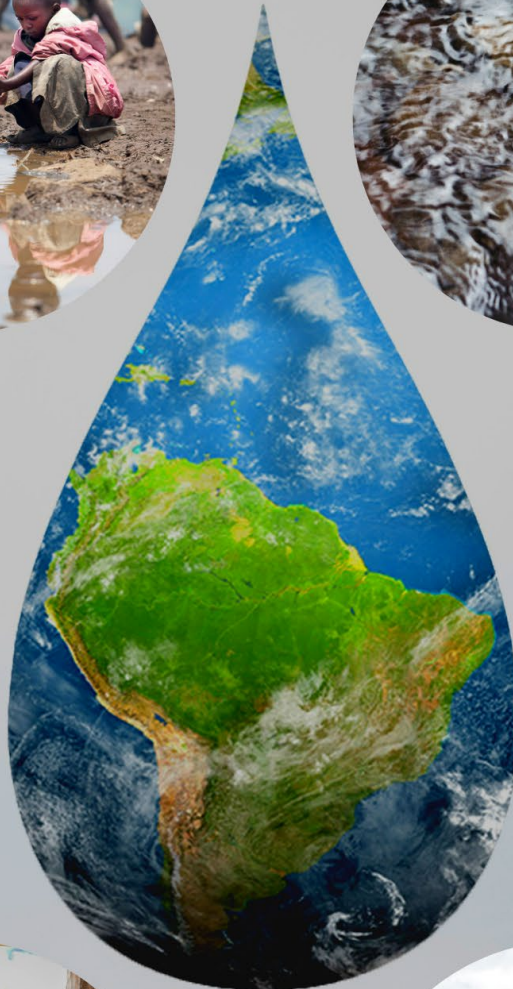




Promotio Iustitiae

Social Justice and Ecology Secretariat (SJES), General Curia of the Society of Jesus, Rome, Italy

The Cry of Water and The Cry of the Poor



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Editorial

Xavier Jeyaraj SJ

The UN Climate Change Conference of the Parties (COP-26) ended in Glasgow on 12 November 2021. We remember that this conference took place in the context of the wakeup alarm raised by a tiny RNA Covid-19 virus. This miniscule virus literally shut down the entire world for almost 2 years, with no end in sight. While we witnessed the 'dance of death' all around us and the busy cities and the airport terminals fell silent, we saw how nature came alive. While we consciously, with considerable anxiety and fear, distanced ourselves socially from one another, some of us introspected and realized, how distanced we were from God's creation and how much damage we have caused to nature. Suddenly we enjoyed *hearing* birds chirping, *seeing* the clear blue sky and the stars even in cities, *seeing* the plants and trees greener without loads of dust and pollutants, *smelling* and breathing fresh air and above all, *feeling* the interconnectedness and interdependence of our lives with one another and all of creation.

After decades of cacophony, selfishness, dominance and arrogance trying to subdue creation, and delighting in the accumulation of wealth and political pride through war, violence, injustice and inequality, we were exposed to our false sense of superiority over God's handiwork and His/Her vulnerable people. The invisible virus made us understand that we are only vulnerable fragile humans and not all powerful. We learned that in reality we are totally dependent on God and God's creation, and the immense intellect we enjoy in comparison to all other living beings is God's freely given gift. The virus made us aware that the more we abuse nature, the more we will face its deleterious effect on us. As Pope Francis said, "People occasionally forgive, nature never does." Hence, it is our responsibility to pause, to recognize our failures and learn to take care of our common home, with a sense of deep respect and reverence.

I hope that the 120 world leaders, who had gathered in Glasgow between November 1 and 2, to kick start a decade of accelerated climate action, realized that - unlike the earlier COP meetings - it could never be business as usual with plenty of empty promises and eloquent speeches. The time has come to stop making false promises for political reasons and act 'together'. Yes, it is time to ACT TOGETHER with a deep sense of hope, taking collective responsibility for the mistakes made. However, let us not leave the responsibility on political leaders. Let each one of us take responsibility as citizens of our common home who have been part of our human failures. Let us claim our rights and seek justice. We shall reflect, discern, plan, and advocate together with the vulnerable, even if it means sacrifices.

The two encyclicals of Pope Francis - *Laudato Si'* and *Fratelli Tutti* - invite everyone of us to establish right relationships with God and with creation, so as to care for our common home and to build a loving friendship with our fellow brothers and sisters as equals. Jesuits have also discerned and received the Universal Apostolic Preferences (UAPs), which again invite us to walk with the poor and to care for our common home. The *Laudato Si'* Action Plan (LSAP) for the next seven years (2021 - 2028), as announced by Pope Francis recently, has two major goals: to help people listen to the cry of the earth and the cry of the poor. The encyclicals, the UAPs and the LSAP articulate the double crises, social and ecological, that we have been going through in recent years. These are not two separate crises that we can tackle separately. Both these crises not only feed on each other, but when they act together, it is impossible to extrapolate the impact not only on humans, but on every organism of the earth and the entire cosmos.

Laudato Si' (§ 27-31) aptly explains the crisis of water particularly in relation to the quality of water available to the poor, pollution produced by mining, industrial activities and wastes poured into water streams, privatisation and commodification of water etc., that result in deaths and spread of water related diseases and destruction of many species and microcosms on earth. It further emphasises that "access to safe drinkable water is a basic and universal human right, since it is essential to human survival and, as such, is a condition for the exercise of other human rights" (LS § 30). It goes on to say that "the environmental repercussions could affect billions of people; it is also conceivable that the control of water by large multinational businesses may become a major source of conflict in this century" (§ 31).

Elaborating further, the invitation of Pope Francis in LS, the Dicastery for Promoting Integral Human Development gave a value-oriented document '*Aqua fons Vitae Orientations on Water: Symbol of the cry of the poor and the cry of the water*' in March 2020. It highlights the various challenges we face and makes operational proposals for action on three dimensions of water: namely: water for human use, water and human activities and water as space and calls for "a more open and inclusive education, including patient listening, constructive dialogue and better mutual understanding" (§ 103).

Fr. Arturo Sosa SJ, our Superior General when asked 'which aspect of the environmental crisis worries him most', in his recent book *Walking with Ignatius*, quickly replied, "Water. I think this is the most serious problem facing us today, although it is little spoken of. We hear warnings about global warming far more often, but it seems to me that the core problem is water." In another place, he explains that "the starting point for achieving integral ecology is the quest for social justice and the promotion of human dignity... What we find most shocking is poverty and the structural injustices that cause it, which necessarily tie in to the issue of environmental imbalance."

As a humble sign of our commitment to the call of Pope Francis in LS and the challenges of caring for our common home (UAP-4), we bring out the three issues of *Promotio Iustitiae* 132, 133 and 134, with a focus on reading, reflecting and analysing the themes of *cry of the poor* and *cry of the earth*. In each of the issues, we will highlight the cry of the poor and the excluded in relation to the three fundamental elements of water (PJ -132), land (PJ-133) and

forest (PI-134). Through these reflective articles, we desire to listen to the excluded, marginalized people and to the voiceless earth, who are crying out for a just future for all.

In the first of the series, we listen to the cry of water (UAP-4) and the cry of the poor (UAP-2). The 17 articles from different continents and different perspectives reflect the concrete experiences of the authors as they work. They reflect how water is not just a problem of the environment but much more a social, economic and political problem created by the unjust structures of the society. They echo the themes of spirituality (Martin & Diem), politics, violence, conflicts around water at the borders (Valery), urbanization, pollution and health (Tuchman), rights of vulnerable communities, especially the indigenous (Ekka & Nelys S.), farmers (Bacon), migrants (Canales), corporatization and commodification of water (Savarimuthu & Saldivar), people's movements (Chiramel), aqua-culture (Galligan & Kinney), accessibility to water and food security (Serrano & Ochoa-García), water harvesting (Molina), and the discrimination faced on the basis of gender (Sinha) bio-diversity, etc. Besides giving facts about these realities, many of them also share some hope generating concrete success stories and case studies of advocacy efforts of resistance movements by affected communities. This brings a sense of unity and hope for a better and a safer future for all.

I would like to end with what Jack D. Forbes¹, an indigenous Americans said a few years ago,

"I can lose my hands and still live. I can lose my legs and still live. I can lose my eyes and still live... But if I lose the air I die. If I lose the Sun, I die. If I lose the earth, I die. If I lose the water, I die. If I lose the plants and animals, I die. All of these things are more a part of me, more essential to my every breath, than is my so-called body. What is my real body?"

Let us humbly acknowledge that Water is life! No water, no life! Hence, let us make the words, "I was thirsty and you gave me [clean water] to drink" (Mt. 25/35) part of our reality.

Original in English

¹ Forbes, Jack D. (2001). Indigenous Americans: Spirituality and Ecos. *Daedalus*, 130 (4), pp. 283-300.



Sister Water: We are Listening to Your Cry and We Acknowledge Your Right

Sue Martin

Project Officer, Reconciliation with Creation, Australian Jesuit Province

At the start, I acknowledge that the sovereignty of the First Nations peoples of the continent now known as Australia was never ceded by treaty nor in any other way. I acknowledge and respect First Nations peoples' laws and ecologically sustainable custodianship of Australia over tens of thousands of years through land and sea management practices that continue today.

Pondering on and with Sister Water in my life is part of my contemplative practice. My worldview is from Australia, the driest continent, living and working in the global north, with a coloniser heritage. Sister Water has been formative in my early years. I grew up on the banks of Devlins Creek a tributary of the Lane Cove River in Sydney Australia. A truly blessed childhood where being in nature was encouraged. Becoming an environmental educator with an ecological vocation to care for our common home is not surprising. My current work title 'Reconciliation with Creation' project officer often prompts me to reflect on what reconciliation with creation or nature could look like in our world today. I am realising this reconciliation requires active listening to the cry of the poor, the First Nations communities around me, to ensure reconciliation with creation can be realised.

World Water Day March 22, 2020, the Dicastery for Promoting Integral Human Development released the publication '*Aqua fons vitae. Orientations on Water*'. Water has been used as a symbol of the cry of the poor and the cry of the Earth. This document builds our toolkit to better listen to Sister Water. For me the wisdom in *Aqua fons Vitae* (AV §15) 'that water related problems, which are complex and often interconnected, are due to the absence of just and adequate relationships with God, with nature and with oneself.... They must be addressed deeply, with justice, determination, solidarity and subsidiarity' this speaks to us all. A call to be doers of the Word not just listeners'.

Laudato Si' calls us to be integral with nature. It says, '*Human life is grounded in three fundamental and closely intertwined relationships: with God, with our neighbour and with the earth itself. According to the Bible, these three vital relationships have been broken, both outwardly and within us. This rupture is sin*' (§ 66).

To work on this 'brokenness' we need to understand the 'rights of nature', reflect where they have been neglected or trampled so that we are truly living an integral life with God, with our neighbours and with Earth itself.

When I talk about the 'rights of nature', it is seeing our earth systems and rivers are not merely as property that can be owned but they are entities that have an independent right to exist and flourish, they just are! Laws recognising the 'rights of nature' change the status of natural communities and rivers to being recognised as rights-bearing entities with rights that can be enforced by people, governments, and communities.

There are a small number of examples of the 'rights of nature' being incorporated into government institutes around the globe and a smaller number in Australia.

The most promising development in listening to Sister Water has occurred in Aotearoa New Zealand, on March 20th, 2017, the Aotearoa New Zealand government enacted legislation recognising the Whanganui River as a legal person, holding rights and responsibilities equivalent to a person.

Small steps can be seen in Australia with the creation of the 2017 Yarra River Protection act. The Yarra Riverkeepers looking after the Yarra /Birrarung River in the state of Victoria, where our Australian Jesuit Province office is located, has taken a bold step to pass legislation giving water rights to the local First Nation community. The Yarra River Protection (Wilip-gin Birrarung murrong) Act 2017 is the first legislation in Australia to be co-titled in a Traditional Owner language. 'Wilip-gin Birrarung murrong' translates as 'keep the Birrarung alive' in Woi-wurrung. Woi-wurrung was used in recognition of the Traditional Owners' custodianship of the river and their unique connection to the lands through which the river flows. It is also a Victorian and Australian first in legally identifying a large river and its corridor, as a single living and integrated natural entity for protection.

On April 27, 2021, Blue Mountains City Council in the Greater Sydney region has become the first Local Council, and the first government entity in Australia, to embed "rights of nature" as a keystone concept into its operational practices, planning processes and advocacy programs. This has been achieved through the work of Australian Earth Laws Alliance.

The Australian Earth Laws Alliance AELA is working to create systems change, so our western societies can shift away from human centred governance to Earth-centred or "life-centred" governance. AELA is working with experts from the natural sciences, Indigenous knowledge systems, law, planning, natural resource accounting, ethics, economics and the arts, to create Earth centred governance models for bioregional ecological health in Australia.

Luke Edwards of Edmund Rice Education Australia EREA, a colleague with me on the Catholic Religious Australia CRA Ecology Alliance committee, is looking to incorporate the AELA 'Greenprints' approach in their school governance systems. 'Greenprints' focuses on a critical question: how can we create governance systems that help human societies to live within our ecological limits and nurture the Earth community? This project has been created because while we have 'blueprints' to document the design of building and engineering projects, we don't yet have effective 'Greenprints' for helping us construct the governance systems we need, to build Earth centred human societies that can nurture the Earth community and flourish in a post-carbon, climate changed world.

Is this something we could explore across our Jesuit communities, to have 'Greenprints' incorporated into our governance structures?

The newly forming Jesuit inspired Rivers above Asia and Oceania Ecclesial Network (RAOEN) seeks culture-based solutions: a strength of growing reconciliation with land and seas through faith, community, and nature. The deep connection RAOEN has to Sister Water is seen in the founding statement.

The 'River above' – the Pacific Ocean is the life, the river of Asia feeding all rivers, seasons and lives. ... The welfare of the lands and peoples is bound to the welfare of the seas.

Recently in the RAOEN Synodality webinar I shared a breakout room with Makareta Tawaroa from Aotearoa New Zealand Whanganui River region. Makareta shared with me that they are working to bring back the life force of the river, its essence. Makareta is a Māori woman who takes her identity from the river.

The Australian Faith and Ecology Network FEN recently held a series of webinars called Deep Listening. One of the webinars heard from Myree Sam, a traditional owner from Saibi Island in Zenadh Kes (Torres Strait). She spoke of the thousands of generations of interconnected knowledge her people have being part of the Great Barrier Reef. Myree spoke of her desire to work with Western scientists to care for Country. While listening to Myree the call that was heard was for each of us to renew our own spiritual connection with the natural world through our own traditions. Asking: "Is there a sense that our loss of spiritual connection to the land, sea and sky has created what is affecting the Great Barrier Reef and the Earth? How can we help people regain that connection?"

From Myree I hear the complexity of forging two worlds. In Australia this struggle of First Nations people across our land to claw back the western legal entitlements to land and water that they have held for millennia has become another wicked problem we all must acknowledge.

The complexity of our Australian water crisis is often termed "wicked" which was a term coined by a colleague Val Brown from Australian National University ANU. ANU has recently started a Water Justice Hub, a response to the need to understand our wicked water issues.

In Australia it is the Murray (Millewa/Tongala)-Darling (Barka) River system that has its water rights most contested. The Murray River (Ngarrindjeri: Millewa, Yorta Yorta: Tongala) is a river in south-eastern Australia. It is Australia's longest river at 2,508 km. Its tributaries include five of the next six longest rivers of Australia (the Murrumbidgee, Darling, Lachlan, Warrego and Paroo Rivers). Together with that of the Murray, the catchments of these rivers form the Murray-Darling basin, which covers about one-seventh the area of Australia covering over a million square kilometres, an area larger than the combined size of France and Germany.

The Murray Darling Basin has a plan, first ratified in 2012, developed by state and federal governments coming together to manage water carefully and protect the Basin for future

generations, to bring the Basin back to a healthier and sustainable level, as a whole 'connected' system. Many critics of the Plan say that vested interests of irrigators and communities living in the catchment have been prioritised over environmental flows and First Nation custodian rights. My previous work in sustainability working with local governments within the MIA Murrumbidgee Irrigation Area has deepened my understanding of the wickedness of water issues. Local communities fought long for no reduction in their irrigation rights. The most recent drought occurred, and it was only then that water restrictions have come into place in towns in the MIA region. Change is hard. It was the fish kills of December 2018 and January 2019 in the Darling Barka River that made many in Australia realise Sister Water is crying out.

The rights of First Nations and the environment have not been an obvious priority in the Murray Darling Basin Water Sharing Plan. Reflecting on the wickedness of the water issues in the Murray Darling basin I do need to heed the voice of a much respected environmental scientist Richard Kingsford from University of New South Wales UNSW who once said it is a world leading plan as many river systems across the globe do not even have a plan.

Very recently August 2021 an announcement outlining a path that would, for the first time, allow water in the Murray Millewa / Tongala River to flow for cultural purposes was announced. Finally, First Nations are being listened to and the 'rights of nature' are slowly being incorporated into government instruments.

The plan maps a path to securing Aboriginal water rights in Murray-Darling Basin's Margooya Lagoon. The plan produced by Environmental Justice Australia for the Murray and Lower Darling Rivers Indigenous Nations (MLDRIN) and the Tati Tati Wadi Wadi community, is a detailed toolkit for using water in the Murray Millewa / Tongala River for cultural purposes at Margooya Lagoon, an ancestral site, important for many ancestral beings and ancestral animals.

The Margooya Lagoon plan defines cultural flows as "water entitlements that are legally and beneficially owned by Indigenous Nations of a sufficient and adequate quantity and quality, to improve the spiritual, cultural, environmental, social and economic conditions of those Indigenous Nations". One day it will be realised it is of benefit for us all, not just First Nations communities.

I recently visited the Darling / Barka River and camped at the Mendindee Lakes which is a bucket list activity for me. Being by the Darling / Barka river filled my soul. One very sad aspect of camping by the Darling / Barka river was to see how the lakes have been reorientated for irrigation, a system created in the 1950s. All water leaving the Menindee Lakes into the Darling / Barka River now flows through a large stormwater pipe 1200mm in diameter. Pondering on this I can hear the cry of Sister Water loudly, one of many disruptions is that fish migration up and down stream is now not possible.

We need to ponder with the rivers where we are living. What is the dream for the river in your region? What 'rights of nature' are possible? What is the name used by First People for your local river?

The river I currently live by is the Hawkesbury-Nepean/Dyiruban River. There is much to dream for, many 'rights of nature' to fight for. A small group of passionate Riverkeepers have formed to be the community voice for Dyiruban working to follow the Yarra/Birrarung and the Wanghuni paths.

Water has a regenerative role in nature but is also a metaphor for the regeneration that is needed in our world today. Regenerative practices are slowly blossoming within farming communities influencing ways of living and working with nature.

Can we be regenerative in all we do?

Dr Anne Poelina is Chair of the Martuwarra Fitzroy River Council and many other accolades including Visiting Fellow with the Australian National University Water Justice Hub. Dr Poelina with others including Australian Earth Laws Alliance AELA has started Regenerative Songlines Australia which is working to create a continent-wide network of regenerative projects and practitioners, led by First Nations peoples but open to all Australians. Regenerative Songlines Australia hopes to focus on amplifying local and bioregional initiatives, which leads to regenerative economies and societies and will be connected with international "regenerative roadmap" partners. Songlines, the dreaming paths, have long been the way First Nations people live and ensure laws and stories are carried out. Regenerative Songlines Australia is pure gift from First Nations to us all.

Can our Jesuit institutions help shape a regenerative roadmap for our world, joining with RAOEN and others? Our Jesuit institutions must respond with actions which are aimed at promoting just relations through and with Sister Water and with nature.

I continue to ponder with Sister Water and learn from First Nations ensuring my worldview shifts to include Deep Listener, regenerator who is a doer of the Word, seeking reconciliation with creation and the rights of nature incorporated into all we do.

"Like a saturated sponge, creation is dripping wet with divine presence, so to speak. Like a soaking ocean, a flowing fountain, an inexhaustible wellspring of sweet water, the life of the Spirit pervades the world." Elizabeth Johnson.

Original in English



Water and Its Fate at Sukaria, Ketapang, West Kalimantan – Indonesia

H. Diem

Where do I come from? And what has become of me? It is obvious that I come from the mountain and I think the old Dayak¹ People who live in Sukaria can tell my story very well. Yes. They witness all the changes. For them, I form part of their lives. No one can live without me. Simply because I am water! My friends and I run through their village under various forms and shapes. We can be springs, brooks, canals, wells, or just puddles! People depend on us and we depend on them. We give them life and the people give us shapes! We now have different destinations and different happenings.

I am at the back of the house where people get together every day. Days and nights, mornings and afternoons, they come to me. They chat, they discuss, they laugh, they joke then they jump into my midst. I am abundant, flowing, and clean. I can play with the children. They are so delighted with me. They feel satisfied with my embracing them. People come here by car. Families, friends, children, guests... come to me. I enjoy their stories, their laughter. They find consolation with me. I can keep flowing thanks to my friends - the bamboo clumps. We are good friends. I have a definite name - "Air Lantung" (Lantung Water). People grow up and fade away in my presence. I am part of their stories. I am "Air Lantung" for them. All find delight with me. When my friends in other places of the village disappear in the dry season, I can still dance with the people.

Oh look! There is a new baby! What a wonderful creature she is! Today, the family brings her to me to have "bermandian" - a ritual of taking a bath for a new baby in a river. This is a sacred ritual of Dayak people. I admire the pureness of this baby. I help her to be stronger with this Dayak ritual. I am part of the ritual that forms her identity. After this ritual, the family celebrates with their new baby. Then I continue to welcome this new member of the village into her daily life. I continue to welcome her laughter, her satisfaction, her jump ...to me and in me.

People go fishing in me. I am sweet and fresh. The fish enjoy being with me so much! People came to fish. They came in groups. They came alone. They bring their children to teach them how to fish. I provide abundant food for them. Fish live abundantly in me. People here like to

¹ Dayak is the name of Indigeneous people living in Kalimantan (Borneo), Indonesia.

eat fish from the river. "We are River Dayak!" they acclaim. I am delighted to be part of this spirit. I am their river. I am part of their typical meals.

One part of me flows into a beautiful, big lake. People take pictures of me. "What a beautiful lake, the water is so clean!" people exclaim. Yes, I look so clean, so transparent but nobody can take a bath in me. I can see them. They look at me. I look at them. One day, I heard the shout of one father to his child who was so excited to jump into the pool to play with me. "No, please do not jump into that pool! You will die later." I feel sad. The boy felt sad. I really wanted to play with that boy but I could not. The fact is I now contain chemicals left over from the mining of bauxite. Because of this parents prevent their children from jumping into me to play with me. I can do nothing else but silently give the reflection of the trees, the sky, the moon and figures of those who admire me. I am a silent lake.

Earlier, part of me flowed freely in the field. Earlier, plenty of fish could swim freely and abundantly in me. People obtained plenty of fish when they visited me. They could find me anywhere. Then, gradually, I have to bend according to what some greedy people design. Initially the contractors came with bulldozers, to make "paret" - the ditches in between the zones of palm plantations. I flow into the ditches that they make. Then they planted palm oil trees. Next they put chemical fertilizer and insecticide for the palm trees. Oh, no! These substances saturated me. I have to absorb them. They flow into me naturally because we are so near to each other. We become one. My color changes - sometimes orange, sometimes brown, sometimes black. I am not transparent anymore. In some parts of where the ditches join each other, I have white bubbles on top because I flow strongly at these joining points. People find chances to get fish at these joining points. Are they afraid to get fish from me? I hold the substances. Fish live in me. Are they free from these chemicals? But people continue to find fish in me. They go fishing with a hook, a net. Some children find delight in taking a bath with me on hot days. On rainy days, they enjoy playing with me. Group by group, families together with friends - jump into me. They do not realize that I now hold chemicals inside. I wish I could speak aloud to stop them from jumping into me.

I look at my neighboring stream of water. She is just on the other side of the division. How I wish I can be transparent and clean again like her. She is in a ditch also but she is friends with the bamboo, with the trees on top of her. She can project the beautiful reflection of the sunrays and of the blue sky. The reflection of the trees too is clear in her. Yes, along her sides, trees are still standing. Bamboos are still green and grow vigorously. She remains in the weave of the original botanical web. Many kinds of trees are just waving in the wind on top of my friend. For me, the reflection of the palm trees looks just like my color. We are all black - myself and the reflection of the palms.

Another friend of mine flows from a mountain. People, especially the young ones, often go to this mountain to find an internet signal. They do not see this friend during sunny days. However, she flows down vigorously during the rain and after the rain. She wishes to slow down her velocity but nothing can hold her back. She had friends, trees on top of the mountain, who helped slow her down but many of the friends, trees have been cut down. The owner of the land is preparing to make another palm plantation. She has become so strong, with no trees to control her. Even she is amazed at her power of flowing. She can make the

top soil and rocky part of the mountain wash down with her power. She actually does not want to do this. She wants the friendly soil to remain on the mountain but her uncontrolled power ferociously rolls them down. She has created a big ditch at the lower part of the mountain. The ditch is very big now.

There is another friend who was the neighbor of the ferocious water on the mountain. She is at the lower part of the mountain. She is between the big road and a palm plantation. When a truck passes by, dust just goes into her. Orange dust. But she keeps flowing. Look! A lady and a child are heading toward her. They want to take a bath in her. They have to walk so far. But it seems that they have no choice. Their house is on top of that mountain. They have tried to find ways to make a well to supply water for their house but they cannot. They have to get my friend water from the sky. When the rain comes, they get big tanks to contain my friends. However, my friends in the tanks cannot serve them throughout a long dry season. The family has to go to this friend for water. But she is so limited being small, and little. People have to go far to reach her. Look! A little girl joins her brother to take a bath. How much she enjoys being with my friend even though my friend is so small and little. My friend can hold fish also. They can sometimes find fish in her. But she becomes smaller and smaller.

I slowly crawl into a well. The well is at the back of a house. One day, I heard the mother say "Let's prepare to go to mass. Hey! Take a bath first." She was trying to look for me, but she could-not find me in the well. She switched on the pump but the pump could not work, because I was so low. I could not enter the pump. I had almost disappeared. I could not bear the heat. Finally I disappeared that year from her well. The heat and the dryness took me away and transformed me into vapor. One person asked the lady later. "Why did you not go to mass the other day?" She replied "I could not find water in my well. I had to go to a river to take a bath. When I came back, it was late, and then I stayed at home."

My friends and I had an exodus to the sky. The heat brought us there gradually and then quickly. We became "migrants". We evaporated listening to the engine of all kinds of vehicles rushing to look for us. They could not see us. We saw them. What a pity! People and we were rushing but we were travelling in opposite directions. They looked down for us while we headed up. They looked for us everywhere. I saw them trying to reach my friends and me, using a mini pump to put us into a tank in their truck to bring home. Sometimes they managed to get a little of us to bring to a field, or to bring to a house. They daily tried to help people who could not reach us. We continued to fly and these trucks continued to run. We were not on the same road. They desperately looked for us. But we evaporated quickly.

My friends and I wondered why we were pushed to move so fast to the sky. On our flight, we could see that people burned the forest everywhere. Some burned their own forest to sell land. Some burned the forest to make rice fields. Some burned the forest to make palm plantations. We were in a race. Big fires and small fires appeared everywhere. Dark smoke and a burning smell prevailed. I heard the claim of the innocents, "It's so hot. It's so dry." I saw people rushing everywhere to find me. Mornings and afternoons, they went with the pails to find me so that they could take a bath.

Another part of me curved into a place which is used for a washing ritual after a funeral. Everyone at the funeral has to do this ritual of washing, and I am ready to cleanse their hands as well as their bodies. Another person left the village for eternal rest one day. Most of the people of the village came to the funeral as usual. After the burial, they came to me to wash their hands and take a bath. Earlier, I just moved gently among them to wipe away the sadness of the loss. But now my level is so low I get stagnant. I cannot move freely at this time. All need to wash their hands and their bodies. I receive all their dust and try to wash away their sorrow and their tiredness. But why have I come to this? From gracious flowing to helpless stagnancy?

The name of the village is Sukaria - means "enjoyment and elation". We, my other water friends and I, witness the joy, the sorrow, and the struggling of the people of Sukaria confronting sudden changes taking place in us. We had been abundant in their lives. They were poor but one with nature. They lived in nature and were nurtured by natural resources. Now, in the name of progress, they have many new gadgets! They enjoy many convenient discoveries! Their lives seem easier and faster! Yet, in exchange, they now lack the simple joys of life. For economic gains by transforming lands into palm plantations, they now have contaminated water sources. We witness their going "to and fro" to look for us. We see their eyes of wonder asking "Where is our fresh and clean water?" "Where can we find fish?" "What happened to them? Why are they so few now?"

We can feel the fear, the sorrow, and worries of the people. But what can we do? How can we become their source of life again? There is nothing we can do; the people must decide. They must take the matter into their own hands. If they want to enjoy us, as before, they must stop polluting us with chemicals. They must find a way of developing the palm trade in harmony with nature. They cannot impose a rush into the natural cycle of life, by using fertilisers and pesticides. They must not cut down the big trees lining the mountain side. Only then can they live happily with nature. Their lives will be free of many diseases. How I hope that people will realize this! How my friends and I would like to be always of service to the joyful living of people! Hopefully the money greedy organizers of big projects consider the simple needs of people and instead they live a harmonious and joyful existence in the beauty of nature.

One day, I saw a little girl come to a small kindergarten in the village. On the first day of school, she saw her friends using water cans to put water for the plants and flowers in the compound; she then joyfully joined the watering team. These little friends already had this habit of watering plants from the instruction of the teachers. They are taught to take care of creation and the planet. They learn that trees can protect the resources of water. by their small but faithful act of watering the plants before the class starts they learn the love of nature. They also learn to plant vegetables in a small garden. On some occasions, I saw their brothers, sisters and friends come to plant flowers, trees and bamboo. Thus little by little, good habits of taking care of Mother Earth are on the move.

The whole village engaged in a bamboo promotion program. They were given lessons that bamboo can keep me and other water bodies well and abundant in the village. Now bamboo in the compound is growing vigorously. They made a bamboo house in that compound. It is by the successful participation of all people of the village. This house marks the lessons and

commitment of the people for the role of bamboo in bringing me back again. This program means hope that I can again skip, dance and meander among them in abundance, in the real beauty of my nature. The process is slow but I can wait.

The seed of hope is already germinating! Life will be beautiful again!

Original in English



Water and Conflicts: Towards Water's Rights

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Conflicts are an unavoidable part of social change in all societies. But conflicts over water should keep humanity perplexed and stupefied at the level of its perversity. When conflict over water leaves us indifferent, and no one raises his/her voice to denounce such a conflict as unnecessary because the very foundation of life is attacked and is at risk, then we can be sure and certain that we have reached the point of total disintegration and destruction of our common home. Beyond this threshold, there is no return to "normalcy". Normalcy being understood as that point where water had *de facto* its rights. A look at the conflicts around water in our world today calls for the necessity to reiterate and stress these *de facto* rights of water.

Water has its rights. Water needs to be treated fairly and justly for itself. We can't keep abusing water. We must stop taking water for granted and stop the abuse of water. Most conflicts over water are due to an abuse of water and a neglect of the rights of water. Before, it seemed unnecessary to evoke water's rights, but now, it is absolutely necessary and urgent to reiterate and defend these rights. Considering some conflicts in our world today around water can help us to understand how water is being denied its rights. These can lead us to reaffirm the *de facto* rights of water.

Water Conflicts in Contemporary Time

In our society today, water conflicts could be Local (between societal groups competing for water in a specific area, or between a state and its citizens in a specific area), national (between different interest groups in relation to national policies affecting water management), international (between states over the use of shared water resources), and Global (between marginalized and affluent populations, in which conflicts result when resources are distributed from marginalized populations on the periphery to more privileged sectors comprising the core) (Gehrig, J. 2009:4). In recent years, some major international water conflicts hot-spots include: Aral Sea (between Afghanistan, China, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan), the Jordan (between Israel, Jordan, Lebanon, Palestine, Syria), the Tigris-Euphrates (between Iran, Iraq, Jordan, Saudi Arabia, Syria, Turkey), The Nile River (between Burundi, Congo (Kinshasa), Egypt, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, Tanzania, Uganda).

a) Today's Nile River Issues

Recently, the tensions among Egypt, Sudan, and Ethiopia over the Grand Ethiopian Renaissance Dam (GERD) on the Blue Nile (Mbaku, J.M., Aug. 5, 2020) have escalated, particularly after Ethiopia announced that it had started filling the GERD's reservoir, an action contrary to Egypt's mandate that the dam not be filled without a legally binding agreement over the equitable allocation of the Nile's waters. Egypt has also escalated its call to the international community to get involved. Already, the United States has threatened to withhold development aid to Ethiopia if the conflict is not resolved and an agreement reached. The dispute over the GERD is part of a long-standing feud between Egypt and Sudan – the downstream states – on the one hand, and Ethiopia and the upstream riparians on the other over access to the Nile's waters, which are considered a lifeline for millions of people living in Egypt and Sudan. Despite the intense disagreements, Ethiopia continues to move forward with the dam, arguing that the hydroelectric project will significantly improve livelihoods in the region more broadly.

Although conflict over the allocation of the waters of the Nile River has existed for many years, the dispute, especially that between Egypt and Ethiopia, significantly escalated when the latter commenced construction of the dam on the Blue Nile in 2011. Ethiopia, whose highlands supply more than 85 percent of the water that flows into the Nile River, has long argued that it has the right to utilize its natural resources to address widespread poverty and improve the living standards of its people. Ethiopia has argued that the hydroelectric GERD will not significantly affect the flow of water into the Nile, while Egypt, which depends almost entirely on the Nile waters for household and commercial uses, sees the dam as a major threat to its water security. Sudan is caught between the competing interests of Egypt and Ethiopia. Though Sudan earlier opposed the construction of this dam, now she sees this dam as significantly helpful to the region although with much reserve. Khartoum continues to fear that the operation of the GERD could threaten the safety of Sudan's own dams and make it much more difficult for the government to manage its own development projects.

Despite mediations, chaired by President Cyril Ramaphosa of South Africa on behalf of the African Union, which have resolved many issues concerning the filling of the GERD's reservoir, agreement is still to be reached on the role the dam will play in mitigating droughts. While Ethiopia wishes to have the flexibility to make decisions on how to deal with droughts, Egypt and Sudan see it important to define clearly what a drought situation is, based on the quantity of water in the GERD's reservoir. Irrespective of these conflicts, the Nile keeps flowing. Water in itself is not the source of this conflict, but the disputes over the use of water by different peoples is the cause of conflict. This is all the more reiterated by most local conflicts around water.

b) The "Water Revolt" in Cochabamba Bolivia

In 1996, the World Bank, the Inter-American Development Bank, and the International Monetary Fund, through a series of structural adjustment policies, made the privatization of the municipal water services for two of Bolivia's (Gehrig, J. 2009) major urban centres, El Alto/La Paz and Cochabamba, a precondition for further water infrastructure development

assistance. The multilateral lending institutions also recommended that there be “no public subsidies” to hold down increases in the price of water services. By September 1999, Cochabamba’s water services were turned over to Aguas del Tunari, controlled by the California engineering giant Bechtel.

Just one year later, there was a huge protest in Cochabamba because of this privatization. To understand what provoked the protest in early 2000, despite severe government repression and the declaration of martial law, a quick review of the terms of the water privatization contract is helpful:

- Aguas del Tunari was authorized to take over the municipal water network and all the smaller systems – industrial, agricultural, and residential – in the metropolitan area, and would have exclusive rights to all the water in the district, even in the aquifer.
- Within a few weeks, Bechtel’s company raised water rates by an average of more than 50%.
- The new water company could install meters and begin charging for water on the many cooperative wells throughout the concession area – despite the fact that the government had not helped build the wells. These expropriations were legal under a new water law that had been rushed through the Bolivian Congress.
- The contract guaranteed the company an average 16% annual return on its investment, which would be adjusted annually to the consumer price index in the United States.
- Peasants were prohibited from constructing collection tanks to gather water from the rain in the area of concession granted to the transnational water corporation. In order to do so, permission would be required of the government regulating agency.

The absurd ban on collecting rain water could only lead to intense conflict. Water, an irreplaceable need for life, became the reason why people died. Only after 17-year-old Victor Hugo Daza was assassinated by an army sniper – a graduate of the U.S. School of the Americas – did Bechtel finally leave Bolivia.

These two realities present to us the threat to life which conflicts over water bring. Several other conflicts of these kinds around the world have caused unspeakable damage to mankind. In all of these conflicts, like in the two highlighted above, it can be noted that water is never the direct cause. Instead, there are different underlying causes of water-related conflicts. These underlying factors can be classified into socio-economic factors, institutional/political factors, and environmental factors (Gehrig, J. 2009). In most cases, the socio-economic and institutional/political factors are more predominant than the environmental factors. Water is seldom the sole cause of conflict. There are a myriad of underlying causes of water conflict. Because there are always a myriad of underlying causes of conflicts around water, and not about the water itself, it seems just appropriate to advocate for water’s rights and particularly its rights not to be weaponized.

Water’s Rights: A Possibility?

It is not uncommon to hear the expression ‘water rights’. Disputes for ‘water rights’ go back to antiquity, and until today, no agreements are easily reached between riparian countries or institutions when conflicts break over water. By ‘water rights’ is meant the legal rights to use

water from a specific source and the authorization to use, sell, divert, or manage water. Water rights dictate the use of surface water, or groundwater from a specified source. Most water rights doctrine limits water users to 'reasonable use' of a water source, meaning that they cannot exhaust the water source or prevent other people's access to it (Hodgson, S. 2006:4).

Despite this understood regulatory role of water rights, conflicts around water only seem to increase over time. Climate change and increase in world's population make the struggle for water rights more intense. In other words, it seems water rights is the cause of conflicts instead of being a tool to resolve conflicts. It also discriminates amongst peoples, given that due to geographical positioning, some people naturally possess control, and others do not. Furthermore, water rights only emphasizes the anthropocentrism, which is at the very centre of environmental degradation. Water is seen a reality to be exploited for the benefits of mankind, and never as an entity in itself, which participates intrinsically in giving life to the cosmos. The dominance, control, and exploitation of water without consideration of its role in the cosmos constitutes an abuse of water. For a good number of reasons, it is more appropriate and justifying to speak of water's rights. Water's rights as an entity in itself, which has dignity and thus deserves respect.

Water is a free gift of nature. Seventy one percent (71%) of the earth is covered by water. Unlike land which is fixed, and air which is everywhere, water has a dynamics. It runs, like in rivers, or is stagnant, like in lakes, moreover it exists in three states - solid, liquid, and the gas and it can easily change from one state to another. Further with respect to the season of the year its volume increases or decreases. Water can be purified for human usage, but can never be created nor destroyed. The amount of water on the Earth is constant, or nearly so. Water has its cycle. It circulates continuously and this circulation has an indispensable role in making our ecosystem what it is. Because of its role in the ecosystem, water is the great connector of all species on Earth. Due to its predominance and importance for life on Earth, Thales (640 C - 548 BC), a pre-Socratic philosopher postulated that water was the fundamental principle of all things.

Water has the right to be all of this. It will be an abuse, if running water is made to be stagnant and vice versa. It will also be an abuse if some natural processes of its cycle are impeded, thus stopping or restricting its life due to human socio-economic interests. Hence it is an absolute abuse of water's rights when the natural processes of its functioning are determined by mankind. As much as we need water life, we need not to abuse its rights. Like all natural entities it participates intrinsically towards the wellbeing of the planet Earth and the cosmos in general.

In addition, water gives life to plants, microorganisms, animals, and humans. There is no life without water. This shows that water is absolutely necessary for life of any sort. This fundamental aspect of water makes it a uniting factor for all life including humans. Water unites us all, because it gives all of us life. The refusal of water to anyone, using whatever means, goes against the nature of water, hence an abuse of its rights. Corporatization of water, or the use of water as a weapon to either influence political decisions by stopping its flow to downstream countries is a violation of the water's rights. Water is abused when it is cornered and used to generate profit for some. It thus follows that it is also an abuse of water to waste

it and to prioritise industries above humans when it comes to water usage and distribution. Any distribution of water based on financial gain is an abuse of water.

Conclusion

Water, a life giving gratuitous gift of nature has for so many years become a source of conflicts. Like the examples above show us, most of these conflicts are actually not related to water itself. Often, there are the socio-economic and political interests which are at play in these conflicts. Water is seen as a tool or rather, as a weapon. Those with water control can make use of this as a tool to their benefit. This look at water is more from a utilitarian perspective. This look gives room for the exploitation of water and makes one blind to water's rights as an entity. Water has its life, detailed in its cycle, and its purpose or end. Water seeks to complete its cycle each time and to meet its purpose of existence which is to give life. Water's rights are abused when these are not met. We need to help water live and attain its purpose. In some cultures like in Chad, these rights are respected to some degree. It is normal to find water jars around the town filled with water for passers-by to have a drink if they need. It is also, respect of water's rights for most African cultures to see the refusal of water to someone taboo. This is the reason why for most African cultures, water is offered to strangers as a sign of welcome.

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Original in English



The Laurentian Great Lakes – A Case Study

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An Introduction to the Laurentian Great Lakes:

The Laurentian Great Lakes of North America (the Great Lakes or the Lakes) comprise the largest group of freshwater lakes (by surface area) in the world, and contain 21% of the world's surface freshwater (by volume). The total surface area of the Lakes is 244,106 km², and the total volume is 22,671 km³. There are five lakes - Superior, Michigan, Huron, Erie and Ontario, all of which share borders between the U.S.A. and Canada, except for Lake Michigan, which is completely positioned within the U.S. These extraordinary Lakes are the primary source of freshwater for over 30 million people today.

The Laurentian Great Lakes were formed by the scouring of glaciers around 10,000 – 12,000 years ago. The bedrock is primarily silica-based granite, which, when crushed by the enormous weight of the glaciers, produced some of the most beautiful, clean silica sand that can be found in the world. Today those sandy beaches attract tourists and permanent residents, but are also greatly threatened by industrial extraction for use in hydraulic fracturing operations. The navigable Lakes attract industry and commerce to both countries through their major port cities, employing nearly 40 million people in manufacturing, tourism and recreation, shipping and warehousing, agriculture, science and engineering, utilities and mining.

Impacts of European Settlement and Population Densification: The Last 350 Years

Pre-European settlement, these magnificent lakes supported a vast diversity of wildlife and fish, as well as being home to over 120 bands of Native Peoples who had occupied the Great Lakes basin over the past ten thousand years. Today, the Great Lakes region is the cultural bedrock for thousands of Chippewa, Fox, Potawatomi, Ottawa, Huron and Iroquois Native Americans. Indigenous People have not only used the Great Lakes as their primary source of water, food (fishing, trapping, harvesting from the shores), medicines (from aquatic and land plants), and handicraft (baskets made of reeds), but the Lakes and the region are the source of their very identities as a People.

In the 1600s -1700s when early European settlers colonized the Great Lakes basin, they forcefully dislocated Native American bands and took control of the land and Lakes. European settlers greatly exploited the high quantity and diversity of fish living in the Great

Lakes. Fish harvests recorded in the 1880s and 1890s suggest a total of 67,000 tons of fish being removed per year. As fishing technology became more sophisticated and mechanized over time, hauls were so great that overfishing became a significant concern and legislation in both Canada and the United States was implemented to manage the quantity of commercial fish removal. Meanwhile, the Indigenous Peoples who relied on Great Lakes fish for a major source of animal protein, were severely impacted by the over-fishing, as well as the exploitation of furs and lumber in their forests.

As human population densities intensified in the Great Lakes basin, and logging, agriculture and major metropolises have developed, the bands of Native Peoples have greatly diminished, and those remaining have been forced to assimilate into social, economic, cultural and educational systems of Western settlement. Terrestrial ecosystems in the surrounding watershed have also been drastically changed; dense forests rich with wildlife which historically dominated the Great Lakes basin, have given way to intensive agriculture, industry and urban centers. Intact forests are important in providing wildlife habitat, reducing erosion and protecting the Great Lakes from receiving high volumes of silt and nutrients from their estuaries. Today, just over 50% of the watershed remains forested. In addition, vibrant coastal wetlands are important for purifying runoff from the land before it enters the Lakes. Over 95% of the original wetlands in the Great Lakes have been destroyed and the remaining coastal wetlands are plagued by invasive species which reduce the important ecosystem services that these wetlands provide.

Despite their enormity, the Great Lakes are very vulnerable to pollution because the annual flushing rate of water is less than 1% of the volume of all five lakes. The source of pollution to the Lakes is primarily from decades of industrial waste, raw sewage which enters the lakes when large rainstorms overwhelm the urban storm water infrastructure, runoff from urban centers, and mining operations.

Until the 1970s when the U.S. Environmental Protection Agency was formed, there was little regulation of the taking of natural resources and the putting of waste into the Great Lakes. Since European settlement, at least 13 species of wildlife have been documented as extinct, and many more are threatened or endangered from over fishing, over hunting, and wildlife habitat reduction. In addition, invasive exotic species which have been introduced through shipping ballast water, the use of non-native live bait for fishing, and the horticulture and aquarium trades, now dominate many of the 7,400 kilometers of Great Lakes shoreline, as well as the deeper water pelagic habitats. Invasive species can out-compete the native species, displacing them and having an enormous impact on the Lakes' biological structure and function.

One of my early personal experiences of the Great Lakes is one of growing up on the sandy shores of Lake Michigan in a small town called Ludington, Michigan. In the mid-1900s, the beaches were pristine, vast, and the water was clean, clear and cold. Swimming, sailing, and fishing on Lake Michigan was something people in the community did as a matter of everyday life. We marveled at the beauty, power, majesty, and seeming infallibility of these "inland seas."

My first experience with the fragility of the ecosystems, was when two invasive fish, the alewife and the lamprey, entered the Great Lakes and within a few years, wreaked havoc on the food web, the fishery, the water quality, and the beaches. The alewife and lamprey invaded the Great Lakes from the Atlantic Ocean through the Erie Canal and the Welland Canal. The alewife is a small silver fish positioned in the middle of the food web, feeding on zooplankton and being preyed upon by the larger carnivorous fish. The lamprey is a parasitic jawless eel-like fish that spawns in freshwater streams where they grow for 8 years before moving out into the open lakes to feed on the blood of the larger game fish. The lamprey latch onto the large fish, rasping their teeth and sucker-like mouth into the flesh of the fish, and sucking the blood and nutrients from the fish, often killing its host in the doing. This parasite reduced the densities of the top predators of the Lake Michigan food web, which at the time included lake trout, whitefish, Atlantic salmon, and the stocked coho and chinook salmon. The smaller feeder-fish (including alewives) then began to grow unchecked. In turn, the growing alewife populations consumed and greatly reduced the zooplankton communities. Since the zooplankton were in such low abundance, their primary source of food, the microscopic plants or phytoplankton, began to expand in number because they were no longer being grazed upon.

In short, with the accidental introduction of two species of non-native fish to the Great Lakes, the food webs in these enormous bodies of water completely collapsed. The lamprey removed the top carnivores, and a cascading effect occurred down the food web from top to bottom. As a result, there were no game fish for humans to harvest. The water was no longer clear and blue, and underwater visibility was reduced to less than one meter with such high populations of phytoplankton. The alewives, having no checks and balances were dying and washing up on all of the Great Lakes shorelines and beaches by the millions. Those beautiful, clean silica sand beaches were now littered with deep piles of dead alewife carcasses which were odorous and attracted billions of flies. Municipalities that relied on their beautiful sandy beaches to attract summer tourists brought out their snow plows and literally moved tons of oily alewives off the beach.

It was a constant battle that worsened for several years until scientists uncovered a way to manage the lamprey populations in the streams of the Great Lakes states, primarily Michigan. A chemical toxicant or lampricide was applied to streams throughout the state of Michigan in order to exterminate the lamprey young. Once the lamprey densities were reduced and the states and provinces restocked the game fish, the food web eventually recovered its balance, the alewives were in check, and the water cleared up.

I also remember news headlines in the 1970s describing the *Death of Lake Erie*, which was another shock and heart break. Unlike the lamprey which attacked the top of the food web, the Lake Erie food web collapse was caused by a disturbance to the base of the food web (the phytoplankton) which then cascaded up the food web. What happened? Industries that produced laundry and dish detergents began using phosphorus to chelate cations including calcium and magnesium, making the detergents more efficient. Phosphorus is an important element that is essential to the growth of plants including phytoplankton, and is in very low natural abundance in the soils and bedrock of the Great Lakes. In the Great Lakes, phosphorus

is considered a growth-limiting nutrient because its scarcity keeps a check on overgrowth of phytoplankton. So, when the phosphorus-rich wash water effluent made its way into Lake Erie, the phytoplankton growth was so highly stimulated that the entirety of this relatively shallow lake turned into a thick “pea soup”. When all of this phytoplankton biomass died in late summer and began to sink to the bottom of the lake, it became an enormous food resource for the decomposing bacteria, who grew in great numbers while feeding on the dead phytoplankton. The bacteria were so numerous that they consumed all of the oxygen in the lake, causing the fish to die. Every trophic level of invertebrate and fish, from the small minnows to the top carnivores essentially suffocated. The entire lake experienced a dramatic death, and billions of fish were found floating belly-up at the surface of the lake, and washing up on shorelines in tremendous numbers.

When scientists determined that phosphorus in detergents was the culprit, legislation was quickly put into place to ban phosphorus in detergents, and Lake Erie miraculously recovered. Such resilience in nature is a true gift and inspiration. It is hopeful and awesome. Yet, nature’s resilience also can make us complacent and we can soon forget the lessons learned from our past mistakes.

Current Threats to the Health of the Great Lakes

Today all of the Great Lakes, and Lake Erie in particular, are suffering from another source of phosphorus pollution to their waters, that which comes from the manure of swine, poultry and cattle on large livestock farms within the watershed. Industrial-scale animal agriculture where thousands of head of livestock are crowded into large (1,860 m²) warehouse facilities, where the animals’ growth is accelerated with the use of growth hormones, and the infection rate is reduced by abundant use of antibiotics, are becoming increasingly numerous within the Great Lakes watershed. Each of these Confined Animal Feeding Operations (CAFOs) can produce up to 3.8 million liters of manure per year, which equates to 18,000 kg of phosphorus loaded into the watershed per year. The land cannot handle all of this manure, and the phosphorus washes into the Great Lakes, causing excessive fertilization of the phytoplankton, resulting in harmful algal blooms. In the western basin of Lake Erie, harmful algal blooms occur on a regular basis each year, requiring large cities like Toledo to stop drawing drinking water from the Lake for several days at a time. The poisoning of the Lake water several times each year puts a disproportional burden on low-income communities of color.

Since the year 2000, one small sub-basin, the Maumee River watershed in Ohio, has experienced a 2- to 3-fold increase in the number of chickens, cows and pigs. These CAFOs and the production and disposal of manure are not legislatively regulated, so the majority of all manure from these CAFOs enters Lake Erie following rain events. Similar increases in CAFOs are recorded in Michigan and Wisconsin, which have produced harmful algal blooms in many parts of Lake Michigan, Lake Huron and surface water streams.

In the past few decades, industry has also left a legacy of toxic contamination in the Great Lakes. The U.S. has identified nearly 100 Great Lakes Superfund Sites - sites contaminated with hazardous pollution. The U.S. Environmental Protection Agency is responsible for cleaning up the sites, making them environmental clean and healthy and to return the sites to

productive use. It is more often the rule than the exception that Superfund Sites are located in low-income communities of color. The human health impacts of toxic industrial waste being located in these neighborhoods, is clear. People who live near Superfund sites tend to have higher rates of cancer, neurological diseases and other health maladies.

The expansion of old fossil fuel pipelines, and the laying down of new pipelines throughout the Great Lakes region is another great source of pollution and a threat to water. There are hundreds of petroleum pipelines that flow across the U.S., and many of them cut directly through Native American reservations, threatening water quality and sacred sites. One highly contested pipeline in particular, the Enbridge Company's Line 5, lies on the bottom of the convergence of Lakes Michigan and Huron in the Straits of Mackinac for part of its 1,038 km length. It carries 540,000 barrels of crude oil and natural gas liquids each day, and a crack in this pipeline caused by a storm would result in ecological disaster for this sensitive and unique area. Enbridge intends to expand the 68 year old pipeline. People concerned about global climate change and the health of the Great Lakes see the expansion of these petroleum pipelines as a high-risk, short-term monetary gain for the company, at a great expense to Indigenous Peoples and the environment.

Climate Change is also having a large negative impact on the Great Lakes by warming the water and thereby making it more suitable for invasive species to spread; altering lake water levels through higher precipitation rates and higher evaporation; and stimulating more frequent and intensive storm events which damage coastal ecosystems and lead to more frequent sewage overflows from cities and from CAFOs.

Pope Francis Calls us to Action: The Laudato Si' 7-Year Journey toward an Integral Ecology

Global climate change, the loss of biodiversity, industrial water pollution, and aging water infrastructure in the Great Lakes region disproportionately impact the Indigenous Peoples, the poor, the youth, and nature itself. Pope Francis' encyclical Laudato Si', and the new 7-Year Journey Toward and Integral Ecology calls people worldwide to action. We are called to reflect on our own contributions to colonization, climate change, and the loss of biodiversity. We are called to conserve natural resources, to live simply, to walk with the under-represented and to accompany youth to a hope-filled future. We are called to live in a right relationship with people and the planet, to correct our path and to insure the health of Earth's systems for the security of our children's futures.

The echo of our ancestors can be heard on the shores of the Great Lakes, and they are telling us to care for the Earth, sky, water, and our four legged, finned, and winged brothers and sisters. Pope Francis is calling us to listen.

Original in English



Water is Life and Life is Struggle: The Global Water Crisis Experienced in a Little Corner of the Earth

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Water is A Renewable, But Finite Good

Although on first impression it seems that there is a lot of water in the world, this perception must be qualified. Certainly, water covers almost 70% of the planet, but the percentage available for human use is much less. Only 2.5% is fresh water, the rest is saline. Of that 2.5% of fresh water, 69.7% is frozen in glaciers, ice sheets and icebergs; another 30% is in underground aquifers. The water from rivers, lakes and reservoirs on the surface only represents 0.3% of fresh water, (McKinley, A. 2015: 3) and this is what is immediately available for the living beings that require it. The other side of the story is that the world's population has increased 400% in the last century, but water use has increased by 700% (UNESCO, 2015) Food production has doubled in recent decades, but three times more water is being used for agriculture (McKinley, A. 2015: 5). The United Nations estimates that by the year 2050 there will be 9.7 billion people on planet earth.¹ Where will the water and food come from?

The Problem: The Availability of Water

El Salvador is a reflection of this global reality. It has an average annual rainfall of 1,784mm, higher than Spain (636), the United States (715) and Israel (435) (World Bank, 2021). The abundant rain would suggest that the problem is not water scarcity, rather mismanagement. Economic and political groups with vested interests in the privatization of this liquid have utilized this argument. However, although there certainly is mismanagement, the real problem is the lack of available water for the entire population. The small territory of 20,500 square kilometers that the country occupies, in relation to its population (6.5 million) puts the water supply increasingly in danger. A country or region is in water stress "when the demand for water is higher than the quantity available during a certain period of time or when its use is restricted by its low quality" (Green Facts, n.d.). Water stress is defined as when water supplies fall below 1,700 cubic meters per inhabitant per year. All sources agree that El Salvador is the country in the region with the worst problems in terms of water availability.

¹ <https://www.un.org/es/global-issues/population>

Country / Region	Water availability M3 / Hab / year
Belize	64,817
Panama	52,437
Nicaragua	38,668
Costa Rica	31,318
Honduras	15,211
Guatemala	12,121
El Salvador	2,976
Central American Average	31,064

Source: OEA, Situación de los Recursos Hídricos en Centroamérica, published in https://www.ucr.ac.cr/medios/documentos/2014/maximiliano_campos.pdf

In the last 55 years, the country doubled its population, from 3,201,313 inhabitants in 1965 to 6,453,553 in 2019.² By 2050, according to the Ministry of Economy, there will be 8,100,000 inhabitants,³ which raises, at the local level, the same questions as those facing the world: Where will the water and food come from?

The Discourse vs the Reality

At the global level, the critical situation of water resources provoked the United Nations to set goals. Sustainable Development Goal #6 (Water and Sanitation) proposes that by 2030 the entire world population should have access to clean water and sanitation. Unfortunately, the report “Progress on household drinking water, sanitation and hygiene in households 2000-2020” published by WHO and UNICEF’s Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP), revealed that the world is far from fulfilling that task. Rather, the report evaluated current rates and stated that the declining availability of quality drinking water is a major problem afflicting all continents (Diario Responsable, 2021).

The heads of states commit themselves to the task in documents, but in practice they do not deliver, and often they act in the contrary. Although their words may not affirm this reality, as Pope Francis says, they offer support “with their deeds by showing no interest in more balanced levels of production, a better distribution of wealth, concern for the environment and the rights of future generations.” (Francis, LS §109)

The global ecology of the planet is directly threatened by the paradigms of development and the damaging impact they have on the environment. The economic model is a paradox, obsessing people with infinite economic growth on a planet with finite natural resources. “Whatever is fragile, like the environment, is defenceless before the interests of a deified market, which become the only rule” (Francis, LS §56). In theory water is said to be a human right, but reality denies this fact. If more than 40% of the world’s population does not have guaranteed access to drinking water, (WHO and UNICEF, 2021), then water is not yet a right, but a luxury, because a right that is not universal is, in fact, a privilege.

² <https://datosmacro.expansion.com/demografia/poblacion/el-salvador>

³ http://www.censos.gob.sv/cpv/descargas/CPV_Proyeccion_Presentacion.pdf

Heading for the Abyss

El Salvador is a practical example of this global reality. The environmental crisis has been brewing for decades, as Monsignor Romero pointed out more than 40 years ago:

“It is frightening to hear about the contamination of the air and the lack of water. There are even areas in our own capital where water reaches only for a few minutes, and sometimes none at all. They say that the wells are drying up, that those picturesque rivers in our mountains are disappearing. The covenant of humankind with God is not being observed because we who should be caretakers of nature are becoming exploiters of nature” (Homily June 3, 1979, VI, p. 375).

The water crisis is one of the manifestations of the country’s socioeconomic inequality. Of 19 Latin American countries, El Salvador ranked third most unequal in terms of access to water (UNDP) (Alianza por el Agua, n.d.). A report by the Salvadoran Ecological Unit (2016), estimated that in the lower area of the Paz River, which is dedicated to the cultivation of sugarcane, 81% of the water that is extracted is used for the irrigation of sugarcane, 8% for domestic use and 11% for the irrigation of other crops and livestock pasture (Oxfam, 2020: 11). Meanwhile, 4 out of 10 Salvadorans in rural areas have no access to water or have intermittent supply. 13% of people living in urban areas are in the same conditions (Oxfam, 2020: 10). An Oxfam study reveals that 37% of the poorest households do not have access to drinking water or have it intermittently; only 5% of the poorest households have access to water through the public network within the home, compared to 58% of the richest ones (Oxfam, 2020: 13-14).

The crisis of water resources in El Salvador also demonstrates its vulnerability as a territory. In the last 50 years, the country’s temperature has increased between 0.4°C and 2.2°C, (Luna F. and Cuéllar N., 2017) with the eastern zone being the worst affected. Various studies have determined that at least 85% of the Salvadoran territory and 95% of its population are in risk-prone situations (Luna F. and Cuéllar N., 2017). El Salvador has severe levels of environmental degradation, with the absence of substantial forest cover and extreme vulnerability to variability and climate change (Sanhueza, J.E. and Antonissen, M., 2014: 54). Of the 360 rivers in the country, “none meets the suitability of use for raw water, to produce potable water by conventional methods, evaluated through the water quality guidelines” (MARN, 2020).

The Law Does Not Change Reality, But It is A Condition to Changing It

This difficult situation is aggravated by the absence of a legal framework. The study “Institucionalidad del agua en América Latina” (Institutionality of Water in Latin America) revealed that there are 16 government institutions that have some role in water management and 36 legal instruments that regulate its access and use (UCA-El Salvador, 2018: 29). These instruments and institutions act in their respective remits, without coordination and without means to settle possible conflicts due to clashes between jurisdictions. The absence of adequate legislation leads not just to a lack of protection for natural resources, but also favors those who see water as a commodity.

Proposals From Below

Proposals to deal with this situation came from social movements. 15 years ago, the first draft of the General Water Law was presented, which was subsequently shelved. Since then, there has been fierce campaigning from social groups, gradually coming to encompass all civil society actors, who have tried every imaginable strategy to make themselves heard. The United Nations General Assembly (2010) recognized water and sanitation as a human right and a necessary condition for the fulfillment of other rights. The demand to recognize these rights in the Constitution was added to the clamors for a general water law. Civil society has written up and disseminated numerous statements, delivered more than 300 thousand letters, held many marches and published research, while national and international personalities have also released statements, all to demand the human right to water and sanitation and a general water law. Until 2019, the Legislative Assembly saw five draft bills, and the Constitution was amended twice recognizing the right to water, but the same parties that voted for the constitutional amendments did not vote to ratify the bills.

The Struggle is A School

Although it has been ignored, the social struggle has been a learning process and has advanced consciousness amongst the general population. In recent years, nothing has had broader consensus than the recognition of the human right to water. In the UCA survey, 99.5% of those surveyed said they recognize that water is a human right, and 88.9% said that water should be under state control, compared to 5.2% who said that it should be privatized (IUOP, 2020:16-29).

In January 2020, a broad part of the social movement presented its "Citizen Proposal for a General Water Law" to the Legislative Assembly, backed by environmental, campesino, human rights, ecclesial, women's rights, LGBTI+ community organizations, and many many others. One image reflected what the fight for water had accomplished. In February 2020, in the company of thousands of people, the bill was delivered following a march led by the signatories of the letter addressed to the Legislative Assembly: Cardinal Gregorio Rosa Chávez; Archbishop José Luis Escobar; Lutheran Bishop Medardo Gómez; Baptist Bishop David Alvarado; Morena Murillo, the representative of the National Alliance against the Privatization of Water; Katherine Oliva, the Salvadoran Coalition of Popular Organizations; José Ángel Coto, president of the Confederation of Cooperatives of Agrarian Reform; and Fr. Andreu Oliva, the rector of the UCA. A very rare moment, maybe without precedent in Salvadoran history, made possible through the struggle for water.

The Minimum Consensus Unifies

What made this coming together possible was the effort to build a consensus. The social movement agreed on five fundamental points that a General Water Law should contain.

- a) The law must recognize water as a human right and a public good.
- b) As a public good, the water's governing body must be the state.
- c) The law must promote broad citizen participation.

- d) Water must be managed with a river basin approach because this constitutes the natural and social unit within which actions for protection, use and recovery will be determined.
- e) A fair and equitable regime. The needs of the population cannot be utilised to make money from water.

If You Can't Beat Them, Join Them

The broad societal backing for the fight for water changed the positions of a significant number of actors who were previously opposed. Convinced or defeated, the political forces generally accepted the citizen's proposals, but time and political dynamics halted the process. What was achieved was the approval of the amendment to the constitution. The amendment was approved on October 15th, 2020 by 78 of the 84 deputies from all parties. In article 2 the phrase "Everyone has the right to life, water and sanitation" was added, and in article 69 a paragraph was amended that establishes the state's obligation to "create public policies and laws that guarantee clean, sufficient, accessible and affordable water for all inhabitants, as well as the harnessing and preservation of water resources".

These simple amendments are still awaiting ratification by the current legislature. But the electoral upheaval and the fears of a government that had come to power with broad social support hindered progress on the citizen's bill. The discussion remained unfinished but it was hoped that it would be continued – a hope that soon diminished.

The Struggle is Not a Sprint, But a Marathon

The February election results radically changed power dynamics and are changing the country. The President of the Republic's party won the elections last February, achieving an absolute majority in the Legislative Assembly. Doubts over the president's democratic credentials were realised once he achieved a majority in the legislature. From there, he dismissed Supreme Court magistrates, judges and the head of the Public Ministry, replacing them with people who would not stand against him. He also neutralized the Institute for Access to Public Information. The broad societal backing with which he came to power is leaking away, but meanwhile the government is strengthening the police and the army with increased spending and personnel.

The struggle for water has suffered another setback. If the government wanted, the constitutional reform on water and sanitation would have already been ratified: they approved the dismissal and replacement of officials, loans to the tune of millions, and the use of a digital currency as legal tender, which is a world first. But they have not ratified it. On May 13, 2021, the citizen's proposal for the General Water Law was shelved, along with all the draft laws under discussion. In the words of the president of the commission, it was done because "the previous laws do not contain even the slightest sense that they would benefit the people. We have to start from scratch" (Amaya, E., 2021).

In addition, the government authorized the construction of a mega urban project located on an important water recharge zone, which already threatens the sustainability of the aquifer and the vitality of the Chacalaca River that supplies neighboring communities. In the same vein, the government has announced the authorization of planning permissions that were

pending compliance with environmental assessments. The government has also presented its own bill and has called for feedback from different sectors, but everything seems to indicate that this exercise is only a strategy to allow them to approve whatever suits them.

Although the data on access to water and sanitation are concerning globally, many believe that it is still possible to achieve the objectives of SDG 6. Also in El Salvador, despite the fact that it is an uphill battle, the struggle to realize the human right to water and sanitation will not stop here. The level of awareness achieved among the wider population is reason for optimism.

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The Water Crisis is the Cry of the Poor: Challenges to Restoring the Hydrosocial Cycle

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The Water Crisis, the Cry of the Poor

The water crisis is global in scale and the data is shocking. Water ecosystems, as well as the livelihoods and dignity of the poorest people are increasingly at risk. International organizations, governments, scientists, social movements, business people, water users and civil society in general seem to agree on this. It is estimated that 80% of the world's population faces a high threat level in terms of water security and biodiversity due to changes in hydrographic basins, pollution, biotic factors, infrastructure development and water policies (land cultivation, impermeable surfaces, dense development of dams, river fragmentation, pressure from fishing and aquaculture, increased nitrogen, phosphorus, pesticides and sediment loads). Areas which lack the capacity and have little or no investment to deal with these issues are the most vulnerable (Vörösmarty et al., 2010).

Conflicts over fresh water multiply everywhere, provoking various forms of confrontation, where “[...] powerful actors assume control of valuable resources and water basins for their own benefit, depriving local communities whose livelihoods depend on these resources and ecosystems” (Kay & Franco, 2012:2). This phenomenon also coincides with the seizure of decision-making powers over the water, including the power to decide how and for what purposes water resources are used, now and in the future.

For this reason, the multiple crises associated with water become a cry of distress from the poorest and most excluded communities. The cry of the water is the cry of the poor, and vice versa. People (often women) fight and defend the water, demanding access and equitable distribution in the countryside and in the city; they call for efficient public services, inclusive water policies, and more sustainable management of water ecosystems. Frequently, this means defending the land and standing up for fundamental rights.

The irony is that the water crisis is taking place on the blue planet, where water is abundant and the progress of science and technology is increasing. However, geography, the course of

history (sometimes a violent one, of war and dispossession)¹, institutional arrangements and socio-economic priorities have resulted in divergences in terms of water management and access. The constant reduction in available volumes of water (ground and surface water) is evident, poor quality affects around 27% of the world's population (Rodell et al., 2018; WWAP, 2018) and, in regions where water is scarce, it is monopolized by a small group.

In countries of the Global South, the shortage and contamination of drinking water causes major public health problems, political crises and the forced displacement of people; furthermore, huge fields of food crops are irrigated with polluted waters and the harmful effects of these practices are still unknown.

“More than 80% of wastewater resulting from human activities is discharged into rivers or sea without any treatment. Water scarcity affects over 40% of the world's population, and this figure is projected to increase. Over 1.7 billion people live in river basins where water use exceeds recharge. Floods and other water-related disasters account for 70% of all deaths related to natural disasters. The global demand for water is projected to increase between 20% and 30% by 2050.” (United Nations, 2018).

The United Nations affirms that water scarcity derives from unequal power relations, poverty and inequality. From this perspective, the crisis can be caused by social or natural factors, but most of these can be solved or mitigated (UNPD, 2006; FAO, 2012). In rural areas, the challenge seems greater because:

“2.6 billion people depend directly on agriculture, but 52% of the land used for agriculture is moderately or severely affected by soil degradation.

Arable land loss is estimated at 30 to 35 times the historical rate. Due to drought and desertification each year 12 million hectares are lost (23 hectares per minute) where 20 million tons of grain could have been grown.

74 per cent of the poor are directly affected by land degradation globally” (United Nations, 2018).

Managing water means managing the land and its ecosystems. The productivist model of agriculture, fishing and livestock faces the challenge of containing its expansion, while also transforming practices in order to regenerate and conserve soils, reduce pressure on water use, and adapt to the unpredictable effects of climate change, among others. In cities, the main challenges related to water are sanitation, efficiency and reuse, quality control, distribution, equitable access for all, as well as moving towards sustainable water infrastructures (small, flexible and linked-up) and proper waste management to reduce the knock-on environmental impacts in rural environments. Cities must urgently reverse the excessive water and energy consumption and take better care of their natural resources in order to avoid catastrophes, as

¹ In extreme situations, water becomes a weapon of war, as has happened in West Asia, Sub-Saharan Africa, South Asia and South America.

happened recently with the “Water Day Zero” that threatened the stability of several cities around the world.

Scientific evidence, official data and personal testimonies leave no room for doubt: the balance that nature carved out over millions of years has been broken. The devastation of the earth by human beings and the problem of water in particular is so serious that the poor are crying out because they are on the front lines. Thousands fall ill and die every day due to pollution and lack of water. For the rest of us this still seems distant, although this reality is rapidly approaching us all. Nature, despite being so powerful, does not cry out; its water ecosystems and their countless forms of life suffer and die silently at the hands of humanity. Endless small bodies of water, springs and streams disappear along with unique ecosystems and biodiversity that will be impossible to recover.

In many cases, water governance models need to be drastically improved; decision-making processes must challenge the approaches of different sectors of the economy and allow the right decisions to be made at the local level (WWAP, 2018). Pope Francis posits that issues related to the environment, water and poverty should no longer be viewed solely in terms of the differences between nations, rather the situation within countries and at the local level must be taken into account (Francis, 2015).

The Hydrosocial Cycle and Water Access Mechanisms

Recognizing the close interdependence and enormous diversity of relationships between water and societies requires transforming our understanding of the water cycle. From this perspective, the idea of the hydrosocial cycle – also referred to as the socio-hydrological or socio-natural cycle – has gained importance in recent decades, because it recognizes the interrelation and continuous evolution between water, society and its environment (Swyngedouw, 2009; Farnum, London and Macdougall, 2017). Thus, humanity is no longer placed above nature as a domineering entity, rather they live side by side, as part of one whole. “Interdependence obliges us to think of one world with a common plan” (LS § 164).

In an attempt to analyze the enormous complexity surrounding the water problem and outline possible alternatives, the concept of the hydrosocial cycle is used below to identify key elements that come into play when faced with the various mechanisms providing access (or exclusion) to water. These components and their elements are incomplete, so they must be adapted and expanded according to each context; those presented here are given for illustrative purposes. Thus, considering the socio-natural diversity of the planet and depending on the case study, it is worthwhile to first define the level of the hydrosocial cycle and then order its main components and each of its interrelated elements:

- Water flows take into account surface, underground and atmospheric water (H₂O) as part of one process that occurs on a local, regional and planetary scale. It includes geophysical aspects such as climate, precipitation (rain, snow, fog), geology, vegetation, ecosystem characteristics, soil types, evapotranspiration, etc.
- Technology, infrastructure and usage practices that intervene and alter different water flows. Interventions can come in various forms and with different purposes, including

extraction, diversion, storage, contamination, reuse, power generation, etc., which take place in rivers, lakes, aquifers, clouds, glaciers, atmospheric humidity, oceans, wetlands.

- Social, institutional and regulatory aspects that determine access, guide water management practices and cause situations of (in)justice and (in)equality.

Humanity already intervenes in multiple ways in the natural water cycle (water flows) and is capable of inducing changes on a local and global scale with the support of technology, infrastructure, institutions, legal frameworks and the exercise of power. “Yet the same ingenuity which has brought about enormous technological progress has so far proved incapable of finding effective ways of dealing with grave environmental and social problems worldwide [...] How can a society plan and protect its future amid constantly developing technological innovations?” (LS § 164, 177).

People’s quality of life and their livelihoods, the production process, social stability, the present and the future, all depend on the conditions of the water in terms of its abundance, scarcity, pollution (natural or human-induced), changes in precipitation and to the river regime, the occurrence of hydrometeorological risks and other dynamics of the hydrosocial cycle. Technological innovations and prevailing social practices have not shown themselves to be effective in improving and safeguarding water care. On the other hand, advances in the field of law, changes to practices, new policies and institutional innovations are outlining principles, rules and commitments in favor of the common good and water justice. However, the results seem insignificant in the face of the challenges, while the fulfillment of local and international objectives and commitments is being postponed.

Currently, the Sustainable Development Goals propose to achieve universal access to water, improve quality and efficiency, in addition to restoring and protecting ecosystems (United Nations, 2018). However, it is important to specify that, in practice, access to water, like other common goods, involves all possible means (legal and illegal) by which a person or entity can benefit from access and control over a certain resource or asset. From this perspective, the concept of “access” implies a set of structural factors and individual or collective social relations that intervene in the access and appropriation of water. Among these are technology for extraction, uses and distribution; capital to control and sustain access to water; markets and labor to allow the accruing of commercial and labor benefits in any phase or stage of the hydrosocial cycle; managing knowledge and information to influence public opinion, obtain advantages over others, manage conflicts, and maintain control over the resource.

Paraphrasing Ribot and Peluso (2003), “access” means the ability to benefit from water, including material objects (hydraulic infrastructures), people, institutions and symbols. Legal, political-economic and cultural frameworks influence access to water. Thus, it is relevant to identify who benefits and through what mechanisms, since power networks allow some people to obtain and retain control over resources. In relation to water, this means that some stages and elements of the hydrosocial cycle are appropriated and controlled by someone who benefits from this arrangement while others are excluded.

Over time, the positions of people, institutions and power arrangements may vary to different degrees. Some may become empowered and change the way resources are accessed; for example, through the vindication of native peoples' rights, through the attribution of legal status and personhood to rivers and lakes (India, Ecuador) or, at the other extreme, the privatization of rivers and natural reserves (Chile). From the local to the global, new forms of social and political relations must be created to improve models of management in relation to water and the land in favor of sustainability. Water justice social movements have opened up new forms of relationships, governance and sustainable practices that transcend borders and offer new perspectives in favor of people and the earth as a whole.

Final Reflection

It can be concluded that certain access mechanisms influence water problems, impacting each of the stages of the hydrosocial cycle, where water is used for multiple and complex benefits (or damages) in each socio-ecosystem; therefore, conflicts emerge and alternatives develop with varying scopes.

In each region of the planet, the water to which access is sought will be significantly different due to its relationships with the geography, the place's hydrosocial configuration and the tangible or intangible value that the water represents (river, lake, aquifer, rain, dam, glacier, livelihood, historical-cultural value). The analysis and mapping of these mechanisms in each country or locality could yield interesting results on the importance of each of these factors, thus presenting a platform from which to define action strategies that favor water management in a more just way.

In this line of reasoning, it seems logical that the design of alternatives should include the perspective of the hydrosocial cycle – which is equal to the life cycle – and consider the access mechanisms necessary to move towards new forms of relationships with water so as to effectively serve the growing needs for water in impoverished sectors. Where should we start in the midst with these diverse water geographies? Agriculture uses the most water; cities house dense human populations; in poor and marginalized areas, thousands of people fall sick and die from pollution and lack of water; forests and nature reserves are becoming extinct, taking all their biodiversity with them, while climate change wreaks unpredictable havoc.

To discern and prioritize the great challenges related to water, we can adopt the questions posed by Pope Francis (LS § 185): “What will it accomplish? Why? Where? When? How? For whom? What Are the Risks? What are the costs? Who will pay those costs and how? [...] For example, we know that water is a scarce and indispensable resource and a fundamental right which conditions the exercise of other human rights. This indisputable fact overrides any other assessment of environmental impact on a region”. Undoubtedly, the key is slowing down to allow the land and hydrological ecosystems to restore themselves. Meanwhile, those who care for and defend the water lend their voices to express the cry of the water and collaborate with many others to create solidarity networks that seek to care for our Common Home. Thanks to these efforts, hope remains.

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Indigenous Peoples and Water

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Introduction

This short essay is a personal reflection of how an individual with indigenous knowledge and conviction becomes an agent of change for the whole community by engaging himself in a lifelong project of transforming the community and the ecological surroundings. The cry of and the crises of water and the cry of the poor in the context of Hariyar Jamtoli, a remote village in Jharkhand has turned into abundance of water and prosperity for the community including the environment by the sheer effort, hard work and vision of an individual who holds no degree or qualification as per modern understanding.

Simon Oraon, known as the 'water man' and who hails from Bero Block in Jharkhand, is a recipient of Padmashree (a highest civilian award in India) for his contribution to water management and conservation of ecology, once asked a question of the management students of Xavier Institute of Social Services, Ranchi, Jharkhand; asking- "what is the richest capital of the farmers and Adivasis (tribals)?" Many students started guessing and said, 'it is money', others said, 'it is land' and yet others said 'money and land.' But Simon emphatically said 'no', and in answer he said, 'water is the richest capital of farmers and Adivasis.' This answer may have not convinced many students and teachers but Simon meant what he said.

Then he narrated the success story of the village Hariyarpur Jamtoli in Bedo Block of Jharkhand which was earlier very dry and economically very poor. People struggled for food and some of them died of hunger and malnutrition. The earth was dry, less productive and had become an arid zone. Simon studied the situation and geographical settings of the village and entire region. Finally, he came to the conclusion that lack of water was the main source of poverty and suffering in the village and surrounding areas.

He took up the issue as a mission to motivate the villagers and taught them to make stop-dams and ponds in the village and thus create water reservoirs as. The villagers were able to make three big dams, five ponds and about 150 wells by their own cooperative efforts. Eventually the arid zone turned into productive land. The water resources are conserved which is conducive for multi-crop cultivation. Irrigation facilities are now available in all parts of the village. 50 years ago the villagers had dug a long canal of about 5,500 feet to irrigate around 300 acres of land. The above-mentioned projects are mostly self-funded by the people in terms of their physical labour. Thus they managed to create irrigation facility for about 8

villages with sheer effort from the villagers under the leadership of Simon Oraon, the *Parha Raja*¹ (Chief of 51 villages) for more than 50 years. As a result, they started producing more than they needed to eat. The surplus produce went to the local market and people started earning a substantial amount of money. The dedication of Simon could not be hidden from the eyes of the people and the government. Simon, together with 85 other citizens of India, was chosen to receive the prestigious civilian award, the *Padmashree* in the year 2016 from the President of India.

Parha Raja, Simon Oraon: An Enigmatic Personality

Parha Raja, Simon Oraon, now known as 'Jangal aur jaeen ke baba' (father of the land and forest), 'Parha Raja', 'Jharkhand ke vikas Purush' (development man of Jharkhand), 'Parha Raja, waterman of Jharkhand; has been working tirelessly and selflessly to promote harmonious living with nature and fellow humans.

*Parha Raja, Simon Oraon, is now more than 80 years of age, a Tribal Chief, who always walks on foot, talks Sadri (local lingua franca) and Kurux fluently, works in the field and his own garden whenever he gets time, chairs meetings of *Parha Samiti (Parha Council)* and visits adjacent villages whenever called for settling any dispute, visits Bero market often to meet people and listen to them. He has an amazing life. He does not own a motorbike or a car but has an old bicycle which he uses to carry the produce from his house and garden to the market. His wife Virginia (of the same age as Simon) sits in the market along with other women to sell whatever produce they get from their own garden and field (like lemon, mangoes, jack fruits, vegetables, drumsticks, potatoes, tomatoes etc.), the whole day. Such are the daily routines of the *Parha Raja* and his wife.*

In Hariyarpur Jamtoli the crops flourish only because of the hard work and water management skills of Simon Oraon. Some villagers remember that 'even during 1977-78 when there was a great famine in the country due to drought, there was greenery and abundance in Bedo area.' Though Simon has not gone to the school, his observation and wisdom has shown the people simple principles of water management. With the tribal knowledge from his ancestors and indigenous skills he has established himself as master of rain water harvesting and storage. For his special contribution to the agricultural development in the Bero Block area *Dainik Jagran*, (Jan. 29, 2015), a daily newspaper in Jharkhand described Simon Oraon as "a mobile school of water management."

Now people visit the *Parha Raja* for various purposes. His goodwill and name has spread far and wide and he is variously perceived by various news agencies as a great man. 'The Public Agenda' calls him, '*Jangal aur Jameen ke Baba*' (father of the forest and land), *Dainik Jagran* (Jan. 29, 2015) calls him, "the mobile school of water management"; according to *Salam Zindagi*, Simon Oraon, is one farmer who set a unique example of water management; The Indian

¹ *Parha Raja* is a local nomenclature for the Chief of a cluster of villages. The number of villages for a cluster, called a *Parha* (in Mundari and Kurux language), may differ, for example, a cluster of seven villages are called seven *parha*, or a cluster of 12 villages, twelve *parha*, a cluster of 21 villages, 21 *parha*, etc.

Express, (Dec. 03, 2010) 'A Septuagenarian who saves rainwater and jungles'; Dalit Adivasi Duniya, '*Banjar bhumi ko banaya sona Jharkhand ka Anna*'; (Anna of Jharkhand has turned barren land into gold) Dainik Jagran, '*we saw the imaginative power of the Raja*'; Dainik Jagran (Jan. 29, 2008) '*Simon ke age Indra ne bhi maan li haar*' (Indra (god) also accepted defeat in front of Simon); Dainik Bhaskar (Nov. 25, 2013) '*Jal ko dikhai khet ki raah*' (showed way for water to the field); Dainik Jagran (29 Aug. 2011), '*Prabandh ki pathshala haen Jharkhand ke Anna*' (the Anna of Jharkhand is a school of management).

Simon Oraon, a silent worker who never desire money, fame or power is now noticed by almost every agency. Many government representatives or NGO workers or individuals come to see the work of *Parha Raja* Simon Oraon and learn lessons from his work and planning. Some of the sayings of Simon Oraon are, '*Jameen se lado admi se nah*' (fight with the land and not with people), '*Gaon vikas ki yojna gaon mein bane*' (village development plans should be made in the villages), '*Jisko vikas karna hae wo baithak baitho*' (those who want to develop their area sit for meetings). These and many other sayings of Simon Oraon summarize his philosophy of life and convictions. He closely lives out his beliefs and convictions. He is neither deterred by poverty, nor politics, nor any kind of backbiting. He continues to humbly work for the good of his people and society at large.

Simon is not only recognized within the country but also in the foreign countries. An Anthropologist Alpa Shah from Cambridge University and a Geographer, Sarah Jewitt from Nottingham University, Buckingham have stayed with *Parha Raja* during their research work. A team of foreign students from the American University of Illinois Urban Campaign came to see the indigenous water management system of Simon. Simon was also chosen by The American Biographical Institute, North Carolina, USA for the American Medal of Honour Limited Stroking, 2002. Simon says, 'I did not go to get the award because I had no money.' He does not even own a passport.

The Rural Development Department of the State Government of Jharkhand has made Simon Oraon "Special Ambassador of the Water Conservation Mission" in 2016. When Simon came to know about his nomination for the Padmashree award, he dedicated the honour of the award to the farmers by saying, 'I dedicate this honour to the farmers.'

He is addressed as '*Baba*' or '*Simon Baba*' (*Baba* in tribal context is used for a father or a 'father figure') by all those who know him, because he relentlessly and selflessly works for the wellbeing of all without any kind of discriminatory attitude. Everyone respects him like a father, guide and philosopher. He is called to settle disputes, and does so amicably. Here are some of the tributes paid to him:- "We never think of migrating to towns even when rains play truant," (Bandhan Oraon, Harhanji). "Simon Oraon's knowledge of traditional irrigation and farming are of immense value." (K.K. Sone, former DC Ranchi). "Simon Baba is like a savior to the farmers here. Today we enjoy bumper crops of vegetable and grain only because of the irrigation system introduced by him." (Peter Tirkey, Jamtoli).

Reflection

According to the Indigenous wherever water passes, it gives life to people, animals, plants, lands and reptiles. Ancient Egyptians and Mesopotamians thought water was the primary element from which all life emerged. According to the Genesis the primeval ocean was divided at creation into upper and lower water (Gen.1:2, 6-7). Many indigenous myths (Elvin V., 1949) like- the Baiga legend, Bhuiyan, Birhor, Chero, Gond, Munda, Oraon and Santal etc. begin with “in the beginning there was nothing but water, water, water” (Baiga). The subterranean sweet waters were identified with **wisdom, fertility and life**. The restless raging sea represents chaotic and destructive power. The use of water in tribal ritual practices is very common. For tribals water is a sign of purity, fertility and abundance of life. Therefore water is used during birth, marriage and death. Water is also used to welcome guests and for ritual purification.

Indigenous Peoples have unique gifts to read the signs of nature. Indigenous knowledge systems are based on experience and observation. They derive their knowledge from the human and natural surroundings they live in. The moods of nature, the forests, animals and their nature, behaviours of plants and creatures, wind and water, flora and fauna, are the open sources from where the indigenous peoples derive knowledge. The conceptualization, interpretation and the conclusion of Indigenous knowledge systems may seem irrational and illogical for a western thought. There does not seem to be any overall conceptual framework, system or analysis in the Indigenous mode of gaining knowledge; but their practical, sustainable and experiential knowledge has guided them and protected the environment for centuries.

Indigenous knowledge systems display sustainable use of available resources including land, forest and water heritages. The Indigenous community also ensures that the benefits of the resources reach one and all. Water, land, air, sunshine, etc. are the free gifts from the Creator. Hence, they should be made freely available for all. Human greed to earn more even from the free gifts like water has led people to monopolize water sources and has even led them to package it and earn profit. Many public places their free drinking water facilities and people are compelled to buy bottled water.

The Indigenous often address the earth as “*paccha mama*” (mother earth). This shows a deep spiritual relationship with the earth. George Manuel (1974) quotes the spiritual dimension of the land for an indigenous person in the following words,

The land from which our culture springs is like the water and the air, one and indivisible. The land is our Mother Earth. The animals who grow on that land are our spiritual brothers. We are a part of that Creation that Mother Earth brought forth.... Although there are as wide variations between different Indian cultures as between different European cultures, it seems to me that all of our structures and values have developed out of a spiritual relationship with the land on which we have lived.

Conclusion

The essay is an attempt to articulate the close connection between the indigenous and natural surroundings. If nature is understood, life becomes easy and happy to live. Simon Oraon has become a symbol of the proper harnessing and use of water. This recognition invites all to use natural heritages properly for the wellbeing of all and not for rampant greed and profit.

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Agroecology and Participatory Action Research for Food and Water Justice in Central America

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I remember driving with local community leaders into northern Nicaragua's mountains to meet with organized farmers as we continued a long-term relationship that sought to explain and construct strategic responses to drought and an El Niño event in 2016. The Famine Early Warning Systems Network warned that this area, and much of Central America, was experiencing a stage three food crisis characterized by severe food insecurity coping responses, such as skipping meals and selling assets. Yet here we found farmers that had organized themselves into a cooperative and invested not only in organic coffee for export, but also in corn and beans for their own consumption and local markets. Although some of these farmers still reported several months of low-level food insecurity, conditions were buffered by their diversified farming practices and a community-based seed and grain bank. The recently upgraded village water system provided access to drinking water from mountain streams. In times of hunger and thirst, the farmers told us how they recently packed up their mules with several thousand pounds of corn and brought them to a neighboring community where they knew others were suffering more. They remembered how these neighbors once sheltered and fed them when they fled their land after it was attacked during the wars of the 1980s. The practical hope in diversified farming and solidarity are matched by global challenges to secure rights to food and water.

Global Hunger and Thirst

The related global facts that three billion people are malnourished (FAO, UNICEF, WFP, & WHO, 2020), 2.2 billion live without access to a safely managed drinking water source (WHO, 2021), and agriculture remains a key driver of anthropogenic climate change, water contamination, and biodiversity loss, have accelerated calls for food and water system transformation. At the same time, climate change and market governance failures have contributed to increasingly extreme events that exact a devastating toll on agriculture, food security, water systems, and the livelihoods. Recent environmental and economic shocks, including COVID-19, the 2015/16 El Niño and resulting weather-related hazards worldwide, the exceptionally strong 2017 and 2020 hurricane seasons in the Caribbean, as well as changing food prices and political violence, have continued to threaten rural livelihoods, food security, and wellbeing. Although there is currently more than enough food to feed 10 billion people and enough freshwater on the planet for more than seven billion people, access is uneven and too much is wasted (Holt-Giménez, E., Shattuck, A., Altieri, M., Herren, H., & Gliessman, S., 2012).

These stats are not evenly distributed affecting a mythical “global average person”, instead the uneven patterns of who benefits and who pays for pollution and climate risks follow a persistent pattern of global injustice. The small-scale farmers, landless workers, urban poor, and so many others in the majority world (e.g. the 80% + of the world that survives on less than \$10/day) creatively sustained their cultures in marginal spaces, burn less oil, use less water, and eat less food, yet face the most devastating impacts from climatic changes. Even within wealthy countries, study after study have shown that low income residents and racial/ethnic minorities suffer disproportionate exposures to air and water pollution, while their proximity to parks, healthy food, and other environmental benefits is often lower.

Collectively the governmental and corporate response to these challenges has been totally incommensurate with the scale of the problem. Not only have government programs and business efforts fragmented themselves into narrow commercially oriented approaches that often undermine local efforts for positive change, they also often focus on either food or water. Furthermore, the depth of ethical and social commitment needed to foster solidarity and sustain this work remains too shallow, while both scale and creativity of public investments and policy changes is too weak or commercialized. In the case of agriculture, the business interests and imperialism behind spreading many strategies that led to production in plantation monocultures is still very strong. Although one might expect that universities focused on developing sharing, and applying knowledge through public service, could be leading the charge to address these injustices, all too frequently those of us in higher education also find ourselves segmented in disciplinary silos or constrained to incremental advances that are insufficient.

How to Respond?

I will share several experiences about personal and collaborative efforts to do our own small part to foster transformative responses to these global challenges and their local manifestations. I write from my perspective as an individual, an associate professor of Environmental Studies, and a co-founder of the Environmental Justice and Common Good Initiative at Santa Clara University, a Jesuit Catholic university in California, USA. As a response to these multiple and overlapping challenges, I offer community-based participatory action research and agroecology as two principle-based integrative approaches that could help universities and other institutions form relationships with communities and initiate partnerships to secure the human right to food and water. If universities invest in these approaches, they will also contribute to institutional transformations that help respond to Pope Francis’ 7-Year Journey Towards Integral Ecology and the process of becoming a *Laudato Si’* University.

Participatory Action Research and Agroecology

Participatory action research (PAR’s) aims to cultivate equality and democracy in the relationship between community and researcher, involving community members and their representatives in defining the research agenda, conducting research, and shaping the outputs (e.g., sharing results in community meeting, public forum, instead of only journal articles). PAR is an approach that fosters a “democratic process concerned with developing practical

knowledge, ... bringing together action and reflection, theory and practice, in participation with others, in the pursuit of practical solutions to issues of pressing concern to people, and more generally the flourishing of individual persons and their communities.” (Reason, P., and Bradbury, H. Eds., 2001) The action step consists of community-led social changes to improve conditions (Bacon, C., Mendez, E., & Brown, M., 2005). Although the relationship building means it often takes longer than a conventional research project, scholars have showed how effective PAR processes improve relevance, rigor and reach (Balazs, C. L., & Morello-Frosch, R., 2013: 9-16). Inspired by Paolo Freire (2018), Martín-Baró (1994) and others, PAR emerged in part to transform the extractive and broadly colonial practices of European and North American university-based researchers conducting projects about – not with – the poor and others in the majority world. This work starts with building trust among participants, recognizing our relative privileges, and entering into a dialogue with the plurality of knowledge systems, worldviews, spiritualities, and epistemologies linked to different identities and livelihoods.

A participatory action research process fits well with an interpretation of agroecology as a transdisciplinary action-oriented approach that is useful for fostering farm and food systems change (Méndez, V. E., Bacon, C. M., Cohen, R., & Gliessman, S. R., Eds., 2015). Agroecology emerged as a response to the large-scale chemically dependent specialized agricultural production and the narrow packages of pesticides, fertilizers, irrigation, and loans that accompanied this project often displacing indigenous people and erasing their knowledge, while frequently failing to deliver food security. Approached from different positionalities agroecology is science, a social movement, and a practice. In the last five years, researchers, social movements, and the UN’s Food and Agriculture Organization have 50on-profit evidence and claims that the effective use of agroecology can secure the human right to food. Agroecological approaches include 10 key elements: diversity, co-creation and sharing of knowledge, synergies, efficiency, recycling, resilience, human and social values, culture and food traditions, responsible governance and circular and solidarity economy (FAO, 2018). Popular rural social movements also frame agroecology as an anti-colonial approach that works against corporate agriculture and transforms unjust food and water systems in ways that advance gender equity and food sovereignty.

Agroecology, Participatory Action Research, and Human Rights to Food and Water in Nicaragua

Long before my first trip to Nicaragua as a Peace Corps volunteer in 1997, these resilient and creative mountain communities were sustaining their livelihoods, cultures, environments, and dignity through dictatorships, revolutions, wars, droughts, hurricanes and famines. After the Peace Corps, I returned to Nicaragua in the early 2000s to conduct dissertation research assessing the potential of organic, fair trade, and specialty coffee to reduce rural poverty and conserve biodiversity. I was lucky to start a partnership with the Promoter of Cooperative Development in the Segovias (aka PRODECOOP), which is a secondary cooperative consisting of 38 base co-ops and over 2,300 affiliated smallholder farmers in northern Nicaragua. PRODECOOP exports fair trade, organic, and specialty coffee, while also offering rural extension, financial credit, and sustainable development services to affiliated members.

I also partnered with a Nicaraguan led regional non-profit agency, the Association for Social Development in Nicaragua (ASDENIC) and local universities. ASDENIC helped us design and conduct farmer survey campaigns and organize farmer-to-farmer learning exchanges with Central America's *Campesino-a-Campesino* movement affiliated local groups, as well as host international short courses in Agroecology. Partnerships brought students and faculty from US Universities to Nicaragua, and the staff, youth organizers and farmers from Nicaragua to the US. These multidirectional intercultural exchanges emerged as key places for sharing knowledge, seeds, and strategies for change.

After many encounters, we defined shared agendas and launched several participatory action research (PAR) cycles that aimed to document experiences of food insecurity, and record effective locally-adopted practices that could reduce agrochemical usage, improve food security, enhance dietary diversity and support organic diversified farming. Field work included four survey campaigns from 2009 through 2017, focus groups, interviews, documenting farmer-led experiments, workshops, and other professional development training events. We found and shared many innovative local practices, like improving soil fertility by inoculating their compost with microorganism rich soil from nearby forests, but regional conditions for farmers remained challenging as they faced a devastating coffee pathogen, droughts, non-profit prices, and persistent exclusion. One farmer said, *"We failed with the coffee, it was one of the alternatives we had to survive, but the famous coffee leaf rust came. Then PRODECOOP helped us to form the seed bank in the cooperative...This beautiful idea came as an alternative to food insecurity. Seed Banks are not only walls, they are composed of the entire group [who plant, store, and share seeds], with this comes new strategies to improve our food security such as diversification."*

Together we conducted over 1000 farmer surveys. I soon realized that we needed more data analysis power, and started collaborating with Professor Bill Sundstrom, an economist and statistician. In a survey from 2010 and another one in 2014, we found statistically significant correlations linking improved food security to more fruit trees on the farm. The cooperative launched campaigns to plant more than 25,000 fruit trees as part of an emerging agroecology-based farm diversification strategy that included home gardens. *We also identified the importance of access to more land, as even a little more land for the smallest producers was correlated to improved food security and water security.* (Bacon, C. M., et al., 2014:133-149)

Another salient finding from the 2010 field research focused on assessing the local determinants of seasonal hunger, was farmer's increasing urgent concerns about water access and climate change impacts. In many focus groups, farmers linked food insecurity to the lack of safe water access in their households and communities. As my long-term Nicaraguan collaborators, including Maria Eugenia Flores Gomez, Raul Diaz (ASDENIC), and Misael Rivas (PRODECOOP), and I examined these findings we recognized the need for more work addressing water insecurity. In response by 2013, I started collaborating with hydrologists and climate scientists Iris Stewart-Frey and Edwin Maurer (Santa Clara University). I also shared these findings with several funders that subsequently partnered with ASDENIC, cooperatives, and local water committees to build village drinking water systems that eventually reached over 8000 people. The ACTION step is often the most challenging part of

the participatory action research process. Despite these important gains, follow-up research shows that many rural drinking water systems in Nicaragua and worldwide remain vulnerable to climate change, bacterial and agrochemical contamination, as well as conflicts and injustices about water for agriculture vs. drinking. Although the human right to food and water are well established in Nicaragua's laws, like many other countries more work is needed to make it a substantive right, and a tangible reality in daily lives.

Towards Transformations in Higher Education, and... Ourselves

These local experiences could be scaled deeper and wider if more institutions use agroecology and participatory action research to guide their approaches, while also starting the important personal work of self-transformation. The science of agroecology is spreading rapidly and it will continue to evolve in response to evidence about its strengths, limits, and the specific contexts that adapt and use it. While there are agroecological proposals for food systems transformation, there is a need to develop more conceptual and practical strategies for an agroecology of both food and water systems. Examples, such as greywater recycling systems, drought tolerant locally adapted open pollinated seeds are a start, but more study, experimentation, and innovation are needed.

Participatory action research (PAR) partnerships that connect farmers, scientists, interfaith civil society groups, and community-based rural enterprises can help meet these challenges, but more support is needed to develop a stronger response. After decades of exclusion, PAR and related approaches are once again also gaining traction within universities and other institutions. If agroecology and PAR could be resourced in universities and across Catholic social ministry organizations working to build partnerships with community-based farmer associations and grassroots initiatives to secure rights to food and water and advance global environmental justice, broader changes become possible.

This work further suggested the need for universities to form institutions that can sustain long-term partnerships and interdisciplinary action research agendas with frontline communities and others. This also contributed to the improved collective scientific understanding and support to develop relational frameworks and methods to jointly 52on-pro households' food and water security in the context of climate change, and explain how farm diversification relates to climate resilience, gender and food security. Yet university incentives ignore the invisible labor needed for building networks and collaboration, 52on-profi specialized knowledge, innovations with commercial rewards, faster publication dates, single authored articles, and work in wealthier communities. Thankfully there are countervailing forces.

"There are two aspects to every university. The first and most evident is that it deals with culture, with knowledge, the use of the intellect. The second, and not so evident, is that it must be concerned with the social reality—precisely because a university is inescapably a social force: it must transform and enlighten the society in which it lives." – Fr. Ignacio Ellacuría, S.J June 1982 Commencement Santa Clara University.

Fr. Ellacuría continues asking, “But how does it do that? How does a university transform the social reality of which it is so much a part?” The Laudato Si’ Action Platform, which will soon include Laudato Si’ Universities (LS’), offers the potential for a powerfully coordinated global response (Turkson, C., 2021). LS’ Universities pledge to change in ways that advance seven action goals. Institutions can use agroecology to help guide transformative responses to the cry of the earth and the cry of the poor (goals 1 and 2), and PAR offers a powerful approach to achieve goal 7, focused on community engagement and participatory action. Another more local response includes how my colleagues, including Professors Tseming Yang, Chad Raphael, Zsea Bowmani, and others mentioned in this article, have developed the Environmental Justice and the Common Good Initiative (EJ&CGI) at SCU. EJ&CGI fosters community-driven research and advocacy to advance social and environmental justice. We respond to Pope Francis’ call for an integral ecology to heal human communities, non-human species, and ecosystems. We partner with organizations accountable to low-income, Latinx, Black, and Indigenous communities and allies in the areas of food and climate justice, water and climate justice, and environmental justice law and policy. We support SCU’s faculty, and our peers at Jesuit and Northern California universities, to incorporate community-based research and environmental justice across the curriculum. To sustain this work and invite more collaboration, I will continue to build this effort and query myself, asking: *Do I hear the cry of the earth? Do I hear the cry of the poor? Do I recognize that I am the poor crying for support? I am also the earth calling out in pain? Am I quiet enough to hear the answers? Am I grateful for gifts in response? Are we humble enough to work together for justice, forgiveness, reconciliation and the common good?*

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Climate Migrants: A Cannonball of Our Times

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The Ignatian family around the world today celebrates the Ignatian year by recalling the 500 years since the wounding of the founder of the Society of Jesus, Ignatius of Loyola in Pamplona in 1521.

This event has been named around the Jesuit world as the “cannonball moment” where Ignatius with a broken leg had a turning point in his life that called for a radical change. Ignatius discerned that Christ was to be the centre of his life; this radical change turned him towards the will of God and set him on a pilgrimage that today continues with millions of people around the world forming the Jesuit Mission.

As it was for Ignatius in his time, we are all constantly experiencing these moments that call for a radical change not only in our lives but also for a radical change in our world. It is up to each of us to discern when these moments come and discern on the changes that we need to be closer to God’s will.

Today, humanity is facing multiple situations that call for our attention; social crisis, political crisis, massive migrations, climate and environmental crisis are just some of the problems that demand a change from us as individuals and also as a world. These moments need to be discerned, reflected upon, prayed about and acted upon.

This Ignatian year, Father General Arturo Sosa SJ, invites us to reflect on many of the major crises we are facing as a world today. One of the most pressing crises that we face today is environmental degradation. This crisis is calling for a radical change of the entire world towards a more sustainable society. Today, we need to reconcile with the environment, however, this goal continues to be distant.

Within the environmental crisis, there are many pressing problems that involve the air, the land and the water. These problems are connected directly to our livelihood, thus, as a world together we are not only called to reflect on the nature of these pressing issues, but we are also called to act to improve the world around us now.

When it comes to water, Father Arturo Sosa, the Superior General pointed out in his book “*Walking with Ignatius*,” (2021:200) that this might be the most serious problem and probably the least spoken about when it comes to the environmental issues. While I agree, it is

important to mention that water can be linked to so many different aspects and problems. Pollution of rivers and oceans, floods and droughts, poor access to water and scarcity of drinking-water, are just some of the problems that make water not only an urgent environmental issue and climate change concern today but is also a problem with social, economic and political consequences that impact every living organism in the world, directly or indirectly.

This concern surrounding water and the environment is not only shared by Jesuits around the world, but is also shared by the Universal Church. A clear example of this position towards our common home has been established in two of Pope Francis' encyclicals *Laudato Si'* and *Fratelli Tutti* where by putting solidarity and love at the core of human change, Pope Francis is inviting us to rethink and re-establish our relationship with creation. This view is also shared by the Commission of the Bishops' Conference of the European Union which in its latest report from the Catholic Youth Convention on the Future of Europe labelled: "Our dream of Europe," (COMECE, July 2021) has placed the environment as one of the most pressing issues, not only in Europe today, but also in the world as something we all share and will shape the future of the world.

As was mentioned above, water is not only an environmental issue, but it is also a social, economic and political problem that affects us all. Water level changes in oceans as a direct result of climate change is starting to affect coastal communities around the world (Kulp, Scott. A., and Strauss, Benjamin. H., 2019) in particular in the Pacific Islands spread throughout Oceania (Lewis, Jon., 2010: 231-236). This problem invites us to reflect as a world about the long-term effects that the sea-level rise will have not only in coastal countries in the Pacific but around the world (Kulp, Scott. A., and Strauss, Benjamin. H., 2019).

Oceania, the Pacific region is the largest region in the world, where climate change is not only visible, but is today a reality that people experience on a daily basis. In this part of the world communities are already suffering the effects of coastal erosion as a consequence of climate change due to the rise of sea levels. Thus this movement and/or relocation of people in the Pacific region due to this unnatural change is a problem that needs attention not only from the countries in the Pacific region but from the entire world. This is one of the drastic effects of climate change in our time, that calls us to discern, reflect, pray and act together in order to prepare and mitigate the future effects of climate change on the ocean waters; a problem that today is affecting the most vulnerable communities (Salem, S., 2020).

Acknowledging this reality, by the many deniers, is a first step towards creating global and regional cooperation in terms of migration policies surrounding the issue of rising sea levels. This acknowledgement should not only be made in the Pacific region by the different stakeholders where people are already aware of and suffering due to the problem of climate change and sea-levels rising, but needs acknowledgment globally by the international community in order to make a radical change on one this disastrous consequence of climate change happening now. The displacement of people due to the rising sea-levels is most unfortunate and will become more visible and drastic sooner than expected.

Hence, today the conversation should not only focus on the different measures and actions we need to take to stop sea-level rise, affecting communities around the world, but also discernment, reflection, prayer and action should be focused on answering the question of what has already happened and what we are going to do about the people displaced due to no fault of theirs.

Around the world there are many organizations already working with the displacement of people in the context of climate change,¹ and most importantly working in the field with the communities directly affected. However, this is far from enough and it is time Governments also get involved in providing food, protection and assistance to coastal communities affected by sea-level rise. This should be a priority in order to prevent a further migratory crisis. As part of the different actions that need to be taken by States globally, I believe that the creation of a structured programme for relocation on a regional, national and international level should be a top priority.

In my opinion this is one of the cannonball moments of our time for the Jesuit community and urgent action is required that will have consequences for the future generations.

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¹ For example, the International Organization for Migration, the Raoul Wallenberg Institute and the United Nations Refugee Agency just to mention a few.



Natural Resource Depletion: Cry of the Poor due to Corporatization and Commodification of Water

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Genesis of Global Water Crisis

As per the General Comment 15, International Covenant on Economic Social and Cultural Rights (CESCR, 2002), the human right to water entitles everyone to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic uses. An adequate amount of safe water is necessary to prevent death from dehydration, reduce the risk of water-related disease and provide for consumption, cooking, personal and domestic hygiene requirements.

Pope Francis in his encyclical (LS § 95) emphasises that “the natural environment is a collective good, the patrimony of all humanity and the responsibility of everyone”. During the 36th Session of the UN Human Rights Council on September 14, 2017 at the Palais des Nations in Geneva, Cardinal Turkson expressed, “as a good of creation, water is destined for all human beings and their communities,” a view given importance by the Catholic Church for decades.

What happens when you take a Ubiquity – God’s gift for all of Mankind to cherish –and turn it into a Commodity that you can peddle for selfish gains? You give rise to a US\$ 160 billion industry. The Packaged Drinking Water industry is no ordinary one at that. As a matter of fact, it has very few parallels in the annals of man’s economic history and its characteristics are as unique as its global spread.

It is Imperialistic as it profiteers by robbing the poor to pander to the aspiration and gratification of the perceived needs of the rich. “Needs”, that they help create through their clever advertising to begin with. They spread their tentacles in poor, developing countries under the guise of economic development all the while exploiting their natural assets for selfish gain. “Water”, the very basic requirement of our life without which we can’t survive, is being privatised, commoditised and commercialised.

This article investigates the imbalances between availability and demand, the degradation of groundwater and surface water quality, inter-sectoral competition, interregional and international conflicts, all that bring water issues to the fore.

Modernity, Consumerism and Scarcity

Delhi and Gurgaon are the two modern images of India within the developing *Bharat*. The statistics speak for themselves about these two developed cities within India. The water Crisis is already happening. Experts say Delhi's water demands are likely to reach 1,380 MGD (million gallons per day) by 2021 (Singh, P., 11 June, 2021), even though the current shortfall in demand and supply is around 235 MGD. In March 15, 2008, the daily demand was 900 MGD and the daily supply then was 755 MGD, with the shortfall of 145 MGD (Mail Today, 9 Feb. 2014). With the rapid increase in Delhi's population, the water demand in the already water-stressed city is likely to reach 1,455 million gallons per day (MGD) by 2041. City planners aim to reduce the per capita water consumption from the existing 60 gallons per capita per day (GPCD) to 50 GPCD.

A golden goose for realtors and investors alike, reckless destruction of the environment could worsen the water crisis. A study done by Megha Shenoy of Resource Optimization Initiative, a firm that does industrial ecology research in developing countries, says that Gurgaon would have only around 48 litres per capita per day (LPCD) of water by 2020. The international standard is 130 LPCD. The population of the city would have increased from 25 lakh to 43 lakh by then. The study also says that in 2010, water available in the city was 83 LPCD (Kumar, KPN., 2 Feb., 2014).

Corporatisation of water

a) Case Studies: Kala Dera - Rajasthan and Plachimada - Kerala, India

In the year 2000, Coca-Cola began exploiting groundwater in the municipality of Kala Dera, Rajasthan, in India. Before Coca-Cola set up its operations in Kala Dera in 1999, water reserves were already slowly shrinking: the level fell 3.94 meters from 1999 to 2000. However, Coca-Cola had definitely worsened the problem, according to the India Resource Center. From 2000 to 2010 (the ten years after Coca-Cola's appearance in the region) groundwater levels plummeted 25.35 meters.

Farmers of the region blame the drastic fall on the bottling plant set up by Hindustan Coca-Cola Beverage, which allegedly draws far more water than can be naturally recharged. According to data compiled by the Rajasthan Groundwater department, in the 16 years from 1984 the groundwater levels at Kaladera dropped from 13 to 42 feet, at an average annual rate of 1.81 feet. But from 2000 to 2011, the drop was sharp from 42 to 131 feet at the rate of 8.9 feet a year (Singh, MP. 13 May, 2016).

In Plachimada, Kerala, India, Coca-Cola was forced to shut down its plant in 2004 and is now liable for \$48 million damages in water reserves depletion due to its operations in the area (Intercultural Resources, Mathews, RD., 1 July, 2011).

b) Commercialisation and Commodification of Bottled Water

The multinationals and trans-nationals of the world are yet to provide "bottled breathing air" in a big way, so let us direct our gaze to water, where they have already converted an "ubiquity" (something that is omnipresent) into a "commodity" that can be commercially

exploited. According to, the British Bottled Water Producers (BBWP): “As a nation we now drink more bottled water than fruit juices and nectars, wines and spirits. UK bottled water consumption per person advanced to nearly 34 litres in 2011, up from 26.9 litres in 2001” (Gray, D., April 11, 2013). The BBWP says this figure is expected to rise to almost 41 litres per person by 2021 (Statista, UK, 2021).

Consider the probability, in the U.S., that in the next few years, bottled water will overtake carbonated soft drinks as the largest beverage category. American consumers spent \$11.8 billion on bottled water in 2012, drinking an average of 140 litres each (The Week, 11 Jan., 2015).

According to IKON’s founder and principal consultant, Azaz Motiwala, “Globally, the Western countries are having the highest per capita consumption of bottled water with Mexico being on top having highest per capita consumption of more than 250 litres, followed by Italy at around 190. The Asian countries are far behind in terms of per capita consumption of bottled water with only Thailand (115 litres) and China-Hong Kong (95 litres) representing in top 20 countries with highest per capita consumption (Pierce, L. McTigue, 30 Jan., 2014).

c) Bottled Up: The Facts behind Bottled Water USA vs INDIA (Statista, US, India)

- Revenue in the Bottled Water segment amounts to US\$ 79,979 mi for the USA and US\$ 5,388mi for India in 2021. The market is expected to grow annually by 7.51% for the USA and 5.00% for India (CAGR 2021-2026).
- In global comparison, most revenue is generated in the United States (US\$ 79,979m in 2021).
- In relation to total population figures, per person revenues of US\$ 240.24 (USA) and US\$ 3.87 (India) are generated in 2021.
- By 2026, 49% of spending and 13% of volume (USA), 6% of spending and 2% of Volume (India) consumption in the Bottled Water segment will be attributable to out-of-home consumption (e.g., in bars and restaurants).
- In the Bottled Water segment, volume is expected to amount to 72,558.7ML (USA), 27,947.7ML (India) by 2026. The Bottled Water segment is expected to show a volume growth of -0.8% (USA) and 5.7% (India) in 2022.
- The average volume per person in the Bottled Water segment is expected to amount to 195.3 L (USA) and 16.6 L (India) in 2021.
- Antimony, which is found in PET plastic bottles, in small doses can cause dizziness and depression; in larger doses it can cause nausea, vomiting and death¹.

Consumption of bottled water in India is linked to the level of prosperity in the different regions. The western region accounts for 40 per cent of the market and the eastern region just 10. However, the bottling plants are concentrated in the southern region, i.e. of the 3400 + bottling water plants in India, more than 55 % are in 4 southern states. This is a major problem because southern India, especially Tamil Nadu, is water starved².

¹ <https://earth5r.org/awareness-plastic-pollution-bangalore/>

² <http://bottledwaterindia.org/indian-bottledwater-market/>

The study estimates that there are more than 12.000 unregistered plants in India. At present, the small pack has maximum market share due to easy affordability and availability. The one-litre bottle holds significant market share. However, in recent years the institutional supply is picking up with supply of bulk packs (Mukherjee, R., 25 June, 2012).

d) Water: Transnational Boundaries and Impending Wars

It will be over water that the next Great War will be fought as the industry is Conflict Inducing. It will be the cause of the next World War as the thirsty proletarian army march in search of the elixir that will quench.

Water Crisis issues are poised to result in political turmoil, because more than 20 countries today get more than half their drinking water from rivers flowing out of neighbouring countries, and more than 240 water basins around the world cross political borders. Major rivers like the Colorado and the Rio Grande, sucked dry by thirsty municipalities and farmers, now reach the ocean only during very wet years. Imagine the issues to be faced in the years to come along rivers like the Mekong, which flows through China, Burma, Laos, Thailand, Cambodia and Vietnam.

Conflict almost erupted over water in 1975, when Turkey drained the Euphrates to fill a newly completed dam, and a bit further downriver, Syria dammed the river to fill a reservoir of its own. Thus only a fifth of the usual river water reached Iraq. Baghdad mobilized troops and threatened to bomb Syria, and Syria said it was Turkey's fault. The situation was defused by Saudi Arabia who suggested that Syria should allow a "goodwill" release of water to Iraq. Since then, Turkey has built the Ataturk Dam, and the Turkish and Syrian governments are already in conflict over it (Geoffrey, L., 1993:16-23, 25).

A new crisis is brewing along the border between Israel and Lebanon, but this one is not about Lebanese guerrillas fighting the occupation of Lebanese land or even about Palestinian guerrillas crossing the frontier to fight the occupation of Palestinian land. It is about water. Lebanese have installed a pump at the Wazzani Springs to develop the impoverished southern Lebanon. Prime Minister Ariel Sharon had threatened military action to prevent what he and other officials in the Jewish state ludicrously described as the theft of their water. The Global water conflicts on the water sources are enumerated below:

- Israel vs Lebanon – Wazzani River
- Turkey vs Syria and Iraq – Tigris and Euphrates
- India vs Nepal – Mahakali River
- India vs Bangladesh – Ganges River
- Punjab vs Haryana – SYL Canal
- Tamilnadu vs Kerala – Bhavani River
- Tamilnadu vs Karnataka – Cauvery River
- West Bengal vs Bihar – Tenughat Dam

Thus the world's growing thirst for water is becoming a major potential trigger for war and global warming is set to accentuate that risk. Ecologists have warned for years a looming water crunch when in hot, dry regions, the demands of a surging population could exceed the

supply from lakes, rivers and aquifers reeling from pollution or drained by decades of over use. Kofi Annan has said that he fears national rivalries over water resources could contain the seeds of violent conflict.

Stewardship than Consumerism

“The environment is part of the logic of receptivity. It is on loan to each generation, which must then hand it on to the next” (LS § 159). The industry is ecologically destructive, as it draws from the Earth’s pool of aquifers, wreaking havoc with the natural water tables and fragile ecosystems, not to mention their epidemic inducing nature as it spreads carcinogens that sip into the water through the plastic packaging of the bottles and pouches and promises to be a great leveller. Our failures are that we over-consume and that we do not share the gifts of creation (tilled too much and kept too little!).

1. **Plug the Hole in Water Pipe System:** Water loss from Mexico cities leaky supply system, which serves 70 million, would be enough to meet the needs of 3 million people. In many countries, more than 30% of domestic supply is lost to porous pipes, faulty equipment, and poorly maintained distribution systems.
2. **Flush and Forget mindset:** Billion gallons of water per day are merely used to flush toilets. An improved toilet system where the flushed water can be treated and reused should be considered.
3. **Traditional Rainwater Harvesting Methods:** People must give importance to the traditional water harvesting methods of collecting the rainwater in *Zings, Kuls, Bamboo pipelines, anicuts, johads, baolis*. Anna Hazare’s contribution in Maharashtra and Rajendra Singh’s contribution to Rajasthan cannot escape one’s memory.
4. **Improved Tank Management:** For agricultural based communities dependent on seasonal rainfall, improved tank management opens the path to multiple opportunities like greater harvest and improved access to water used in the home.
5. **Water Pricing and Awareness Campaigns:** Each government should introduce water Pricing for large consumers and launch a massive awareness campaign among its citizens, on the essentiality of water conservation.
6. **Research and Technological Contribution:** Scientific research towards water resistant (drought-resistant) and less water requiring crops can be carried out and biotechnological contributions can be awaited. Accordingly the farmers will benefit from their mode of cultivating particular types of crops.
7. **Change in Agricultural Practices:** Farmers often engage themselves in using large amount of water for the cultivation of cotton and sugarcane. They should also follow certain dry agricultural practices and follow crop rotation pattern in their mode of cultivation.
8. **To Declare water as an essential commodity:** Water should be declared as essential commodity and its wastage be considered as an offence to ensure its optimal use. Water could be supplied to the farmers at subsidized prices. Use of drinking water for other purposes like watering the lawns and car wash should be prohibited.

9. **Organic Farming:** It has been established that by switching over to organic farming we can reduce the demand for water for irrigation purposes by 50 per cent.

Finally, the industry is Un-Godly as it is against every basic tenet of His Teaching. **In that home entrusted to us by the Creator, can we repudiate our Father's love by telling our sisters to scavenge for food and clothing in garbage dumps?**

What God has created, let no man plunder!

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Healing the Niger Delta: Remediation of Environmental Damage by Corporate Polluters as a Component of Integral Ecology

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The Continuing Discernment of How to Apply *Laudato Si'*

Over the next generation or so, once the “Francis Moment” has passed, one of our great challenges will be to unpackage the riches of the social vision of *Laudato Si'* and see what care for creation looks like in practice as we incorporate integral ecology into the larger Catholic Social Teaching framework since, as the Pope reminds us, it is just as much a social encyclical as it is a “green” one.¹ The *Laudato Si'* Action Platform is a step in this direction, but as ambitious as it is, it is only a beginning. As Francis has emphasized, integral ecology calls us to conversion in regard to structures and institutions, inviting us to a “Copernican revolution” in our thinking about economics and finance, towards “a different kind of economy: one that brings life not death, one that is inclusive and not exclusive, humane and not dehumanizing, one that cares for the environment and does not despoil it.”² While we need bold thinking to mold the contours of what this revolution entails, we also need equally bold thought on how to bring it to fruition.

There is a tendency in our thinking on care for creation to be overly oriented towards the future, working for a conversion of hearts and minds that will result in changes in present behaviour, but with an eye towards the road ahead. Too little attention is paid toward the question of *remediation*, addressing the environmental and ecological damage which has already taken place. This is particularly the case in regard to damage done to water, not only as a source as fresh drinking water, but also to marine ecosystems, oceans, and riparian communities.

¹ Pope: *Laudato si'* is not only a ‘green’ Encyclical but also a ‘social’ Encyclical. (2021, August 24).

² The Holy See. (February 8, 2021). *Address of His Holiness Pope Francis to the Members of the Diplomatic Corps Accredited to the Holy See.*

Addressing Human Rights Abuses by Multinational Corporations in the Global South

In the case of multinational corporations (MNCs) operating in the Global South, it is not enough for polluters to write a check and walk away since the damage done to water sources by mining activity and oil exploration is often times not only extraordinarily toxic, but expensive and technologically complex to reverse. For example, a leak of toxic material from Angola's largest diamond mine into the Kasai River in July 2021 has resulted in at least 12 deaths and thousands of people taken ill upriver in the Democratic Republic of the Congo (DRC). According to Eve Bazaiba, the DRC's minister of environment and sustainable development, due to the change in the river's pH level, "It's practically acid. It sucks the oxygen out of the water. There's no life there anymore" (Neto, G. & Maclean, R., Sept. 3, 2021). Money alone will not reverse that damage to the water, something more needs to be done to restore it to life.

It is well-established that individuals can be held accountable for human rights violations and that states are obligated under international law to protect against human rights abuses committed within their territory or jurisdiction by third parties. However, what is less clear is whether, or how, corporations can be held to account for the same conduct. This is important because as Ronald Slye, professor of law at Seattle University in the United States, notes: "Corporations wield enormous power; they can, and have caused significant harms. In addition to wielding enormous economic power, corporations increasingly engage in state-like activity as a result of the privatization of traditional state functions...and the tendency of corporations to elect to operate in environments where state power is weak or non-existent" (Slye, R.C., 2008:961).

Whether corporations can be held liable for human rights violations, particularly whether they can be held to account in their home jurisdictions for conduct which takes place abroad, is one of the most contentious issues in international human rights litigation today. For example, although it seems counterintuitive to the lay observer, it is not well-settled whether a U.S. or European corporation can be sued at home, by foreigners, for human rights violations it commits in its practices abroad, particularly for what it does in Africa. Thus, with little fear of being haled into court at home, in front of shareholders and regulators, for their foreign business practices, MNCs operate in the Global South with a dangerous degree of impunity that they would never dream of exercising at home.

And, up to this point I have consciously been referring to *human rights* violations committed by MNCs. That is no mistake. Human rights and the environment are radically intertwined. According to the UN Environment Programme, "human rights cannot be enjoyed without a safe, clean and healthy environment; and sustainable environmental governance cannot exist without the establishment of and respect for human rights." (UN Environment Programme, n.d.) This relationship is recognized as the right to a healthy environment in over 100 constitutions worldwide. (UN Environment Programme, n.d.) UN High Commissioner for Human Rights, former Chilean president Michelle Bachelet, warns that the environmental threats resulting from the intersection of pollution and climate change will pose the "single greatest challenge to human rights of our era" as these crises intensify (Al Jazeera, 13 Sept.,

2021). Therefore, when we discuss the normative framework under international law for addressing human rights abuses by MNCs, it is imperative that we include environmental damage, particularly to water sources, in that same conversation.

Remediation as Remedy

The UN Human Rights Council took a tentative first step in that direction in June 2011 when it unanimously endorsed the Guiding Principles on Business and Human Rights. Those Guiding Principles outline how states and businesses should implement the UN's "Protect, Respect, and Remedy" Framework on Business and Human Rights, which was developed by the Secretary General's Special Representative, John Ruggie, over the course of a six year mandate (Mares, R., 2012: 1-3). According to Professor Ruggie, the Guiding Principles rest on three pillars: 1) the state duty to *protect* against human rights abuses by third parties, including business; 2) an independent business responsibility to *respect* human rights, and 3) greater access by victims to *remedy*, both judicial and nonjudicial (Ruggie, J.G., 2017: 48-49). Over the last decade, it is the third pillar, access to remedy, which has proved the most difficult to achieve.

More often than not, access to remedy in regard to business-related human rights abuses has been seen in terms of grievance mechanisms, specifically in terms of access to courts or non-judicial dispute resolution (UNOHCHR, n.d.). While this is important, and a critical area where progress is painfully slow, remedy can also be understood in the legal sense of the term. Specifically, the law of remedies determines the "nature and scope of relief to be given to a plaintiff who has established a substantive right in court." (Dobbs, DB. & Roberts, CL., 2018:1) Hence, in this context, there are two aspects to access to remedy: 1) access to the dispute resolution procedure itself, and 2) what relief that procedure provides. The second aspect is key, because remedies in the legal sense "aim at a single goal: to rectify a wrong, to restore a right" (Weaver, R.L., Shoben, E.W. & Kelly, M.B., 2017:5). Quite simply, once a human rights violation has been established by a court or tribunal, the law of remedies asks, "Now what?"

In those woefully few cases regarding environmental damage by MNCs operating in Africa that have been successfully litigated on the merits, the answer to that question is rarely *remediation* - the actual removal or containment of contaminants or pollutants from a given area. Particularly when corporate pollution affects the quality of water sources the old adage that corporations apologize through money simply does not suffice. Justice calls for something more. As Pope Francis emphasized in *Laudato Si'*, "access to safe drinkable water is a basic and universal human right, since it is essential to human survival and, as such, is a condition for the exercise of other human rights" (§ 30). Nowhere has that access been under more sustained attack by corporate pollution than in the Niger Delta.

Healing the Niger Delta: Removing Oil from Water

The Niger Delta sits on the Gulf of Guinea and is the region in southern Nigeria through which the Niger and Benue Rivers empty into the Atlantic Ocean. More than 30 million people live in the Delta, which extends over 70,000 km² and is also one of the most fragile ecosystems in the world, with the largest mangrove and swamp forest in Africa. It is also the heart of

Nigeria's oil industry, the largest oil producer in Africa with an estimated 37 billion barrels of proven crude oil reserves at the end of 2019 (U.S. Energy Information Administration, June 25, 2020:1-2). Due overwhelmingly to oil spills, the Niger Delta is also one of the most heavily polluted places on Earth (Amnesty International, n.d.).

Oil was first discovered at Olobiri, in the Niger Delta, in 1956 by Shell-BP, which at the time was the sole concessionaire in the country (Nigeria National Petroleum Corporation, n.d.). Since that time, Royal Dutch Shell and its subsidiaries under the Shell Nigeria umbrella have remained the hegemon in the Nigerian petroleum industry, serving as the cornerstone of Shell's global operations (Hennchen, E., 2015:3). Not surprisingly then, to tell the story of oil pollution in the Niger Delta is to tell the story of Shell's operations in Nigeria.

The overwhelming majority of cases which have been litigated alleging human rights abuses or environmental damage by MNCs in the Niger Delta, winding their ways through courts in the U.S. and Europe over decades, have named Shell as a defendant. Shell's litigation strategy for claims coming out of Nigeria is a textbook example of how access to remedy is stymied in the primary sense, by ensuring that the route to the dispute resolution process itself is as difficult and narrow as possible.

For example, in this year alone there were rulings in two cases, one in the United Kingdom and the other in the Netherlands that were lauded as great advances in holding Shell to account for its activities in the Niger Delta. However, their impact is much narrower than might appear at first blush. For example, the ruling in the case before the UK Supreme Court, *Okpabi v. Royal Dutch Shell Plc*, while holding that the British parent of Shell's Nigerian subsidiary could be sued in the UK for oil spills in the Delta, only means that after six years of litigation the case can return to the lower court to be heard on the merits. The victims and their community are effectively back at the starting gate after years of proceedings, no closer to justice than they were at the outset.

Nor is this the most egregious case of judicial delay. The claims of the plaintiffs in *Kiobel v. Royal Dutch Petroleum Co.*, alleging Shell's human rights violations in regard to crushing resistance to oil development in Ogoniland, spent the better part of a decade winding its way through U.S. courts before the U.S. Supreme Court ruled that the matter could not be heard in U.S. federal court (*Kiobel v. Royal Dutch Petroleum Co.*, 569 U.S. 108, 2013). Now, almost twenty years after the case started, and thirty years after the underlying conduct, the matter is now slowly proceeding through the Dutch courts, all the while Shell continues to rake in enormous profits and the waters of the Niger Delta suffer from oil spills and pollution.

Healing the damage to the Niger Delta from oil production requires that we look critically at access to remedy in both senses of the term. While it remains no less important that the courthouse door be opened and that we resolve the question of whether Shell, or any other MNC, can be sued in their home courts for what they do in the Niger Delta, we also need to be asking what they should actually do to fix the damage that they have caused. Too little attention is paid to *remediation*. While remediation of contaminated sites by businesses is a principle of U.S. and European domestic environmental law, it is wholly absent in the

international arena. Monetary compensation to affected communities, while an important part of an overall restitution scheme, does nothing to address the pollution to the Delta itself.

Rethinking International Relations on Integral Ecology Principles

In *Fratelli Tutti* (FT), Pope Francis reiterates his call for a new ethics of international relations based on principles of human fraternity, a recognition of the inalienable dignity of all people wherever they live (FT § 124-127). This new ethics should not be limited to relations between states, but should address the ways that MNCs operate in their host countries. There cannot be one standard for environmental protection in the North and another in the Global South. Damage to the waters of the Niger Delta and the Gulf of Guinea by oil production should be taken just as seriously as that in the Gulf of Mexico or the North Sea. As Pope Francis says, “We are still far from a globalization of the most basic of human rights.” (FT § 189) Chief among these the right to clean drinking water, a healthy environment, and access to remedy when these basic rights are violated by MNCs.

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Cry for Water: Cry for Survival

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'What is the point in saying that we are free if the land, water and air over which we have the right are not freely available to us? We are all slaves even now'. – Mayilamma (Pariyadath J. 2018).

Introduction

Is the problem of water one of scarcity, misuse, and overuse, or unreasonable and unsustainable use? Or should we go beyond the normal rational confines and ask: Is there manipulation at the level of management of water for “blind-profit” on the part of governments, and private agencies? There is already an outcry to policy makers, on behalf of the poor who sustain themselves on Common Property Resources (CPRs): “Stop privatising essential services such as water and health” (Combat Law 2004, p.3). What should the poorest of the poor do if their basic right to drinking water is violated and water as a natural resource, one of the essential CPRs, is increasingly privatised? We have had the recent unfortunate tragic event of the labelling and incarcerating an octogenarian Indian Jesuit, the Late Fr Stan Samy as anti-national and making him languish in jail and die in a hospital while in custody, just because he mobilized the tribals to protect their rights to their common property resources much to the dismay of the multinational companies and the ruling class that supported them. What should be our strategy to deal with the unholy alliance of the ruling class with the for-profit organizations? What lessons could we learn from the unique case of the resistance of the weak and vulnerable tribal people of Plachimada to a behemoth like Coca-Cola?

Water Rights and Human Rights of the Marginalized

The United Nations’ Department of Economic and Social Affairs (UNDESA) came out with very significant resolutions as part of its decade-long campaign (2005-2015) clearly indicating how water rights and human rights were essentially related. Another decade is about to be over after the right to access to potable water and water for domestic use and irrigation have been recognised world over as a basic human right (UNDESA, 2014). One would expect that as society progressed, this basic right would become a reality. However, as evidenced in the Plachimada struggle against Coca-Cola, the linkage between neo-liberal economic globalisation and the violation of human rights of large masses of people seems to have become a resilient evil. The struggle spearheaded by some illiterate tribal women led by Mayilamma continues to this day as villagers are resisting a rather surreptitious comeback by

the Coca-Cola Company even before compensating the villagers' for loss of livelihood and the extreme damage done to the water resources in the area. The struggle represents a new chapter in the countercultural movement against multinational companies since it is an object lesson in the rightful assertion of people to protect their CPRs.

The Plachimada struggle reminds me of a tribal awareness song that I learned in a social action theatre workshop in a tribal village. The song is a recollection of the dream of a tribal man who saw myriads of hunch-backed ants 'aligning, moving together and killing an elephant.' In a matter of about three decades after that theatre workshop, I witness the fable of the ants being played out in the theatre of humans involving this seemingly insignificant tribal village.

The Story of the Plachimada Struggle

It is being retold here based on the anecdotes from Sudheesh K (2009), Mathew R. (2011), Mustafah K. (2017), and Gopinath A. (2020). The Coca-Cola plant was started in 2000 at Plachimada in Perumatty Panchayat, investing Rupees 900 million. Though the permitted limit for water extraction was only for 1,224,000 bottles, the company illegally extracted millions of litres of ground water from Plachimada every day. Even after causing environmental degradation of the highest proportions, the company kept on cheating the Adivasi-Dalit people by encouraging them to use the sludge (containing heavy metal), from the factory, as fertilizer. In the absence of a mandatory solid waste disposal system, the company kept on polluting the nearby Chittoor River.

The first direct protest was in February 2002 against the pollution by Coca-Cola. This was led in front of the company by *Adivasi Samrakshana Sangham* (The Tribal Protection Council). In March 2002, the locals lodged a complaint with all the significant authorities of the State including the Chief Minister. Within a month, the *Coca-Cola Virudha Janakeeya Samara Samithy* (Anti-Coca-Cola Peoples' Struggle Committee – henceforth Samithy) began its protest against the plant, with over 1500 people, mostly tribals, demanding the immediate shutdown of the plant owing to the severe hazard it was causing to their daily lives.

Eventually many human rights organizations and social organizations having local, national and international alliances, expressed their solidarity with the struggle. A series of strikes, stand-offs and mass protests were staged including a symbolic exercise of some protesters throwing 50 sacks of cow dung at the walls of the plant, and then symbolically cleaning it. The use of cow-dung is a cultural symbol of purification. In Kerala, until the use of cemented floors became pervasive, the floors used to be pasted with cow-dung since it is believed to be antiseptic.

The struggle against the Cola giant took a decisive legal turn in April 2003. The Perumatty Panchayat decided not to renew the license of Hindustan Coca-Cola Beverages Private Limited (HCCBPL) due to excessive exploitation of the groundwater by the company, environmental problems due to presence of hazardous and toxic substances in wastes emitted by the company, and a scarcity in drinking water. This was challenged by the company at the Kerala High Court, which directed the company to approach the Local Self-Government

Department (LSD) of the State. The LSD stayed the cancellation issued by the Panchayat, stating that it had exceeded its powers.

In the meanwhile, the movement orientation of the struggle gathered momentum with the BBC Radio 4 programme 'Face the Facts' reporting the presence of carcinogens in the waste deposited by the plant. Soon, the Centre for Science and Environment, based in Delhi, came out with a report that showed that 12 soft drinks had significant amounts of pesticides in them. Amidst mounting public opinion, the Kerala State Pollution Control Board (KSPCB) confirmed the BBC report, and ordered the company to stop supplying waste to the adjoining areas and to immediately recover all waste and store it in safe containment within the premises of the plant.

The legal battle continued in the High Court and at a crucial point, a single bench of the High Court, in response to a writ petition by the Panchayat, came out with an important decision. It held that "groundwater was a public property held in trust by a government and that it had no right to allow a private party to overexploit the resource to the detriment of the people."

On January 23, 2004, World Water Conference was organised near Plachimada at Pudussery. On the third day of the conference, the Plachimada declaration was adopted, and it made several significant claims: "it is our fundamental obligation to prevent water scarcity and pollution and to preserve it for generations... Water is not a commodity. We should resist all criminal attempts to marketize, privatise and corporatize water. Only through these means we can ensure the fundamental and inalienable right to water for the people all over the world" (Mathew R., 2011).

Amidst increasing local, national and global support for the struggle, on February 21, 2004, The Government of Kerala declared Palakkad District to be drought affected, and ordered an immediate restriction on the company's usage of groundwater. On March 9, 2004 the company stopped operations. Even then, from February 12, 2005 onwards, the High Court kept on intervening on behalf of the company and at one point in time the Panchayat had no choice but to issue a license. But based on evidence, the KSPCB ordered the company to immediately stop production. Though there was further legal battle involving the High Court, in November 19, 2005, backed by the new rules established by the Kerala Groundwater (Control and Regulation) Act, the Water Resource Department included Plachimada under the category 'overexploited' and prevented any further extraction for commercial purposes.

On February 16, 2011, the cabinet approved a draft bill, which was passed shortly thereafter in the legislative assembly, to form a tribunal for securing compensation and relief for the environmental degradation caused by the company at Plachimada. Though the bill could have been passed in the State Assembly itself, it was sent for approval of the Centre. During the tenure of both the United Progressive Alliance (UPA) led by the Indian National Congress Party and the National Democratic Alliance (NDA) led by Bharatiya Janata Party, the bill was not taken up for the assent of the President. On 2017 January 13, instead of facing the judgement of the Supreme Court of India, the company tactfully informed the Supreme Court of its withdrawal from Plachimada.

Although the company withdrew from Plachimada, it is coming back to launch a for-profit project under the guise of social welfare. The project is submitted to the very same Perumatty Panchayat that took its legal battle against the Coca-Cola Company up to the Supreme Court. The project is part of its Corporate Social Responsibility and seems to replicate in its first phase what other NGOs have been doing in the tribal settlements of Palakkad District, Kerala. But the people are cautious at this juncture since this seems to be an attempt to re-enter and reclaim the property to launch other for-profit projects in the second phase without being accountable for the harm it has already caused to the people and their natural habitat. The Anti-Coca-Cola Strike Committee alleges that the company that escaped legal action through political influence is trying to improve its image by covering up its misdeeds of the past. The Coca-Cola's new avatar seems to be attractive to the investment-friendly government but the Anti-Coca-Cola Strike Committee consider it still non-environment friendly and according to them, the Company has apparently violated some crucial legal provisions including major Acts.

Even after about two decades, the State Government is reluctant to start legal action against the Company. Even if the Tribunal Bill is not proceeded with, other legal actions could have been initiated. The CSR funded project seems to be a ploy to enhance the Company's main industry, the soft drink industry. Some of the leaders of the struggle allege that the political leaders oppose the Company publicly but secretly collaborate with them in anti-environmental and anti-people activities.

The Need for Integrating Micro and Macro Level Strategies

While acknowledging the need for micro level strategies to deal with the scarcity of water for safe drinking and irrigation such as conservation and preservation, purification, rainwater harvesting and equitable distribution of safe drinking water and reprioritization of current use of water, the Plachimada struggle points to the need for macro level strategies such as the creation of policies that will ensure the conservation and preservation of not only the big water bodies but even the other natural water receptacles and providers considering them under Common Property Resources (CPRs). There is a need to resist privatisation of water management as a solution to safe drinking water. Private business participation in water management must be subordinated to public sector undertaking in such a manner that the primary necessity of drinking water of all citizens is met as a fundamental right. There must be a policy to check the overuse and misuse of water in an institution or establishment when there is no adequate supply of safe drinking water to a neighbouring group of people. Use of drinking water for other purposes must be monitored. Population-based rationing of water may be contemplated in the light of the overuse of water by an affluent minority depriving others of even their basic necessity.

In the context of the pollution of water bodies by profit-making organizations, there is a need to ensure policies for administrative and fiscal provisions for surveillance of water bodies along with implementation of mandatory laws by local bodies for treatment plants and the formation of community-based guardian groups. To prevent depletion of groundwater, safeguarding against overexploitation of groundwater, stoppage of deforestation and promotion of afforestation must be integrated in the policy framework.

Conclusion

Even after having seen the protracted struggle of Plachimada and the negative impact the people had to suffer, the political expediency of many governments to support mega projects is deeply disturbing. Even while creatively generating sustainable alternatives engaging people at the grassroots, movement-oriented people need to create hope by refusing to imbibe the values of consumerism. They need to promote counter-cultural values, rediscovering of the beauty of simple nature-friendly life, and celebrate the togetherness of people from different cultures. While the consumerist market power driven by capitalism wants to divide and rule the people, our elected representatives may go hand in glove with them for personal benefit. Medha Patkar's question in the context of water rights will spur many committed social activists to be alert: "Can people's movements succeed in challenging the callous and corrupt politics of today?" (Patkar M., 2017).

Now people dare to think that there are many alternatives to the Liberalization-Privatization-Globalization mantra: There Is No Alternative (TINA). The people are exploring all the possibilities of grass-root level democracy and social advocacy to influence the lawmakers and implementers. The concept of local self-governance is effectively made use of by activists to highlight the need for self-determination by the affected people. The struggle has shown the need for exposing manipulative tactics of profit-seeking companies that undermine people's right to prevent undue extraction of their natural resources. The core of Mayilamma's message as expressed in her own words, is inspiring: 'wherever I go [to deliver speeches], I have only one thing to say, "Our air, water and soil belong to us alone! We will always fight against those who try to destroy them"' (Pariyadath J., 2018).

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Water Resource Management: Indian Rural Women's Perspective

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Women and men, everywhere and from all socio-economic strata, do not have equal opportunities for domestic and productive uses of water. In the background of inter-linkages between 'development', 'health' and 'environment', the issue of gender comes in as a shaping force, wherein the definitive status of women assumes importance. This reflection based on a micro-level research study undertaken by the Indian Social Institute, New Delhi, deals with vital issues pertaining to water resource management in the broader framework of natural resource management including gender issues in water at household level as well as at the community level.

Water scarcity is considered as one of the most pressing problems confronting the survival of humankind. The study was conducted in Rajasthan, selected on the basis of the extensiveness of traditional/indigenous water harvesting structures in the region. The importance of water in the desert state of Rajasthan assumes a much greater significance especially when people have encountered years of drought. The State of Rajasthan in India was selected as it is the most water deficient state in the country where recurrence of drought is a frequent disaster, affecting millions of people; it is deficient in surface water and groundwater and water at many places is unfit for human consumption. More than sixty percent of the state's total area is under a desert environment with sparsely distributed population, entailing a very high unit cost of providing basic services, and for the bulk of its remaining area with less than 60 centimeters of annual precipitation, water is the most scarce resource and is critical to the survival and livelihood of its people. Alwar district, situated in the northeast of Rajasthan receives a deficit rainfall; and Jodhpur district, located in western part of Rajasthan is in the central arid region, where sand dunes are commonly visible, receives a scanty rainfall.

The control of household water is mostly managed by women. Women undergo a lot of suffering due to lack of water, as they have to trek long distances and spend a lot of time everyday to get water required for the household. Inaccessibility to water is an important indicator of drudgery for rural women. Provision of a community water supply would provide an abundant opportunity for alleviating water related problems and the impact on women would redefine a bit of the stereotyped gender roles in society.

This paper examines the hardships caused by droughts in the lives of people in general and of women in particular – highlighting the ways in which water shortages impact women. There is little general awareness that the impact of water problems have a differential impact on people according to gender and social groups as these factors determine the community's vulnerability to such a situation. A woman's subordinate position vis-a-vis men in all social contexts impinges upon the women's experiences of water scarcity in terms of her work participation, family care, children's health, and her own health situation. There are reports of exploitation of poor people due to the impact of drought, as it increases the poverty of the poor. The lives of people, especially women, have been severely affected due to drought conditions. The main problems identified are women being overburdened due to multiple work, both domestic and agricultural, lack of availability of drinking water, ill effects on health and unemployment due to non-availability of agricultural work.

Executors in Water Management

Participation of men and women is a prerequisite for any development process. During the field survey an effort was made to discover who took the initiative for the construction or renovation of the water sources in their areas – that is, who realized the water problem occurs, who raises the issue and who is involved in some way or the other to solve the problem by construction or renovation of the water source. It is observed that in Alwar district, the participation and involvement of men is 93.5 percent while that of women is only 6.5 per cent. In Alwar, an important factor inspiring farmers to participate actively in the process was the revival of their traditional system of "*johad*" (a traditional water harvesting structure) which mostly entailed work by men. In Jodhpur district, the participation of men is 82.8 percent while that taken by women is 17.2 per cent. However, on 78on-profi the gender roles, the data revealed that in Alwar district the active women's participation was less than 10 per cent in all the blocks; whereas, in Jodhpur the women's participation was above 10 per cent in all the blocks except in Bhopalgarh block where it was only 8.1 per cent.

Women are the ones to be affected first and most in cases of depletion in the amount of water availability or in a reduction of water quality. At the same time, the nature of jobs usually performed by women are such that they are in constant contact with polluted or poor quality water, and are also affected by the lack of sanitation, and thus are the most vulnerable to water related problems. There is a need for higher levels of groundwater extraction in India. With increasing technology, the search for groundwater has increased. However when it comes to decision making about water resource management, women are almost invisible. Women's participation in water resource management is essential from equity and a sustainable development perspective.

The analysis suggests that communities have tended to continue with traditional views about women's use of water. Priorities have been set with the assumption that women's strategic interests lie primarily in the 78on-profit of household responsibility. The important role played by women in agriculture has seldom been given consideration in water resource management. It is assumed that water management, health and community development are closely interlinked in the sense that sustainable development practices are the key factors in ensuring better health to the population and that if water resources are made available at the

community level, women will benefit equally with men. This study therefore attempted to understand the nature and extent of gender dynamics in water resource management and its implications on women.

In most situations of water scarcity, it is women who have to bear the brunt, for the simple reason that in rural Indian homes, making water available, happens to be the responsibility of women, be it a matter of drawing it from a household or village well or fetching it from miles away. This is particularly true in the context of rural women in arid and semi-arid areas of Rajasthan. Moreover, it is indicative of the crucial role the women play in water management and of the difficulties they have to face while doing so. Hence, it may be rightly stated that though water and water related issues are important to all, the women's role in its availability is much greater and water resource management should be one of the stepping-stones in the upliftment of women.

Impact of Water Management on Women

Water initiatives have an impact on women in the milieu of their participation in utilization and management of water resources. This must be looked at in the broader context of the social construct of gender roles, and women's access to productive assets and resources. Approaches must be made to improve women's roles through situation-specific contexts and efforts must be made to understand the gendered nature of relationships where water is a natural resource which continues to change with time. Development goals in water and health converge with gender issues because though women play a central role in provision, management and protection of water-related resources and facilities, it is men who are often key investment decision-makers. Where introduced women's participation alongside men in maintenance and management of water has brought distinct benefits to the functioning and use of water systems. Approaching water, sanitation and hygiene from a gender and development perspective is crucial to ensure balanced control of resources and facilities (Sue: 1999).

New schemes for supplies of drinking water function around a tube well, located in an area with a reasonable quality, carrying water through a pipe several 79on-profit in length with an outlet or two provided for villages enroute. Hand pumps are means provided where ground water lies at shallow depths. Though most of the villages are reported to be provided with some source of drinking water, the situation remains far from satisfactory in many villages. For people living in '*dhanis*' (scattered hamlets) in Jodhpur it still means a traverse of 3-10 kilometers to water point. A situation of crisis develops in dry summers, when demand is manifold and supplies from governmental sources are diminished and irregular and village ponds also dry up. During drought, this acute scarcity prevails throughout the year, as happened during the survey period. There was no reliable source of drinking water in some of the villages compelling people to fetch drinking water from a distance of 30-50 kilometers in Jodhpur.

Without a family '*taanka*' (a household-level water harvesting traditional structure), women have to walk on an average 1-3 kilometers, balancing a load of water pots on their heads, twice daily, for drinking water. This daily chore consumes time and energy by engaging a

productive person's labour merely on this drudgery though essential. Where available *taanka* helps by leaving women free to go out and earn for the family. It saves the daily hardship of traveling and fetching water from distances, which almost always increases during the dry season. Women are spared the drudgery of spending half a day fetching water from a distance. Some of them along with the elders save a 10-15 km round trip using donkeys, camels or bullock carts. The *taanka* full of rainwater saves considerable money and time, which would otherwise be spent on purchasing water. During drought, families are forced to purchase water at a cost that depends on the distance of the home from the water source. The analysis of data on the average hours per day per woman in fetching water reveals that the average hours per day per woman is 1.23 hours in Alwar district while it is 5.83 in Jodhpur district. This indicates that the water problem is more acute in Jodhpur district where the women have to stroll distances, trudge harder and also have to wait for longer hours to collect water. With men moving out to near and far places in search of earning some money, women have to take over all responsibility of running the household in addition to their burden of fetching drinking water, and gathering fuelwood. With children in tow, they also go to work in the scorching heat as daily labourers to make some earnings as food and some cash. During severe drought, sometimes villagers get water by tractor-tankers (free supplies from government agencies or procure tankers on payment).

Thus, collecting and transporting water over long distances has grave impacts on women's time and health. Further, girl-children often help in the collection of firewood and this impacts their health and access to education (March C., et.al., 1999).

Conclusions

It has emerged that though women have been the primary caretakers, they have not benefited much with the construction or renovation of water resources and the initiatives taken in this regard by various agencies. There has not been much improvement in the conditions of their lives. Moreover, their position and social status continue to be defined by traditional norms as evident by their levels of education, health and exclusion from decision making on water issues. It may be concluded that women's involvement is possible at the community level only if men are fully aware of gender. As long as men do not help women in traditional tasks, overburdened women cannot effectively participate in the development process. Men in general assume that water supply is a technical matter and thus women have no influential roles to play in this sector; the challenge here is to make men in the community aware that water has not only a technical dimension but also a social dimension, and that women's strategic involvement is absolutely essential. Thus gender concerns have to be adequately addressed in water resource management for sustainable development.

Water security should be seen as a social event that has its roots in the social systems and structures. Since there are social differences in the society, inequalities and vulnerabilities are not distributed equally; there are differential impacts of drought on people. Women are amongst the most vulnerable due to their subordinate social and economic position within the family and society. Hence, there is a need to create gender awareness among policy makers, civil society organizations and those working for natural resource management, to

understand women's vulnerabilities and include them in resource management efforts to enhance their capacities to deal with the situation of water scarcity.

Women are the ones to be affected first and most in cases of depletion in amount of water availability or a reduction in water quality. There is clearly a gender imbalance in the water sector; whereas, responsibilities, burdens and insecurities are for women, benefits are claimed to accrue to them automatically as men or entire communities are considered. It may be rightly stated that since water and water related issues are important to women, their life and role in water development is much greater and water resource management could be one of the stepping-stones to their own development. Thus, gender concerns must be adequately addressed in water resource management for sustainable development.

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The Rights of Indigenous Communities over the Water

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Manaus is traditionally a place where many indigenous peoples come to seek better living conditions. However, in the last 50 years, this presence has grown with the influx of migrants who uprooted themselves from their homelands in search of the “good life”, supposedly possible in the city. Paradoxically, this results in the loss of state protection and, consequently, the right to be indigenous, driven by the fanciful misconception that indigenous people must live naked, away from urban centers. Or, perhaps, it has been driven by an indigenous policy intended to steer indigenous people towards western civilization; to “emancipate them” so that they abandon their savage lives.

Pope Francis wrote in *Querida Amazonia*: “I dream of an Amazon region that fights for the rights of the poor, the original peoples and the least of our brothers and sisters, where their voices can be heard and their dignity advanced.” (Francis, 2020: § 08), because this dream belongs to everyone; it belongs to the peoples of the Amazon who want to see their lives fulfilled. Being from Manaus, I am outraged to see my people suffer because of a liquid as precious as water. In Manaus I work as a Social Analyst with the Amazon Service of Action, Reflection and Socio-Environmental Education (SARES), a Jesuit work that today, from a socio-environmental perspective, defines its mission as the defense and safeguarding of rights and the promotion of socio-environmental justice. We act as facilitators, points of connection between social movements and community leaders in the city of Manaus, and through the collective called FORUM DAS ÁGUAS, which is made up of several leaders who defend water as a human right. It is a space where the consequences and problems of privatization that the people of Manaus have suffered for 21 years are discussed and debated collectively.

Manaus: Characterizing Reality

The Encyclical *Laudato Si* emphasizes that “access to safe drinkable water is a basic and universal human right, since it is essential to human survival and, as such, is a condition for the exercise of other human rights” (LS § 25). Despite being surrounded by the great Amazon River – great both in terms of water volume and length (6,992.06 km long) – the city of Manaus suffers from the negligence of its leaders regarding access to water and the care of water resources.

The population of Manaus suffers from many problems, especially disadvantaged groups who have limited access to drinking water and basic sanitation. It is shameful that we live in

a region so rich in water resources and yet we face serious issues in accessing drinking water and sewerage services. It is unfortunate that private companies, which are contracted to provide these services, seek to maximize profits, but they rarely spare a thought for groups with low or no income. The city of Manaus, capital of the state of Amazonas, is located in the geographic center of the Amazon, in the Rio Negro/Solimões subregion, northern Brazil. It has an area of 11,458.50 km²; the city was founded in 1669, with the construction of the Fort of São José do Rio Negro. Manaus carried out urban reforms, constructing stately buildings, modern port facilities (to meet the demands of the foreign market), developing electric power, public transport (trams), water supply and sewerage networks (Almeida, 2013).

The bosses of the new city either hid or banished the poorest to the suburbs. With the economic crisis, poverty increased as local companies went bankrupt and foreign companies relocated, generating mass unemployment. Rubber production was resumed in the late 1940s to meet the demand driven by World War II. Once again, the progress propelled by the extractive industry caused migration to increase in the municipality of Manaus, resulting in a high growth of the urban population (Almeida, 2013).

The city grew in all directions in a disorderly manner. The lack of economic resources and municipal planning led to the spatial disorganization of the urban region, which developed unsupervised, the modus operandi being immediate turnarounds, emergency solutions for infrastructure problems and the provision of basic services at election time. The city's boundaries were drawn into zones: North, South, East and West, South-Central and Central, in order to control urbanization based on a needs analysis, classified according to the type of occupation. Currently, Manaus is divided into 63 official neighborhoods with hundreds of communities, housing complexes and units belonging to these neighborhoods. It currently has more than two million inhabitants and is divided into 9 hydrographic basins, which are catchment areas containing one or more interconnected watercourses that drain directly or indirectly into a riverbed or body of water. However, most of these basins, made up of *igarapés* (a type of long stream) are not suitable for human consumption, due to pollution and other waste contaminants (Almeida, 2013).

At SARES we have accompanied various organizations and their leaders for years. In an interview on October 24, Marcivana do Saterê – from the Coordination of Indigenous Peoples of Manaus and Surrounding Areas (COPIME) – stated that the 2020 census (IBGE) provided a 83on-profit83ed of the locations of indigenous people in Manaus. The objective was for them to be included in the census as areas requiring greater attention. 47 indigenous peoples were detected in various areas, even with the restrictions due to Covid-19, and more than 100 organizations were identified in the city of Manaus. From these documents it was shown that 18,000 indigenous people are living in Manaus (Almeida and Pacini, 2020).

Privatization is Not the Solution:

In Manaus, various leaders network with each other to support their respective causes, in defense of their territories and in the pursuit of “*buen vivir*”¹. A case that bears mentioning is that of an indigenous leader, Vanda Ortega, of the Witoto people, interviewed on September 15 in the Parque das Tribos located in the Tarumã Açu neighbourhood. According to her:

The “Parque das Tribos” has existed for 7 years, it has 30 indigenous peoples and the community currently has potable water. However, achieving this was a great struggle, and water only reached them this year. Before, the families drank water from the well – built by the community – and, in previous years, they drank water from the Tarumã Açu river, but a large part of this basin is currently contaminated (Ortega, 2021).

Vanda highlights the magnificence represented by forests, rivers and the diversity of the people who live here.

However, this region suffers the highest water scarcity index for its poorest sectors; namely, those who live in indigenous communities in Manaus. The diversity of natural resources is in stark contrast to its peoples’ precarious lived reality, especially in terms of basic sanitation and drinking water.

Our villages do not receive treated water, we have the highest mortality rate from diarrhea. Most have to dig wells for drinking water or collect rainwater and cannot even drink from the river due to pollution. Today, privatization is a big problem for indigenous populations and the poorest sectors, as the service fees are high. How long will they continue to deny the essential human right to life? What is Water? It is a sacred element that should not be subject to a fee, how long will the State be negligent towards our peoples? (Ortega, 2021)

Another interviewee was the leader Hellen Greicy Kokama, from the Nova Vida indigenous community, which is located in the Cidade Nova neighborhood, in Manaus North. Hellen Greicy is 30 years old, born in Tefé, belongs to the Kokama ethnic group and has been living in the community for three years. She is the Catholic Church’s deputy coordinator in the community.

The indigenous peoples came here first with 47 families of various ethnicities. Over time, the leadership allowed white people to join and today, our community consists of streets, blocks and two entrances. In the leaders’ most recent update, there were around 980 families living in the Nova Vida community. Before, a *cacimba* (well) was the water source. This water was used for washing, not drinking. So we had to buy drinking water. As an indigenous person of the Kokama people, my view is that the state agencies are not providing for those who live in this newly created community because every inhabitant is in need of basic sanitation, and most of all water. My feeling is one of

¹ Translator’s note: “*Buen Vivir*”, roughly translated as “good living” or “living well”, a worldview prevalent among indigenous communities across Latin America based on humans living in harmony with one another and with nature.

outrage, since the council and the government only pay attention to the community when it's election time. We do not need promises, but actions. The community bought plumbing pipes to distribute to the houses. Today, we continue to use water from clandestine sources... Some get sick from the water... and anyone who can, buys it... Others filter it. (Barbosa, 2021)

The testimony above shows that privatization is not the solution. Unemployment and poverty accelerated during the pandemic, affecting low-income families who could not pay their bills which were subject to excessive price hikes, as pointed out by Chief Domingos Vieira del Povo Dessana, of the Sol Nascente indigenous settlement, in the Francisca Mendes 2 neighbourhood, Manaus North.

According to the Chief, they waited for 5 years before receiving treated water. In June 2019 water was installed. But our taps don't have running water every day. The company does not inform us, and we are left without water for 4 to 5 hours. One part of the settlement with 50 houses is without services. They use water from clandestine sources. Through campaigning, the leaders of the settlement were able to obtain discounts on water for low-income families... this is called a social tariff. (Vieira, 2021)

We are the Waters

In the Amazon, women have an ancestral, transcendental and mystical relationship with water because we are daughters of the forests. Water for indigenous peoples is sacred, as pointed out by the educator Clarice Gama of the Tukano People of the Alto Río Negro Indigenous Land.

The indigenous relationship with water is very important. Mythologically, from the very beginning, it says that we come from water, so water for us represents life... We dialogue with water, because water is people, it is what is sacred there... We humans need to dialogue; How do we dialogue? Through the *Pajés* (shamans), when we submerge ourselves in rivers, we bathe, we must ask for permission, saying that we are the people, we come to visit you... that we are women, with the utmost respect, talking with the water... and talking to Mother Earth. Clarice believes that all people have some relationship with water (Gama, 2021).

Across the country, nature is being exploited by loggers, mining companies, land-grabbers and private companies who view water as a commodity. Greed is even more explicit when it comes to the Amazonas. The city of Manaus is no different and although there are many indigenous people who live in the city, they end up becoming invisible to society (Almeida e Pacini, 2020). The water and land of this region nourish and sustain nature, life and the cultures of hundreds of indigenous communities. The search for a life in abundance by the Amazonian indigenous peoples is captured in what they call the "*buen vivir*".

As the Post-Synodal Apostolic Exhortation, *Querida Amazonia*, says: "*This dream made of water; the rivers and streams are like veins, and water determines every form of life.*" (§ 26)

As Berta Cáceres said: “Giving one’s life for the defense of rivers is giving one’s life for the good of humanity and this planet.” (Cáceres 1971-2016)

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Providing Access or Taking Sides? Blue Growth, Small-Scale Fisheries, and the Case of Lamu, Kenya

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People will stand fishing beside the sea...it will be a place for the spreading of nets; its fish will be of a great many kinds, like the fish of the Great Sea (Ezek. 47:10).

When the prophet Ezekiel received a vision promising his people's return from exile, he saw a miraculous river flowing from the threshold of the rebuilt Jerusalem temple (Ezek. 47:1-12). As the waters flowed east, the river became deeper and gained strength, bringing life to all it touched and renewing relationships both human and ecological. As one commentator argues, this post-trauma promise of consolation was as much about "restoration of the land" as "restoration to the land" (Copeland, 2019, pp. 214-215, emphasis in original). Ezekiel's vision of restoration also included an abundance of fish, notable both for their beauty and their role as food.

Today, as in Ezekiel's time, God's promise of healing and restoration applies to relationships that are human, ecological, and aquatic. And yet, so many of today's conversations about water neglect rich perspectives like Ezekiel's. In particular, they neglect the importance of wild capture fisheries, and especially small-scale fisheries, in the ongoing struggle for eco-social justice. Many countries' exclusion of fisheries from national food policies provides but one salient example (A. Bennett et al., 2021). In what follows, we make a case for the importance of small-scale fisheries and describe how they are simultaneously threatened by a "blue" turn in economic development and a failure of imagination on the part of those interested in helping them. We then turn to the case of a traditional fishing community in Lamu, Kenya, in order to illustrate these trends and seek guidance for ways forward.

Small-Scale Fisheries, Blue Growth, and the Problem with "Access"

The consistent neglect of small-scale fisheries (SSF) in discussions about water and eco-social justice has more to do with a technocratic paradigm that renders diversity invisible (LS §107-108) than with any fact-based judgment about their value (Short et al., 2021, p. 734). Indeed, SSF are the backbone of many coastal communities. In developing countries, they account for over 90% of fisheries sector jobs and more than half of the catch (World Bank, 2012, p. 22).

And while the global trade in seafood contributes to a net flow of micronutrients out of developing countries where they are sorely needed (Hicks et al., 2019; Vianna et al., 2020), SSF counteract this trend by more frequently keeping seafood in the places where it was produced (World Bank, 2012. P. 24). Today, it is becoming increasingly clear that SSF are indispensable for food and nutrition security (Loring et al., 2019; Short et al., 2021). In many places, SSF are also indispensable for indigenous cultures (Loring et al., 2019, pp. 65-67), which, in turn, protect far more than their fair share of the world's biodiversity (IPBES, 2019, p. 14).

Despite small-scale fisheries' myriad contributions to food security, employment, culture, and biodiversity, they are confronting numerous threats. Obstacles highlighted by the academic literature often include high proportions of post-harvest losses (Affognon et al., 2015), decline of key ecosystems (McClanahan, 2020), low availability of capital (Short et al., 2021), and threats to traditional fishing rights (Sunde & Erwin, 2020). This conventional diagnosis, while correct, also supports a narrative that depicts SSF as homogenous, poor, and dysfunctional, that is, in need of economic development (Short et al., 2021). As a result, the proposed solutions derived from this diagnosis often reflect the usual neoliberal toolkit. A viable future for SSF, many say, lies in technological innovation, improved infrastructure, strengthened governance, and economic inclusion (e.g., WorldFish, 2020). These pathways to change may benefit fishers and their communities, but the analysis undergirding them is ultimately crippled by a blindspot that ignores some of the most pressing challenges facing SSF today. That blindspot is caused by a limited view of SSF that tends to portray them as passive recipients, or potential recipients, in need of some kind of "access" that is best granted by outsiders.

When academics, development agencies, and non-governmental organizations talk about "access" for small-scale fisheries, they assume they know and have what fishing communities need. Regardless of the veracity of this assumption, it is a remarkably unhelpful starting point. The thing offered might, for example, be a solar-powered refrigerator, a relatively benign and often useful piece of infrastructure. But infrastructure projects, useful ones included, tend to assume that the desires and aspirations of small-scale fishing communities match those of decision makers and planners in air-conditioned urban offices. Similarly, economic inclusion in the form of capital investment might be identified as an important need of SSF, but this type of access assumes an imported economic model that is often foreign to fishing communities' existing ways of life. "Access" even frames the protection of traditional fishing rights and healthy ecosystems. This, too, although a key demand of many SSF struggling for survival, already assumes a contested geography of capitalist development. Access to fishery resources would not need to be guaranteed were it not already threatened by environmental destruction and competing claims to ownership. In many cases, small-scale fishing communities do in fact want or need the things proposed under the banner of "access." However, the focus on access neglects to ask why these needs have appeared and it implicitly relies on an underlying power dynamic whereby those granting access are aligned with the same forces that make access so necessary in the first place.

If the conventional diagnosis of the challenges facing small-scale fisheries relies on a weak analysis that ignores the root causes of SSF vulnerability, we propose an alternative view.

Instead of providing access to external resources, those interested in supporting small-scale fishing communities ought to work to protect them from external threats. Today, these threats are largely driven by a new economic focus on coasts and oceans (Jouffray et al., 2020), a phenomenon sometimes referred to as “the blue economy” or “blue growth” (Ehlers, 2016). Blue growth initiatives often promise sustainable and inclusive economic development (e.g., European Commission, 2021). The view from the ground, however, demonstrates that “sustainable” and “inclusive” are rarely accurate descriptors. Recent years have seen blue growth agendas lead to the expropriation of fishing rights, displacement of local communities from their traditional lands and fishing grounds, increased pollution, and numerous other burdens disproportionately borne by local communities who have often relied on and cared for their ecosystems for centuries (N.J. Bennett et al., 2021; Cohen et al., 2019). Indeed, blue growth has made it so that simply being a small-scale fisher today requires organized resistance to encroaching forms of economic development.

Despite how important they are, small-scale fishing communities face an uncertain future. On the one hand, they are threatened by a global trend in blue growth that sees no value in, and leaves no space for, their ways of life. On the other hand, a well-meaning but ultimately flawed approach to global development is so limited in scope that it risks perpetuating the urgent threats these communities face. If access to resources is the only solution we can think to provide for small-scale fishers and others who face similar challenges, perhaps we need to stop trying to think of solutions and start listening to find more productive ways to support their struggle.

In the next section, we aim to aid our collective listening by turning to the case of a small-scale coral reef fishery in Lamu, Kenya. As with many SSF around the world, blue growth has already damaged Lamu’s ecosystem and threatens traditional ways of life. Some pieces of the story, however, also provide a new way to think about local struggles for eco-social justice and have the potential to help us move beyond the limitations and blind spots so prevalent in development discourse today.

Resistance and Hope in Lamu, Kenya

The Lamu archipelago, located on Kenya’s north coast, has been continuously inhabited by a wide range of indigenous communities for over one thousand years (Quintana Morales & Horton, 2014; Osuka et al., 2016). Throughout this time, these communities have relied on and conserved local ecosystems despite their great diversity of worldviews and cultural practices (Save Lamu, 2018). Today, Lamu is internationally recognized for its unique endowment of cultural and biodiversity and is home to both a UNESCO World Heritage Site (UNESCO, 2001) and a UNESCO Biosphere Reserve (UNESCO, 1980). This remarkable place is also home to a small-scale fishery that is as old as the indigenous communities themselves. As a 2018 judgment of Kenya’s High Court put it,

these residents of Lamu Island are traditional and artisanal fishermen...who derive their livelihoods directly from fishing [and have] from time immemorial fished using relatively small vessels and deploying small amounts of capital and energy in the areas immediately adjacent

to the Lamu archipelago (Mohamed Ali Baadi and others v. Attorney General and 12 others, 2018. 291).

Even today, small-scale fishing generates 75-80% of Lamu's economic activity and directly involves at least 6,000 of Lamu's residents (Osuka et al., 2016), supporting and feeding a wider community of over 100,000 (Save Lamu, 2018).

Despite its long history of resilience, Lamu's fishing community faces many of the same challenges as other SSF. These include catches well below historic baselines, inefficiencies in access to markets, shifting climate conditions, signs of overfishing, and decades of economic and political marginalization (Athman & Ernst, 2015; Osuka et al., 2016; Samoilyls et al., 2017). Today, however, these challenges are dramatically compounded by Kenya's largest-ever infrastructure project, known as the Lamu Port South Sudan Ethiopia Transportation Corridor, or LAPSSET (Athman & Ernst, 2015; Save Lamu, 2018). Planning and initial construction began in 2012, with a megaport, a cross-country oil pipeline, highways, railways, a resort city, and a coal plant all slated to converge on Manda Bay in Lamu, just a few 90on-profit from the Lamu Old Town World Heritage Site (LAPSSET, 2016). In the years since, the project has proceeded at a lightning pace (Athman & Ernst, 2015; Save Lamu, 2018) despite the absence of key planning documents, including a complete environmental impact assessment (*Mohamed Ali Baadi and others v. Attorney General and 12 others, 2018*).

Today, LAPSSET represents the single most important threat to Lamu's indigenous communities and SSF. Construction, even in its initial stages, has displaced farmers from their land and fishers from their fishing grounds; it has caused grave damage to local ecosystems, including the marine resources on which SSF depend; and the project has generated public confusion and economic dislocation (*Mohamed Ali Baadi and others v. Attorney General and 12 others, 2018*). In the meantime, and independently of LAPSSET, researchers and various fishing industry stakeholders, including local and national government agencies and 90on-profit organizations, have spent recent decades 90on-profi Lamu's fishing industry and planning for its "improvement" (e.g., Lamu County, 2017; WWF, 2021). While the more recent versions of these interventions and analyses tend to acknowledge the negative effects LAPSSET will have on Lamu's SSF, their proposed solutions are drawn from the same blue growth framework as LAPSSET itself. The future they envision is one that includes fewer fishers, larger vessels, and the explicit abandonment of traditional ecosocial lifeways. For the local community, this response is really no response at all, particularly in light of the imminent threat to their livelihoods that LAPSSET presents.

Responding to the absence of any substantive support, Lamu's diverse communities developed a grassroots movement that would advocate for their interests. They soon formed a civil society organization devoted to sustainable development, which allowed various local stakeholders to speak with one voice and to assert their rights (Athman & Ernst, 2015). Together with legal partners, they sought justice in the courts, arguing that the LAPSSET planning process had violated legal requirements for community consultation and environmental mitigation. Then, in a sharp rebuke to virtually every government agency in Kenya, the High Court at Nairobi (in the case of Lamu Port) and the National Environmental Tribunal (in the case of the proposed coal plant) both ruled in 90on-pr of the community's

claims (*Mohamed Ali Baadi and others v. Attorney General and 12 others*, 2018; *Save Lamu & 5 others v. National Environmental Management Authority (NEMA) & another*, 2019). Perhaps even more significantly, the High Court's judgment in the case of Lamu Port did not solely focus on LAPSSET's rampant procedural violations, but also cited the project's violations of fishers' constitutional rights to life, culture, a clean and healthy environment, and property (*Mohamed Ali Baadi and others v. Attorney General and 12 others*, 2018). In other words, the court ruled that Kenya's bold attempt at blue growth had violated small-scale fishers' basic human rights.

The legal victories won by small-scale fishers and other community members in Lamu are a heartening and notable example of an entirely community-led effort to confront a major challenge facing SSF, but they are not the end of the story. Over three years after the first judgment against LAPSSET and over eight years since the project began, none of the 2018 judgment has been implemented and Lamu's fishers still have not received the financial damages awarded by the court. Today, construction is still ongoing, and the first section of Lamu Port is already operational (President, 2021).

Taking Sides

Small-scale fisheries in Lamu and around the world do not reflect the vision presented by the prophet Ezekiel in his promise of social and ecological restoration. Instead, SSF are left to contend with a very different vision, characterized by a one-size-fits-all approach to development that is incapable of respecting or listening to local communities. These visions, and their approach to SSF, present two basic options for us today. The first option, and the one 91on-prof by many government planners and 91on-profit organizations, is to attempt to harmonize the development of SSF with blue growth agendas, mainly by providing access to infrastructure, capital, and fishing rights. As we have seen, this approach ignores the most urgent threats faced by SSF today and, at least in Lamu, has violated fishers' basic human rights. The second option, and the one most consistent with Ezekiel's vision, is that we who have the luxury of deciding which path to follow choose to support the self-determination of those for whom blue growth, despite its professed goals, is a truly existential threat. Notably, the Lamu community's success in the judicial system was achieved with the support of national and international organizations based outside the local community. Rather than provide technocratic plans for SSF "improvement," these organizations took the time to listen to the authentic cries of earth and poor and responded by joining a difficult, even dangerous, cause. Our pursuit of ecosocial justice ought to mirror this commitment, supporting rather than dictating, dealing with root causes rather than symptoms, and choosing sides when the work of the Kingdom demands it.

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Original in English



Sustainably Harvesting Water in the High Mountains: When the Project Comes from Them

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Peru is located in the western part of South America, currently populated by 33 million people. It is a megadiverse country due to its variety of ecosystems which allow for the development of different productive economic activities. The last national agricultural census (CENAGRO) of 2012 indicates that 97% of agricultural producers are family farmers, which is very important for national food security, given that more than 75% of fresh foods come from this family farming.

Family farming is a way of life. It's characterised by the small area of land managed (agricultural units of less than 5 hectares per family), a lack of technology, limited access to irrigation systems, using family members as the workforce and its development in the Andean and Amazonian region of Peru.

In the area of Cusco, there are a total of 2,666,567.32 hectares of crops, only 17% (445,014.9) of which have some type of irrigation technology.

Challenging Areas

Quispicanchi is a province of Cusco, Peru, with a population of 101,000 people who live in rural communities and small urban centres. For 76% of the total population, their main source of work and survival is farming. Among these family farms, those who produce solely for their own needs and those who produce due to demand and/or for commercialisation can still be distinguished.

Despite having the second highest glacier in Peru, Ausangate, and three rivers of significant volume, Vilcanota, Mapacho and Araza, one of the main problems of farming in Quispicanchi is access to irrigation, especially considering that only 25% of agricultural units have irrigation. If on top of this we add the micro land division¹ of these units, the promotion of agricultural development is a challenge that implies establishing a close relationship with the families; organising agricultural producers, rural communities and local institutions;

¹ 59.35% of agricultural units have less than 0.5 hectares (less than five thousand metres squared), 37.5% have 0.5 to 4.99 hectares and only 1.54% have less than 5 hectares.

designing a working route that allows for identification; constructing alternative innovative strategies; recovering the wisdom of the people, and elaborating an action plan where responsibilities are shared.

A Suitable Alternative

Many research and advocacy organisations for development had experimented with projects and strategies so that farmers would have enough water for their work, all of which used permanent sources of water (water springs, streams, rivers, lagoons, etc). But for family farming that is rainfed, seasonal or in other words depends solely on rain that forms in high Andean regions of more than 3,500 m a.s.l., harvesting water is a great alternative to this problem.

The technology to harvest water consists of identifying natural dams located at the head of cultivation areas; capturing and conducting rain water towards the natural dam for its duration; constructing dikes and shortcuts for containment; projects for conducting and distributing the water, and fundamentally, organising the farmers to manage the water harvest.

The first water harvesting experience in the province of Quispicanchi (1998) was an initiative that came from the Huarahuara rural community to resolve the problem that farmers from the Lloqueta, Churubamba, Culli, Ccollotaro and Huarahuara communities were facing. After monitoring the operation over the years, this experience was replicated in other communities and districts of Quispicanchi where farmers live with common problems and favourable topographical characteristics.

During the period of identifying the problem, cocreating the solution, scaling the project and the sustainability of the water harvest; the participation of the families, their organisation of the producers and managers of the system, the rural community, the local authorities and the support of the CCAIJO team was important. Along those lines, 16 water harvest projects were executed providing 1,500,000 cubic metres of water annually to irrigate 300 hectares benefiting approximately 980 families (agricultural units) of 16 communities of the Ccatcca, Ocongate, Urcos and Andahuaylillas districts.

Changes Generated

Implementing water harvesting generated results and/or visible changes to the dynamic of the community. Families recovered their interest in farming, the land began capitalising (with irrigation technologies, and infrastructure like sheds and barns) and fundamentally, it reduced the mass migration of communities to the city.

On the other hand, improvements were noted such as, the agricultural production of two harvests per year, the transition from farming to livestock with an emphasis on the production of cattle and guinea pig livestock, and the demand to construct more water harvests (or micro dams). Additionally, we can confirm that water harvesting allows downstream aquifers to recharge (a water harvest that was executed for farming purposes is currently being used for human consumption).

Public Policy

Among the CCAIJO strategies, reproducibility, transfer and sustainability are methods that contribute to creating public policies that favour farming and rural development. Under this strategy, 14 of the 16 water harvests that were executed in Quispicanchi had different levels of implication, participation and co-financing from the municipalities. Quantity, duration and experience was useful in order to transfer these responsibilities to the municipalities who, after requests and pressure from the people, farmers and rural communities, incorporated it into their investment programmes, strengthened their project design teams and their teams in charge of carrying out the water harvest.

Following the experience developed by CCAIJO in Quispicanchi and by other centres in other regions of the country, the Ministry of Agricultural and Irrigation Development (*MIDAGRI*) summoned CCAIJO and other centres to contribute to the Sierra Azul Fund Executive Unit design. The objective being to increase agricultural water safety by sowing and harvesting water from agricultural and high Andean areas spanning across all Peruvian land, and primarily favouring farmers with lower levels of economic income in situations of poverty or extreme poverty.

In 2015, the Ministry of Environment awarded CCAIJO with the National Environment Award “Antonio Brack Egg” for its support in improving the environmental conditions and its action against climate change in rural areas through its projects “Sowing and Harvesting Water in the Quispicanchi Province of Cusco”.

Peru is currently experiencing the start of a new government, one of the most noticeable announcements is the implementation of a “second agricultural reform” aimed at prioritising family farming within public policy, and one of its main components is the harvesting of water. With this in mind, following requests from farmer organisations, the rural communities and the Ministry of Agricultural and Irrigation Development, CCAIJO is participating in the design of this policy.

A Space for Mutual Learning

In the last two decades, the rural communities of Quispicanchi have become a preferred place to visit. Hundreds of farmers, leaders of farmer organisations, rural community directives, public and private institutional professionals, regional and municipal authorities, from towns of Quispicanchi, from the region and country have come and witnessed the experience from a social, technical, or budgeting perspective in order to replicate the project in other areas.

Within the communities there are leaders capable of receiving visitors and explaining the components of the project and of managing the required conditions to carry out the water harvesting. They have the capacity to reveal and suggest the effective route before the relevant entities and they know the procedures for establishing the organisation of water harvesting management.

Learning from the Experience

To conclude with this brief description of the experience, we can confirm the importance of the participation of the producers, highlighting it as a fundamental strategy in the development and sustainability of water harvesting. During the experience, we have supported producers who identified and prioritised the problem. It is directly from these producers that the idea of the project came about. Organised producers designed and planned the project with the facilitation of professionals. It is they who, through their organisations, establish the responsibilities for the duration of the construction. Experienced leaders and managers contribute decisively to the development of water harvesting management mechanisms. In other words, the organised producers were the protagonists and to them we attribute the sustainability of this answer to their strategic problem.

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Translation Nils Sundermann



From a Desert to a Flowing River: Success story of the Water Man of India, Dr. Rajendra Singh

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He had raised a glass of water for the assembled gathering to see. “This is all the water that I allowed myself to use in a day for many years as I was fighting to bring the waters back into the rivers, to quench the thirst of the parched land” he said, to a stunned audience in Kolkata. That was before he started his formal presentation, exactly 6 years ago, on World Water Day 22 March 2015, when the Waterman of India, Magsaysay Award winner, Dr Rajendra Singh Rana had blessed the Jesuits of South Asia Conference with his presence at the Global Earth Summit that I had organised as the Coordinator of Global Ignatian Advocacy Network-Ecology (GIAN).

The glass was raised not in a toast. It was raised, not for the dramatic effect that it created. Neither was it raised, by a seasoned orator, to attract the attention of the audience before his presentation. The glass was raised from a deep-rooted, all-pervading conviction that forces people to take extreme steps to turn their life’s missions into reality. Dr Rajendra Singh, we realised, was raising the glass as a symbol of his long struggle when he had stood alone, against seemingly insurmountable odds, defiant on the face of collective apathy.

Somehow, when one saw Dr Rajendra Singh with his glass raised that day, with the glint of righteousness in his happy eyes, one instinctively knew that the man’s crusade, however difficult, would be crowned with victory. Somehow, the ending seemed something preordained, tempting the focus back into the story that was to follow.

Before delving deeper into the presentation that Dr Rajendra Singh had made that day that has left a lasting impression on the minds of all of us who were lucky enough to have been present, let us get acquainted with the man. Rajendra Singh (born 6 August 1959) is an Indian water conservationist and environmentalist from Alwar district, Rajasthan in India. Also known as “waterman of India”, he won the Magsaysay Award in 2001 and Stockholm Water Prize in 2015. He runs an NGO called ‘[Tarun Bharat Sangh](#)’ (TBS), which was founded in 1975. The NGO based in a village hori-Bhikampura in Thanagazi *tehsil* (sub-district or a township), near Sariska Tiger Reserve, has been instrumental in fighting the slow bureaucracy, mining lobby and has helped villagers take charge of water management in their semi-arid area as it

lies close to Thar Desert, through the use of *johad*¹, check dams and other time-tested as well as path-breaking techniques.

Starting from a single village in 1985, over the years TBS helped build over 8,600 *johads* and other water conservation structures to collect rainwater for the dry seasons, has brought water back to over 1,000 villages and revived five rivers in Rajasthan, namely, Arvari, Ruparel, Sarsa, Bhagani and Jahajwali. He is one of the members of the National Ganga River Basin Authority (NGRBA) which was set up in 2009, by the Government of India as an empowered planning, financing, monitoring and coordinating authority for the Ganges (Ganga), in exercise of the powers conferred under the Environment (Protection) Act, 1986. In the UK he is a founder member of an NGO called the Flow Partnership which aims to counter the negative effects of soil erosion and flooding.

Going back to the presentation that Dr Rajendra Singh had made that day, which was an eye-opener, he talked about how age-old traditional methods of water conservation were gradually pushed out as authorities had ostensibly taken charge and the so-called “modern” methods were put into place. It was a tragic tale, but also one that was pregnant with possibilities, one that could be related to and from which lessons could be taken at multiple levels. Water harvesting in India, we learnt again, has always been a community effort in which all local stakeholders are traditionally involved. The key features of such an operation have, down the ages, been the use of local resources and age old techniques; operation driven by full participation of the community; decentralised to have grassroot democracy with community led management of water allocation and use; and finally, the conservation and disciplined use of natural resources.

Dr Singh pointed out that the system had imploded over the years due to a number of reasons which were not addressed with the immediacy they required leading to the rivers drying up completely. The reasons, as he so lucidly pointed out were many – population explosion – both of humans and of livestock leading to overgrazing; the change in water extraction technologies leading to unchecked extraction of water from subsequent deeper levels; a complete change in the paradigm of development; takeover (and often callous abandonment) of community functions; creation of a dependency syndrome; complete destruction and disintegration of community institutions; a gradual loss of interest and often necessary skill of the people to address common issues and finally, a total disregard for and neglect of traditional systems. The result was catastrophic. The rivers dried up. Desertification continued its march unchecked and land which were once arable became fallow – multiplicity of destruction began to manifest itself, quietly spreading its tentacles.

Dr Singh then proceeded, in his inimitable way, to explain how he had organised the grassroots stakeholders and the steps taken to arrest the march of the desert and the painstaking reclamation, over a period of time, of what was to most, irretrievably lost. The remarkable story that he had recounted, backed by necessary data and visuals, was one that

¹ A *Johad*, also known as a *pokhar* or a percolation pond, is a community-owned traditional harvested rainwater storage wetland principally used for effectively harnessing water resources in the states of Haryana, Rajasthan, Punjab, and western Uttar Pradesh of North India.

is too detailed to be recounted here, within the confines of this piece. However, what needs to be pointed out is that the resilience and the fortitude with which the task was relentlessly continued and achieved, over a period of more than a decade and a half, is one that has spawned many lessons. Traditional ways of living a life one with nature, is still the best option. The knowledge that our ancestors have bequeathed, can be sacrificed on the altar of misplaced development only at the risk of destroying the fragile ecological balances that have taken millions of years to develop. Stakeholders are the first line of defence against natural implosion and are without doubt the best people to lead the fight against environmental denigration. Developmental paradigms, imposed from above run a high risk of failure, as, without stakeholder participation, they tend to end up with misplaced priorities and end up being like runoff rainwater – the opposite simpler projects conceived and implemented ground up, with awareness of nature hold all the promise.

Dr Singh has proved what he has preached. The results are there for all to see. The point is, are we ready to understand and learn the lessons that he teaches. Are we even willing to make the sacrifices needed to replicate his successes, and think of spreading the lessons far and wide? Or are we going to continue the looting that parched land?

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