SOCIAL INNOVATION IN HEALTH INITIATIVE

HOLISTIC WATER SYSTEMS FOR PUMPING WATER UPHILL, PHILIPPINES

CONTINENT	Asia
COUNTRY	Philippines
HEALTH FOCUS	Neglected tropical diseases, Water and sanitation
AREAS OF INTEREST	Access to quality water, community mobilisation
HEALTH SYSTEM FOCUS	Access to quality water, community mobilisation

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HOLISTIC WATER SYSTEMS FOR PUMPING WATER UPHILL, PHILIPPINES

The *Holistic Water Systems for Pumping Water Uphill*, also known as the AIDFI ram pump program, features a hydraulic ram pump model that pumps water uphill to remote upland communities, helping improve the lives of rural villagers in terms of health, nutrition, and sanitation. AIDFI's approach of involving communities in the installation, maintenance, and management of ram pumps has empowered upland villagers with valuable skills, making them more self-reliant in ensuring the functionality of their water supply systems.

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CONTENTS

ABBREVIATIONS

AIDFI	Alternative Indigenous Development Foundation, Inc.
LMICS	Low- to middle-income countries
NFSW	National Federation of Sugar Workers
NGO	Non-governmental organisation
WASH	Water, Sanitation, and Hygiene
WHO	World Health Organization

CASE SUMMARY

Thousands of villages in the Philippines do not have access to safe, potable water as they are topographically situated above existing water sources. This makes it difficult for villagers to access water, often leading them to resort to trekking through dangerous mountain paths to fetch water manually. Limited and unsafe water resources result in numerous health issues, including waterborne diseases such as diarrhea, amoebiasis, cholera, typhus, and schistosomiasis.

To help villages across the country gain access to clean and safe water, the Alternative Indigenous Development Foundation, Inc. (AIDFI) developed a hydraulic ram pump that pumps water uphill to remote upland communities, tremendously improving the villagers' health, nutrition, and sanitation. Operating out of Bacolod City, AIDFI focuses on technological innovation, social enterprise, and community development to create sustainable solutions for marginalised populations. The organisation envisions a society where technology and development systems coexist harmoniously with nature, forming the foundation for sustainable growth.

AIDFI's ram pump program is a social innovation that facilitates reliable access to clean water, thereby decreasing the incidence of water-related illnesses, thus alleviating pressure on healthcare facilities and resources. Ram pumps are hydraulic devices that harness the kinetic energy of flowing water to transport it to higher elevations without relying on external power sources. This ram pump program features several qualities—sustainability, community empowerment, scalability and replicability, and resilience to climate change. AIDFI's approach also goes beyond the installation of infrastructure. The organisation actively involves communities in the process, fostering a sense of ownership and empowerment. Through skills training and capacity-building programs, AIDFI ensures that communities are equipped to manage and maintain their water systems effectively.

As of this writing, AIDFI estimates that over 28 billion liters of water has been delivered to over 595 communities, totalling to an estimated 295,000 beneficiaries of the program. AIDFI has also done complete technology transfer to Afghanistan, Colombia, Mexico, and Nepal.

This innovation has become a beacon of sustainable and community-driven development, and has had a profound impact on communities living in upland areas in the Philippines in terms of water accessibility and security, health and sanitation, agricultural productivity, and community empowerment. AIDFI's approach to involving communities in the installation, maintenance, and management of ram pumps has empowered upland villagers with valuable skills, becoming more self-reliant in ensuring the functionality of their water supply systems. This innovation has received recognition and awards for its impactful approach, most recently, the Climate Action of the Prince Talal Prize and the Mohammed bin Rashid Al Maktoum Global Water Award.

1. INNOVATION AT A GLANCE

Organisation details

Organisation name	Alternative Indigenous Development Foundation, Inc.
Founding year	1992
Founder name	Auke Idzenga*, Leonidas Baterna**, Gina Veloria**, Edmund Villorosa**
Founder nationality	*Dutch (Netherlands), **Filipino (Philippines)
Current head of organisation	Engr. Christopher Taclobos (President), Auke Idzenga (Co-Founder and CEO)
Organisational structure	Nongovernment organisation
Value proposition	Holistic Water Systems for Pumping Water Uphill, also known as the AIDFI ram pump, is a hydraulic ram pump model that pumps water uphill to remote upland communities, helping improve the lives of the villagers in terms of health, nutrition, and sanitation. AIDFI's approach of involving communities in the installation, maintenance, and management of ram pumps has empowered upland villagers with valuable skills, becoming more self-reliant in ensuring the functionality of their water supply systems.
Size	28 employees in the Philippines: 11 employees in the organisation 17 project-based employees
Main income streams	Donor grants (the main funder is The Coca-cola Foundation Philippines, Inc,), small donations, and revenue from products and services.
Annual expenditure	Between PHP 18,000,000 to PHP 25,000,000

Operational Details

Country/countries of operation	Philippines
Types of Beneficiaries	Poor communities in rural upland villages across the country
Number of beneficiaries	303,000 individuals from 602 villages as of 2024
Innovative Elements	• A locally sustainable ram pump model–made from locally available and recyclable materials–adaptable to various geographical and environmental conditions • A holistic approach that fosters a sense of ownership within communities • A community-direct approach that empowers communities to actively participate in their own water system management
Scaling Considerations	The AIDFI ram pump program has proven to be scalable in both local and international contexts. Various ram pump projects have been implemented in the Philippines, and complete technology transfer has been done in Afghanistan, Colombia, Mexico, and Nepal.

Sustainability Considerations	Long term partnership with the Coca-Cola Foundation Philippines; operations are also sustained through a stream of grants and donor funding.

2. CHALLENGE

The Philippines is an archipelagic nation, consisting of over 7,600 islands and home to more than 110 million people. With a diverse and rapidly growing population, the country faces unique social and economic challenges, including income inequality, rural poverty, and vulnerability to natural disasters. As a developing economy, the Philippines has seen significant growth in recent years, however, disparities in access to resources persist, making social innovation a crucial tool for addressing systemic issues and fostering inclusive development.

Water, sanitation, and hygiene (WASH) in the Philippines is characterised by both progress and challenges. While there are efforts to improve access to clean water and sanitation facilities, there remains significant disparities between rural and urban areas, as well as among different provinces in the country (WHO-UNICEF, 2017). This is particularly true among remote and marginalised communities living in rural, upland areas, of which many rely on unimproved water sources, such as springs or unprotected wells that pose risks of contamination and waterborne diseases.

Thousands of villages in the Philippines do not have access to safe, potable water as they are topographically situated above existing water sources. Limited and unsafe water resources result in numerous health issues, including waterborne diseases such as diarrhea, amoebiasis, cholera, typhus, and schistosomiasis (Wolf et al., 2023). These infections are caused by a number of viral, bacterial, and parasitic organisms in communities where there is inadequate sanitation, hygiene, and a lack of safe water for drinking, cooking, and cleaning (Chan et al., 2021). Without intervention, waterborne diseases can lead to impaired immune function and chronic diseases (van Riet et al., 2007). Moreover, the social costs of WASH-related diseases include decreased wages or livelihood opportunities and productivity loss (Lenk et al., 2016). Gender significantly influences how individuals, particularly women and girls, experience and contribute to WASH-related issues. Women and girls are largely considered as primary caregivers and are responsible for managing household water and sanitation needs. These gender roles that assign women the responsibility of fetching water, often result in time-consuming and physically demanding tasks, impacting their overall well-being, their opportunities for education, and income-generating activities (WHO, 2017).

As low- to middle-income countries (LMICs) grapple with enduring health challenges, including those related to WASH, social innovations in health arise as mechanisms to confront multifaceted issues in ways that are both responsive and transformative. One such innovation is the Holistic Water Systems for Pumping Water Uphill (also known as the AIDFI ram pump program), which was initiated by the Alternative Indigenous Development Foundation, Inc. (AIDFI), to address the lack of access to safe, potable water in communities across the Philippines. The innovation features a hydraulic ram pump made from locally available and recyclable materials to provide clean water to communities. According to the CEO,

"The ram pump program [is] not purely a health program, our main goal was really to trigger

development. Further development connects to health and nutrition, not only access to water, but also improving volume which enables us to use it for agriculture, for sanitation, and other things." (CEO and Co-Founder of AIDFI)

This demonstrates how an innovation, which can be viewed as technical and technology-centric, would be transformed into a holistic program that takes into consideration the social, economic, and cultural aspects that shape communities.

3. INTERVENTION

The AIDFI ram pump program is the organisation's flagship program that features a combination of technical and organisational interventions to ensure that water is delivered to upland communities without the use of fuel or electricity. As of this writing, more than 1,000 locally manufactured ram pumps have been installed to more than 595 communities, benefiting an estimated 295,000 people.

3.1 THE RAM PUMP MODEL

Relatively unknown despite existing for over 240 years, AIDFI describes the ram pump as a *"forgotten technology",* and that the ram pump is a *"very old technology which, despite being unbelievable, never had the real chance to spread since it had a wrong timing in history."*

Ram pumps are hydraulic devices that utilise the kinetic energy of flowing water to pump it to higher elevations without the need for external energy sources (Guo et al., 2018). They are installed in areas with free-flowing water such as streams or rivers. It works in a cycle of operation, beginning with water flowing downward from the water source into a feed well. The flowing water then travels through a drive pipe. The drive pipe directs the water to the pump's main chamber. The pressure buildup in the main chamber forces a valve in the delivery pipe to open, pumping a portion of the water to a higher elevation into the villages. As redesigned by AIDFI, their version of the ram pump can lift a volume of 1,500 to 72,000 liters of water per day.

According to AIDFI, since the ram pump is powered by water itself, it does not pollute or produce waste. This technology has been transformative for remote upland communities, providing them with reliable access to water for hygiene and sanitation, domestic use, agriculture, and livestock (Guo et al., 2018).

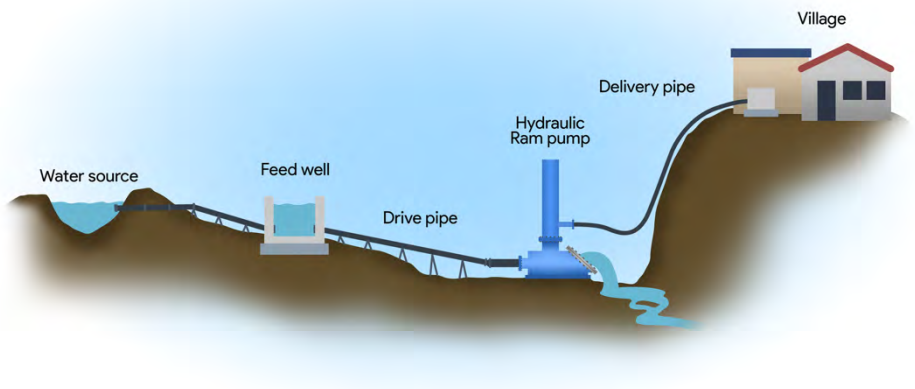

Figure 1. AIDFI Ram Pump Diagram

3.2 AIDFI'S HOLISTIC APPROACH

The social innovators of AIDFI are fully aware that the lack of water in upland communities makes people disadvantaged in multiple ways. It was thus very intentional to design a holistic approach, which they do in seven stages: (a) survey, (b) social preparation, (c) prefabrication, (d) installation, (e) monitoring and final inspection, (f) conveyance, and (g) post-project assessment and monitoring.

Survey and Social Preparation

The survey involves all stakeholders from the local community, including the village local government council. Over a 3–5-day survey duration, AIDFI's technical services coordinator and community development coordinator engage in discussions and collaborative planning with the community to outline the water system. Following the survey, a technical study and community baseline are formulated and subsequently submitted to the project's funding entity. The technical study comprehensively details all the essential costs associated with the project.

This is followed by social preparation—a crucial part of the ram pump program aimed at equipping the community with the skills to manage their water system effectively. In this phase, a water association is formed by the community. Once established, the project's legal aspects are facilitated by AIDFI's community development coordinator. This phase also includes comprehensive training for association officers, equipping them with essential management and capacity-building skills to effectively oversee their rural water system. By strengthening their capabilities, the initiative empowers local leaders to make informed decisions, address challenges, and maintain reliable water services for their communities. Upon project completion, the water association receives a comprehensive portfolio containing all essential project documents.

Prefabrication, Installation, and Inspection

The ram pump is an innovative adaptation of a traditional technology, designed for local manufacturing using readily available skills, materials, and spare parts. The model follows a system of centralised quality manufacturing while ensuring decentralised operation, maintenance, and repair. By fully transferring technical knowledge to the community, the design enables villages to sustain and manage the technology independently with low-cost, easily replaceable parts.

Prefabrication is done at AIDFI's workshop in Bacolod City. Throughout this phase, the required prefabricated materials essential for installing the ram pump are prepared before delivery. The installation is then carried out on site, and lasts anywhere between 30 to 120 days. During installation, community members are involved in hauling, pipelaying, or clean-up activities. In particular, two to three community members are trained to be local water technicians and equipped with the skills to maintain the water system, troubleshoot common issues, and conduct necessary repairs. This hands-on training includes technical instruction, practical exercises, and mentorship to ensure they can effectively manage and sustain the system in the long term.

Monitoring takes place concurrently with the ongoing installation to ensure adherence to AIDFI's established standards and quality. Following the completion of the installation, a final inspection team will assess the project to ensure its readiness for handover to the community.

Conveyance, Post-project Assessment, and Monitoring

A conveyance activity is held after the installation and final inspection, wherein the project is formally turned over to the community. During this activity, different stakeholders—such as local water association officers, members, and local water technicians—are also recognised.

Post-project assessment and monitoring occur six months after the official handover of the project. In this assessment, AIDFI conducts an on-site visit to document observable changes. Post-project monitoring is a proactive approach by AIDFI and the water association to measure project impacts. Water associations are equipped with a monitoring app on mobile phones, facilitating data collection on metrics such as water delivery, organisational information, and project impacts.

4. IMPLEMENTATION

4.1 ORGANISATION AND PEOPLE

AIDFI was established and registered as a non-governmental organisation (NGO) in 1992, with a focus on helping rural communities with technological innovation, promoting social enterprise, and fostering community development. The organisation's vision statement expresses their dream of: **"***A society where technology and development systems exist in harmony with nature and serves as foundation of growth and sustainable development where people share and live in abundance and happiness and where there is peace, freedom and equity."*

As for the organisation's mission statement, AIDFI is (a) dedicated to excellence in the development and promotion of appropriate technology and social enterprise for sustainable development; (b) committed to effectiveness and efficiency in development management; and (c) driven to help facilitate empowered communities, gender equity, and cultural diversity.

AIDFI was the brainchild of four innovators who rose from the ranks of the National Federation of Sugar Workers (NFSW), a labor organisation that helped mobilise and educate sugarcane laborers in the midst of the sugar industry crisis in the Negros Island of the Philippines. As one of their founders had experience with the hydraulic ram model, this technology was introduced to the organisation and eventually became its flagship innovation. It took a continuous process of improving, from the development of different models to numerous tests and field implementation—what began as a purely technical innovation then turned into a holistic one.

"If you really look back at the history of AIDFI we really went from one project to another… And those were really minimalist projects, really technical, because [there was] no funding for other things. Then… we developed when we really developed the holistic story." (CEO and Co-Founder of AIDFI)

It is this holistic approach that inspired the seven stages of the ram pump program, which the organisation recognises as a process that truly involves the community. It is working with various communities that keeps the work exciting, and what continues motivating the innovators in their journey.

"The surprise is that it remains exciting… Every time you see that the project is finished and that water is there, you start seeing [new] things." (CEO and Co-Founder of AIDFI)

"There is a sense of fulfillment that we feel when we see in [the community's] eyes that they are truly happy." (AIDFI Operations Manager)

4.2 INNOVATION IN IMPLEMENTATION

AIDFI's ram pump program has demonstrated several commendable qualities—sustainability, community empowerment, scalability and replicability, and resilience to climate change. AIDFI's approach also goes beyond the installation of infrastructure. The organisation actively involves communities in the process, fostering a sense of ownership and empowerment. Through skills training and capacity-building programs, AIDFI ensures that communities are equipped to manage and maintain their water systems effectively.

Technological Innovation in Water Delivery

One of the features that makes AIDFI's ram pump technology innovative is its adaptability to diverse geographical terrains. The Philippines is characterised by diverse geography, including mountainous regions where remote communities reside. AIDFI's commitment to continuous innovation has enabled it to adapt its technology in challenging terrains, bringing water access to areas where traditional infrastructure might be impractical or cost-prohibitive. This adaptability showcases the organisation's ingenuity in tailoring solutions to meet the specific needs of different communities.

Part of continuous innovation is its development of new technology. In 2019, AIDFI introduced the mechanical water kiosk, which facilitates an efficient and fair water collection system. It has replaced communal faucets and resolved the complicated collection system that served as a challenge to the communities. For only one peso, users get 20 liters of water through a gumball mechanism that releases the water mechanically through a three-compartment system.

"So when we think about technical innovation [we think about] social innovation. So there's a reason why we came up with the water kiosk. We developed it because there were problems that we wanted to solve through technical intervention." (AIDFI Chief Operating Officer)

Figure 2. The Mechanical Water Kiosk

Social Preparation and Community-direct Approach

AIDFI implements a community-direct approach through social preparation, which involves organising the community and supporting them towards taking over the ram pump project to guarantee its long-term sustainability. The social preparation also includes training, such as community and enterprise training sessions, wherein community members are taught how to sustain and safeguard the project.

"It's very important also that they understand the process of the project you are presenting... They really feel that it's theirs. So they have to be involved in the entire process. It's not only

the social preparation, but we even involved them in installation, and we have training." (CEO and Co-Founder of AIDFI)

One of the ways by which they involved the community members was by encouraging them to form a community water association. The formation of local water associations has made it easier for the communities to make informed decisions as they implement initiatives and create partnerships with other organisations and communities. There are designated community organisers whose main tasks include inspecting areas that are candidates for the installation of a ram pump and leading social preparation efforts. They also assist in registering for permits with the relevant government agencies and take part in community and enterprise training, where they cover topics such as the maintenance of the ram pump, the creation of policies for water use, and financial matters, among others. However, AIDFI emphasises that they are simply assisting the community so that the community itself will develop a sense of ownership of the ram pump. In the end, it is the community that makes the decisions when it comes to their project.

"We are just assisting them, it's still them who will communicate with the source owners. This is to ensure that the community develops a sense of ownership of the project." (CEO and Co-Founder of AIDFI)

"When it comes to decision making, it's the community that does that. What we do is to assist them and inform them of the objectives of the project, the tasks involved, and letting them know how they will benefit if they take care of the project." (AIDFI Community Organiser)

Another aspect of social preparation is collaboration with other stakeholders, particularly with the local government. This ensures a comprehensive and integrated approach to development, addressing multifaceted challenges that come with water security.

"As part of social preparation, we do a courtesy call to the local village council and the municipal government… We also organise the community by helping them create their local water association, and then to register the association to the DOLE [Department of Labor and Employment] or a government agency." (AIDFI Community Organiser)

Through their ram pump program, AIDFI also plays a vital role in promoting sustainable development and environmental conservation. By providing remote and upland communities with a renewable, gravity-powered water supply, AIDFI reduces reliance on fossil fuels and electricity while ensuring access to clean water for drinking, agriculture, and sanitation. Additionally, since AIDFI promotes community-based maintenance and eco-friendly technologies, they ensure long-term environmental sustainability. Their work empowers local communities to manage their own water systems while preserving natural resources for future generations.

5. OUTPUTS AND OUTCOMES

5.1 IMPACT ON HEALTH, SANITATION, AND HYGIENE

AIDFI's implementation of the ram pump program has been a game-changer for communities facing water scarcity. The ram pump provides a sustainable and reliable source of clean water, eliminating the need for arduous journeys to distant water sources. This fundamental improvement in water access has also directly translated to improved health, sanitation, and hygiene for the community members. For example, consider the data on specific sites in Negros Occidental where AIDFI operates (Table 1).

Table 1. 2020 Health Survey Data on AIDFI's Ram Pump Communities in Negros Occidental

Sites in Negros Occidental	No. of Households	No. of Individuals	Common Waterborne Diseases Yellow - Before Ram Pump Program Green - After Ram Pump Program				
			Stomach Ache	Diarrhea	Eczema	Amoebiasis	Typhoid Fever
La Castellana (8 villages)	505	2,378	277 47	218 39	8 2	11 0	37 0
Murcia (3 villages)	151	602	12 5	10 9	2 0	2 1	0 0
Himamaylan (3 villages)	160	710	74 13	50 11	2 0	18 2	1 0
Salvador Benedicto (1 village)	58	255	12 2	19 1	0 0	0 0	0 0
Talisay (1 village)	53	237	25 11	15 5	0 0	0 0	1 0
Toboso (1 village)	210	882	23 3	45 16	6 5	19 3	0 0
Total	1,137	5,064	423 81	357 82	18 7	50 6	39 0

Based on 2020 data from the upland communities in Negros Occidental, 1,137 households previously sought water from water sources such as springs or rain. Prior to the ram pump program, a total of 423 households were reported to have suffered from stomach ache, 357 households were reported to have experienced diarrhea, 18 households were reported to have eczema, 50 households were ill due to the amoeba, and 39 households were reported to have typhoid fever. Stomach ache and diarrhea were linked to the practice of open defecation, while skin diseases were associated with not being able to bathe regularly. Before the installation of the ram pump, many community members were found to have back and spinal problems from manually fetching and carrying heavy containers of water. The task also posed significant safety risks as they had to walk across slippery and uneven terrain. In addition, community members tended to collect and save water in uncovered containers, creating breeding grounds for mosquitoes and increasing the risk of vector-borne diseases.

"We had no [comfort room] before, because we had no water to use to flush the toilet." (End User and Community Member from Sitio Ananggue)

"[Previously], because [the water source] is far, we needed to schedule our baths… Now, we can take a bath everyday." (End User and Community Member from Barangay Cabagnaan)

After the ram pump program was implemented in the 17 villages, waterborne diseases were reported to have decreased, with only 81 households experiencing stomach ache, 82 households diarrhea, 7 households eczema, 6 households amoebiasis, and typhoid fever reduced to 0. This improvement was attributed to better access to clean water, the subsequent

installation of toilets, and the ability for community members to bathe regularly.

"There was a big difference. There used to be a lot of cases of diarrhea. Now, the water is clean and they give out filters… illnesses are minimised." (Local Water Technician and Community Member from Sitio Ananggue)

Beyond its direct impact on health and sanitation, access to clean water has also expanded livelihood and economic opportunities for participating communities. In Sitio Ananggue, for instance, gardening held little importance prior to the installation of the AIDFI ram pump—no vegetable plots or ornamental plants were visible in the village. Following the installation, residents began engaging in domestic gardening and even ventured into small-scale lemongrass cultivation and essential oil production. This case illustrates how the AIDFI ram pump program not only improves access to water but also enhances agricultural productivity and supports sustainable livelihood development in remote, upland areas.

5.2 IMPACT ON WOMEN AND GIRLS

Traditionally, the responsibility of fetching water has disproportionately fallen on the shoulders of women and girls. These long, arduous journeys to distant water sources consumed hours that affected the time they might have had for education, personal development, or income-generating activities. AIDFI's ram pump program has dramatically altered this dynamic by providing a sustainable and convenient source of clean water, thus enabling women to engage in alternative livelihood opportunities, such as setting up small businesses or selling local desserts and snacks.

"The women have become business-people. There are different types of livelihood activities now. Others are able to sell. If before they needed time to go to the stream [to collect water], now they use that time to sell." (Local Water Association Officer from Barangay Cabagnaan)

"They have businesses here now that they did not have before, like selling halo-halo for local tourists, they take advantage of that opportunity. That's also one way that they get extra income." (AIDFI Community Organiser)

According to one of the AIDFI community organisers, the majority of the board members and the members of the executive committee are women. Aside from being recognised as leaders in their own community, they are also invited to speak about their experiences, which are unique opportunities for women who are otherwise at home.

"They start going into the formation of the association… It's a very democratic process. The community people elect among themselves. Actually, in the past few projects, it's mostly women who are the leader[s]. And that's a natural involvement." (AIDFI Chief Operating Officer)

The women are also able to build social relationships and friendships as officers of the association.

"I am very thankful for the officers of the association. I just send one message to the group chat, and they answer immediately and they come at once." (Local Water Association Officer from Barangay Cabagnaan)

With these components in place, women gain access to resources (e.g., financial, knowledge, social relationships), which help transform communities socially. This is captured in the statement of one of the community members: *"Before, when there was no association, we didn't do any of those activities. Ever since there was an association, we're happy. We are together, we help each*

other. Sometimes we each bring vegetables so that we can cook together—a way of bonding." (Local Water Association Officer from Barangay Cabagnaan)

5.3 ORGANISATIONAL MILESTONES

Through the years, AIDFI has received recognition and has been awarded numerous times for its impactful approach. AIDFI was a recipient of the Ramon Magsaysay Award in 2011, Asia's premier prize for individuals and organisations that have made significant contributions to some of the most intractable problems of human development.

As of writing, AIDFI's accolades include winning first place in the Gelia Castillo Award for Research on Social Innovations in Health (2020); being a finalist for the Zayed Sustainability Prize (2020); winning second place in the World Water Challenge (2020), which is an international contest for water solutions; and being one of the winners of the WHO Western Pacific Innovation Challenge (2022). AIDFI has also been given the Red Award by Good Design Award Philippines (2022), the G-Mark from Good Design Award Japan (2022), the Europa Awards (2022), the Prince Talal International Prize (2022), and the Mohammed bin Rashid Al Maktoum Global Water Award (2023).

5.4 COMMUNITY PERCEPTIONS

While all communities eventually benefit from having a ram pump installed in their village, AIDFI notes that there have been instances where community members hesitated at first, often due to disbelief that a machine requiring no fuel or electricity could actually provide water. As one of AIDFI's staff members shared,

"There were those that did not believe that the water could be pumped upwards. Some even said they would have their fingers chopped off if it was true—they didn't believe that it could be done without electricity. There were also those that didn't believe the project would actually happen, based on other promises made to them before that were not fulfilled." (AIDFI Community Organiser)

However, upon seeing the pump in action, and being able to see water flow upwards to their village, community members started trusting in the technology and are grateful for it.

"I cannot explain their happiness, it was truly a different kind of joy when they gained access to water. I cannot explain fully but you can feel their satisfaction and happiness, the long wait is over." (AIDFI Community Organiser)

The ramp pump has evidently been a great help to the communities, allowing them to spend their time on more meaningful activities instead of fetching water. Being part of AIDFI's holistic process in implementing the ram pump program has also taught community members the value of collaboration and working together.

"AIDFI also taught us that it's important that we help each other, and not to go do things alone." (End User and Community Member from Sitio Ananggue)

6. SUSTAINABILITY

A key factor contributing to the long-term sustainability of the AIDFI ram pump program is its strong emphasis on community capacity building and empowerment. By equipping community members with the technical skills and knowledge to operate and maintain the ram pump, the program ensures that communities can manage their water resources independently. This participatory approach not only strengthens local ownership but also supports environmental sustainability by promoting low-impact, renewable

technologies that harmonise with natural water sources.

With regards to funding, AIDFI has had the longest partnership with the Coca-Cola Foundation. For more than a decade, the Coca-Cola Foundation has helped fund the implementation of 175 ram pumps through their Agos Project.

"Most of our projects are through grants… the longest running partnership we have is with Coca-Cola Foundation in the Philippines. That's the Agos Project. That started in 2012. And until now, we still do projects." (AIDFI Chief Operating Officer)

According to AIDFI's chief operating officer, the organisation needs a minimum of 10 ram pump projects a year in order to maintain its operations. AIDFI continues to sustain their operations mainly through a stream of grants and awards. Some of their alternative income streams include their social enterprises, such as the Wild Geese Cafe in Bacolod City, and lemongrass products from their Essential Oil Program.

7. SCALING CONSIDERATIONS

AIDFI has been involved in implementing hydraulic ram pump projects across various regions in the Philippines. These projects have provided sustainable and efficient water access to around 600 remote and off-grid communities, delivering over 28 billion liters of water to thousands of end-users nationwide.

AIDFI has participated in international projects that involve sharing its successful model and experiences with other organisations and communities worldwide. This knowledge-sharing initiative facilitates the replication of effective solutions in diverse global contexts. Complete technology transfer has been carried out in Afghanistan, Colombia, Mexico, and Nepal. In addition, several ram pump units have been sent to Cambodia, Indonesia, Japan, Malaysia, Costa Rica, Peru, France, Cameroon, and Mozambique.

8. KEY LESSONS

8.1 IMPLEMENTATION LESSONS

Establishing community ownership instills resilience and sustainability

As highlighted in the sections above, AIDFI's approach to community engagement and capacity building is integral to the ram pump program's success. Communities are actively involved in the installation, maintenance, and management of their ram pump. This not only empowers community members, but also helps build their resilience as they become self-reliant in maintaining and sustaining their water systems. By encouraging innovation and collaboration, AIDFI empowers individuals and communities to take ownership of their own development journey.

Establishing community ownership not only helps sustain water systems, but also spurs economic growth and fosters stronger social relationships. By empowering local communities, particularly women and marginalised groups, to take on leadership roles, the initiative ensures a more inclusive and resilient approach to development. These groups play a crucial role in decision-making, resource management, and maintaining community cohesion. Furthermore, AIDFI collaborates closely with local governments and organisations, ensuring that the technology and knowledge transfer align with local policies and support systems. This collaborative effort enables communities to effectively navigate new challenges and uncertainties, promoting long-term sustainability and social equity.

Continuous innovation to trigger further development

Continuous innovation ensures that solutions remain relevant and responsive to the evolving needs of communities. In the context of AIDFI's ram pump program, continuous innovation enables the technology to be refined and improved, making it more efficient, reliable, and sustainable, and ensuring it remains responsive to the evolving needs and challenges of the communities it serves. Furthermore, innovation in implementation involves learning what already works for the community, and simplifying processes in order to guarantee that community members can look after the water systems themselves.

"And this is also our strategy up until now—always see what is already there. Why, why it works, what doesn't work, and how can we localise it, how can we make it simpler, and how can it be operated, repaired, and maintained by the communities themselves." (AIDFI Chief Operating Officer)

By embracing innovation, AIDFI unlocks new possibilities, improves existing solutions, and expands the reach of its impact. In the words of the CEO, AIDFI's projects are designed to *"trigger further development".* In a rapidly changing world, continuous innovation is not just advantageous but imperative for driving positive change in society. Through its pioneering work in ram pump technology and community-driven water systems, AIDFI has provided scalable models that address water scarcity and promote long-term resilience worldwide.

CASE INSIGHTS

1. AIDFI's ram pump program is a social innovation that facilitates reliable access to clean water, thereby decreasing the incidence of water-related illnesses and alleviating pressure on healthcare facilities and resources. The sustainability of the ram pump and other social innovations related to water, sanitation, and hygiene (WASH) ensures long-term benefits for health systems, as communities reap the benefits of clean water even after initial implementation.
2. AIDFI's community-direct approach fosters ownership of social innovations and responsibility for health outcomes, empowering communities to actively participate in their own health management. By engaging locals in the installation, maintenance, and management of ram pumps, AIDFI equips upland villagers with essential skills, enhancing self-reliance in sustaining their water systems.
3. AIDFI's ram pump program is adaptable to various geographical and environmental conditions, making it a scalable innovation to a wide range of communities, especially in underserved areas where access to health services may be limited.
4. The success of AIDFI's ram pump program can serve as a model for integrated development approaches that prioritise both health and environmental sustainability. This offers valuable insights to policymakers addressing WASH and public health challenges. Exploring future directions for such approaches involves creating holistic solutions that connect technology, social enterprise, and community empowerment.

REFERENCES

Chan, E. Y., Tong, K. H., Dubois, C., Mc Donnell, K., Kim, J. H., Hung, K. K., Kwok, K. O. (2021). Narrative review of primary preventive interventions against water-borne diseases: Scientific evidence of health-EDRM in contexts with inadequate safe drinking water. International Journal of Environmental Research and Public Health, 18(23), 12268. https://doi.org/10.3390/ijerph182312268

Guo, X., Li, J., Yang, K., Fu, H., Wang, T., Guo, Y., Xia, Q., & Huang, W. (2018). Optimal design and performance analysis of Hydraulic Ram Pump System. Proceedings of the Institution of Mechanical Engineers, Part A: Journal of Power and Energy, 232(7), 841–855. https://doi.org/10.1177/0957650918756761

Lenk, E. J., Redekop, W. K., Luyendijk, M., Rijnsburger, A. J., Severens, J. L. (2016). Productivity loss related to neglected tropical diseases eligible for Preventive Chemotherapy: A systematic literature review. PLOS Neglected Tropical Diseases, 10(2). https://doi.org/10.1371/journal.pntd.0004397

van Riet, E., Hartgers, F. C., Yazdanbakhsh, M. (2007). Chronic helminth infections induce immunomodulation: Consequences and mechanisms. Immunobiology, 212(6), 475–490. https://doi.org/10.1016/j.imbio.2007.03.009

Wolf, J., Johnston, R. B., Ambelu, A., Arnold, B. F., Bain, R., Brauer, M., Brown, J., Caruso, B. A., Clasen, T., Colford, J. M., Mills, J. E., Evans, B., Freeman, M. C., Gordon, B., Kang, G., Lanata, C. F., Medlicott, K. O., Prüss-Ustün, A., Troeger, C., … Cumming, O. (2023). Burden of disease attributable to unsafe drinking water, sanitation, and hygiene in domestic settings: A global analysis for selected Adverse Health Outcomes. The Lancet, 401(10393), 2060–2071. https://doi.org/10.1016/s0140-6736(23)00458-0

World Health Organization. (2017). Advancing health through attention to gender, equity and human rights : Summary of stories. World Health Organization. https://www.who.int/publications/i/item/WPR-2017-DHS-001

World Health Organization (WHO) and the United Nations Children's Fund (UNICEF). (2017). Progress on drinking water, sanitation and hygiene: 2017 update and SDG baselines. Licence: CC BY-NC-SA 3.0 IGO