DONATION OPPORTUNITY

Portable micro membrane filters

Projeto Saúde & Alegria

SAÚDE & ALEGRIA

doebem

DONATION OPPORTUNITY

Cause area: Lack of access to treated water
Organization: Projeto Saúde & Alegria
Intervention: Portable micro membrane filters

TEAM
Executive Director Gisele Fior
Research Director Luan Paciencia
Researcher Vevila Dornelles

BOARD
Alexandre Teixeira
Elisa Mansur
Lucas Giannini

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Questions and comments are welcome at contato@doebem.org.br

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Executive Summary

doebem's work results in searching for and recommending the best donation opportunities from the cost-effectiveness perspective. Our research into water insecurity in Brazil identified a highly cost-effective intervention that provides significant social impact per Brazilian Real donated. This solution is the portable micro membrane filter distributed by Projeto Saúde & Alegria to communities and traditional peoples in the west of Pará state.

These affordable filters, equipped with ultrafiltration micro membranes, are a proven solution to mitigate water insecurity in places where water is available but unsafe for consumption – the precise context in which Projeto Saúde & Alegria (PSA) operates. The territories where PSA works have high rates of water insecurity and related hospitalizations, yet they receive disproportionately low funding for basic sanitation projects. These factors indicate that donations for PSA filters are likely to be highly cost-effective.

Review highlights:

→ The filters are not only effective but also significantly more cost-effective than other interventions we evaluated.

→ The filters are also highly scalable and can benefit many more people in the medium and long term.

→ The region and the beneficiary public are some of Brazil's most neglected concerning safe water access.

→ PSA is a solid, respected, and capable organization with sound financial and institutional health.

Problem

Water insecurity is a problem that affects more than 33 million people in Brazil, equivalent to 16% of the population. In some states, more than half of the population does not have access to treated water. Every day, more than seven people die due to water related issues. In addition to its impact on physical health, water insecurity affects mental health, food security, income, and education. It can also hinder the country's economic growth. In general, the people most affected by water insecurity are black people and indigenous and live in the North and Northeast regions of the country.

Estimates show that annual investments in basic sanitation in the country need to double more than those made in the last five years to universalize access to water by 2033. This suggests that many will continue to suffer the negative consequences of water insecurity for a long time. Until then, alternative solutions are being implemented to guarantee access to treated water for populations suffering from the problem.

IN GENERAL, THE PEOPLE MOST AFFECTED BY WATER INSECURITY ARE BLACK PEOPLE AND INDIGENOUS AND LIVE IN THE NORTH AND NORTHEAST REGIONS OF THE COUNTRY

Organization

Projeto Saúde & Alegria Project (PSA) has been operating since 1987 in communities in the Brazilian Amazon. It aims to improve the quality of life and promote and support participatory processes of integrated and sustainable community development of the populations served.

PSA operates in the rural areas of the municipalities of Santarém, Belterra, Aveiro, Juruti, and Mojuí dos Campos, located in the west of the state of Pará, within the Legal Amazon. The public benefiting from the PSA mainly comprises traditional and indigenous peoples and communities living along rivers and roads.

Hospital ship of the Saúde e Alegria Project - Abaré Model. (2024). Source: Institutional website.

The PSA's institutional solidity assessment carried out by **doebem** highlights the following points, organized by evaluation criteria:

Legitimacy

The organization has been operating for almost 40 years, is well known in the region, respected in the communities, and actively engaged in addressing primary causes that are its focus.

Credibility

PSA's solid performance is expressed in regionally recognized projects and become models for partnerships with public authorities.

Openness to external audits and evaluations

The organization undergoes regular audits (by public and private bodies) and has already been awarded awards and quality seals.

Sustainability

PSA has dedicated teams and competent partners. It seeks alignment with local knowledge through alliances with social movements and other organizations active in the region. PSA demonstrates correct use of its resources and tends to end the year with a surplus.

Reputational risk

The organization has already undergone investigations that confirmed its integrity and does not present risks that could compromise its reputation or that of its partners.

Transparency

The team regularly produces and publishes activity reports and maintains active, updated communication channels.

Delivery capacity of the operational team

The team is qualified to provide accountability for operational activities but needs more members. PSA leaders are aware of this issue and plan to expand the team.

Strategic use of additional resources

The organization has a clear strategy for utilizing financial resources from new partnerships, irrespective of the available amount.

Hospital ship of the Saúde e Alegria Project - Abaré Model. (2024). Source: Institutional website.

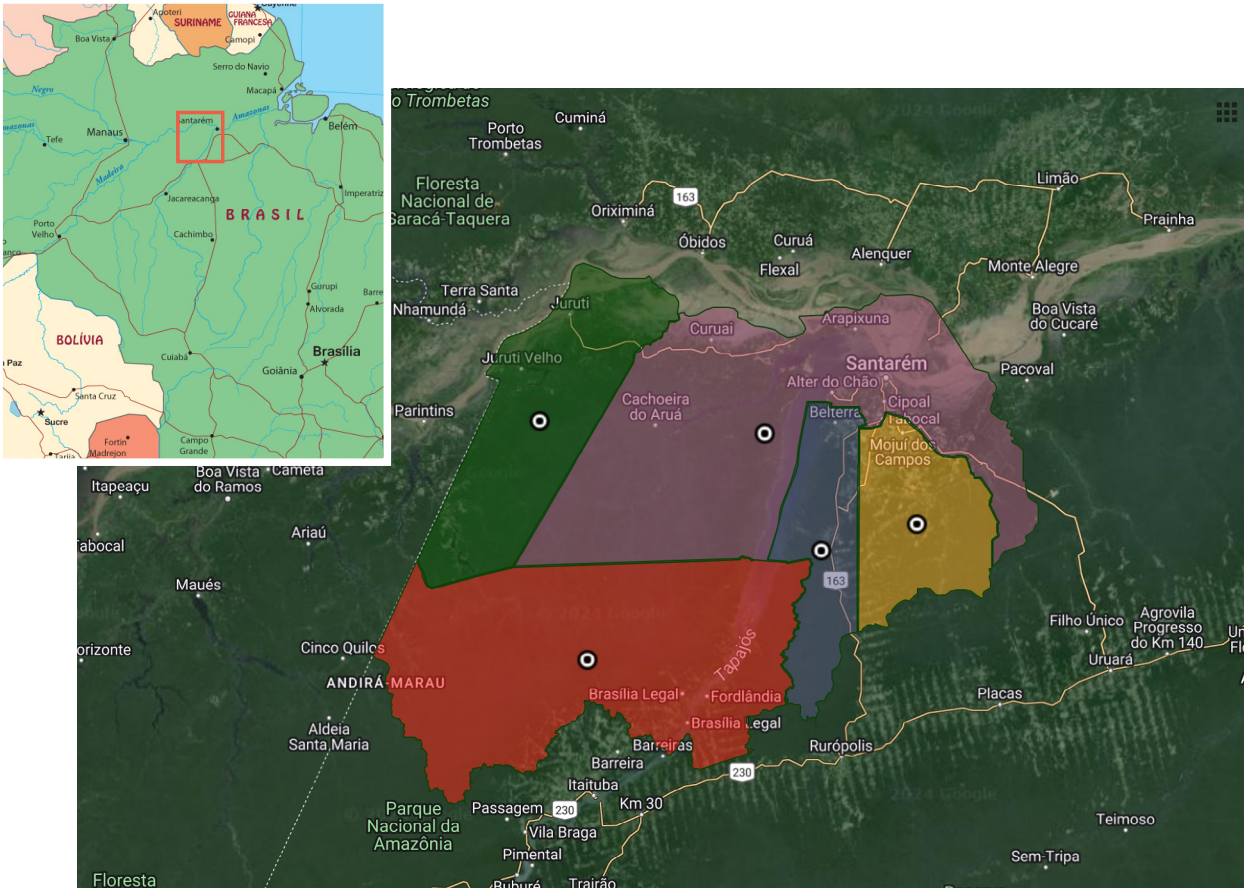
In the evaluation, PSA fully satisfied most of these aspects, with an emphasis on the legitimacy and sustainability of the organization. Two points of attention were mapped during the evaluation process but resolved or forwarded by the organization before the publication of this document: the institutional documents were not published on the company's website, and there was a considerable delay in receiving these documents requested from the organization.

However, before formalizing the partnership, the organization had already updated its website to include activity reports, balance sheets, and external audit reports from recent years. The delay in responding and sending documents also raised concerns about the operational team's ability to fulfill agreements with partners. In a meeting with the organization, there was a commitment to define a focal point with **doebem**, ensuring quick and efficient communication for future demands. In summary, the points of attention raised during the evaluation have already been resolved or addressed, ensuring **doebem** and its donors that this is a solid recommendation.

Implementation territory

PSA works with communities and traditional peoples living in rural, forestry, and riverside areas of Pará in northern Brazil. Pará occupies third place in the ranking of federation units, with the highest percentage of the population experiencing water insecurity — over half of its population lives in these conditions.

Furthermore, it is the second unit in the federation regarding the hospitalization rate for water-borne diseases, well above the national average.



Area of operation of the Saúde e Alegria Project (2024). Source: Institutional website.

PARÁ OCCUPIES THIRD PLACE IN THE RANKING OF FEDERATION UNITS, WITH THE HIGHEST PERCENTAGE OF THE POPULATION EXPERIENCING WATER INSECURITY

The Brazilian Amazon is a territory rich in water resources, with many rivers, lakes, and streams surrounding the communities. However, water insecurity is significant due to the quality of the water, which is generally unfit for human consumption as it contains sediments, organic matter, industrial or agricultural pollutants, or even sewage contamination. In this sense, filters are strategic solutions for this context.

Furthermore, PSA's strategy of working in rural areas, which have higher rates of water insecurity than urban areas, and serving traditional people and communities markedly more susceptible to the problem allowed us to focus donations on those who need them most.

Intervention

Portable micro membrane filters use advanced technology in which 0.1µm ultrafiltration nanotubes remove up to 99% of harmful microorganisms from water. Currently, the filters are imported and have a total unit cost, including logistics expenses, of approximately R$ 213 (USD 42.6[I]). Each filter can serve an entire family with an average of 5 individuals and, due to local conditions, where the available water contains a significant volume of sediments and organic matter, has a useful life of 2 and a half years.

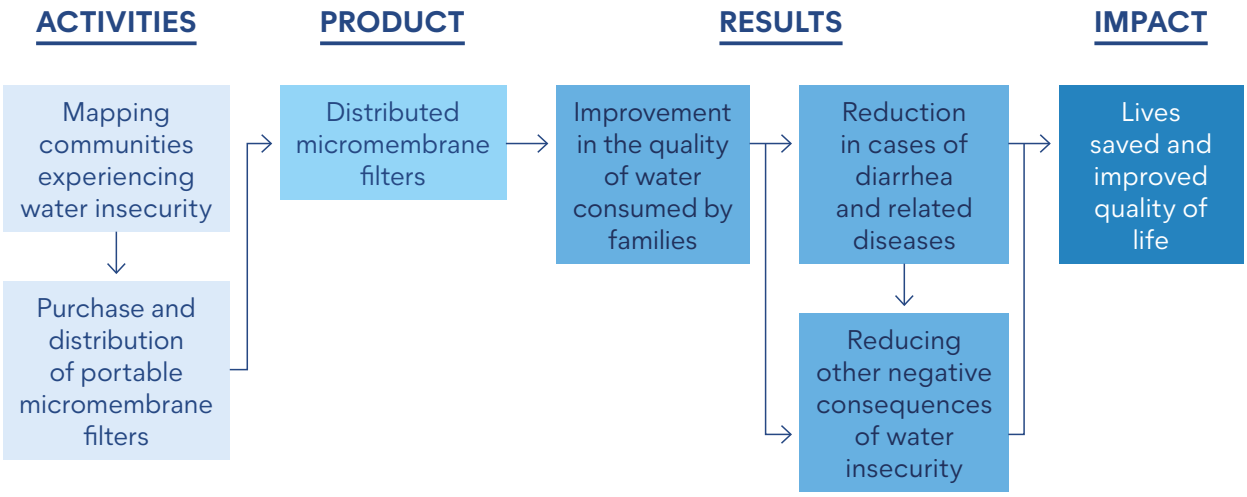
[I] Exchange rate of 1 USD = 5 BRL used as an estimate for reference, based on the average value over the past 5 year. For a more precise estimate, we suggest performing the conversion at the time of reading due to the significant volatility of the BRL-USD exchange rate.

↘
Portable filter for individual or family use (2024). Source: Projeto Saúde e Alegria.

↘
Before and after - water collected at the source compared to the same water after using the portable filter (2024). Source: Projeto Saúde e Alegria.

EACH FILTER CAN SERVE AN ENTIRE FAMILY WITH AN AVERAGE OF 5 INDIVIDUALS

Once delivered to communities experiencing water insecurity, the filters allow families to transform previously undrinkable water from rivers, lakes, and streams into safe drinking water. This improvement in water quality results in a reduction in cases of diarrhea and other related diseases, as well as a reduction in other problems generated by the lack of access to treated water, such as school absences, decreased productivity, and impacts on the mental health of individuals. Such results ultimately reduce premature mortality and improve individuals' quality of life.



Theory of change summarized from the intervention carried out by Projeto Saúde & Alegria.

Evidence of impact

Studies show that filters significantly impact mitigating the negative consequences of water insecurity, notably by reducing cases of diarrhea, the most common water-borne disease. Diarrhea can aggravate and generate other diseases and even lead to individual deaths.

Filtration is the most cost-effective among existing and commonly implemented solutions for treating water for human consumption. In addition to being cheap and effective in reducing contamination, it significantly improves the appearance of water, making it preferred among users and, therefore, more commonly used in everyday life.

A randomized impact assessment in the Dominican Republic demonstrated that portable micro membrane filters, when used in homes, reduced cases of diarrhea by 62%[2].

By the end of 2024, the Brazilian Ministry of Health recognized the high efficiency of filters in removing pathogens and harmful particles, thus making surface water effectively safe to drink. In a technical note, the Ministry states that the use of the micro membrane filters significantly contributes to the safety of the water available in areas with restricted access, as well as during crises, and recommends its use in conjunction with water disinfection strategies (i.e. added chlorine).

[2] Click to read more: Tropical Medicine and Health

Cost-effectiveness

Through cost-effectiveness analysis, **doebem** calculates the relationship between the impact generated by the intervention and its costs. To this end, variables such as characteristics of the intervention, institutional strength of the organization, and health and socioeconomic conditions of the benefited communities are considered, in addition to reference studies that estimated the impact of similar interventions through robust methodological strategies.

The filters' impacts were estimated considering their causal effects on reducing morbidity and mortality caused by diarrhea and other related diseases, saving on medical expenses, and increasing individuals' education and salary.

After applying the model calibration factors[3], it is estimated that the filters reduce diarrhea cases by 48%. Compared to the counterfactual, which would be to continue living in water insecurity, the income of those who use the filters would increase by 5%. Finally, it is estimated that filters are linked to an average increase of 0.3 years of schooling.

Simulating an arbitrary donation of R$ 100,000 (USD 20,000), these impacts would be linked to 13 DALYs[4] avoided. This same donation would cause a reduction of more than 700 cases and seven hospitalizations for diarrhea and related illnesses per year. Consequently, there would be a total saving in medical expenses (outpatient care and

[3] Weighting coefficients used to better transpose the impact observed in the reference study to the context of the evaluated intervention. They are: territory, time, population, intervention and institutional solidity.

[4] Daly stands for Disability-Adjusted Life Year. One Daly represents losing one year of healthy life due to illness, injury, or health conditions. It is a measure that combines the impact of premature mortality and morbidity into a single metric.

hospitalizations) of R$ 4,400 (USD 880) per year, which, converted[5] into measures of morbidity and mortality, would be on the order of 1 DALY. The additional years of schooling are estimated to generate an income increase of R$ 39 (USD 7.8) per individual in present value, equivalent to 1.8 total DALYs. Furthermore, the direct income impact on individuals' income would be R$ 164 (USD 32.8) per year, which, when brought to present value, would reach R$ 283 (USD 56.6), equivalent to 49 DALYs.

Thus, it is estimated that R$ 100,000 (USD 20,000) would prevent 65.3 DALYs in total; that is, a donation of R$ 1,500 (USD 300) would promote a year of healthy life for an individual who would have died or suffered from the consequences of water insecurity if they had not received portable micro membrane filters. This result is between 4.8 and 10.3 times better than other donation opportunities evaluated by **doebem**.

5 Conversion carried out through moral weights, which are correspondence factors based on ethical values or personal preferences that individuals or societies have to compare impacts of different natures.

Financing opportunities

The PSA is expanding to other municipalities and communities and will increase its reach by thousands of people in the coming months. In the short and medium term, PSA has plans to expand its operations to additional communities that are currently underserved, such as the indigenous village Munduruku, Murucutu Island, and other communities in greater Santarém. Together, they bring at least 2 thousand families that could benefit as soon as there is investment. The resources needed to implement this plan would be R$ 426,000 (USD 85,200).

In the medium and long term, the organization can expand this distribution to other communities yet to serve and effectively operationalize additional investments of around R$ 766,800 (USD 153,360) annually.

IN THE MEDIUM AND LONG TERM, THE ORGANIZATION CAN EXPAND THIS DISTRIBUTION TO OTHER COMMUNITIES YET TO SERVE

Highlights

→ **Cost-effectiveness:** filtration is the most cost-effective technique for solving the challenge of water treatment and promoting water security in communities where access is not a problem, such as the communities served by PSA.

→ **Efficiency:** the portable micro membrane filter distributed by PSA uses cutting-edge technology proven to eliminate up to 99% of harmful microorganisms present in water.

→ **Scalability:** filters are highly scalable solutions, and increased donations can benefit a much larger number of people experiencing water insecurity.

→ **Region of operation:** the North region and the state of Pará stand out for having higher percentages of the population without access to treated water than the national average. Furthermore, they are relatively more neglected places in terms of investments than the rest of the country.

→ **Target audience:** water insecurity is disproportionately higher among self-declared indigenous people, who are the PSA's priority audience.

→ **Good institutional reputation:** PSA has a history, legitimacy, and solid performance in the Brazilian Amazon.
Good institutional health - The PSA's financial, technical, and political health is good and verifiable.

→ **Transparency:** the PSA undergoes recurring external audits to certify its legal compliance and credibility.

→ **Technical capacity:** the PSA team demonstrates technical capacity and in-depth knowledge of the territories where they operate.

Points of attention/ uncertainties

→ **Intervention strategy:** although efficient and cost-effective, filters are a secondary strategy still gaining importance within the organization.

→ **Challenges with communication and access to documents:** throughout the evaluation process, we had difficulties communicating with the organization and accessing institutional documents. Despite these difficulties, the **doebem** team had access to the documents in time to complete the evaluation and, more recently, received with satisfaction the news of the documents' publication on the institutional website.

→ **Effectiveness dependent on proper use:** filters' effectiveness is intrinsically related to their good use. The PSA guides families on using and maintaining filters upon delivery; however, there are no monitoring strategies to ensure the proper use of filters.

→ **Dependence on external partners:** currently, micro membrane filters result from an institutional partnership and are imported by PSA. This purchasing process can be a bottleneck in their acquisition and distribution. Recently, PSA successfully exempted filters from import taxes, which can significantly reduce their cost.

→ **Other problems related to water insecurity:** although effective in reducing cases of diarrhea, filters do not solve all the problems caused by water insecurity in communities: the absence of safe sources of water in the communities served keeps the population in productive difficulties and inequality of gender.

Questions and answers

WHY MEASURE THE IMPACT OF FILTERS IN DALYS?

DALY is a metric commonly used to evaluate and mainly compare interventions from the point of view of cost-effectiveness, as it encompasses both mortality and morbidity aspects in a single measure.

WHY IS AN R$ 1,500 (USD 300) INVESTMENT REQUIRED TO GENERATE 1 DALY IF THE FILTERS COST R$ 213 (USD 42.6) AND REACH FIVE PEOPLE?

doebem's cost-effectiveness analysis applies the concept of counterfactual to estimate the expected impact of donation opportunities. That is, it compares what happened to people who received the intervention with what would have happened if they had not received it. As not all people who receive the filters will have diarrhea and suffer its consequences if they do not receive them, it is necessary to make this discount to estimate the expected impact of the filters. In short, it is a rigorous way to measure the real effect of donations more accurately.

HOW CAN I BE GUARANTEED THAT MY DONATION WILL BE USED TO DISTRIBUTE THE FILTERS?

doebem monitors donations with partner organizations to check the effective use of donations and analyzes the organizations' financial statements and activity reports periodically to maintain the partnership. Additionally, it updates the assessment of the donation opportunity every, on average, two years.

WHAT IS DONE WITH THE FILTERS AFTER 2.5 YEARS?

After 2.5 years, the filters must be discarded in an appropriate place and replaced with new ones or, in the best case scenario, kept with the same families that would only receive new micro membranes, which are cheaper, reduce waste disposal, and extend the lifespan of filters, increasing their cost-effectiveness. As filters are recent solutions implemented by PSA, this moment has not yet arrived in the communities served by PSA.

> DOEBEM'S COST-EFFECTIVENESS ANALYSIS (...) COMPARES WHAT HAPPENED TO PEOPLE WHO RECEIVED THE INTERVENTION WITH WHAT WOULD HAVE HAPPENED IF THEY HAD NOT RECEIVED IT

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Donate to **Effective Fund** and support this intervention.

R$ 17 (USD 3.4)
→ provides one year of potable water for one person

R$ 85 (USD 17)
→ provides one year of potable water for one family

R$ 213 (USD 42.6)
→ allows the delivery of one portable filter to one family

R$ 1,500 (USD 300)
→ prevents the loss of one year of healthy life due to premature death or disability caused by water insecurity

Acknowledgments

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