

Mobilising investments for water and sanitation enterprises through carbon credits



Introduction

Carbon credits can provide additional revenue streams for water and sanitation small and medium enterprises (SMEs) that contribute to mitigating climate change.¹ These SMEs, however, lack knowledge and capacity to mobilise carbon finance. Besides, carbon credits buyers and funders need to get a better understanding of the opportunities and challenges for developing a thriving carbon market in the water and sanitation sector.

Since 2013, Aqua for All has financed carbon credits trajectories in Ethiopia and India. Aqua for All considers carbon credits a catalytic instrument to support water and sanitation SMEs to scale and attract investments by increasing their profitability and sustainability.

This paper summarises Aqua for All's learnings and identified opportunities to generate carbon credits by water and sanitation SMEs. It is based on Aqua for All's experience in carbon finance and the findings of a study on carbon finance opportunities for the water and sanitation sector in collaboration with FairClimateFund.

What are carbon credits?

Carbon credits are a tradable certificate that help companies compensate for their CO₂ or other greenhouse gas (GHG) emissions as part of their sustainability agenda. Depending on the industry, carbon offset can be mandatory or voluntary.

Carbon credits are also a market-oriented mechanism which requires quantifying GHG emissions and mobilising investments in carbon-mitigating interventions. This contributes to reducing GHG emissions and obtaining additional revenues for certified GHG-mitigating initiatives. Emission reductions are calculated by comparing the emissions caused by a specific initiative (project emissions) against emissions caused in a plausible baseline scenario (baseline emissions) without the initiative. For this calculation, one carbon credit equals one metric tonne of reduced CO₂ emissions, or an equivalent amount in another GHG.

¹ Small and medium enterprises working in the business of water purification, waste management and allied sectors.

A tradeable carbon market has the potential to drive industrial and commercial processes towards less carbon intensive approaches. It also allows individuals and companies to offset their emitted GHGs more easily. Through this tradeable carbon market, investments can reach those who are most vulnerable to the consequences of climate change.

Carbon credits and the water and sanitation sector

Carbon credits can be claimed for several types of water and sanitation initiatives. These initiatives can range from household-level biogas plants and composting units to household water filters and rehabilitated boreholes with chlorine dispensers.

According to the Gold Standard registry,² a growing number of water and sanitation initiatives are getting certified for carbon credits as they contribute to reducing GHG emissions and mitigating climate change. Some examples include reducing kerosene or fuel consumption to boil water to make it safe, avoiding methane emissions by treating organic and human waste (instead of dumping it into a landfill), and replacing wasteful fuel types such as charcoal by biomass fuels.

The carbon market kicked off in 2005 as part of the Kyoto Protocol. Since then, it has developed significantly, especially the voluntary carbon market. Many businesses, organisations and individuals currently look for high-quality carbon offset projects. These initiatives have quantifiable and verifiable additional impacts on the Sustainable Development Goals (SDGs) and their direct community. Impact on SDG 6 – Clean water and sanitation – progresses in parallel with significant impact on climate action-related SDGs. This is because many water and sanitation SMEs develop change mitigation and adaptation strategies to manage risks and ensure continuity of their services.

Under the 2015 Paris Agreement, more developing countries have started to review and develop national action plans to reduce the risks and consequences of climate change. In this context, carbon credits offer significant opportunities to leverage finance for improving access to safe water and waste management practices that contribute to climate change mitigation. This additional funding can help water and sanitation SMEs improve their financial sustainability and viability, scale up and attract investments. Carbon credits can therefore be instrumental to sustainably improve access to safe water and sanitation, especially for people on low-incomes and in rural areas.

Accessing carbon finance

The choice of getting a carbon credit certification must be based on the potential for generating credits and their market price compared to the total monitoring and certification costs, which can be significant. For a microscale project, with a maximum of 10,000 credits issued annually, this could be an option when at least 5,000 tonnes of CO₂ are certified per year.

² <https://registry.goldstandard.org/projects?q=&page=1>



Furthermore, any carbon initiative must prove that carbon finance is crucial to make it financially viable. This is called 'the precondition of additionality': A credit is considered additional if the emissions reduction that underpins the credit would not have occurred in the absence of the activity that generates the credit (the business-as-usual scenario).³

Water and sanitation SMEs need support to assess their potential for attracting carbon finance and for using revenues from carbon credits to become sustainable. For almost a decade, Aqua for All has supported these enterprises to build capacity on both aspects as part of its comprehensive approach bridging the service and financial gaps to achieve SDG 6.

Drinking water

A water initiative can claim carbon credits if it eliminates the need to boil water to make it safe to drink. Boiling of water increases (fossil) energy consumption. Depending on the cooking methods, it could also lead to deforestation and wasteful charcoal production.

Several drinking water initiatives offer alternatives to boiling water. Safe water enterprises (SWEs) use treatment methods like chlorine to provide safe water (Figure 1. Household water treatment and safe storage (HWTS) systems, like water filters, treat the water at water point of use (household level). Other enterprises focus on rehabilitation of boreholes with built-in chlorine dispensers. Drinking water initiatives, especially borehole rehabilitation projects, are producing more carbon credits than other initiatives in the water and sanitation sector. Under the Gold Standard, the number of water purification projects increased from 83 projects in 2018 (1.3 million tonnes in CO₂ emissions avoided) to 185 projects in 2019 (1.4 million tonnes in CO₂ emissions avoided).¹

The number of carbon credits that can be claimed depends on local cooking methods (for example, electric, charcoal or wood) and on deforestation rates in the country of implementation. Water treatment methods, such as HWTS, can offset up to 500g of CO₂ per litre of water not boiled in implementation countries where charcoal is used in cookstoves and deforestation rates are high, rendering 0.0005 carbon credits/L of water not boiled.⁴

The social benefits of carbon projects linked to SWEs are often more emphasised than those of carbon projects linked to SMEs working on waste treatment or borehole rehabilitation, for example. Social impacts include increased employment opportunities (SDG 1), health benefits (SDG 3), and time saved by women (SDG 5) who are generally responsible for fetching water.⁵ Subsequently, there is often more demand for carbon credits initiatives related to drinking water.

³ Partnership for Market Readiness (PMR), Pedro Martins Barata (2016). *Carbon Credits and Additionality: Past Present, and Future*.

⁴ MacCarty, N., Ogle, D., Still, D., Bond, T., Roden, C., & Willson, B. (2007). Laboratory comparison of the global-warming potential of six categories of biomass cooking stoves. Aprovecho Research Center, 6. Retrieved from Global Warming Report_8_10_07_Dean.doc

⁵<https://www.unicef.org/press-releases/unicef-collecting-water-often-colossal-waste-time-women-and-girls#:~:text=A%20study%20of%2024%20sub,were%20responsible%20for%20water%20collection.>

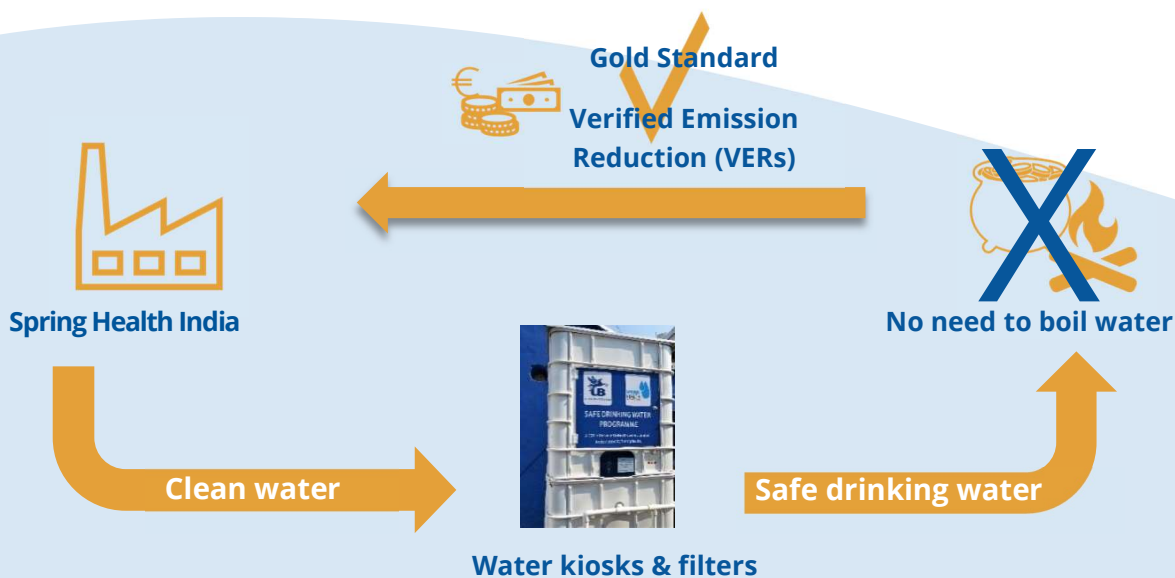


Figure 1: Carbon credits for safe water enterprises: Spring Health India

Waste and faecal sludge management

Under the Gold Standard, the number of waste management initiatives grew from 6 projects in 2018 (reducing 0.8 million tonnes in CO₂ emissions) to 15 projects in 2019 (reducing 1.6 million tonnes in CO₂). These initiatives stop dumping organic waste (solid and liquid) into landfills or wastewater discharge sites. In developing countries, organic waste and faecal sludge disposal significantly adds to GHG emissions such as nitrogen and methane. Methane (CH₄) is 28 times stronger than CO₂.⁶

The certification of faecal sludge management projects is most feasible if the faecal sludge is mixed with organic waste. Dumping organic waste (food and garden) and wood waste emits larger amounts of methane than faecal sludge. Therefore, treating these kinds of waste together renders more carbon credits than faecal sludge alone.

Faecal sludge to fuel

Some sanitation initiatives transform faecal sludge into briquettes that can be used as a fuel. Replacing wood or charcoal with biomass fuel can reduce CO₂ emissions significantly and therefore generate carbon credits. Initial calculations in Kenya have shown that one tonne of biomass fuel could offset up to 2.4 tonnes of CO₂ (2.4 carbon credits) when replacing firewood and up to 7.2 tonnes of CO₂ (7.2 carbon credits) when replacing charcoal. The calculation of the actual CO₂ emission reductions should include the CO₂ emitted as part of the biomass fuel production.

⁶ https://www.goldstandard.org/sites/default/files/documents/ga_agriculture_clean_cow_meth_dec_2018.pdf

Carbon credits can offer important opportunities for a marketable, sustainable alternative to charcoal, which is often produced illegally through processes emitting larger amounts of CO₂. The emission reduction potential for feeding biogas into the grid is not enough to start a microscale carbon project. In West African countries, the grid emission factor⁷ is approximately 0.55 tonnes of CO₂ per MWh.⁸ Electricity generation alone cannot reach enough offset CO₂ in general. However, these initiatives can complement projects that generate enough carbon credits, such as treatment of organic waste through composting, to increase their yield in carbon credits.



Sanivation (Kenya) transforms human waste to produce briquettes.



Nawasscoal's plant in Nakuru, Kenya, produces briquettes from faecal sludge.

Conclusion

Our assessment of water and sanitation initiatives in Africa and Asia with access to carbon financing shows that carbon credits are playing an important role in supporting water and sanitation enterprises. However, smaller enterprises lack expertise and tools to access the international carbon market. Unlike wind and solar energy projects, which dominate this market, there is limited support and knowledge to progress towards achieving SDG 6 through carbon financing for water and sanitation.

By supporting water and sanitation enterprises in accessing carbon finance, their financial sustainability can be improved and access to safe water and sanitation can be safeguarded.

Aqua for All is actively developing new opportunities to mobilise carbon finance for water and sanitation SMEs. Would you like to know more, please contact Aqua for All at info@aquaforall.org.

⁷ A grid emission factor refers to a CO₂ emission factor (tCO₂/MWh), which will be associated with each unit of electricity provided by an electricity system.

⁸ https://cdm.unfccc.int/methodologies/standard_base/2015/sb102.html