Safe Water & Borehole Projects

How providing clean water access eliminates the need to boil unsafe water, generating carbon credits and improving community health

PROJECT TYPE GUIDE | Gold Standard GS4GG | SDG 3, 5, 6, 13

Standard	Gold Standard GS4GG
SDG alignment	SDG 3, 5, 6, 13
Typical credit yield	0.5 – 1.5 tCO2e per household per year
Project life	10 – 15 years
Indicative price	GBP 10 – 15 per tCO2e (Gold Standard, 2024)

What is a Safe Water Project?

In communities without access to safe drinking water, households commonly collect water from rivers, streams or shallow wells and boil it to make it safer for consumption. Boiling water requires significant quantities of firewood, generating greenhouse gas emissions and placing pressure on local forests.

Safe water projects — typically through the rehabilitation of boreholes, installation of water treatment systems, or distribution of point-of-use water purification — eliminate or dramatically reduce the need to boil water. The resulting reduction in firewood use generates verifiable carbon credits under the Gold Standard methodology.

- Eliminates or reduces the need to boil drinking water
- Reduces firewood consumption and associated CO2e emissions
- Dramatically reduces waterborne disease — particularly in children under 5
- Saves women and girls hours per day previously spent collecting water and firewood
- Verified under Gold Standard for the Global Goals (GS4GG)

Carbon Credit Generation Methodology

Baseline Assessment

The baseline establishes how much water each household boils, how much firewood this requires, and what fraction of that firewood is non-renewable. Field surveys measure water collection and boiling practices. The Gold Standard methodology (AMS-III.AV for water purification) provides a rigorous framework for this assessment.

Key Parameters

Parameter	Typical Value
Water boiled per household per day	10 – 20 litres
Firewood to boil 1 litre of water	0.09 – 0.12 kg
Non-renewable biomass fraction	50 – 80%
Emission factor for wood burning	1.83 tCO2e/tonne
Credits per household per year	0.5 – 1.5 tCO2e

Monitoring Requirements

Annual monitoring visits verify that water sources remain functional, that households are using the safe water supply, and that boiling rates have reduced as expected. Water quality testing is conducted at each monitoring visit to confirm the water meets WHO drinking water standards.

Project Types and Infrastructure

Borehole Rehabilitation

Many rural communities have existing boreholes that have fallen into disrepair. Rehabilitation involves repairing or replacing handpumps, deepening boreholes where necessary, and establishing local water management committees to ensure ongoing maintenance. This approach is typically the most cost-effective route to safe water access.

New Borehole Installation

In communities with no existing water infrastructure, new boreholes can be drilled to access groundwater. This requires hydrogeological surveys to identify suitable drilling sites, typically at depths of 30 – 80 metres in East Africa.

Point-of-Use Water Treatment

Distribution of ceramic pot filters, biosand filters or chlorine-based treatment systems provides household-level water treatment where centralised infrastructure is impractical. These approaches have lower capital costs but require ongoing consumable supply chains.

Project Economics

Scale	Annual Credits	Annual Revenue (at GBP 12/t)	Capital Cost
500 boreholes (2,500 HH)	~2,500 tCO2e	~GBP 30,000	GBP 200 – 400k
1,000 boreholes (5,000 HH)	~5,000 tCO2e	~GBP 60,000	GBP 350 – 700k

2,000 boreholes (10,000 HH)	10,000 tCO2e	~GBP 120,000	GBP 600k – 1.2M

Note: Assumes 5 households per borehole, 1.0 tCO2e per household per year. Capital costs vary significantly by geography, drilling depth and infrastructure condition.

Safe water projects typically have lower credit yields per household than cookstove projects but generate premium prices due to their strong SDG co-benefit profile, particularly around SDG 6 (Clean Water) and SDG 3 (Good Health). Gold Standard projects with strong gender co-benefits (SDG 5) can command further premiums.

Community and Gender Impacts

The Gold Standard requires safe water projects to demonstrate measurable contribution to at least three SDGs. In practice, safe water projects typically deliver some of the strongest community co-benefits of any carbon project type:

- Waterborne disease rates (cholera, typhoid, diarrhoea) typically fall 40 – 70% in project communities
- Women and girls save 2 – 6 hours per day previously spent collecting water from distant sources
- School attendance rates for girls improve as water collection burden is reduced
- Local Water Committees — typically with gender parity requirements — build community governance capacity
- Reduced infant and child mortality from waterborne diseases