

Dispensers for Safe Water Carbon Crediting Process

In partnership with South Pole Group

Evidence Action's Dispensers for Safe Water (DSW) program currently provides access to sustainable safe drinking water services to over three million people. This reach will extend to 25 million by 2018. The DSW program works by installing chlorine dispensers at the point-of-use (i.e., local waterpoints). By placing containers under the valve and turning the handle, dispensers issue the correct amount of chlorine (3 ml) to kill 99.99% of harmful pathogens for up to 72 hours.

Scaling up this program takes new and innovative financing approaches. Even at an anticipated low cost of \$0.50 per person per year at scale, financing is required to ensure that dispensers can be maintained and refilled with chlorine over the long-term. Whereas traditional donor financing usually comes in the form of time-limited project-specific grants, DSW is committed to providing sustainable services.

One option that helps us achieve our commitments to sustainable services is revenue from carbon crediting. The first two pages of this document provide an overview of what is involved in obtaining carbon credits culminating in a flow diagram of the overall process (see *Figure 1*). The second page provides a snapshot of how carbon credits are obtained specifically for the DSW program. Pages 4-7 describe this process in detail.

What is the process for generating Carbon Credits?

Register a Program of Activities under a Clean Development Mechanism

A **Program of Activities (PoA)** describes the registration and implementation of a policy/measure that leads to emission reductions. A PoA is often owned by a single entity, but can represent varied technical methods of reducing emissions by multiple partners. For example, a program supporting clean cook stoves in Uganda and another focusing on water assets in Kenya can both be covered by the same PoA.

Using a **Clean Development Mechanism (CDM)**, a PoA generates **Certified Emission Reductions (CER)** or carbon credits, equivalent to one-ton of CO₂ per credit. The CDM is essentially the mechanism by which a technology aims to reduce emissions. A CDM has two main goals: to assist *developing countries* without emissions targets in achieving sustainable development and to help *developed countries* with emission reduction targets by allowing them to purchase offsets (credits) created by CDM projects. A CDM such as the Kyoto Protocol allows Evidence Action to translate the use of chlorine dispensers in East Africa into tradable carbon credits. A broad range of projects and technologies are eligible for CDM accreditation, from hydropower or wind energy projects, to fuel switching and industrial efficiency improvements. DSW projects comes under the International Water Purification Program CDM.

Identify and Register Component Project Activities

A **Component Project Activity (CPA)** is defined as a single measure, or a set of interrelated measures under a PoA's CDM that are used to reduce greenhouse gas emissions. A PoA's CDM can have multiple registered CPAs in multiple regions. Due to pre-set guidelines based on the size of the technology (i.e., hydroelectric dam compared to household chlorine dispensers), each CPA under the registered CDM should only offset 60,000 tons of CO₂ emission reduction¹.

Calculating Emission Reductions

There are a number of steps involved in the calculation of **Emission Reductions (ERs)**. At a basic level, the program has to demonstrate that emissions were reduced as a result of the asset. DSW does this through the use of baseline surveys and ongoing monitoring. Baseline surveys collect information on household-level carbon emissions (i.e., whether they burn coal or wood for boiling water), and rate of drinking water consumption. After dispensers are installed, ongoing monitoring measures usage of chlorine at a household

¹ This restriction is specific to DSW CPAs as outlined in the PoA design document. Larger CPAs have larger offset caps and vice versa.

level (% adoption), and consumption rates according to chlorine inventories. Operating on the assumption that if people are using chlorine they are no longer boiling water - we use adoption rates to estimate ERs.

Certifying Emission Reductions

The validity of a CPA in generating ERs is determined by a gold standard reviewing process, which certifies emission reductions. CPAs typically are monitored for a year before submitting a 'passport' of operations and calculated ERs for review by the rule-making bodies associated with CDM governance; the Gold Standard. Once the Gold Standard has reviewed and assessed the CPA, credits are issued.

Carbon Markets

Carbon markets trade emissions under cap-and-trade schemes or with credits that pay for, or offset, greenhouse gas reductions. Evidence Action trades in credits. There are two markets for carbon credit trading; the **compliance market** and the **voluntary market**.

Compliance markets are created and regulated by mandatory national, regional or international carbon reduction regimes such as the Kyoto protocol. The Kyoto Protocol established a system that imposes national caps on the emissions of developed countries. Each participating country is assigned an emissions target. The compliance market provides a platform for these countries to offset their emissions by trading for credits, allowing them to achieve their targets.

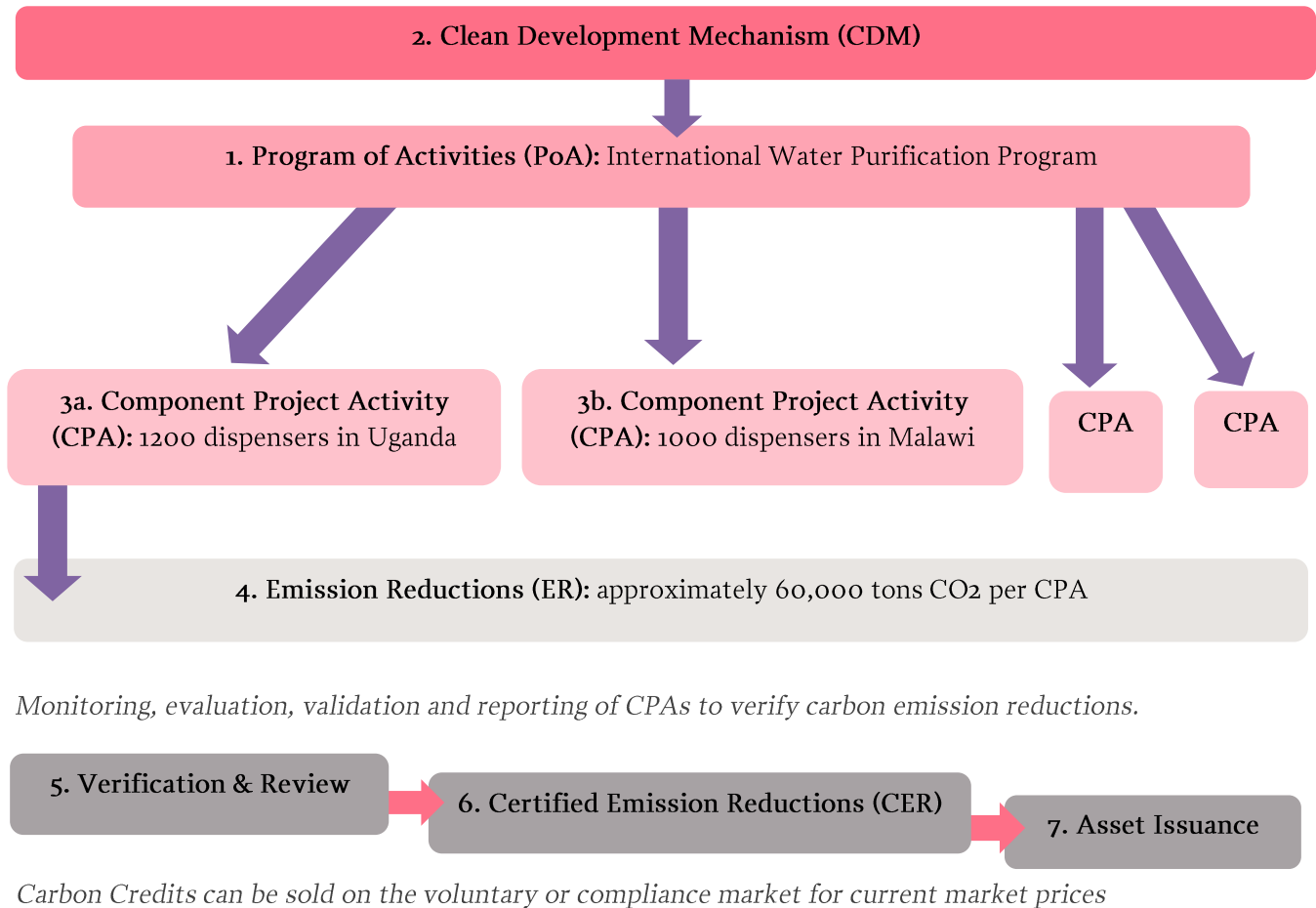
The voluntary carbon markets function outside of the compliance market. They enable businesses, governments, NGOs, and individuals to offset their emissions by purchasing credits. Compared to the compliance market, trading volumes in the voluntary market are much smaller and prices are cheaper because demand is created only by voluntary buyers; whereas in a compliance market, demand is created by a regulatory structure. The process and methodology for certifying ERs for trading on the voluntary market is more involved than certification for the compliance market.

Trading in Carbon Markets

Evidence Action has over 14,000 dispensers registered for trading on the voluntary market. The regulations for the monitoring, review and crediting of these dispensers is different to the regulations for CPA dispensers registered for trading on the compliance market. Voluntary market trading is handled through a partner organization, Paradigm.

CPA dispensers (traded on the compulsory market) are the focus of this brief and are described more in detail in the following pages. CPA dispensers are handled through a consultancy, South Pole Group.

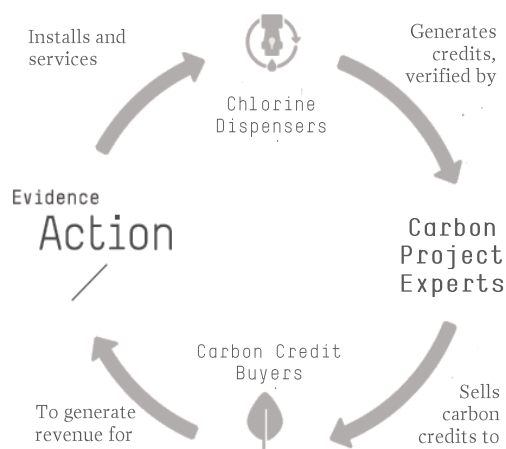
Figure 1. Carbon Crediting Process



A Spotlight on DSW Carbon Crediting

Clean Development Mechanism: International Water Purification Program

Program of Activities: Paradigm Healthy, Cook Stoves and Water Treatment Project²



Component Project Activities: Working under the registered PoA, CPAs are created for multiple geographical ‘groups’ of 1200–1600 dispensers that represent approximately 45,000 tons of CO₂. DSW is currently set up to do 8 CPAs in Kenya, Uganda and Malawi on a rolling installation basis (once installations are completed for CPA, they begin in another CPA region). The credits generated from these CPAs will be traded on the compliance market.

For each individual CPA, the crediting process is as follows;

- / DSW registers the CPA;
- / DSW conducts a baseline survey³ & installs dispensers;
- / DSW monitors households;
- / DSW calculates emissions reduced & applies for credits;
- / Applications (passports) reviewed by the issuing body;
- / DSW receives certified carbon credits and trades credits on the compliance market.

This process, from the start to the issuance of credits, typically takes more than 18 months.

DSW Carbon Crediting – Where are we now?

There are over 19,000 dispensers currently installed across Kenya, Uganda and Malawi. It is estimated that these dispensers combined offset over 760,000 tons of CO₂. Indeed, DSW reduces enough carbon emissions per year to offset the household energy demands of the entire population of Boston (646,000) or Seattle (653,000) for three months⁴ or save 1,654 hectares of forest⁵ from deforestation per year.

Revenues generated from credits sold in 2012 totaled \$260,000 USD at average price of \$5.16 per ER (per credit). DSW has also secured a futures contract worth 5 million EUR for purchase of credits generated from year 2017–2022. **This contract covers 100% of current and future dispensers planned till year 2017.** Our buyers have paid a higher price for these credits, recognizing twin benefits of reducing in carbon emissions as well as the provision of safe rural water services.

Take-Away Messages

1. Burning firewood to boil water emits greenhouse gases into the atmosphere, but chlorination via dispensers allows people to drink safe water without having to boil it.

2. Dispensers also serve to avoid the greenhouse gas emissions anticipated as poorer countries develop. Emissions are averted as people leapfrog boiling and go straight to a cleaner water treatment technology.

3. Carbon crediting is a sustainable financing mechanism that will allow dispensers to continue to operate free of charge for local populations.

² This PoA is owned by a group called Paradigm. Evidence Action operates under Paradigm’s PoA. For a percentage of the credits issued, Paradigm sources buyers and trades Evidence Action’s credits on the compliance market.

³ Where dispensers already exist or are in the process of being installed (CPAs 1&2), DSW retrospectively collects baseline information.

⁴ The average monthly energy demand of an American home is 1 ton of CO₂. Assuming that an average household in the US has 2.6 members.

⁵ Assuming average of 186 tons of CO₂ per acre.

Steps involved in DSW Credit Issuance

This section describes a logical timeline of events involved in obtaining certified emission reductions (i.e., credits) as also highlighted in the above chart. Each of these sections briefly describes the activity, the time given and the primary contact or person/s responsible for this task. A more complete description of roles and responsibilities can be found following this section.

It is important to note here that Evidence Action's DSW program also operates under a pre-existing PoA owned by an external organization, Paradigm. Evidence Action and Paradigm work together to sell credits on the *voluntary market*. The monitoring process for the voluntary market is somewhat more rigorous than the process described here. For a further explanation of the difference between dispensers worked on by Paradigm and South Pole, see the GS&CDM overview document see box filepath; *MLIS/L&C/Programs/DSW/Carbon*.

CPA dispensers (described in this document) are registered to trade on the compulsory market. For this process, we coordinate through an intermediary organization that acts as a consultant on carbon activities; South Pole Group. Evidence Action is responsible for all program activities, ongoing monitoring and ensuring that South Pole has the necessary documents/inputs for the calculation and registration of emission reductions. South Pole completes all review requirements, coordinates with the CDM for the issuance of credits and negotiates for selling of credits.

Step 1. The water point selection process ensures that we have appropriate water points for installing chlorine dispensers. At the end of the waterpoint verification process, a list of eligible dispensers is created in the database.

- *Responsibility:* DSW Program Teams (conducting activity), MLIS (providing data)
- *Time:* 6 weeks
- *Output:* Waterpoint Database

Step 2. CPA Boundary is defined as representing districts/boundaries of dispensers that equate to around 60,000 tons of emissions. Project boundaries for each CPA are calculated using the number of dispensers in a given area.

- *Responsibility:* DSW Program & South Pole
- *Time:* 2 weeks
- *Output:* CPA boundary defined, Heat Maps for counties/sub-county in CPA project area.

Step 3. Each CPA requires its own baseline survey to be conducted among the households within the CPA project boundary.

- *Responsibility:* MLIS
- *Time Given:* 3 weeks
- *Output:* Baseline data

Step 4. Local Stakeholder Consultations (LSC) must happen at the CPA level. A single LSC meeting can be used to cover several CPAs in one country, as long as convincing justification can be provided that the activities are similar. The LSC report documents minutes from the meeting and records the comments made by stakeholders. South Pole Carbon is responsible for writing up the LSC report, using the notes and hard copies of all documentation (e.g. photos, attendance lists) that Evidence Action should maintain.

- *Responsibility:* DSW Program (VCS Meetings) and South Pole (LSC Report Update)
- *Time:* 4 weeks (VCS meetings) and 4 weeks (LSC Update)

- *Output:* Final LSC report⁶

Step 5. Dispenser Installation and CEMs include the completion of installation forms by Program FOs. These forms should be available for audit. It is critical that the first dispensers installed for the CPA have installation forms available on Box, since these will provide the necessary “start date evidence” for the audit. Each dispenser should include a carbon asset tag. The presence of this tag will be checked during the DOE visit.

- *Responsibility:* DSW Program
- *Time:* 10 weeks
- *Output:* File with all carbon right waivers and all installation records for CPAs

Step 6. Dispenser Database: Once all dispensers have been installed, a comprehensive dispenser database should be compiled as quickly as possible

- *Responsibility:* MLIS
- *Time:* 3 weeks
- *Output:* Updated clean dispenser database⁷

Step 7. Monitoring Period & Reporting: Monitoring of dispensers in CPAs begins at installation and lasts for approximately one year. Monitoring reports form the basis for emission reduction calculations and are a requirement for the registration of CPAs for issuance of credits (see the following section for a more detailed description of the contents of the report).

- *Responsibility:* MLIS
- *Time:* ~ 52 weeks
- *Output:* CPA Monitoring Report

Step 8. CPA and Gold Standard (GS) passport: South Pole will be responsible for drafting the CPA, GS Passport and ER calculation. These documents should all be reviewed by Evidence Action.

- *Responsibility:* South Pole
- *Time:* 2 weeks
- *Output:* CPA-DD, GS Passport and ER calculation

Step 9. DOE site visit and validation: Designated Operational Entity or DOEs are independent auditors that assess whether a potential project meets all the eligibility requirements of the CDM (validation) and whether the project has achieved greenhouse gas emission reductions (verification and certification). These visits follow the submission of the Gold Standard Passport for review.

- *Responsibility:* South Pole and DSW Program
- *Time:* 8 weeks
- *Output:* Final CPA-DD, CDM final validation report & CDM registration of CPA

Step 10. Stakeholder Feedback Round: After the LSC report is submitted to Gold Standard and uploaded to the Registry, it is necessary to make it available to stakeholders to review and provide any feedback over the course of the next 60 days. This must be concluded before the CPA can be included under the POA.

- *Responsibility:* Evidence Action & South Pole

⁶ If at least one dispenser has been installed before the LSC Report is uploaded, we need to take additional steps for registration of the CPA [see the CPA Best Practices Manual and pre-feasibility assessment].

⁷ This database should include the following columns: program; water point name; water point id; barcode ID; dosage (i.e one- or two-turn); CPA #; county; sub-county; parish; village; installation date; CEM date; water source type; latitude; longitude; number of HH in dry; number of HH in wet; market center; landlord; former ID; directions.

- *Time:* 12 weeks
- *Output:* GS final validation report by DOE

Step 11. Gold Standard (GS) Review: The DOE also checks the compliance of the CPA with Gold Standard requirements and raises clarification requests, corrective action requests and forward action requests. This can happen in parallel to the stakeholder feedback round, however, it cannot be concluded before the end of the SFR. Once the DOE submits a final GS validation report, it is uploaded to the GS registry by South Pole.

- *Responsibility:* South Pole
- *Time:* 6 weeks
- *Output:* Final GS Passport & GS registration of CPA

Ongoing Monitoring and Reporting

Chlorine delivery survey and records: At each chlorine delivery (every 3 months) the CSA will complete the dispenser spot check/chlorine delivery form. This survey and spot check will determine the number of functional dispensers and the chlorine consumption at each dispenser. The number of refills of chlorine used at each dispenser is used to determine how much water is treated with the dispensers.

Water quality testing survey: Evidence Action commits to conducting water quality tests at 2 randomly selected water points per month for the life of the project, beginning as soon as possible after CEMs are completed. Statistical requirements are that *all households* at these 2 randomly selected waterpoints will be surveyed each month.

Promoter survey and community survey: Each month, field teams will visit a minimum of 10 randomly selected chlorine dispensers. At each water point, an average of 8 households are surveyed in addition to the promoter (or assistant promoter if the promoter is unavailable). The promoter survey is used to establish the fraction of delivered chlorine that is available for use in the dispenser. The community survey is used to establish the fraction of water treated with the dispenser that is actually drunk.

Interview with RDC: Field teams will conduct a biennial (every 2 years) interview with the Resident District Commissioner (RDC) in each district included in the CPA to determine if a piped water supply exists for the areas included in the CPA.

Box Links

The general folder for Carbon Assets on Box is [here](#) while the specific folder of presentations is [here](#), the high-level Best Practices documents (of considerable usefulness) are [here](#) (longer narrative description) and [here](#) (simpler flow-diagram approach).

Roles and Responsibilities in Carbon Financing

Carbon Activity	Program	MLIS	South Pole
1. Verification	<ul style="list-style-type: none"> - Conduct activity - Notify MLIS when activity complete 	<ul style="list-style-type: none"> - Compile, clean, analyze - Provide dispenser database 	
2. CPA Boundary Definition	<ul style="list-style-type: none"> - Identify verified areas to receive dispensers - Agree on boundaries 		<ul style="list-style-type: none"> - Participate in boundary decision making
3. Baseline Survey		<ul style="list-style-type: none"> - MLIS FOs to collect data - MLIS to provide baseline report 	
4. Local Stakeholder Consultations	<ul style="list-style-type: none"> - Conduct VCS Activity 		<ul style="list-style-type: none"> - Write LSC Report
5. Dispenser Installations & CEMs	<ul style="list-style-type: none"> - Conduct Activity - Notify MLIS when activity complete 	<ul style="list-style-type: none"> - Provide heat maps of dispenser locations 	
6. Dispenser Database	<ul style="list-style-type: none"> - Work with MLIS to reconcile dispenser numbers 	<ul style="list-style-type: none"> - Create database of installations 	
7. Monitoring Report	-	<ul style="list-style-type: none"> - Compile data and report as required 	
8. CPA and Gold Standard passport	<ul style="list-style-type: none"> - Review Passport 	<ul style="list-style-type: none"> - Review Passport 	<ul style="list-style-type: none"> - Create Passport
9. DOE site visit and validation	<ul style="list-style-type: none"> - Submission of relevant documents for review - Logistics of site visit/travel/accommodation 	<ul style="list-style-type: none"> - Input in the review process as required (i.e., clarification or additional data) 	<ul style="list-style-type: none"> - Contracting DOE and arranging timing
10. Stakeholder Feedback Round	<ul style="list-style-type: none"> - Emails and letters sent to attendees of the LSC - Documented with screen shots, delivery confirmations, and photos of posters 		<ul style="list-style-type: none"> - LSC report and other documents made available on website
11. Gold Standard Review			<ul style="list-style-type: none"> - Final GS validation report uploaded to the GS registry

Where are we now⁸?

The following information is correct as of the 05 May, 2015.

CPA	Current Status	Future Actions
CPA 2 – Uganda	CPA submitted, Monitoring Report submitted end March, 2015, Verification conducted June, 2015.	ER calculated by South Pole, Passport submission due
CPA 3 – Uganda	CPA in process of submission	
CPA 5 – Malawi	Installations ongoing, baseline completed	
CPA 6 – Kenya	Installations began in April, 2015	
CPA 7 – Kenya	Installations began in April, 2015	
CPA 8 – Malawi	Currently undergoing verification	Installations begin June 2015
CPA 10 – Kenya		Verifications begin in Aug 2015 Installations Oct 2015 - Jan 2016
CPA 11 – Kenya		Verification to begin in Aug 2015 Installations from Oct-Jan 2016

⁸ The reason that some CPA numbers are skipped is that other organizations working on the same carbon asset (IWPP) are using those numbers.