

Innovating towards climate resilience

The world's water and sanitation resources are under threat from the intensifying impacts of climate change.

The proportion of the global population residing in urban cities continues to rise. At the same time, water resources and sanitation measures in cities are increasingly more vulnerable to the impacts of climate change. Safeguarding these water resources and services to meet the needs of a growing urban population is a continuous challenge.

VIA Water supports different innovations that tackle urban water challenges in cities in Benin, Ethiopia, Ghana, Kenya, Mali, Mozambique, Rwanda and Senegal.

These solutions can help communities **adapt** to the impacts of climate change, such as to the increasing risk of severe weather events. Other solutions can help to **mitigate** the

causes of climate change, such as by re-greening the landscape or reusing waste streams to prevent the emission of greenhouse gases.

Here we show examples of VIA Water supported innovations that are addressing different aspects of climate change adaptation and mitigation.

32 innovative solutions for climate mitigation

Overview of projects here: <http://bit.ly/VIAWaterimpact>



19

Reuse or removal of organic waste streams



5

Use of recycled materials and sources



4

Reduced tree logging



4

Regreening the landscape (cooling)

25 innovative solutions for climate adaptation



7

Increase water efficiency for agriculture



6

Drought resilience measures



5

Flood resilience measures



4

Access to severe weather alerts



3

Climate change-focused development planning

The *Impact Series* showcases examples of VIA Water-supported innovations that are making an impact in different key areas and to share emerging lessons from these.

Meet our innovators

More project updates can be found at www.viawater.nl/projects

In-home sanitation for tenants and labor camps



Country: Kenya

Innovator: Sanivation

Climate change mitigation:

- Reuse or removal of organic waste streams
- Reduced tree logging

Website:

<https://www.sanivation.com/>

Problem

A growing urban population means that cities are under pressure to manage the increasing levels of wastewater and faecal sludge. When left untreated, raw wastewater and faecal sludge naturally break down in the environment to release greenhouse gas emissions into the atmosphere, which can exacerbate climate change. To combat this, the safe management of organic waste streams as part of a circular economy can have a positive impact.

Innovation

Social enterprise, Sanivation turns waste into value. They install toilets inside people's homes and charge homeowners a fee for bi-weekly waste collection. The raw toilet waste is brought to Sanivation's factory site, where it is mixed with other organic

waste products to be transformed into biochar briquettes – a good alternative to wood-based charcoal. It reduces the need for deforestation and helps mitigate greenhouse gas emissions.

With VIA Water support, Sanivation explored ways to expand their sanitation and waste treatment model further to better serve the sanitation needs of low-income communities. These include tenants living in rented houses and labour camps around Lake Naivasha.

Sanivation recently secured a contract with Naivasha's water and sanitation service provider to build a new waste processing factory that will treat and transform 100 tonnes of faecal sludge and produce 10 tonnes of biochar briquettes per month.

Key results

- Compared to traditionally-produced charcoal, **1 tonne of biochar briquettes** will offset **10 tonnes of carbon dioxide**
- In 1 year, **120 tonnes of briquettes** would save **2.4 hectares of common woodland** or **0.75 hectares of commercial forest** from deforestation

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The Greening Plastic Project



Country: Senegal

Innovator: Diaw Multiservices (DMS)

Partners: Deltares, LVIA Senegal

Climate change mitigation:

- Use of recycled materials and sources

Climate change adaptation:

- Increasing water efficiency for agriculture

Website:

<http://www.dmssenegal.com/>

Problem

Cities are under pressure to manage the increasing levels of plastic waste produced by a growing urban population. From extraction and production from fossil fuels all the way to waste disposal, plastic contributes to greenhouse gas emissions, climate change and environmental pollution at every stage.

Innovation

To address this problem, the Senegalese start-up company Diaw Multiservices (DMS) uses recycled plastic for the production of drip-irrigation systems. These drip-irrigation systems also help farmers address another urban challenge. They are able to meet the increasing demand for food in dry-prone areas of Senegal whilst using water three times more efficiently compared to traditional irrigation systems.

The Greening Plastic Project has been a positive partnership between DMS, Deltares and LVIA Senegal to successfully establish a waste-to-value enterprise.

Lessons learned

There is great potential to transform waste into valuable end-products to address societal challenges in food and water. This project equips small, medium and large-scale farmers with the tools to improve the water efficiency of their business. Together, these measures help communities become more climate resilient.

Key results

- **150 tonnes of plastic waste** was removed from the environment during the project for reuse as drip-irrigation tubes
- This offset an estimated **300 tonnes of carbon dioxide emissions** during the project
- **5.5 kg of plastic waste** can produce enough drip-irrigation tubes to service a small farming plot of 10 x 10 metres
- This can save an equivalent of **53 m³ of water per year** compared to traditional irrigation

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Rain4Sale



Country: Rwanda

Innovators: RAIN Foundation, ANA Rwanda, Rwanda Natural Resource Authority

Climate change adaptation:

- Drought resilience measures

Website:

<http://www.rainfoundation.org/>

Problem

As climate change drives global temperatures to rise, this could affect the occurrence of prolonged dry spells and drought in many areas. A drier future poses significant challenges in water access for many vulnerable communities.

Innovation

In Rwanda, dry spells can last several months. To provide water to low-income communities living in areas that often suffer from drought, Rain4Sale provides local entrepreneurs with rainwater harvesting and filtering installations that can store up to 100 m³ of filtered rainwater. During the rainy season, they are able to collect and filter the rainwater to sell at a low cost to their community.

Rain4Sale provides business and technical training for the local entrepreneurs to help them best meet the water needs of their community. Part of their rainwater sales revenue is used to repay the installation costs of the rainwater harvesting kit. It is also being reinvested into the construction of more rainwater harvesting kits for other local entrepreneurs.

Lessons learned

The project provides training and tools to empower local entrepreneurs to fulfil the water needs of their community. By doing so, low-income communities have better access to (drinking) water, and are more resilient during current and future dry seasons.

Key results

- Based on initial sales records in the rainy season, Rain4Sale entrepreneurs provided **2400 litres of filtered rainwater per day**. This is equivalent to the water usage of **60 households**
- During the dry season, it is estimated that Rain4Sale entrepreneurs could provide **830 litres of filtered rainwater per day**. This is equivalent to the water usage of **20 households**

About VIA Water:

VIA Water supports projects with innovative solutions for water problems facing cities in eight African countries. Through the programme, these solutions can be brought to life: with financial support, but also with the help of the (online) learning community. At the moment, VIA Water has a full portfolio: over 60 projects are being implemented in Mali, Benin, Ghana, Rwanda, Kenya, Ethiopia, Senegal and Mozambique.

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