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INTERNATIONAL WATERS

# COMMUNITY WATER INITIATIVE IN MALI, NIGER AND SENEGAL

## CREATING COMMUNITY-BASED WATER AND SANITATION SCHEMES TO IMPROVE FOOD SECURITY, LIVELIHOODS AND RESOURCE CONSERVATION

March 2013

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# LIST OF ACRONYMS

| | |
|---|---|
| CBA | Community-Based Adaptation programme |
| CWI | Community Water Initiative |
| GEF | Global Environmental Facility |
| LDCs | Least Developed Countries (World Bank) |
| MDGs | Millennium Development Goals |
| SGP | Small Grants Programme |
| SIDA | Swedish International Development Cooperation Agency |
| UNDP | United Nations Development Programme |
| UNOPS | United Nations Office for Project Services |

# INTRODUCTION

"In 2010, 2.5 billion people – or half of the developing world – lacked improved sanitation facilities and 780 million lacked access to improved drinking water".[1] **Water and sanitation are vital elements for human development and healthy ecosystems**, affecting biodiversity, livelihoods, health and education. The **Millennium Development Goals** (MDGs), which set specific human development objectives to be achieved by 2015, recognize the delicate interdependence between these factors by making access to water and sanitation an explicit MDG target:

**"Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation. " - MDG Goal 7, Target 10**

Thus, water and sanitation is not only a development goal in itself, but is also a critical factor in achieving transformative changes in the other MDG goal areas:

 Goal 1: Eradicate extreme poverty and hunger

 Goal 2: Achieve universal primary education

 Goal 3: Promote gender equality and empower women

 Goal 4: Reduce child mortality

 Goal 5: Improve maternal health

 Goal 6: Combat HIV/AIDS, malaria and other diseases

 Goal 7: Ensure environmental sustainability

 Goal 8: Develop a global partnership for development

Another milestone was set in July 2010, when the United Nations recognized the **human right to water and sanitation**. Accordingly, water access must be **sufficient**, **safe, acceptable, affordable** and **physically available**. To ensure sufficient water, water collection distances must be **less than 1000 meters or 30 minutes** from homes.

In response to the MDGs, UNDP launched the **Community Water Initiative (CWI)** in 2003 to provide improved access to water and sanitation in poor communities. With a primary focus on Africa, CWI supported projects in **Ghana, Kenya, Mali, Mauritania, Niger, Senegal, Tanzania** and **Uganda** - but projects have also been pioneered in Asia (**Sri Lanka**) and Latin America (**Guatemala**). CWI has since supported **67 projects** in **Mali, Niger and Senegal**, dramatically

[1] UNDP HDR 2006

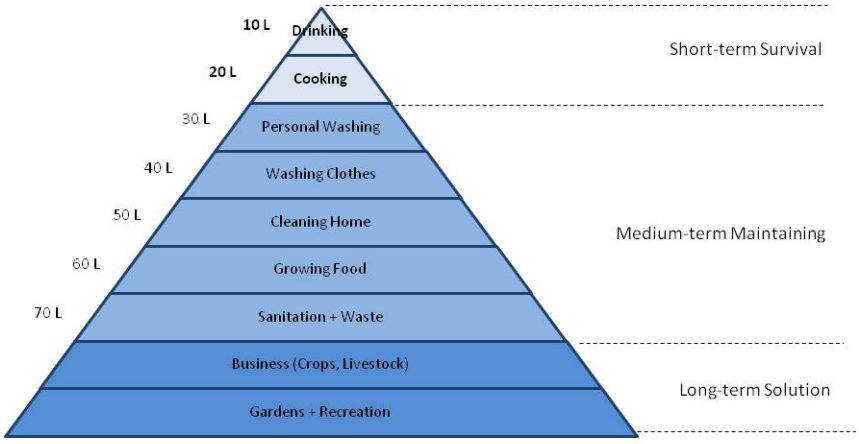
enhancing the wellbeing and living environment of more than **550,000 beneficiaries** in poor communities. CWI activities included:

- Providing **low-cost technologies** for community-based **water** and **sanitation** schemes
- Promoting **renewable energy** for water pumping
- Fostering **water resource conservation** and sustainable land management
- Creating **green spaces** to strengthen food security and carbon sequestration
- Developing **capacity** for governance and improved livelihoods, especially for women
- Raising **awareness** on resource conservation and hygiene

# IMPROVING ACCESS TO WATER AND SANITATION

Water and sanitation are vital elements for **human development** and **healthy ecosystems**. With strong population growth and climate change, pressure on freshwater resources has steadily grown, intensifying competition among its users. The **lack of water** forces communities to rely on water sources that are unsafe, overused and difficult to access. The **lack of adequate sanitation facilities**, on the other hand, forces people to relieve themselves in the open-air, - a practice that contaminates the environment and creates an ideal breeding ground for communicable disease vectors. In deed, water and sanitation deficits cause health problems for nearly half of all people in developing countries, and are the world's second biggest killer of children. Thus, inadequate access to water and sanitation exacerbates **health hazards**, **degradation of ecosystems** and **pressure on fresh water resources**.

**Chart 1: Water requirements per activity level**




Source: World Health Organization (2012)

Access to water and sanitation also has tremendous impact on other areas of human development. The **level of access** to adequate amounts of safe water determines to which degree human needs for consumption (hydration), cooking, hygiene and cleaning can be met. The United Nations determined **50 to 100 liters per person per day** as the minimum amount required to satisfy sustainable human development needs. As Chart 1 above shows, with each additional amount of water, communities can build towards **long-term developmental goals**, including cleaning, produce gardening, farming, and other livelihood activities.

**CWI** projects help move communities towards long-term, sustainable development solutions. More than just providing water and sanitation infrastructure, **CWI's holistic development approach** comprises a mix of complementary tools that enhance food security, livelihoods and climate change adaption and mitigation. The resulting synergies amplify and sustain project impact.

## CWI APPROACH

### PARTICIPATORY DEVELOPMENT AND TRANSFORMATIVE CHANGE

In its 2006 Human Development Report on Water and Sanitation, UNDP emphasized the importance on incorporating "approaches that build on community participation and the use of appropriate, low-cost technologies". CWI is built on this vision, supporting **demand-driven projects** that implement **innovative, low-cost water and sanitation technologies** for poor communities in rural areas. The initiative is rooted in the strong belief that **local, participatory project design** and **management** are essential elements in sustaining improved access to water and sanitation services in poor communities.

Building on SGP's role as pioneer, CWI provides communities with the **flexibility to adapt and design** projects according to their specific community needs. This approach has inspired a range of creative development solutions. In fact, a number of CWI projects received awards and recognition, including one receiving the **Equator Initiative Award** (2010), four entering as **Kyoto Grand Prize** finalists (2009), one entering the top ten finalists at the **World Water Forum** (2009), one receiving a **UNDESA** award and two earning **Wisions Awards** (2008).

**CAPACITY BUILDING AND SUSTAINABILITY**

In line with current development thinking, CWI understands that communities know their living environment and community needs best, and should, therefore, play a key role in defining solutions for their water and sanitation challenges. This is why CWI puts emphasis on **capacity and institution building** in its beneficiary communities. During the course of each project, CWI assists with the development of **community-based management committees**, as well as with the mobilization of local leadership and community participation. In addition, CWI also provides **technical and management capacity** training to promote **local ownership** and sustainability of the new infrastructure.

All projects are designed and implemented with a **gender-sensitive, participatory approach** in mind: community members – especially women – are mobilized and involved throughout all stages of the project, - as are local governance actors. The projects also aim at **sustainability** by devising a **revenue generation strategy** to cover expenses for the water and sanitation infrastructure and providing **micro-credit mechanisms** to seed-fund activities such as gardening or reforestation.

Women's Cooperative in Koussan, Mali

**CLIMATE RESILIENCE**

The effects of climate change have increasingly exacerbated **water stress** for some of the poorest countries, especially those located in East Africa, the **Sahel** and Southern Africa, further straining their natural adaptive capacities and constraining human development. Eight out of the ten countries of CWI's portfolio are located in this region. CWI projects help communities **cope and adapt** to the changing environment**.** Sustainable, drought-resistant crop management, or the use of renewable energy powered pumps, are just a few technologies that CWI projects employ to promote adaptation to climate change.

Solar energy pump Rounhou, Niger

CWI projects also play an important role in **mitigating adverse effects** on climate change. Building on its synergies with the GEF SGP, CWI projects employ a variety of **'green technologies'** and **planning procedures** to promote climate change adaptation and mitigation. For example, CWI projects integrate water supply activities with water resource conservation, reforestation and ecosystem rehabilitation. In partnership with UNDP and GEF SGP, CWI supplements these activities with **community education campaigns** to raise awareness about sensible resource management and hygiene.

In order to better **assess climate risks** and design climate-resilient projects, CWI undertakes a **Vulnerability Reduction Assessment (VRA) analysis**, which it adopted from SGP's Community-based Adaptation (CBA) programme, at the beginning of each project. **Additional funding** from **GEF SGP** and the **CBA** programmes has **boosted CWI's efforts** to address climate risks.

**PRO-POOR, GENDER SENSITIVE APPROACH**

CWI supports poor and marginalized populations to fulfill one of the most basic human needs – access to clean water and sanitation. With the expansion of CWI projects to **Mali, Niger** and **Senegal**, CWI now operates in six of the **world's poorest countries** ("Least Developed Countries"). Poverty is particularly dire in **rural areas** where communities are excluded from basic infrastructure networks and where men have migrated to urban areas in the search for work.

**Women and girls** in rural areas are most affected by inadequate access to water and sanitation. It is them who are traditionally tasked with the responsibility of **collecting water**, spending several hours a day on this chore. Women and children are also highly susceptible to water-borne diseases. CWI projects encourage active involvement on the part of women.

**The poor – particularly women - benefit from CWI's integrated approach** of combining improved access to water and sanitation with its focus on capacity building, environmental rehabilitation, food security and livelihoods.

Women collecting water at Tangadougou, Mali

"Water collection is part of a gender division of labor that reinforces inequality within households, contributes to time-poverty and retards the human development prospects for a large section of the world's people".

– UNDP Human Development Report 2006, p. 87

# GEF SGP: COMMUNITY ACTION - GLOBAL IMPACT

CWI is implemented through the **Global Environment Facility's Small Grants Programme (GEF SGP)**, the largest environmental organization to **directly reach communities** around the world. So far, SGP has channeled nearly **$400 million** through more than **16,000 community-based projects**. SGP projects have had direct environmental impacts, and influenced the formulation of national and local policies on sustainable environmental management. SGP received more than $200 million from **GEF** for community-based environmental projects during 2011-2014 while CWI has received financial support from **SIDA, the Government of Luxembourg, the Government of Norway** and other donors.

Village Committee, Moribabougou, Mali

The flexibility of **small-sized projects**, together with **innovation, low-risk pioneering**, and concrete on-the-ground **demonstrations**, provide a unique mechanism to **pilot** and **test novel techniques, modalities and practices**, which can be later upscaled through larger interventions. SGP opens a unique window for **communities and civil society organizations** to provide **direct inputs** and experiences to international policy development and programming processes. The next operational phase will emphasize closer integration of SGP pilot initiatives with GEF regional strategies.

Seeno Kuna Solar Pump, Mauritania

Aranayake Rain Water Harvesting, Sri Lanka

**BACKGROUND ON THE COUNTRIES**

All three countries are located along the **Sahel belt**, a semi-arid transition zone extending from the West Coast across the African continent[2], - home to some of the world's poorest countries. Being subject to **Sahelian climate**, the region experiences **high inter-annual rainfall variability**, **flooding** and **extended, recurring droughts**. Over the last 40 years, variability in the hydrological cycle has steadily gained on strength, frequently resulting in massive **food shortages**, if not widespread famines. Currently, more than **half of the population lacks access to clean water**, and **more than three fourths** of the population **does not have access to improved sanitation**. This has a serious effect on social stability, hygiene and health, and the environment.

The region has also increasingly suffered from **desertification** – there are indications that as much as 80% of the land in the Sahel may be degraded.[3] The main culprits are **deforestation, overgrazing, continuous cropping** and **inappropriate use of water resources**. The degradation of the quality of **soil** has tremendous impact on the **food security** for the region's population who rely heavily on **rain-fed agriculture** and **pastoral activities**. In addition, **climate variability** – which is projected to increase in the coming decades – and the highest **population growth** in the world - pose a major obstacle in achieving food security and poverty alleviation in the region.

Communities and ecosystems base their existence on their **capacity to adapt** to climatic effects. CWI projects aim at helping communities do that – cope with increasing water stress through a **mix of strategies**, including for instance **water harvesting and irrigation schemes, reforestation and climate sensitive agricultural practices**. A large share of projects sought to directly strengthen food security and livelihoods by promoting higher productivity in **produce gardening** and **pastoral activities**.

Implementing green water concept, Mali

[2] Mauritania and Ghana, CWI beneficiary countries, are located in the Sahel region as well.
[3] Food and Agriculture Organization (FAO) in Irin's "Backgrounder on the Sahel, West Africa's poorest region", 2008.

**PORTFOLIO OVERVIEW**

CWI had already been building a strong portfolio in its seven countries, when it set to expand its operations to **Mali, Niger** and Senegal in 2007. This addition was made possible thanks to increased funding from the **Government of Luxembourg**, which provided 80% of total grant financing for the new countries[4]. By extending its work to Mali, Niger and Senegal, CWI further built its effort to support communities in the world's **poorest** countries. In fact, this expansion doubled the number of **least developed countries** (LDCs) in CWI's portfolio.[5] Table 2 shows that **40%** or 67 of the 167 CWI community projects were implemented in these three new beneficiary countries. Therefore, Mali, Niger and Senegal are the most active countries in terms of project implementation, besides Mauritania.

CWI granted **$1,377,274** or nearly **half of CWI's total grant funding** to communities in Mali, Niger and Senegal, - who also managed to raise an additional **$900,000 dollars** in community-level **co-financing**. (More than **90% of programmable funding** flows **directly** to beneficiary communities.) More than **half a million people** benefitted from these projects. Having launched **725 community projects** in these three countries, **GEF SGP** was able to provide CWI has with its extensive **network** and **experience** in working with communities on developing localized, adapted solutions. It was also through GEF SGP, that **UNDP** provided direct water and sanitation services to the communities.

**Table 2. Project funding and beneficiaries in Mali, Niger and Senegal**

| CWI Countries | Nr. of projects | Grant Amount | Co-financing in cash | Co-financing in kind | Beneficiaries |
|---|---|---|---|---|---|
| **Mali** | 23 | $449,998 | $128,218 | $108,645 | 164,185 |
| **Niger** | 23 | $447,421 | $35,507 | $117,396 | 313,042 |
| **Senegal** | 21 | $449,855 | $96,215 | $351,679 | 71,743 |
| **Total 3 countries** | **67** | **$1,377,274** | **$259,940** | **$577,719** | **548,970** |
| **All CWI projects** | **167** | **$2,990,200** | **$1,442,200** | **$1,440,000** | **714,441** |

Women pumping water in Moribabougou, Mali

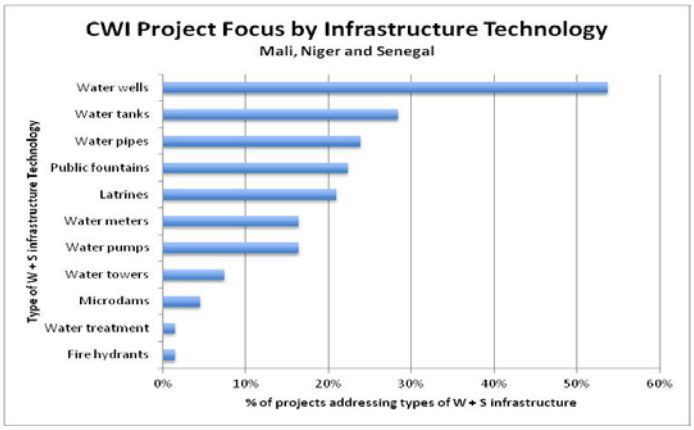
[4] Excluding UNDP and UNOPS fees
[5] LDCs now receive account now for more than two thirds of the projects and grants in the portfolio.

**IMPROVING ACCESS TO WATER AND SANITATION**

CWI projects have had tremendous impact on improving access to safe drinking water and sanitation, benefiting almost **550,000 people** directly in Mali, Niger and Senegal. Following the UN goal, the projects **reduced water collection times** while **improving the quality of water**. Walking distances to drinking water have been reduced on average by 3,000 meters in Mali, by 11,500 meters in Niger, and by 1,000 meters in Senegal, saving on average 5 hours per day. These water and sanitation points have enabled communities to satisfy basic **personal consumption, cleaning** and **hygiene needs**.

Integrating **long-term development goals** such as **food security** and **alternative livelihoods**, the majority of CWI projects also gave communities the opportunity to use clean water for activities such as **watering livestock, farmland, and plant nurseries**. As a result, CWI projects realized a significant positive impact on **health, education, livelihoods and gender equality.** The positive effects on life quality have also **improved social cohesion** and **the environment**.

**Chart 2: Most frequently installed water infrastructure technologies**




CWI can now point to a rich portfolio of 67 **innovative projects** in Mali, Niger and Senegal. CWI's communities have improved water and sanitation facilities, installing more than **31,000 meters in water pipes** and approximately **624 pieces of equipment**. As Chart 2 shows, more than half of the CWI projects built **wells** to provide improved access to safe groundwater. One third of the projects built **water tanks** to capture and store water from various sources, including rainwater and rock water harvesting, while almost a quarter of the projects also installed **water pipes** and **public fountains** to extend access to drinking water. More than a fifth of the projects sought to alleviate environmental pollution through the construction of **latrines**. The specific emphasis of the projects, however, varied by country and region as communities adapted projects to their local needs.

"Since the construction of wells our chore of searching for water has been eased significantly."

- Rabi, Resident of the village Tassaou Haoussa ( NER/CWI/Y3/2009/02)

**CWI IMPACT ON THE ENVIRONMENT AND CLIMATE CHANGE**

The implementation of CWI water supply projects has had direct, positive effects on the environment, - most notably on water and land degradation. The availability of water not only **eased pressure** on precious **freshwater resources** and **land**, but also provided water for additional **green spaces**. The provision of **sanitation** facilities, on the other hand, has led to a **cleaner living environment**, and **rehabilitation** of terrestrial and aquatic **ecosystems**.

CWI recognized that it was essential that all of its projects **incorporate environmental elements** to remain sustainable throughout climate change. CWI projects have thus aimed to **address climate change mitigation as well as adaptation**. A large share of the projects used a multi-pronged approach that combined mitigation technologies with pollution reduction and strengthening of food security. Hence, CWI projects promoted sustainable land and crop management (including agroforestry), plant conservation and reforestation to increase **carbon sequestration** and **food supply**.

In **Senegal**, for instance, CWI funded nine projects focusing on the **rehabilitation** of more than 150 hectares of **mangrove forests** at the Saloum Delta Biosphere Reserve to mitigate effects from climate change. In **Niger**, all well projects adopted the "**green water" concept** by establishing village nurseries around the wells, planting 54,000 seedlings over 170 hectares of land. In **Mali**, CWI supported, among others, the implementation of a micro dam to promote **natural regeneration of groundwater** and develop agricultural techniques for climate change adaptation. Overall, 33 or **half of the CWI projects** in Mali, Niger and Senegal undertook **reforestation** and **ecosystem rehabilitation** activities.

Micro Dam, Tinkele, Mali

**CWI IMPACT ON COMMUNITIES AND LIVELIHOODS**

Following CWI's unique approach, water supply schemes have frequently been designed to integrate water supply for **climate change adaptation** and **livelihood** activities. As a result, communities have realized a marked improvement in their wellbeing and their rural economies. In particular, CWI has spurred the development of various **jobs** and **income generation activities** including water supply maintenance and management, water sales, produce gardening, (shell)fish and livestock breeding, food processing, and forest product sales. Many of those activities have also aimed at strengthening climate change-adapted **food security**.

The participatory, gender-sensitive approach also helped **improve social conditions for women and girls** in their communities who have been able to realize significant improvements in social status, education and livelihoods. **Women** have benefited from **sustainable income generating activities,** particularly from produce gardening and water sale, as their time freed up from water collection chores. In addition, women were able to devote more time to other critical activities such as **childcare, education and housekeeping**. The improved household environment has also enhanced happiness in marital and family relations.

"According to village leaders and Kogan Dounankébougou Tongoye Maribougoe, before the project, families had serious difficulties to receive the hand of girls in marriage from neighboring villages due to the hard chore of collecting water. With this investment, the sad reality belongs to the past and a new era opened for them and the future generations of their villages." -

Testimony of authorities in the rural village of Kolokani

While all households enjoyed improved access to water, some households managed to upgrade to **in-house** water or sanitation facilities. CWI projects also **improved public spaces** by installing water and sanitation facilities in schools, religious institutions, markets, major transportation hubs and national parks. Communities implementing **sanitation facilities** realized tremendous improvements in the cleanliness of their **living environment**.

**The availability of water and sanitation** has greatly enhanced social cohesion in the communities. For instance, before CWI commenced its work, the condition of **water stress** had often produced strong **competition** for water among settlers, transhumant herders and animals. The disposal of human waste had created delicate social situations as well. A number of CWI beneficiary communities have stated **how improved access to water or sanitation reduced conflict** in their communities once **clean drinking water became available** and **pollution of their living environments eased**. Indeed, many communities have organized village life around water and sanitation points. CWI projects further promoted **social cohesion** among community members by promoting **mobilization, solidarity and mutual assistance** during project implementation.

**CWI IMPACT ON HEALTH AND EDUCATION**

Health improvements through access to **safe drinking water and sanitation** have been substantial as people no longer had to resort on contaminated surface water[6] and relieve themselves in the open air. In particular, before project implementation, **the disposal of human waste** had degraded the living environment and promoted the proliferation of waterborne diseases. All communities have achieved a **considerable decrease in waterborne disease cases and associated medical costs**. The installation of latrines resulted in an enormous reduction – on average **around 70%** - of water borne diseases.

Pit Latrine, Kahi Grain Jeji, Niger

Projects implementing **orchards, agroforestry** and **gardens** saw strong health improvements, particularly in **child nutrition,** as counter-seasonal gardening made fresh produce more readily available for household consumption. Benefits from clean drinking water consumption are likewise high. Given that water is often sold to communities in surrounding villages, the **health benefits from clean water consumption** are likely more widespread than stated here. On account of better health and improved access to water and sanitation, **school attendance has also risen substantially**. This has been particularly true for girls, whose time has no longer been taken up by the search for water. For many communities, the availability of latrines in schools has had a positive impact on girls' school attendance as well.

Water fountain in Koussan, Mali

In addition to providing water and sanitation infrastructures, **CWI provided a mix of complementary activities to lead those projects to success**. For instance, as sanitary practices are often rooted in cultural and religious beliefs, it was recognized that **behavioral change** would have to go hand in hand with the provision of improved access to water and sanitation. Therefore, **awareness and information campaigns** played an important role in convincing people to **adopt new practices**, especially as it pertained to hygiene. During a sanitation project in Niodior, Senegal, for instance, it was critical to convince the community to refrain from using the old sea-immersed latrines but to use the newly built, land-based latrines instead. CWI projects also educated communities on how to **maintain sanitary conditions** around drinking water points, especially if they had previously been used to sharing water with animals.

[6] Surface water is frequently contaminated with human waste due to lack of sanitary facilities, animal pathogens due to sharing of the same water sources between animals and people, and chemicals from agricultural production.

**IMPACT ON GENDER EQUALITY**

CWI projects aimed particularly at targeting **women and girls**, as they had been most affected by the lack of water and sanitation. The most immediate impact of CWI projects on them has been **relief of their arduous daily water collection chores**. Girls have increased their **schooling**, and women have attended to a variety of **jobs** and **activities**, which has improved community wellbeing. Most commonly, women have worked on **produce gardening**, which has allowed them to provide fresh produce for their families and sell the remainder to **generate additional income**. Other jobs women have gained from CWI projects include water sales, plant nurseries, food processing and cleaning. The additional income has helped **cover household expenses**, **schooling** and at times enabled **upgrades in the homes**. In Mali, relief from the water chores also opened the opportunity for women to marry outside their respective villages.

**IMPACT ON CAPACITY BUILDING**

CWI emphasizes the approach to **develop local community capacity** in **managing water** and **sanitation activities** with its participatory project approach, and ensures that **women are empowered** through active participation in governance structures as well as training activities. Since 2008, CWI has helped establish **101 management committees** of which **two thirds** are being **led by women**. Revenues from collectively managed natural resources such as water or forest products have been used to **finance maintenance and staff** for the water and sanitation infrastructures. Occasionally, revenues also support communal activities such as workshops and schools. All communities implemented **public education or awareness campaigns** to inform people on issues of water management and hygiene.

In order to promote sustainability, several persons in each community – overall more than **1,170** in Mali, Niger and Senegal combined - received **technical training** to ensure local repair, maintenance and installation of the water and sanitation equipment. In addition to training and institution building, CWI helped communities set up a **revenue generation plan** to cover infrastructure costs and a **micro-credit mechanisms** to fund alternative income-generation activities. The goal of CWI's capacity building is thus to increase **local ownership** and **sustainability**. GEF SGP provided support for all the projects through its monitoring missions and knowledge exchanges.

Community in Tiébeakourouni, Mali

**IMPACT ON SUSTAINABILITY, REPLICATION AND UPSCALING**

**CWI** places great emphasis on supporting water and sanitation projects with **holistic, long-term development goals**. Capacity building is an important element for sustainable project results, as is integration of climate change, food security and livelihoods. An independent evaluation in 2007 found that 80% of SGP projects have had their outcomes sustained over two decades of operation. The concentration of projects in particular regions – as delineated by **SGP's Country Program Strategy (CPS) -** encouraged **cross-community learning** and **deepened impact** in the respective areas. It is this internalization of cross-cutting change across communities what inspires **transformational change**.

A number of CWI projects have been replicated in other communities with **support from public officials**. But it is SGP's role as **seed-funder** and **pioneer** of projects on the community level that allow it to explore and test innovative solutions which can be replicated and upscaled by other **global actors**, including GEF. **SGP's global network** in more than 118 countries is of critical importance, as are the publicity and recognition that **award** winning CWI projects enjoy. In Niger, CWI's work has been further upscaled by UNDP's CBA Programme and the Africa Adaptation Programme (AAP) with a total funding of $550,000. CWI projects have also been highlighted as promising models for future replication by the UNDP Water Governance Programme.

# LESSONS LEARNED

During the course of the projects, CWI gained the following insights:

- Improved water and sanitation has a critical impact on the **environment** and **community well-being** - especially on environmental rehabilitation, food security, livelihoods, health, education, gender equality and social cohesion
- **Participatory approach** and **social mobilization** are a must **–** without local buy-in and local ownership sustainability is at risk.
- Need to **involve women** in management of water and natural resources to promote sustainability and gender equality
- **Capacity building** of community members is critical for sustainable management water infrastructure and livelihood activities
- **Financing structures** have to be put In place to fund maintenance of water and sanitation infrastructure and other activities
- **Public awareness** and **education campaigns** and the creation of community-sourced **guidelines** are important to foster behavioral change

- **A multi-focal, holistic approach** integrating water and sanitation schemes with livelihoods and food security are critical for sustainable development outcomes
- Communities and NCs need training on how to **address equipment damage** due to natural disasters.

## PARTNERSHIPS

CWI developed and fostered cooperation with numerous partners at **global, national, and local** levels. These partnerships are key to the success of CWI activities. The following are the main partners that CWI has worked with:

- 67 Communities, NGO, CBO and other grantees - $1 million
- GEF - $3.5 million parallel funding on environmental projects
- CBA Programme - $350,000
- H2O Africa Foundation - $35,000
- UNDP and SGP staff - in-kind contribution through oversight and technical support

## LOOKING BEYOND 2013

CWI is **highly popular programme** in the three countries. Community demands have far exceeded funding availability. Thus, competition among the project proposals has been high. During the current operating phase GEF-5 (2011-2014), SGP has been promoting to use its global funding to support water and sanitation activities in the **Small Island Developing States (SIDS)**, where it seeks to develop climate resilient water and sanitation activities in alignment with GEF policies.

SGP and CWI are committed to helping poor communities make **progress** towards the **MDGs**, while reducing vulnerability to climate change challenges. As shown in this review, CWI laid a solid foundation, piloting **climate resilient activities** to meet the water and sanitation needs for communities in Mali, Niger and Senegal. Future funding will offer great opportunities to **upscale efforts** and inspire **transformative impact** locally, nationally and globally.

However, many sub-Saharan countries will have to depend solely on non-GEF funding to continue their water and sanitation activities. There, SGP will build on its previous work on water and sanitation and explore **future funding possibilities** to further **expand results** and impacts of CWI. SGP welcomes opportunities to work with partners to expand CWI's activities to allow poor communities meet their basic human needs for water and sanitation.

**MALI**

**NIGER**

**SENEGAL**

# MALI

## BACKGROUND

Mali is **land-locked, environmentally diverse country** in West Africa. About two thirds of the country is desert, with its northern part stretching far into the Sarah desert and receiving little rainfall year around.[7] The Southern areas, on the other hand, experience a wetter, more tropical climate. As is typical for the **Sahel climate**, Mali faces high inter-annual variability in rainfall, which has periodically **destabilized local food supply**. Due to climate change, rainfall has declined by 30%[8] and droughts have become more frequent, particularly, in Mali's northern areas, which have consequently experienced **increased migration**[9]. Mali's population derives its livelihoods predominantly from **rain-fed subsistence agriculture, fishing** and **pastoral activities**.

Mali is one of the **poorest** countries in the world with more than **two thirds of its population** or 10 million people still living in underserved **rural** areas. Although the government of Mali has put particular emphasis on increasing availability of drinking water in rural areas during the last ten years, coverage remains low: As of 2011, **49% of its rural population lacked improved access to water, while more than 86% lacked access to improved sanitation**[10]. Women and girls have to walk as much as 10 km to collect water from other water sources. **Overgrazing**, combined with **strong population growth** has put strong pressure on precious land, forest and water resources. This has exacerbated Mali's **chronic food insecurity** and malnutrition. Hence, water management and climate adaptation are critical elements in strengthening Mali's food supply.

## CWI IN MALI

CWI launched its work in Mali in **2007**, implementing **23 projects** for more than **164,185 beneficiaries**. The majority of CWI projects clustered in the Baoulé Biosphère, the Bafing reserve, the Sankarani Basin and the Ramsar site of the Interior Niger in the South or West of Mali. The projects sought to **improve access to water** and sanitation and **strengthen food security** through the implementation of micro-dams, wells and produce gardens. CWI helped communities **reduce vulnerability to climate change** by helping them acquire counter-seasonal, climate risk sensitive agricultural practices.

[7] UNDP Climate Change Country Profiles: Mali
[8] IFAD (2011)
[9] World Bank Mali Dashboard – Climate Baseline at www.sdwebx.worldbank.org
[10] World Bank Data at www.data.worldbank.org/country/mali

# CASE STUDY #1: ADDRESSING DRINKING WATER, FOOD SECURITY AND CLIMATE CHANGE THROUGH THE EXTENSION OF THE WATER SUPPLY NETWORK IN THE TOWN OF MORIBABOUGOU, KATI, MALI

Project ID: MLI/CWI/2008/07

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**BACKGROUND**

Moribabougou is a small town located in the region of Koulikoro in Southwestern Mali, - an area of plains and plateaus situated between hills and the river Niger. Even thought the government of Mali had implemented a water supply network within recent years, the availability of drinking water remained inadequate and poorly distributed. The old town area, the area behind the rails and the carrière were particularly challenged with water supply. The populations of these areas collected water from traditional wells that tended to dry up after the rainy season or from water fountains located 15 km from the village, at the outskirts of the capital Bamako.

This is why the NGO REDEVI petitioned to implement a project to develop adequate drinking water supply in the village of Moribabougou. The project aligns perfectly with the Community Development Plan (PDESC) which sought to (1) develop low cost drinking water technologies for poor and marginalized communities for domestic use, as well as for irrigation and pastoral activities, (2) abundantly satisfy the needs of drinking water in rural areas, and (3) to involve users in the management of water in a more meaningful way.

**PROJECT ACTIVITIES**

The project aims to systematically reduce the constant shortage of potable water in the area Moribabougou by constructing four water fountains and by extending the village's drinking water supply network. In addition, four community water management committees were created and trained. The project would also increase incomes through the utilization of water and inform the community on waterborne-related health issues.

**ENVIRONMENTAL IMPACT**

The new water supply network has had a tremendous effect on Moribabougou's immediate environment. The community has taken advantage of the water to create a number of green spaces, produce gardens and reforestation projects. In particular, one hectare of land has been converted and replanted with eucalyptus trees. Various education campaigns helped households, gardeners and livestock farmers adopt sensible water management practices as they relate to natural resources, biodiversity and climate change. The community has also become aware of the hazards inherent in water pollution and land degradation. The ultimate goal of these activities was to minimize the carbon footprint and to reduce effects on climate change.

**COMMUNITY AND LIVELIHOOD IMPACT**

The community now enjoys continuous access to clean water through the implementation of a water supply network and four water fountains. Thanks to the extension of domestic water network connections, the number of private connections has more than doubled from 200 to 500 households. The number of families who get their water from water fountains has increased from 1,000 to 1,800 families. Consequently, 80% of the inhabitants now enjoy access to drinking water. The availability of adequate amounts of water promoted social cohesion as it significantly reduced conflict to meet water needs.

The project greatly improved working and living conditions in the community of Moribabougou, as people can use the new water supply for personal consumption (drinking, cooking, washing), produce gardening, plant nurseries, livestock, and housing construction. As a result, a number of jobs and income generation activities have been created. Four permanent jobs and 200 indirect jobs were created, leading to an increase in income of around 15%. Household finances also improved with a reduction in the price of water from 1000 CFA to 250 CFA per cubic meter. These gains have been particularly helpful for the most vulnerable population segments.

Women were the biggest beneficiaries of the project. The new water points decreased the distance for water collection from 4 kilometers to 400 meters or less, saving women around four hours a day, and saving children, especially girls, about two hours per day in water collection time. These time savings have allowed women to pursue income generating activities such as gardening or small trades, greatly benefiting the community as a whole. Women also received the operating rights for the water fountains, from which they have been able to sell bottled water and ice. Hence, women were able to improve their livelihoods and standard of living.

**HEALTH AND EDUCATION IMPACT**

The new drinking water supply network provides water that is uncontaminated, chemical-and toxin-free and poses no risk to human health or the environment. More than 12,000 people or 80% of the community gained access to safe drinking water. The implementation of the water facilities was complemented with a public and awareness campaign to inform people on the dangers of water pollution, including water-borne diseases. The beneficiaries now rely almost exclusively on the new water points (90%) for their consumption needs, with the remainder still coming from wells and rivers.

As a result, the project has had an enormous effect on the community's health and education conditions. Before the implementation of the CWI project, two out of five children afflicted with waterborne disease died. Thanks to safe water access, the rate of waterborne disease-related morbidity and mortality has now fallen by 75%. Better health and convenient access to water have also significantly reduced school absenteeism and lateness for children, - especially for girls. Fresh produce from the irrigated gardens has strengthened nutrition and health as well.

**IMPACT ON GENDER MAINSTREAMING**

The project has greatly advanced gender equality in Moribabougou. Before the start of the project, a gender assessment had been conducted, which found that women had been poorly represented in communal decision-making bodies (10%). As a result, particular attention was paid to increase women's participation during the course of the project. Women played a highly active role, for example, educating water users about issues related to water management and sanitation and leading the all-women water management committees. Furthermore, the project has trained 97 women – that is 27 members of the water management committees and 70 women from 10 associations – in water management and sanitation. Women's income generation capacities have also been strengthened through the sale of water, dyeing and gardening. These activities have enabled women to not only improve their living conditions but also to pay school fees for their children.

"We express our joy and satisfaction in relation to the availability of drinking water for our various uses. We are very pleased with the monetary income that we get from the sale of water. We can say without a doubt that our lives and work have improved thanks to this investment." –

- Ms. Fanta Diarra Sidibe and Mrs. Nana DEMBELE SANGARE, Water Fountain Managers in Moribabougou.

**IMPACT ON CAPACITY BUILDING, SUSTAINABILITY AND REPLICATION**

The project aimed at increasing sustainability and local ownership through the concerted involvement of all stakeholders including women, youth, religious and political leaders. The management committees are in charge of monitoring the village chief and technical services in water management. REDEVI and beneficiary communities have benefited from the support from the SGP and the National Steering Committee through their visits and workshops. This has created enormous excitement among the people who have been determined to support and maintain the new infrastructure.

The project has provided space for a dialogue on water with all stakeholders including administrative, municipal, technical services and management committees. The project has also attracted the attention of public officials. In particular, two exchange visits were made and a certificate of recognition was issued by the municipality for the proper execution of the project and its impact on Moribabougou's population. In regards to replication, REDEVI and its local partners are determined and willing to share this experience with other actors in the water sector in order to make supply of safe drinking water a reality in other places. Other villages in the municipality and those of neighboring rural communities have already expressed their desire to be connected through the same water supply network.

# CASE STUDY #2: PROVIDING CLEAN WATER FOR PEOPLE AND LIVESTOCK IN THE VILLAGE OF TIÉBAKOUROUNI, IN THE RURAL DISTRICT OF TANKANDOUGOU, MALI

Project ID: MLI/CWI/08/05

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**BACKGROUND**

The rural district of Tangandougou is situated in the region of Sikasso in the South of Mali. The

population in this area lives primarily from subsistence farming. Since the droughts in the 70s, however, the problem of drinking water has become a major concern as water. This has resulted in high water stress for the population for the larger part of the year. This problem affected particularly women who spent an enormous amount of their time to track down water to meet their daily households needs. But the severe water shortage has also resulted in a substantial loss of isoetes (quillwort – grass-like aquatic plant), which in turn led to a progressive decrease in the water table and the drying out of pools, creeks and rivers. In addition, strong population growth poses a major concern regarding satisfying increasing hydrological needs.

Before the project, needs for drinking water were satisfied by water pools or traditional wells without any measure to ensure hygiene standards. These traditional wells and pools were used for all types of consumption, human and animal alike, and lacked purification or enclosures. Generally, these wells featured a diameter of less than one meter and drew from the [unsafe] water table in the quaternary lateritious and alluvium formations. This condition has become particularly precarious during the dry season when water can get easily contaminated if proper hygienic measures are not taken by its users.

During the dry period, women and girls had to spent hours in line waiting to get a turn at these rare water points. Despite its unsanitary state, this water was consumed and caused much suffering from waterborne diseases such as diarrhoeas, dysentery, cholera, bilharzias, and intestinal worms. In deed, in Mali, waterborne diseases are the leading cause for child mortality after malaria.

**PROJECT ACTIVITIES**

The goal of the project was to provide improved access to safe drinking water, which contributes to a better quality of life and eradication of waterborne diseases. The specific objective of the project was to supply the village with drinking water trough the installation of a large diameter well, to strengthen the capacity of the community in sustainable management of the water point and to eradicate waterborne diseases. The project activities included a mix of tools providing water infrastructure, public education and capacity building of water management institutions. Given the importance that water plays in the environment and human development, the project was readily supported by CWI and the SGP. The grantee for this project was Action pour le Development et Contre la Pauvrete au Sahel (ADCOPS).

**ENVIRONMENTAL IMPACT**

A large diameter well was built and equipped with a pulley to provide easy access to safe drinking water for the entire community of Tiébakourouni, benefitting 1,179 people. Around the well, a grove with trees was created to provide green space for the well users. The green space was treated to restore the soil for produce gardening before local species were planted. Twenty farmers were trained on water-related hygiene and gardening and those practices were further relayed to other farmers. Under the supervision of ADCOPS, the implementing NGO, the nursery farmers who are responsible for the planting and care of the plants, are also represented on the village water management committee.


**SOCIOECONOMIC IMPACT**

After the completion of the project, the community saw a strong reduction in waterborne diseases. This health improvement also carried over into other life areas where strong improvement in living conditions was achieved. The availability of safe drinking water allowed for the flourishing of other income generating activities, most importantly that of produce gardening. These alternatives were an important step in helping the community adapt to climate change. Women were relieved of their chore of collecting water.

**HEALTH AND EDUCATION IMPACT**

The project had a tremendous positive effect on Tiébakourouni's community, who has been able to register a substantial decrease in waterborne diseases. Before the project, waterborne diseases and malaria counted to the most prevalent diseases. In rural areas such as this, women and children are the most affected groups because they are also the most vulnerable population segment. Vulnerability is further being reinforced through the poverty trap were ill health, precarious health conditions, and lack of financial resources for medical expenses interplay.

In addition well construction, public information and education campaigns were implemented to raise awareness about hygienic standards, waterborne health risks and water point rules. More than two thirds of the population was reached through these initiatives. As a result, the population adopted good practices in water-related hygiene.

**IMPACT ON CAPACITY BUILDING, SUSTAINABILITY AND REPLICATION**

In the rural commune of Tangandougou, the involvement of women in all appropriate activities was critical for the project's success in achieving these results. Women were part of the water management committee as well as among those farmers who were trained on water hygiene and produce gardening.

The community formed a 20-member water management team of which 50% are women and youth. The committee is responsible for the management and enforcement of hygiene rules around water points. Water hygiene training was conducted and covered around thirty individuals including committee members and village leaders. The ultimate goal was to encourage the internalization of hygiene rules as well as sensible management of water and the equipment.

# NIGER

## BACKGROUND

Niger is a **landlocked country** in Africa's **Sahelian desert** belt. Indeed, three fourths of the country is occupied by desert land. Soil fertility is generally low, with arable land amounting to no more than 12% of the country. And yet, nearly 80% of Niger's population lives from **subsistence farming** and **cattle breeding**. Niger has been ranked as the **world' poorest country** according to the UNDP. It also records the **highest population growth rate** (4%) in the world, which exerts pressure on water, food and other natural resources.

Hence, Niger's population of more than 16 million faces an ongoing struggle to meet its basic water needs. In rural areas, where 82% of Niger's population lives, **61% of the population does not have adequate access to potable water and a staggering 96% lives without access to improved sanitation facilities**[11]. Over the last 30 years, Niger has experienced a **sharp decrease** in **rainfall** - and increasing **desertification** has only compounded the problem. Lakes and ponds have suffered from shrinkage, as is most apparent for Lake Chad, which shrank an astounding 94% during the last four decades. Droughts and water shortage have since resulted in major **food crises** and **public health problems**.

## CWI IN NIGER

CWI started its work in Niger in **2007**, - implementing **22 projects**, providing improved water and sanitation to more than **313,000 beneficiaries**. CWI projects focused predominantly on the issue of improving water capture or storage as well as safe groundwater access. Most of the well projects replaced malfunctioning, unsanitary wells with modern wells, and incorporated the **"green water" concept** – which established nurseries and produce gardens around the wells. The provision of **sanitation** facilities - particularly in public spaces - has been an important focus of some projects as well. A handful of projects provided water and sanitation infrastructure for public spaces including national parks, zoos, transportation hubs and public squares.

CWI projects revealed that there is a **crucial need** to access water for **poor communities** countrywide and to avoid exclusion by concentrating water points in certain areas. **Social cohesion** is increasingly delicate as there is growing demand – and pressure - in communities to access safe water in the same environment due to the high population growth rate among the poorest people. **Water points** could therefore reduce conflict over access to water. As the well building is costly due to low water tables in the region, there is a strong need to raise **additional funds** through co-financing. Therefore, building partnerships with International NGOs and donors funding water-related projects is a priority.

[11] World Development Indicators, World Bank www.databank.worldbank.org

# CASE STUDY #3: IMPROVING ENVIRONMENTAL SANITATION AROUND THE FERRY STATION IN THE VILLAGE OF FARIÉ, TILABÉRI

Project ID: NER/CWI/Y2/2008/1

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**BACKGROUND**

Farié is located in the Tilabéri region right on the shores of the Niger River in the Southwestern corner of Niger. As part of the Sahel region, the area is dry and vegetation is sparse, except for along the Niger River, where lush, wild vegetation flourishes along fruit and vegetable gardens. Farié is an important transit stop along the Niamey-Farié-Gothèye paved road, where it also offers one of the few opportunities in this region to cross the river with its BAC Farié ferry services. The village receives a large number of travelers heading either to one of the wetlands nearby or Tialkam, a major West African gold belt that stretches from the Atlantic coast in Ghana to the Niger River. However, since there are no adequate sanitary or waste management facilities in Farié, the village, the water and both banks of the Niger River have become heavily polluted with human waste and plastic debris.

Besides creating an unpleasant living environment, the proliferation of waste, odors and insects has had various other adverse impacts. The pollution has degraded ecosystems, particularly that of the Niger River where the aquatic flora and fauna has been seriously affected. The river in the immediate environment of Farié is also home to the endangered West African manatee. But the pollution also engendered a range of public health threats. For one, the threat of biological contamination increased due to the waste and plastic garbage that was consumed by animals. And secondly, the proliferation of germs spurred the development of diseases such as malaria, typhoid, cholera, chigallose (itching) but also the emergence of meningitis and malaria epidemics. The disposal of waste by travelers along the gardens of the Nile banks was also subject to many conflicts.

**PROJECT ACTIVITIES**

The goal of this project was to rehabilitate the environment and improve hygienic conditions through the provision of sanitary and waste management facilities. As part of the

implementation of this project, four blocks of modern public latrines were built and waste disposal facilities were installed. Furthermore, six households were equipped with modern latrines as a model for potential project extension. The project also included the establishment of a local management committee and technical training to manage the facilities.

**ENVIRONMENTAL IMPACT**

The project greatly reduced land and water degradation and environmental pollution. The living environment also improved considerably for Farié's population as 3,381 inhabitants and 72,000 travelers now enjoy access to sanitary facilities. The provision of access to public sanitation and waste disposal facilities prompted a change in behavior among people, leading to a large reduction of waste in the open environment. Consequently, the village of Farié has become very clean and the pollution of the river has decreased significantly.

"We young people noticed that our village has become clean and we have benefitted from various employment opportunities such as gardening, housekeeping and other hygiene/health related activities."

- M. Ali, Youth of the village Farié

**COMMUNITY AND LIVELIHOOD IMPACT**

The construction of latrines improved social relations in the area as tensions and conflicts between the population, travelers and the owners of gardens along the river decreased significantly. The project also resulted in the creation of several direct and indirect jobs. CWI provided technical training for six persons, including four masons and two managers for sanitation and plastic waste. Other employment originating from this project included guards, cleaning agents, and water vendors. In addition, the project improved social conditions for women who not only benefited from new employment opportunities but also fully participated in the newly established waste management committee.

"With this project, we learned about community management, hygienic conditions improved in the village, the living environment is better, social cohesion has returned thanks to a decrease in conflicts. "

- M. Mounkaila, President of the Management Committee

Sustainability of the facilities was largely based on a user fee model, - paid by Farié inhabitants as well as travelers through BAC -, that finances cleaning agents, household products and maintenance of the infrastructure. Overall, the project helped to strengthen the community's capacity in terms of community management and hygiene.

**HEALTH AND EDUCATION IMPACT**

The project implemented an awareness campaign to inform the community about the dangers of pollution and the benefits of proper hygienic conditions. Since the population received access to the sanitary facilities, pollution of the open environment, particularly the water, has been significantly reduced.

The improved quality of water has had a powerful impact on health: The community of Farié was able to record a significant reduction (70%) in waterborne disease cases, - especially in children. Consequently, school attendance has increased as children miss fewer days due to sickness. The decline in waterborne diseases has also allowed villagers to save on medical expenses and travel time to health clinics in neighboring villages, which amounted to approximately 10 hours per day.

**IMPACT ON CAPACITY BUILDING, SUSTAINABILITY AND REPLICATION**

The community of Farié has been deeply involved in the project design and implementation. CWI assisted with the establishment and training of a community management committee, ensuring full participation of women in governance, decision-making and capacity development activities. As a result, women have been able to advance their social conditions significantly.

The project has received sound support from local authorities and government agencies in form of project visits and technical support. For example, CNUT (National Council of Transport Users), which manages the BAC, constructed a wall. Some partners have replicated this project experience in other villages, which did not have sanitation facilities. However, it is SGP and other partners that provide the opportunity to take the water issue to a global level.

"This project allowed us to learn about hygiene and strengthened our capacity for local governance. The river banks are clean, as are our households. We have noted a decrease in water-related diseases because the people relieve themselves in latrines instead of in the river as before."

- Mme Aissa, Inhabitant of the village Farié

# CASE STUDY #4: ENHANCING GREEN SPACES, FOOD SECURITY AND ACCESS TO DRINKING WATER IN TASSAOU HAOUSSA

Project ID: NER/CWI/Y3/2009/02

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**BACKGROUND**

Tassaou Haoussa is a group of eight small villages located in the Zinder region in the South of Niger. The population of the villages is extremely young – 70% of its 850 inhabitants are under 20 years of age – and growing at a rapid pace. The villages themselves are also surrounded by densly populated settlements. The community of Tassaou Houssa lives primarily form subsistence farming and livestock breeding, - activities that require adequate access to clean water but that the village did not enjoy. It was therefore difficult for the community of Tassaou Haoussa to develop food production. The community had previously drilled for groundwater but these wells were too shallow and not properly functioning. In fact, one well dried up periodically and the other one had collapsed just before the CWI project started. Consequently, many women and girls were forced to walk far distances to collect water for their produce gardens. In addition, water had to be collected to meet the daily water needs of the livestock, which amounted to several thousands of cows. Tassaou Haoussa's population had long demanded the implementation of modern wells to satisfy its basic daily water needs and to promote development of produce gardening and pastoral activities.

For these reasons, the grantee OSE IL ED Yanai, chose to petition for this project on behalf of the community Tassaou Haoussa. The project fit perfectly within the implementation framework of the national environmental strategies, plans and programs, - especially the Poverty Reduction Strategy framework that Niger had adopted in 2002 and updated with the global Millennium Development Goals (MDGs) in 2007. Also in its strategy for implementing the MDGs and the Accelerated Development and Poverty Reduction (PRRS), Niger set objectives that focused on "ensuring environmental sustainability" for the wellbeing of present and future generations. This strategy is accompanied by the Rural Development Strategy (RDS) that has assigned the rural sector the role of the main engine for economic growth until 2015.

**PROJECT ACTIVITIES**

The overall objective of the project was to contribute to improving the coverage of drinking water points for Tassaou' Haoussa's populations, gardens and their livestock. The main project activities included the construction of wells with pulleys, implementation of carrying channels, building of troughs, and creation of an enclosure of the wells to improve sanitary conditions. In addition, tree planting, capacity building and public awareness campaigns on hygiene were conducted.

**ENVIRONMENTAL IMPACT**

The availability of clean drinking water in Tassaou Haoussa has greatly improved the living environment for its 850 inhabitants. People are now able to irrigate their produce gardens and green spaces with ease. The replacement of traditional wells with modern wells had a positive impact on deforestation since the old wells were reinforced with large quantities of wood, which had to be renewed annually. Thus, the construction of modern wells has allowed the community of Tassaou Haoussa to reduce woodcutting and protect the environment.

Two NSC members visiting a traditional well (before the project) and a modern well (after project)

CWI also incorporated several climate adaptation and mitigation activities into the project. For one, the community created catch basins in the produce garden to harvest rainwater and encourage infiltration of water into the soil. Secondly, the community wanted to promote reforestation of the area. Drawing on the "Green Water" concept, CWI helped Tassaou Haoussa thus establish a tree nursery around the wells. Women, who mainly attend to this area, have since been planting these seedlings into surrounding fields to rehabilitate the forests.

Community creating plant nursery around the well for reforestation purposes - “Green Water” concept.

**COMMUNITY AND SOCIAL IMPACT**

The availability of water has considerably reduced the drudgery for women who had at times been forced to walk more than ten kilometers to search for this precious resource. The newly freed up time is spent on income generating activities that give women financial independence and integrate them into economic activities. Thus, women have been the main beneficiaries of the project. Overall, the village have registered an increase in activity of about 15% due to the construction of wells, including those related to the modernization of housing.

Improved access to water has also eased tensions in the community. The wells have reduced conflicts between villagers and livestock breeders who had previously competed for scarce water resources. The capacity of the community has been strengthened particularly in terms of collective water management but also in terms of improving hygiene around water points.

"The availability of water in sufficient quantity and quality explains the decrease or disappearance of cases of conflicts around water points between us nomadic/transhumant herders and settlers.”

- Hardo, Nomadic Herder

**HEALTH AND EDUCATION IMPACT**

Improved access to water has greatly strengthened the community’s ability to satisfy its water needs for basic hygiene and consumption. Now there is enough water for drinking consumption as well as for bathing newborn babies and children in the villages. Sanitary conditions have improved significantly with the construction of wells and public awareness campaigns on

hygiene and sanitation. This has led to a dramatic reduction in waterborne disease cases. The population has learned about hygiene rules around water points such as the proper cleaning of the body, hands, and clothing. With better health conditions the community has also seen a decline in sick days. This has resulted in improved school attendance, especially for girls who can now spend their time at school, instead of collecting water. As a result, the community of Tassaou Haoussa has seen a clear increase in the girl's educational success rate since the construction of the wells.

"Since the construction of the wells we do not lose time looking for water, which has enabled us to attend school regularly and to have satisfactory results." - Tchima, Young Girl of the village Tassaou Haoussa

**IMPACT ON CAPACITY BUILDING, SUSTAINABILITY AND REPLICATION**

CWI projects promote sustainability because communities are deeply involved in the project design and implementation. CWI assisted with the establishment and training of a community management committee, ensuring that women who had traditionally been sidelined by development projects, are actively engaged. As a result, women were fully involved through participation in management committees, capacity development activities and decision-making procedures. Through this empowerment, women have seen their social conditions improve significantly.

The project has managed to attract the attention of local authorities, which has been attested by the attendance of several officials during the official project launch. Some partners have replicated this project experience in other villages. One project's partnership with the local organization CREPA consisted of advice on water and sanitation standards, grantee capacity building as well as a visit during the project launch. Government agencies have provided support as well. For example, the Zinder Regional Directorate of Hydraulics ensures the proper monitoring and maintenance of the water infrastructure. However, it is SGP and other partners that provide the opportunity to take the water issue to a global level.

# SENEGAL

## BACKGROUND

Senegal is located along the westernmost edge of **West Africa's Atlantic coast** and is part of the fickle **Sahelian climate zone**. Over the last 50 years, however, all regions in Senegal have experienced a decrease in rainfall, with some areas in central and northern Senegal even suffering from extreme droughts. **Climate change** effects have increased Senegal's vulnerability to **drought, sea-level rise, coastal erosion, flooding** and related **health epidemics**[12]. Droughts in particular have adversely impacted Senegal's rain-fed agriculture and food supply. **Falling groundwater tables –** the result of over-usage - now require some rural areas to drill as deep as 80 meters, which cannot be easily done without technical and financial assistance.

More than 7 million or 60% of Senegal's 12 million people live in rural areas, and 47% live below the poverty line. Almost half of the rural population **(46%)**[13] **does not have access to improved water points**, and **almost three fourths (72%) of the population does not have sanitation coverage**[14]. Communities commonly rely on the use of unsafe surface water. The primary source of improved water access is rural multi-village boreholes with motorized pumps. Nevertheless, the quality of water remains a challenge.

## CWI IN SENEGAL

CWI launched its operations in Senegal in 2007 and has since implemented **21 projects** for more than **71,000 beneficiaries** to ensure improved access to water and sanitation. Several of these projects were located in the **Saloum Delta Biosphere Reserve**, an area that suffered from storm surges as well as **environmental pollution** and **forest degradation**. These projects focused on building improved **sanitary facilities** as well as rehabilitating mangrove forests, which provide critical protection from climate change.

Another set of projects addressed **biodiversity** and **land degradation** issues. In addition to providing access to **drinking water**, these projects aimed at **forest conservation** through the promotion of agroforestry, forest nurseries and fruit orchards – which was to simultaneously strengthen food security. A third group of projects focused on addressing **drought** issues in Senegal's Groundnut basin by **extending existing water supply** to other surrounding villages. This not only increased access to drinking water for a wider population, but it also allowed for the establishment of **produce gardens**. From these projects, water and produce sales provided additional income generating opportunities.

[12] World Bank (2011)
[13] World Bank Database
[14] AMCOW Country Overview: Senegal

The CWI projects have been very much appreciated by the beneficiaries as demand for water and latrines is very strong in rural areas. This has led to **strong social mobilization**, the coming together of villages and the protection of cultural values such as solidarity and mutual aid. Nevertheless, some projects faced challenges in regards to maintaining social cohesion for the project implementation.

CWI was able to take advantage of **SGP**'s experience in terms of financial partnership, sustainability and replication strategies. The SGP National Coordinator, the National Steering Committee and SGP's network provided **technical assistance** and **capacity building** activities. Besides support from UNDP and the SGP, a host of other partners – especially local governmental bodies - were intimately involved in the project.

Water storage tower in Bambey, Senegal

# CASE STUDY #5: IMPROVING ACCESS TO POTABLE WATER AND SANITATION TO REDUCE MARINE POLLUTION AND POVERTY IN NIODIOR, SENEGAL

Project ID: SEN/CWI/08/07

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**BACKGROUND**

The island of Niodior, home to 6,000 people, is located on the fringes of Senegal's Saloum Delta Biosphere Reserve and is a Ramsar Convention site. It is comprised of 234,000 hectares of marine, flooded, and terrestrial ecosystems. The Bioshpere is home to 60,000 hectares of Mangrove forests and is a globally important migratory site for Palearctic birds. It hosts breeding sites for green sea turtles (Chelonia midas), manatees, and Sousa dolphins. Its coastal waters contain over 115 species of fish, making it the sixth most biodiversity estuary in the world. In addition, 186 tree species and 35 medium- and large-sized fauna species have been counted in the reserve[15].

Niodior's lack of infrastructure for water supply and sanitation had long caused water shortages and adverse health effects among the local population. In particular, local people had relied on traditional, shallow wells (7 to 8 meters deep) for their drinking water. This posed enormous difficulties, especially in the dry season, as the quantity of water provided by these wells was inadequate. Rainfall is also highly variable from year to year, resulting in recurring droughts. This situation forced women to remain at the wells for hours, waiting to fill their buckets. During the rainy season, rising ground water did provide enough water but the inferior quality posed significant health risks.

Much of the local water quality issues were a result of sea-immersed latrines, which dispersed faecal matter into the surrounding ocean and beaches, where children play and women wash grain. Parasitic diseases and dysentery were also linked to the consumption of certain fish from inland waters. These factors, combined with poor hygiene practices, resulted in a high prevalence of cholera and other diarrheal and parasitic diseases. In 2006, Niodior experienced a cholera epidemic and only the village district that had benefited from latrines built by another SGP project was spared. This CWI funded project sought to reinforce these positive results in Niodior.

[15] United Nations Development Programme. 2012. Local Federation of Economic Interest Groups of Niodior (FELOGIE), Senegal. Equator Initia- tive Case Study Series. New York, NY.

**PROJECT ACTIVITIES**

The project is part of a larger group of CWI SGP projects in the Biosphere Reserve, primarily focusing on rehabilitating mangrove ecosystems and promoting marine resource management. The Federation Locale Des Gie De Niodior (FELOGIE), the grantee for this project, is a women's group, which works to rehabilitate and conserve marine and forest resources, including shellfish beds in the Soloum Delta Biosphere Reserve. In line with SGP's participatory local development approach, community meetings were arranged to facilitate an open exchange regarding the site selection of the six improved wells and the construction of 25 latrines.

**ENVIRONMENTAL IMPACT**

The project greatly contributed to the reduction of pollution and ecosystem degradation along the periphery of the Saloum Delta Bio Reserve. Improved access to sanitation allowed the community to significantly raise the level of cleanliness in the village and on the beach. A large share of the sea-immersed latrines, which were located along the shore were destroyed or abandoned in favor of in-house latrines. This had a positive effect on water quality and marine ecosystems.

The community organized procedures to ensure the disinfection of the wells and treatment of the traditional winter drinking water. In order to convince community members to abstain from using the old, submerged latrines, a day of advocacy was organized with the active involvement of local authorities, traditional leaders, funders, and the vulnerable, - especially women and children and women.

The project also sought to mitigate climate change effects with the planting of mangroves on 25 hectare of land. Rehabilitating mangroves helps protect the coastline from storms and tidal surges, conserves important fisheries habitats, and serves as an important carbon sink for green house gases (50 tons of CO2 avoided).

"The wells of the CWI project have improved the quality and quantity of water supplied for the population of Niodior. In regards to latrines in the houses, they have improved the well being of population and significantly decreased shoreline pollution."

- Assane Thiam, former Head of the Centre for Support of Local Development, Niodior, Senegal

**COMMUNITY AND LIVELIHOOD IMPACT**

Thanks to the improvement of six traditional wells and water treatment procedures, the entire population of Niodior – around 6,000 people - now enjoy access to safe water and more than 1,000 people have access to the new latrines. Distances to collect water decreased by 1,500m or four hours per day. The construction of the wells also removed competition for access to drinking water in the village, enhancing social relations in the community. Similarly, with the construction of latrines, welfare of the population has increased because the problem of human waste disposal was significantly reduced, lessening tension among community members.

The construction the water and sanitation infrastructure had a positive effect on employment, creating jobs and increasing incomes of local suppliers for building materials. Specifically, the project resulted in the creation of 56 jobs of which five were created for the construction of latrines and 6 for well-digging. The cluster of CWI SGP projects in the Reserve also enabled income-generating activities based on natural products, in this case, shellfish breeding and forest products. Thanks to the restoration of mangroves and reduction of water pollution, over 400 women earn over $5,500 annually from the shellfish bed alone. Revenues from the sale of sustainably harvested forest products are used to remunerate members of the monitoring committee, and to subsidize workshops and schools. Local villagers also managed to build their capacities to selffinance the improvement of vulnerable mangroves that will be increasingly threatened by rising sea levels.

"The SGP mangrove restoration project and CWI sanitation project in the Niodior village enabled the empowerment of women of the village. I say my sincere gratitude to these two projects because they allowed me to travel to New York where I was one of five winners of the 2010 Equator Initiative , with a grant of USD 20,000."

- Amy Ndour President of the FELOGIE Niodior, Fatick Region

Gender equality was also enhanced through this project. Women in particular have benefited from the creation of sustainable income-generating activities. Time-savings resulting from reduced distances for water collection has enabled women to engage in a range of other activities including shellfish breeding, health and safety, cleaning, and child education. Since women were the key beneficiaries of the project, they made all decisions relating to the design and implementation of project activities. Social cohesion has been strengthened through solidarity and mutual assistance on project tasks.

**HEALTH AND EDUCATION IMPACT**

CWI helped communities implement awareness and public education campaigns to promote a change in sanitary behavior. Consequently, the use of sea-immersed latrines has fallen substantially and diarrheal diseases have declined by almost 100%. Indeed, no cholera or other waterborne diseases have been recorded since the construction of CWI's wells and latrines. The project also had a tremendous effect on education. Many school girls who were helping their mothers in search of water have been attending school full time.

**IMPACT ON CAPACITY BUILDING, SUSTAINABILITY AND REPLICATION**

Three years after project completion, the wells and latrines are still working well. In order to ensure proper maintenance of the water infrastructure, 30 community members were technically trained to build, maintain and repair the components, which they have succeeded to do so. Trained community members also provide technical training to others. For instance, Mrs. Amy Ndour, President of the grantee organization FELOGIE, often shares her experience with SGP project network members working in the Saloum Delta National Park area. Local government representatives likewise participated in the coaching and capacity building of women beneficiaries of the project.

The project caught the attention of public officials. Local rural governance Board officials who attended the CWI project have expressed interest in replicating its activities in other villages with similar problems in access to drinking water and sanitation. (SGP has funded a sister project for the restoration of the mangroves in the community of Niodior.) Ms Amy Ndour, the president of FELOGIE, the grantee, won the Equator Prize 2010 with a prize on Special Recognition for Ecosystem-Based Adaptation to Climate Change.

"Equator Initiative and our partners GEF SGP and UNDP have actually responded to the needs of population of Niodior through this project to build wells and latrines. We warmly congratulate Ms Amy Ndour and women of FELOGIE for this award. This project deserves to be replicated in other villages in our rural community."

- Ibrahima Diop, President of Dionouar Rural Council

# CASE STUDY #6: EXTENDING ACCESS TO CLEAN WATER AND COMMUNITY VEGETABLE GROWING IN KEUR ASSANE, SENEGAL

Project ID: SEN/CWI/07/04

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**BACKGROUND**

The region of Diourbel in Senegal's Northern Groundnut Basin has experienced significant droughts within the last decades, seeing a decline as well as high variability in annual rainfall. As there are no rivers or other water bodies close by the villages of Keur Assane Kane and Keur Makhoudia, the communities have traditionally relied on surface water and Keur Makhoudia's small water tank to meet their water needs. These reserves, however, did not provide an adequate supply of water for human consumption and agricultural use. In Keur Assane, women and girls had to collect water from Keur Makhoudia's water tank, hauling water over a distance of 1.5km on a daily basis. This grueling work affected their health, school attendance and the opportunity to pursue more rewarding activities. Overall, poverty levels were high due to a lack of income-generating activities.

**PROJECT ACTIVITIES**

The objective of this project was to ensure adequate water supply for Keur Makhoudia and Keur Assane Kane and to establish a system for managing public drinking water. To this end, CWI extended the water supply network between the neighbouring villages by increasing water storage with large water tanks in Keur Makhoudia and by extending the network with 1,500 meters of water pipes from one village to another. Two newly constructed water fountains - each with two tabs – have since provided improved access to clean water for the two communities.

**ENVIRONMENTAL IMPACT**

Improved access to water has allowed the village of Keur Assane to fight against the water scarcity that characterizes its ecosystem. Around 1,000 people in Keur Assane Kane and Keur Mahkhoudia now enjoy improved access to safe drinking water. Given that water from the new, larger water tank is also being sold to other neighboring villages, the indirect benefits of the CWI project may be larger than expected. The communities use the water for personal consumption as well as for irrigation of green spaces or produce gardens. The Rural Council provided one hectare of land to establish a produce garden for improved food security. A water management system with water metering helps communities manage their water resources more sensibly, - especially in the light of climate change adaptation.

**COMMUNITY AND LIVELIHOOD IMPACT**

The CWI project has had a strong impact on women and livelihoods in the communities. Women, who had traditionally been responsible for collecting water, no longer have to walk 1,500 meters or spend four hours a day on this task. Indeed, many households were able to build individual in-house connections from the water fountains. Consequently, women have been able to devote time to other activities such as health and safety issues, house cleaning, child education and other income generating activities. It is also important to note that the project has eased social tensions, removing competition for access to drinking water in the communities.

The addition of one hectare of land doubled the gardening surface to two hectares. This extension, along with improved access to water has allowed people – predominantly women - to pursue gardening to a greater extend. Gardeners typically reserve a share of the produce for household consumption and sell the remainder to generate income (about USD $20,000 per year per project). As a result, the communities have experienced an improvement in food security and poverty alleviation.

The project also spurred the creation of at least 50 new jobs. Apart from produce gardening, women have generated income from water sales, - primarily to surrounding villages ($170 per day). Overall, women were the key beneficiaries of this project and made all decisions relating to the design and implementation of project activities.

"Increasing the capacity of the [water] tank in Keur Makhoudia allowed the population to increase revenues from gardening."

- Abdou Fall, Vice Chairman of the Board of Rural Council of Baba Garage

**IMPACT ON HEALTH AND EDUCATION**

The project has had a tremendous positive impact on school attendance and health in the community. Since the implementation of the CWI project, many girls who were helping their mothers to collect water have been attending school full time. The expansion of produce gardening has significantly strengthened the quality of child nutrition, providing various fresh garden vegetables including carrots, lettuce, cabbage, eggplant, tomatoes, okra and sorrel for consumption. The communities have also been able to register a decline in water-borne diseases, including malaria. Indeed, diarrheal diseases may have been completely eliminated.

"The water project is very beneficial to the women of the village as we wash more regularly than before, then there is less malaria in the village."

- Ms. Sokhna Ngom, President of the group of women

**IMPACT ON CAPACITY BUILDING, SUSTAINABILITY AND REPLICATION**

The communities established a women-led water management committee to provide a mechanism for local management of the infrastructure. The members were trained in various aspects of water management and maintenance. In addition, 50 people were technically trained and have succeeded in providing adequate service. The water supply network is still in working order. Furthermore, a revenue generation mechanism based on water sale was established to cover maintenance costs for the water supply network. It raises approximately $170 per day.

The project has caught the attention of public officials. Local government representatives participated in the coaching and capacity building of women beneficiaries of the project. Local rural governance board officials who attended the CWI project have expressed interest in replicating its activities in other villages with similar problems of access to drinking water.

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