Introduction to Climate Resilient WinS Programming

1st WASH in Schools International Learning Exchange (WinS ILE) 13-17 March 2023

Climate Change Definitions

- **Weather:** atmospheric condition at any given time or place (measured in terms of temperature, precipitation…).
- **Climate**: usually defined as the “average weather” over a period of time (usually 30 years).
- **Climate Hazard**: event with potential to cause harm (e.g. drought, storm) or long-term change in climatic variables (e.g. temperature, precipitation).
- **Vulnerability**: degree to which a system is susceptible to harm due to exposure to a perturbation or stress and the ability to cope, recover, or fundamentally adapt.
- **Risk:** is the result of the interaction of physically defined hazards with the properties of the exposed systems (e.g. social vulnerability). Risk = (Hazard) x (Vulnerability) x (Exposure) / (Capacity)

Definition of Climate Change

Climate Change refers to “a change in the state of the climate that can be identified (e.g. using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer” (IPCC, 2007)

Climate Change refers to “a change of climate that is **attributed directly or indirectly to human activity** that alters the composition of the global atmosphere and that is in addition to natural climate variability observed over comparable time periods” (UNFCCC)

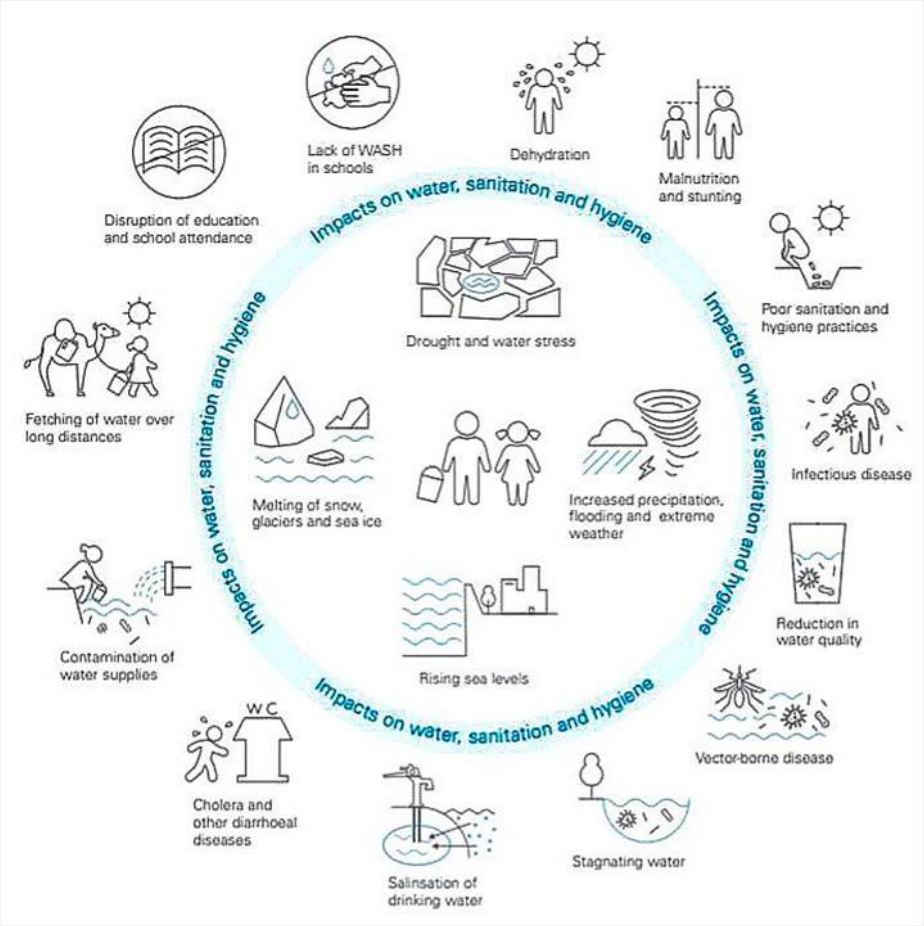
Climate Change Evidence

IPCC found out already in its fourth assessment report that:

- It was **“very likely”** that emissions of heat-trapping gases from human activities have caused “most of the observed increase in globally averaged temperatures since the mid-20th century”.
- it was **“unequivocal”** that Earth’s climate is warming, “as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global mean sea level.”
- The Atmospheric concentration of CO_2 and CH_4, “**exceeds by far”** the natural range over the last 650,000 years.”

The IPCC Sixth Assessment Report

Climate change impacts WASH and community resilience



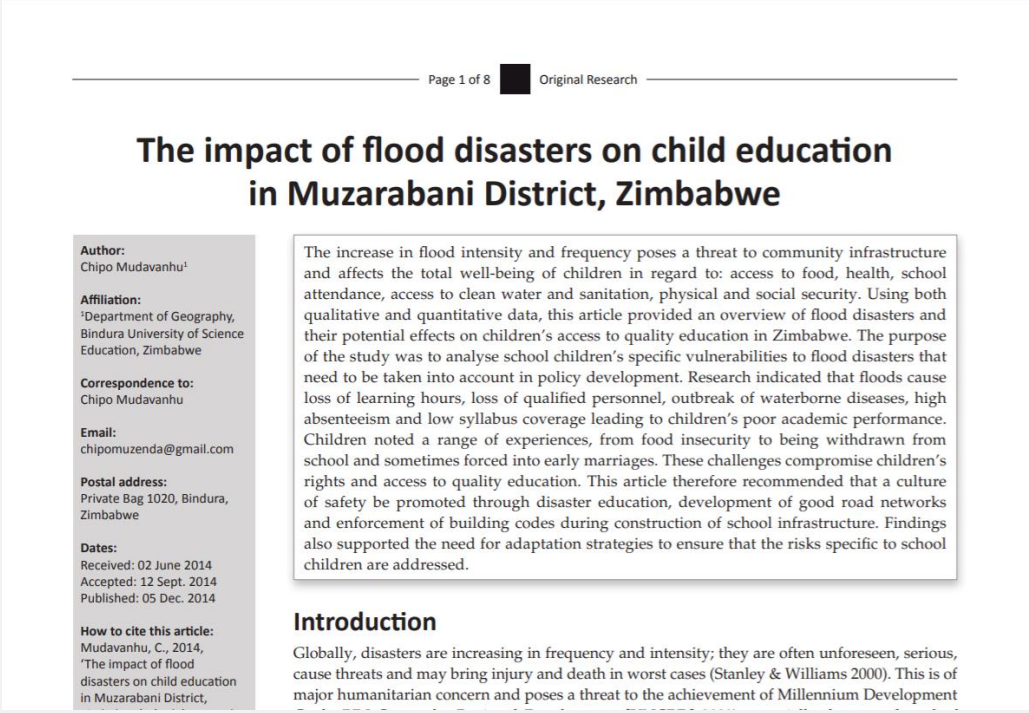
Climate effect	Hazard	Impact on WASH sector
Decrease in precipitation	Drought	Reduction in raw water supplies, reduced flow in rivers, less dilution/increased concentration of pollutants in water, challenge to hygiene practices.
Increase in precipitation and severe weather	Flooding	Pollution of wells, inundation of wells, inaccessibility of water sources, flooding of latrines, damage to infrastructure, landslides around water sources, sedimentation and turbidity, challenges to sustainability of sanitation and hygiene behaviours, and waterborne diseases.
Increase in temperatures	Heatwaves	Damage to infrastructure, increase in pathogens in water leading to increased risk of disease.
	Melting and thawing of glaciers, snow, sea ice and frozen ground	Seasonality of river flows affected leading to a reduction in water availability in summer.
Sea-level rise	Flooding and saline intrusion into freshwater aquifers	Reduction in availability of drinking water, with high impacts on quality.

Climate change impacts WinS

- Extreme weather events and floods destroy or disrupt sanitation facilities in schools, compromising attendance.
- Lack of water in schools during droughts disrupts hygiene practices (e.g. handwashing), impairs children attention and difficult meal preparation.
- Lack of reliable and resilient water supply forces children to walk longer distances to fetch water an compromise attendance to schools, or if they attend are often too tired to pay attention.

Evidence needed to better understand climate impacts in WinS

- There is an increasing body of evidence indicating that climate change negatively impacts WinS
- More WinS trials and studies are needed to produce learnings
- Reviews of evidence are needed to help summarize findings



Page 1 of 8 Original Research

The impact of flood disasters on child education in Muzarabani District, Zimbabwe

Author:
Chipo Mudavanhu[1]

Affiliation:
[1]Department of Geography, Bindura University of Science Education, Zimbabwe

Correspondence to:
Chipo Mudavanhu

Email:
chipomuzenda@gmail.com

Postal address:
Private Bag 1020, Bindura, Zimbabwe

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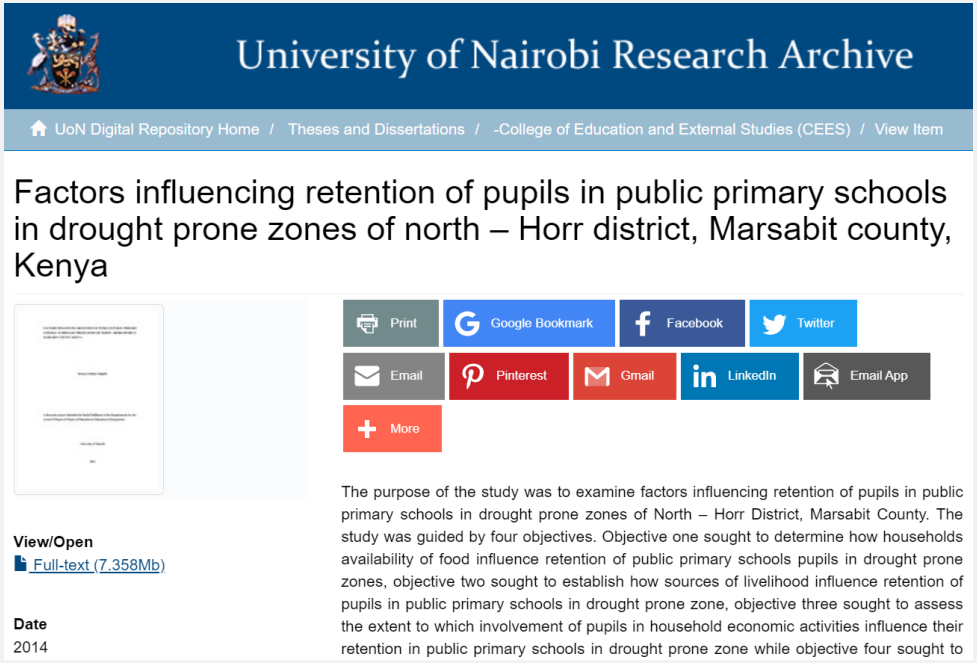
The increase in flood intensity and frequency poses a threat to community infrastructure and affects the total well-being of children in regard to: access to food, health, school attendance, access to clean water and sanitation, physical and social security. Using both qualitative and quantitative data, this article provided an overview of flood disasters and their potential effects on children's access to quality education in Zimbabwe. The purpose of the study was to analyse school children's specific vulnerabilities to flood disasters that need to be taken into account in policy development. Research indicated that floods cause loss of learning hours, loss of qualified personnel, outbreak of waterborne diseases, high absenteeism and low syllabus coverage leading to children's poor academic performance. Children noted a range of experiences, from food insecurity to being withdrawn from school and sometimes forced into early marriages. These challenges compromise children's rights and access to quality education. This article therefore recommended that a culture of safety be promoted through disaster education, development of good road networks and enforcement of building codes during construction of school infrastructure. Findings also supported the need for adaptation strategies to ensure that the risks specific to school children are addressed.

Introduction

Globally, disasters are increasing in frequency and intensity; they are often unforeseen, serious, cause threats and may bring injury and death in worst cases (Stanley & Williams 2000). This is of major humanitarian concern and poses a threat to the achievement of Millennium Development



University of Nairobi Research Archive

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Factors influencing retention of pupils in public primary schools in drought prone zones of north – Horr district, Marsabit county, Kenya

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View/Open
Full-text (7.358Mb)

Date
2014

The purpose of the study was to examine factors influencing retention of pupils in public primary schools in drought prone zones of North – Horr District, Marsabit County. The study was guided by four objectives. Objective one sought to determine how households availability of food influence retention of public primary schools pupils in drought prone zones, objective two sought to establish how sources of livelihood influence retention of pupils in public primary schools in drought prone zone, objective three sought to assess the extent to which involvement of pupils in household economic activities influence their retention in public primary schools in drought prone zone while objective four sought to

Climate change responses and children

MITIGATION

Technological change and substitution that **reduce GHG emissions** and **enhance sinks.**

Examples:

- Renewable energy supply (e.g. hydropower, solar energy)
- Reforestation
- Waste minimization
- Composting of organic waste

ADAPTATION

Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which **moderates harm** or exploits beneficial opportunities.

Examples:

- Expanded rainwater harvesting
- Water storage and conservation
- Water conservation, efficiency and reuse
- Desalinization

Children are agents of change in their communities and **WinS** can support scaling up of climate change adaptation and mitigation (e.g. school environmental clubs, water conservation, reuse, tree plantation for watershed management)

Key objectives for climate action in WASH

… Also apply to WASH in Schools

1

Ensuring that WASH facilities and services are sustainable, safe and resilient to climate-related risks

2

Ensuring that resilient WASH systems contribute to build community resilience and adapt to the impacts of climate change

3

Working towards a carbon-neutral WASH sector

Child-friendly WASH facilities in schools…

Do not harm the environment

Conserve and reuse valuable water resources: Scarce water resources should not be wasted. Pour-flush toilets can be used to minimize the volume of water needed to flush and discharge

Prevent soil and groundwater pollution: Pits should be well lined and properly located to avoid seepage into the surrounding soil and groundwater

Avoid possible environmental hazards during disasters: Pits can overflow as a result of extreme rainfall and floods, causing severe health risks

WinS and climate change in the 2030 Agenda

SDG 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

SDG 6: 'Ensure availability and sustainable management of water and sanitation for all'

SDG 13: 'Take urgent action to combat climate change and its impacts'

Photo from Eurowaters.org National Competition for Water Conservation for Primary Schools Students

- **Target 13.3** Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning
  - Indicator: Number of countries that have integrated mitigation, **adaptation, impact reduction and early warning into primary, secondary and tertiary curricula** (e.g., water cycle and climate change impacts, water conservation, reuse, etc.)

Blue Schools

Swiss Water & Sanitation Consortium

Tigist

HELVETAS
SWISSAID
CARITAS Schweiz Suisse Svizzera Svizra
Swiss Red Cross
Terre des hommes Helping children worldwide.
SOLIDAR SUISSE FIGHTING FOR GLOBAL FAIRNESS
HEKS EPER Bread for all.
Fastenaktion Action de Carême Azione Quaresimale

With support from
Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra
Swiss Agency for Development and Cooperation SDC

Who are we?

- Consortium of 8 Swiss NGOs working on improving WASH in institutions and Communities
- Co-Funded by SDC
- 16 projects in 12 countries
- On-going since 2011 (phase 3)
- Working on two signature approaches: Blue Schools and WASH in HCF
- Strong focus on knowledge sharing, innovation, as well as advocacy/policy influencing and system strengthening

HELVETAS SWISSAID CARITAS Schweiz Suisse Svizzera Svizra Swiss Red Cross

Terre des hommes Helping children worldwide. SOLIDAR SUISSE FIGHTING FOR GLOBAL FAIRNESS HEKS EPER Bread for all. Fastenaktion Action de Carême Azione Quaresimale

With support from Schweizerische Eidgenossenschaft Confédération suisse Confederazione Svizzera Confederaziun svizra

Swiss Agency for Development and Cooperation SDC

What is a Blue School?

→ A healthy and environmentally friendly school….. Where:

ALL Students at the centre

Use **safe drinking water and well-maintained latrines.**

Practice **good hygiene (including MHM).**

Experience **gardening** activities.

Participate in **solid waste** management.

Take part in **environmentally**-friendly activities.

ALL Teachers

Teach in a practical way.

Are role models.

Parents

Are engaged in activities.

Replicate good practices (students as change agents).

What is a Blue School?

Blue Schools topics

INFRASTRUCTURE + LEARNING/PRACTICE

Blue Schools principles

- It is a **mindset –** being committed to improve hygiene and environment.
- It is a **pathway** - starting by addressing WASH needs.
- It is about **strengthening systems actors –** We do not impose, we inspire (teacher).
- It is about **learning by doing** - fostering practical education on hygiene and the environment**.**
- It is **context and school specific** – all Blue schools are different.

What is in the Blue Schools Kit?

What is the Blue Schools Kit?

Support and inspiration materials for schools stakeholders

- A Catalogue of Technologies
- A Catalogue of Practical Exercises
- A Facilitator's Guide
- A Concept Brief (2 pager)

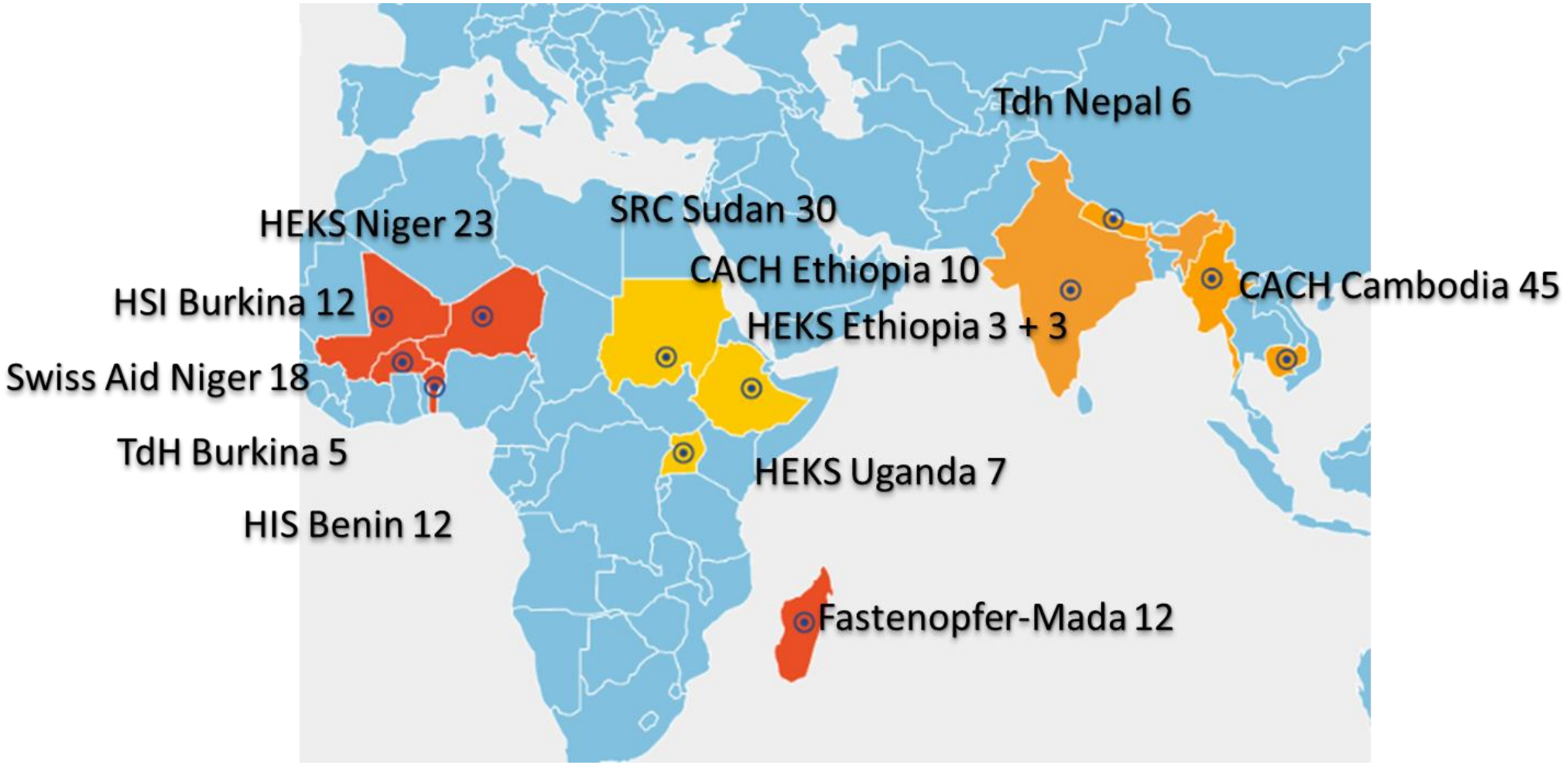
→ Blue Schools Kit under revision

Why catalogues?
To inpire, not to impose.
The Blue Schools Kit does not tell you what to do and how!

Where do we implement Blue Schools?

2017 – 2018. Blue Schools Kit development.

13 projects – 9 countries – 7 organisations – 186 schools



Blue Schools Theory of Change

SYSTEMS-WIDE APPROACH – WASH IN SCHOOLS & ENVIRONMENTAL EDUCATION – ADVOCACY

Who we accompany	What that leads to	What that contributes to
Teachers and school management to strengthen practical learning on WinS (including MHH) and environmental conservation **Education and other sectoral authorities** to: • Monitor services and plan/budget accordingly. • Build capacity of teachers and school management. • Enhance policy framework. • Prioritize learning about WASH and the environment in national curriculum	**Access to "Basic" level of WASH services in schools** **Students** adopting good hygiene behaviours and experience good land, water management practices **Teachers** providing practical education on hygiene and environmental conservation **School Management** Committees deciding on priority WASH and environmental conservation activities **Education and other sectoral authorities** mainstreaming Blue Schools principles at (sub) national level	**Improving health** of students and the community at large (SDG 3) **Availability and sustainable management of WASH for all** (SDG 6) **Inclusive and quality education for all**, with a focus on gender equality (SDG 4, 5) Reduction of absenteeism, better school performance, more dignity for girls Other SDGs linked to the environment (e.g. SDG 12, 13, 15) **Longstanding social, political and budgetary commitments** and actions for WinS

Main lessons learned from the SWSC

- **Water:**
  - Access to water is the starting point, and there should be enough water for drinking and hygiene before embarking in other activities!
  - There are a lot of learning opportunities around water.
  - The best technical solution depends on the context.
- **Sanitation and hygiene:**
  - There should be clear plans for O&M, and monitoring by systems actors.
  - Behaviour change requires more than just bringing infrastructure (practice).
- **MHM:**
  - The first step is to change teachers and boys' mind and breaking the taboos.
  - For adequate MHM, there is a need for
    - Facilities: Adequate facilities for girls
    - Materials: water, cleaning products, pads for emergency available
    - Information: Learning what menstruations are, and how to manage them
    - Enabling environment: dedicated teacher, budget line, etc.

Main lessons learned from the SWSC

- **School garden:**
  - If access to water is limited, it is ok to garden only during rainy season.
  - Space should not be a limiting factor (vertical garden, key hole garden).
  - The most important is not the size of the garden, but the learning.
  - For demonstration: good land & water management practices, nutritive crops…
  - Clear arrangements on how to manage the school garden.
- **Solid waste management:**
  - Sustainable solid waste management is more than just collecting waste.
  - It is about:
    - Activities to REDUCE the amount of waste → starting point
    - Activities to REUSE and RECYCLE waste that can not be REDUCED
  - Plastic waste should never be burnt!

Monitoring & Evaluation of Blue Schools

WASH: *Emerging service ladders for monitoring WASH in schools in the SDGs* (JMP, 2016)

Drinking water	Sanitation	Hygiene
Advanced service May include: water is available when needed, accessible to all, and free from faecal and priority chemical contamination based on water quality testing (to be defined at national level)	**Advanced service** May include: facilities are accessible to all, of sufficient quantity, inspected for cleanliness & appropriate facilities for menstrual hygiene management are provided (to be defined at national level)	**Advanced service** May include: handwashing facilities available at critical times and accessible to all; menstrual hygiene education and products provided (to be defined at national level)
Basic service Drinking water from an **improved** source is **available at** the school	**Basic service** Improved facilities, which are **single-sex and usable** at the school	**Basic service** Handwashing facilities, which have **water and soap** available
Limited service There is an improved source (piped water, protected well/spring, rainwater, packaged or delivered water), but water not available at time of survey	**Limited service** There are improved facilities (flush/pour flush, pit latrine with slab, composting toilet), but not sex-separated or not usable	**Limited service** Handwashing facilities with water, but no soap
No service No water source or unimproved source (unprotected well/spring, surface water source)	**No service** No toilets or latrines, or unimproved facilities (pit latrines without a slab or platform, hanging latrines, bucket latrines)	**No service** No handwashing facilities at the school or handwashing facilities with no water

Monitoring & Evaluation of Blue Schools Components

SWSC, Eawag, Simavi, 2020 (Based on the JMP service ladder approach for monitoring WASH in the SDGs)

MHH	Solid waste management	School gardening	Environmental activities
Advanced: Additional criteria may include: A separate, private bathing area with water and soap, girls have access to sanitary materials for urgent needs, and menstrual hygiene waste is managed safely	**Advanced:** Additional criteria may include: Measures implemented for waste reduction, reuse and recycling	**Advanced:** Additional criteria may include: Additional crops, low external input sustainable agriculture (LEISA) techniques, seedling/nursery beds	**Advanced:** Additional criteria may include: activities for sustainable land/water management implemented in the surrounding community.
Basic: There is at least one private space with water and soap where girls can wash or change, *and* bins with covers for disposal of sanitary materials	**Basic**: Solid waste is safely managed at the school. This means: •There are no signs of waste litter, *and* •There are no signs that plastic is burnt, *and* Inorganic waste is separated from organic waste, *and* •There is a compost pit or pile in use, *and* •Non reusable/recyclable waste is disposed onsite in a protected waste disposal pit OR given for disposal by an authority outside the school	**Basic:** There is a school garden where at least three different crops are being grown	**Basic:** At least one sustainable land/water management technology is demonstrated in the school compound or in an area adjacent to the school
Limited: There is at least one private space with water where girls can wash or change, OR bins with covers for disposal of sanitary materials	**Limited:** At least one, but not all, of the above requirements for basic service are met	**Limited:** There is a school garden, but fewer than three different crops are being grown	**Limited:** N/A
No service: There is no private space where girls can wash and change and no bins with covers for disposal of sanitary materials	**No service:** None of the requirements to safely manage waste are met	**No service:** There is no school garden	**No service:** No sustainable land/water management technology is demonstrated

COOPERATION PROGRAM COTE D'IVOIRE - UNICEF 2021 - 2025

SOLAR WATER PUMPING AS A CLIMATE CHANGE ADAPTATION SOLUTION IN NORTHERN COTE D'IVORE

1st AFRICAN INTERNATIONAL LEARNING EXCHANGE Grand-Bassam, 16 March 2023

Presented by Dr. SILUE BETIO WASH SPECIALIST UNICEF COTE D'IVOIRE

unicef | for every child

PRESENTATION PLAN

1. Background and Rationale;

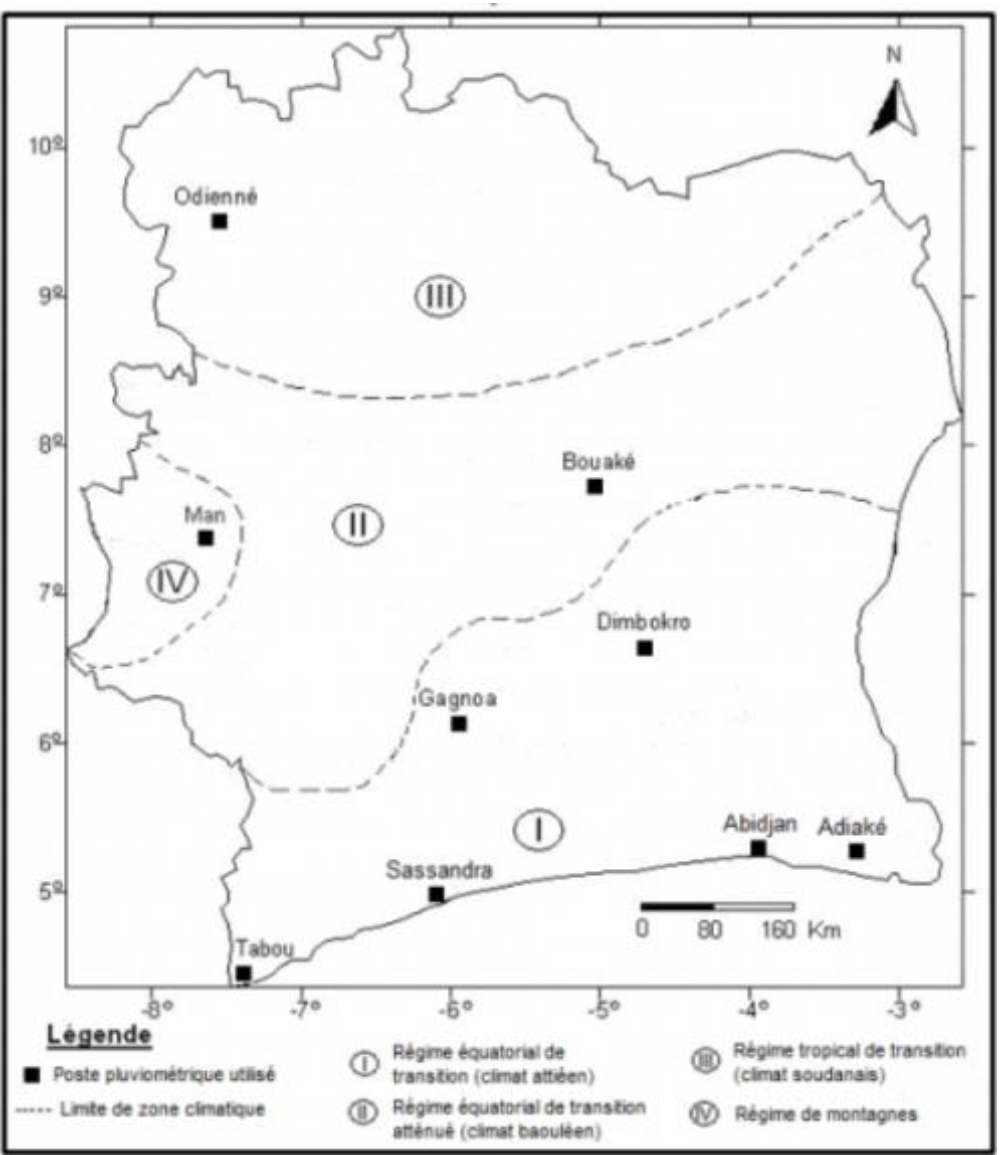
2. Solar Water Pumping Projects

3. Training of actors

4. Lessons learned and recommendations

1. Context

Geographic and climatic location



Tropical or Sudanian climate

Least watered area

Precipitation between 1700 mm and 1000 mm per year with an average of 1100

The hottest and driest area

Trends

Reduced precipitation and increased temperatures

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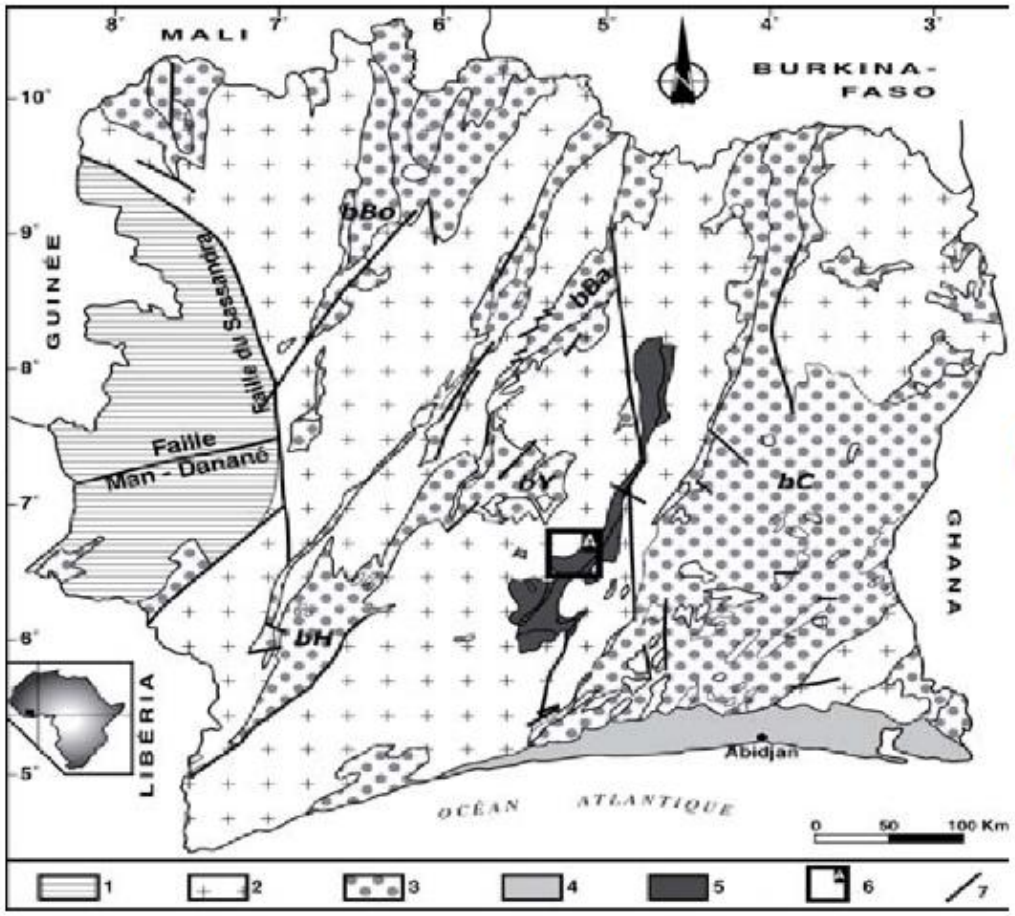
pour chaque enfant

1. Context
Geology and hydrogeology



Carte géologique simplifi ée de la Côte d'Ivoire, modifi ée d'après Tagini (1972) 1 = domaine archéen ; 2 = granitoïdes indifférenciés d'âge paléoprotérozoïque ; 3 = volcanites, sédiments et volcano-sédiments indifférenciés paléoprotérozoïques; 4 = formations post-birimiennes ; 5 =

Base area

Large cities= Surface water

Rural area = Groundwater

- Drilling
- Traditional wells
- Alternative sources

Trends

Higher FTEs

Drying of wells and alternative springs in dry season

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1. Context

Geological and hydrogeological studies

Groundwater resources in Côte d'Ivoire are increasingly subject to irregular fluctuations due to the impact of climate change that has affected the Sudano-Sahelian region since the early 1970s and anthropogenic pressures on watersheds

Surface water (rivers and reservoirs) is mostly drying up due to low rainfall and sunshine.

drilling campaigns have a higher failure rate, making the living conditions of the populations difficult.

2. PEES projects (1st phase)

N°	REGIONS	DEPARTEMENTS	SOUS-PREFECTURES	LOCALITES	Système Mini_ AEP photovoltaique	Borne fontaine (2 Robinets par borne fontaine) en Communauté	Points de puisage (4 robinets par muret) à l'école	Branchement du batiment du centre de santé
LOT 1	Poro	Dikodougou	Dikodougou	Nerkémé	1	2	1	1
	Poro	Dikodougou	Dikodougou	Pindokaha	1	2	1	0
LOT 2	Poro	Dikodougou	Guiémé	Sokpokaha	1	2	1	0
	Poro	Dikodougou	Guiémé	Féguéré	1	2	1	0
	Tchologo	Ferké	Koumbala	Koumbala	1	2	1	0
				TOTAL	5	10	5	1

- Actors ONEP, DR Hydraulics of Poro and Tchologo, village communities, companies (Sie Travaux and Rockwell), UNICEF team

- Identify boreholes with an operating flow rate greater than 3 m3/h

2. PEES projects (2e phase)

N	Region	Departement	Souspréfectures	Localites	Systeme de mini AEP solaire	Borne fontaine	Point de puisage ecole	Branchement de batiment centre de sante
Lot 1	Tchologo	Ferkessedougou	Koumbala	Djogonakaha	1	2	1	
				Allamandjoukaha	1	2	1	1
Lot 2				Sambakaha	1	2	1	1
				Yediandekaha	1	2	1	
Lot 3				Lamekaha 2	1	2	1	1
				Lamekaha 3	1	2	1	
Lot 4	Poro	Dikodougou	Giembe	Namasserikaha	1	2	1	
				Kafiplekaha	1	2	1	
Lot 5	Bagoue	Boundiali	Ganaouni	Kambiala	1	2	1	
				pahatogo	1	2	1	
Total					10	20	10	3

- Actors ONEP, DR Hydraulics of Poro and Tchologo, Village communities, Companies (SIE Travaux, GMHDR, Aquifere Forage SAER/ATD), UNICEF Team

- Automatic connection of schools to the system
- Connection in health centers
- Tank of 10 m3

3. Training of actors by Water mission

Order number	Participants	Number	Observations
1	Ministry of Hydraulics	02	Directorate of Drinking Water Supply (DAEP)
2	Regional Directions of Hydraulics	08	Regions of : Goutougo, Bounkani, Tchologo, Poro, Bagoué, Folon-Kabadougou, Bafing, and Tonkpi
3	National Office of Drinking Water (State Technical Services	03	
4	Representatives of private companies	05	SIE TRAVAUX, ROCKWELL, SAHER, GMHDR, COSTRA-CI
5	National NGOs	02	Caritas Bondoukou, KRG
6	International NGOs	03	CARE, IRC,ACF
7	UNICEF/WASH	08	
	Total	31	

Phase 3

3 localities of Bouna
2 locations in Boundiali; 2 locations in Ferke

Phase 4

4 in progress and 1 finalized

Facilitate the understanding of key concepts of Solar Water Pumping Systems (SWPS) through the visit of a field system,

To allow participants to practice designing an SSEP system through step-by-step resolution of SSEP-related issues

Facilitate connections between participants and IRS/AOC staff

4. Lessons learned and recommendations

PEES increases community water demand

Water point management committees have not adapted to the system level

The water treatment is not continuous breakage of the treatment products or not mastered the process by the members of the committee or not functioning of the system

Local people trained to maintain and manage the HVA system must be regularly retrained

The maintenance of HVA systems should not be left to the localities. A partnership with the private sector is imperative to ensure the sustainability of these structures.


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