



Aquasol Technology Limited

KENYA

www.aquasol-tech.com

Introduction

- The Aquasol Nano Box is a containerized, solar-powered water purification system that uses advanced filtration technology to remove bacteria, viruses, odors, unpleasant taste, dissolved chemicals, salts, hardness, and even stubborn heavy metals.
- It integrates intelligent power regulation, automated membrane cleaning, and UV disinfection, minimizing operator intervention, while ensuring water that is safe from germs and harmful chemical contaminants.



Aquasol Nano Box Specifications



Output: 350 liters per hour

Maximum Input TDS: 1600 ppm

Containerized design with industrial tyres

Dimensions: 75x38x50 inches

Storage tank capacity: 160L

Automated Backwash System

UV Disinfection present

Hybrid Power System (AC & DC)

Auto Tracking of quality of water (TDS)

Low power consumption when running on AC

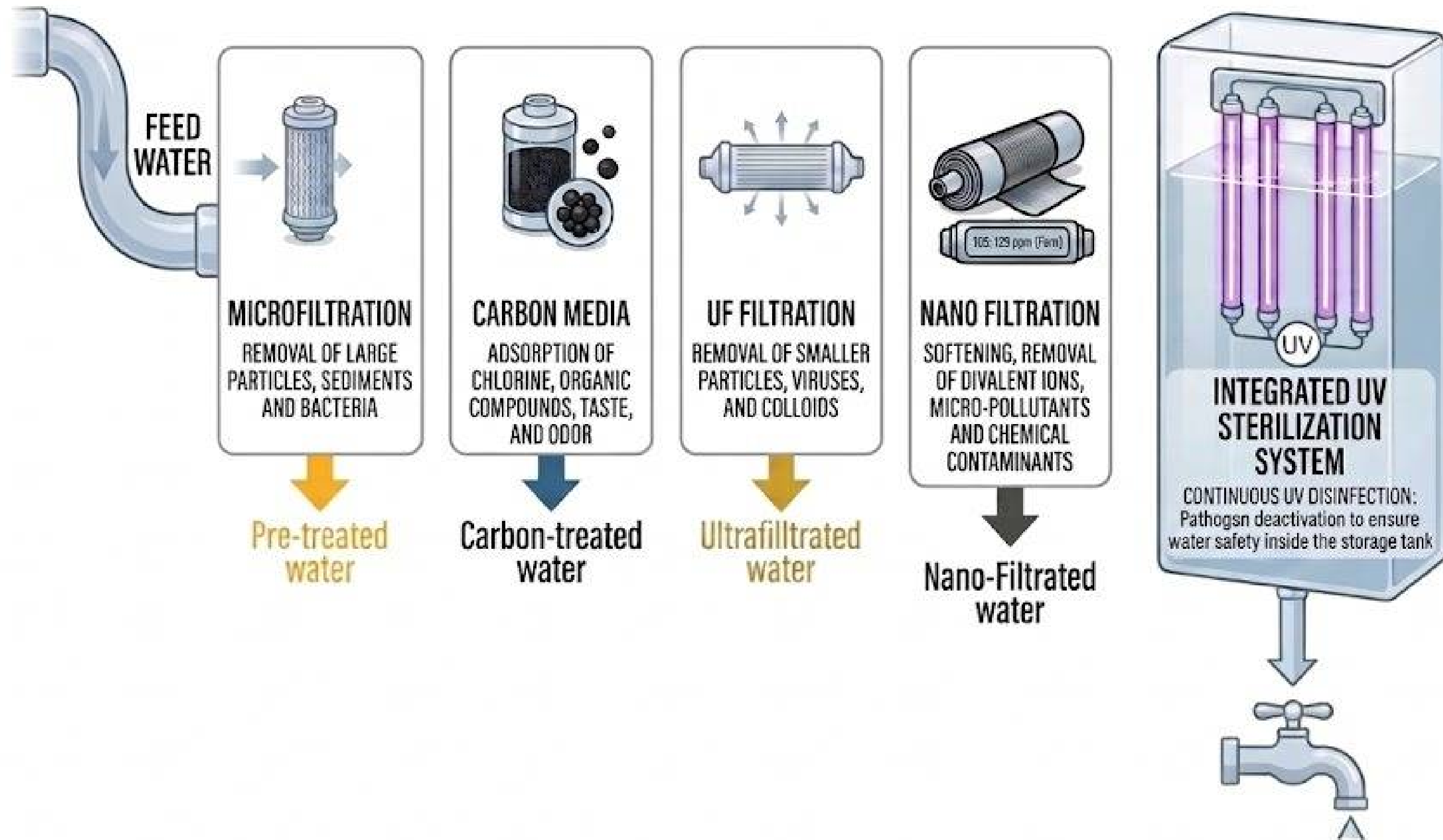
5 - Stainless steel Dispensing taps

Aquasol Nano Box: Contamination Filtration Capacity

Category	Contamination type	Examples	Removal Capacity
Physical Contaminants	Particular Matter	Dirt, Clay particles, Silt	99.91%
	Suspended Solids	Fine sand, Rust particles	99.91%
	Sediments	Fine sand, Rust particles	99.91%
	Turbidity-Causing	Organic matter, Dead plant material, Decaying leaves	99.91%
	Particles Organic Colloids	Humid substances, Fulvic acids	99.9%
	Inorganic Colloids	Silica particles, Iron oxides, Clay particles	99.9%
Microbial Contaminants	Bacteria	E.coli, Salmonella, Legionella, Vibrio cholera , Shigella, Campylobacter	99.9%
	Protozoa	Giardia lamblia, Cryptosporidium, Entamoeba histolytica	99.9%
	Viruses	Larger viruses (e.g., Mimivirus, Pandoravirus, CMV)	99.9%
	Algae	Green Algae (Chlorella, Scenedesmus), Blue-Green Algae (Microcystis, Anabaena)	99.9%

Aquasol Nano Box: Contamination Filtration Capacity

Category	Contamination type	Examples	Removal Capacity
Chemical Contaminants	Color and Taste Compounds	Dissolved organic compounds contributing to color and taste	90-99%
	Dissolved Salts	Sodium, Chloride	70-95%
	Hardness Ions	Calcium, Magnesium	90-99%
	Heavy Metals / Lead	Lead, Mercury, Arsenic, Cadmium, Chromium, Nickel, Copper	80-99%
	Pharmaceuticals	Various drugs and medicinal compounds	99-99.9%
	Natural Organic Matter	Decomposed plant and animal matter	85-95%
	Herbicides	Various agricultural herbicides	75-95%
	Pesticides	Various agricultural pesticides	75-95%
	Flouride	Monatomic anion of fluorine	90-99.9%
	Cyanide	Ferrocyanide and Ferricyanide	> 95%





COMMON CONTAMINANTS IN KENYA

Bacteriological contaminants: E. Coli and Coliforms are harmful bacteria commonly found in water sources, and require effective treatment. The Aquasol Nano Box is designed to remove these contaminants efficiently and reliably.

Physicochemical contaminants—such as pH level, turbidity, high total dissolved solids (TDS), and fluoride concentrations above 1.5 mg/L—are also commonly found in Kenya. Excessive fluoride exposure can lead to severe, permanent dental discoloration and serious skeletal damage.

The Nano Box can remove up to 99.9% of physical, biological, and chemical contaminants, including fluoride.

Case Study - Before Treatment

PARAMETERS	METHOD	VALUES	KS EAS 12:2018 TREATED WATER STANDARD	WHO Guidelines 4th Ed. 2022	REMARKS
PHYSIO-CHEMICAL ANALYSIS					
pH (pH Units pH)	AQL/TM/HACH/8156	7.22	6.5 - 8.5	NS	PASS
Colour (Pt. Co. APHA Colour)	AQL/TM/HACH/8025	< 5	15	NS	PASS
Turbidity (NTU TUB)	AQL/TM/CHEM/10	2.87	5.0	NS	PASS
Total Suspended Solids (mg/L TSS)	AQL/TM/HACH/8006	ND	NIL	NIL	PASS
Total Dissolved Solids (mg/L TDS)	AQL/TM/HACH/8160	1041	1000	NS	FAIL
Electrical Conductivity (uS/cm EC)	AQL/TM/HACH/8160	1977	1500	NS	FAIL
P Alkalinity (mg/L CaCO3 PA)	AQL/TM/HACH/ISO/9963-1:1994	ND	NS	NS	-
Total Alkalinity (mg/L CaCO3 TA)	AQL/TM/HACH/ISO/9963-1:1994	664.1	NS	NS	-
Chloride (mg/L Cl)	AQL/TM/HACH/ISO/9297:2000	208.8	250	NS	PASS
Fluoride (mg/L F) ✓	AQL/TM/HACH/8323	7.64	1.5	1.5	FAIL
Sulfate (mg/L SO4)	AQL/TM/HACH/8051	394	400	NS	PASS
Nitrate (mg/L NO3)	AQL/TM/HACH/8358	< 1.3	45	50	PASS
Phosphate (mg/L PO4)	AQL/TM/HACH/8114	< 0.3	2.2	NS	PASS
Sodium (mg/L Na)	AQL/TM/APHA/3111B	268.3	200	NS	FAIL
Calcium (mg/L Ca)	AQL/TM/HACH/8030	106.11	150	NS	PASS
Magnesium (mg/L Mg)	AQL/TM/HACH/8030	30.37	100	NS	PASS
Iron (mg/L Fe)	AQL/TM/APHA/3111B	0.07	0.3	NS	PASS
Manganese (mg/L Mn)	AQL/TM/APHA/3111B	0.045	0.1	-	PASS
Ammonia (mg/L NH3)	AQL/TM/HACH/10001	7.46	0.5	NS	FAIL
Copper (mg/L Cu)	AQL/TM/APHA/3111B	< 0.04	1.0	2.0	PASS
Zinc (mg/L Zn)	AQL/TM/APHA/3111B	< 0.01	5.0	NS	PASS
Calcium Hardness (mg/L CH)	AQL/TM/HACH/8030	265	NS	NS	-
Magnesium Hardness (mg/L MH)	AQL/TM/HACH/8030	125	NS	NS	-
Total Hardness (mg/L TH)	AQL/TM/HACH/8030	390	300	NS	FAIL
Silica (mg/L SiO2)	AQL/TM/HACH/8185	66.1	NS	NS	-
BACTERIOLOGICAL ANALYSIS					
Total Coliforms (cfu/100 ml TC)	KS ISO 9308-1:2014	> 300	ND	ND	FAIL
E. Coli (cfu/100 ml E.C)	KS ISO 9308-1:2014	ND	ND	ND	PASS
Total Viable Counts 37 °C (cfu/ml TVC)	KS ISO 6222:1999	> 300	50	-	FAIL

Case Study - After Treatment

PHYSIO-CHEMICAL ANALYSIS					
pH (pH Units pH)	AQL/TM/HACH/8156	6.51	6.5 - 8.5	NS	PASS
Colour (Pt. Co. APHA Colour)	AQL/TM/HACH/8025	< 5	15	NS	PASS
Turbidity (NTU TUB)	AQL/TM/CHEM/10	0.28	5.0	NS	PASS
Total Suspended Solids (mg/L TSS)	AQL/TM/HACH/8006	ND	NIL	NIL	PASS
Total Dissolved Solids (mg/L TDS)	AQL/TM/HACH/8160	154.0	1000	NS	PASS
Electrical Conductivity (uS/cm EC)	AQL/TM/HACH/8160	318	1500	NS	PASS
P Alkalinity (mg/L CaCO ₃ PA)	AQL/TM/HACH/ISO/9963-1:1994	ND	NS	NS	-
Total Alkalinity (mg/L CaCO ₃ TA)	AQL/TM/HACH/ISO/9963-1:1994	86.0	NS	NS	-
Chloride (mg/L Cl)	AQL/TM/HACH/ISO/9297:2000	45.2	250	NS	PASS
Fluoride (mg/L F) ✓	AQL/TM/HACH/8323	0.23	1.5	1.5	PASS
Sulfate (mg/L SO ₄)	AQL/TM/HACH/8051	24	400	NS	PASS
Nitrate (mg/L NO ₃)	AQL/TM/HACH/8358	3.5	45	50	PASS
Phosphate (mg/L PO ₄)	AQL/TM/HACH/8114	< 0.3	2.2	NS	PASS
Sodium (mg/L Na)	AQL/TM/APHA/3111B	50.64	200	NS	PASS
Calcium (mg/L Ca)	AQL/TM/HACH/8030	6.00	150	NS	PASS
Magnesium (mg/L Mg)	AQL/TM/HACH/8030	4.86	100	NS	PASS

- **TDS decreased from 1,041 mg/L to 154 mg/L (85.21% removal)**
 - KENAS Standard for TDS: Below 1,000 mg/L
- **Electrical Conductivity from 1,977 uS/cm to 318 uS/cm (83.92% removal)**
 - KENAS Standard for Electrical Conductivity: Below 1,500 uS/cm
- **Fluoride decreased from 7.64 mg/L to 0.23 mg/L (96.99% removal)**
 - KENAS Standard for Fluoride: Below 1.5 mg/L
- **Sodium decreased from 268.3 mg/L to 50.64 mg/L (81.13% removal)**
 - KENAS Standard for Sodium: Below 200 mg/L

Case Study - After Treatment

Iron (mg/L Fe)	AQL/TM/APHA/3111B	< 0.02	0.3	NS	PASS
Manganese (mg/L Mn)	AQL/TM/APHA/3111B	< 0.006	0.1	-	PASS
Ammonia (mg/L NH ₃)	AQL/TM/HACH/10001	0.01	0.5	NS	PASS
Copper (mg/L Cu)	AQL/TM/APHA/3111B	< 0.04	1.0	2.0	PASS
Zinc (mg/L Zn)	AQL/TM/APHA/3111B	< 0.01	5.0	NS	PASS
Calcium Hardness (mg/L CH)	AQL/TM/HACH/8030	15	NS	NS	-
Magnesium Hardness (mg/L MH)	AQL/TM/HACH/8030	20	NS	NS	-
Total Hardness (mg/L TH)	AQL/TM/HACH/8030	35	300	NS	PASS
Silica (mg/L SiO ₂)	AQL/TM/HACH/8185	16.9	NS	NS	-
BACTERIOLOGICAL ANALYSIS					
Total Coliforms (cfu/100 ml TC)	KS ISO 9308-1:2014	ND	ND	ND	PASS
E. Coli (cfu/100 ml E.C)	KS ISO 9308-1:2014	ND	ND	ND	PASS
Total Viable Counts 37 °C (cfu/ml TVC)	KS ISO 6222:1999	< 1	50	-	PASS

- **Ammonia decreased from 7.46 mg/L to 0.01 mg/L (99.87% removal)**
 - KENAS Standard for Ammonia: Below 0.5 mg/L
- **Total Hardness decreased from 390 mg/L to 35 mg/L (91.03% removal)**
 - KENAS Standard for Total Hardness: Below 390 mg/L
- **Total Coliforms and Total Viable Counts decreased from >300 cfu/100 mL to Not Detectable (100% removal)**
 - KENAS Standard for Total Coliforms: Not Detectable

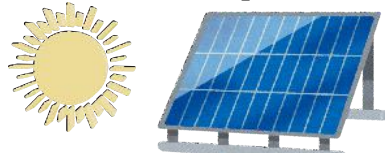
AQUASOL CORPORATE & OFFICE SOLUTIONS

**DELIVERING PURE, SUSTAINABLE DRINKING WATER FOR OFFICE STAFF AND
HYGIENIC OPERATION FOR FACILITY AMENITIES.**

RAW WATER SOURCES

-  **Borehole Water**
-  **Tanker Water**
-  **Rainwater Harvesting**
-  **Surface Water**

DUAL POWER OPERATION



DC POWER (SOLAR)

Runs on Solar Power
Sustainable & Green



AC POWER (GRID)

Reliable Operation
24/7 Performance



HIGH EFFIECIENCY FILTRATION PROCESS

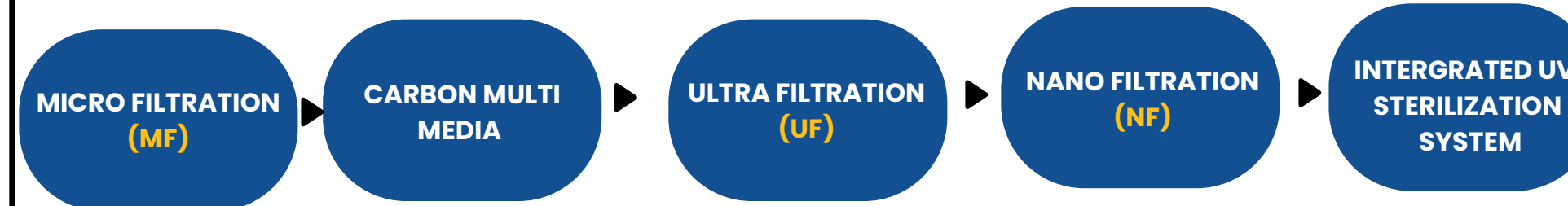
70%

**PURE WATER
(FOR DRINKING)**



30%

**BACKWASH WATER
(REUSE)**

FOR YOUR STAFF

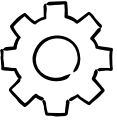
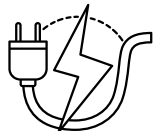


- Corporate hydration
- Employee wellness and productivity
- Overall hygiene improvement

REUSE – NOT WASTE



- Pure, effective cleaning, spotless results
- Well-irrigated on-site corporate roof garden

70% PURE WATER  HIGH RECOVERY RATE	30% REUSE WATER  ZERO WASTE APPROACH	SAFE & HEALTHY  ADVANCED MULTI-STAGE FILTRATION	LOW MAINTENANCE  EASY TO OPERATE & MAINTAIN	OUTDOOR DESIGN  ALL-WEATHER, RUGGED, DURABLE	DUAL POWER  DC (SOLAR), AC (GRID)	COST EFFECTIVE  LOWER BILLS, HIGHER SAVINGS
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MARA CAMP: FINANCIAL CASE STUDY - BOTTLED WATER VS. NANO BOX SYSTEM

DATA & OPERATIONAL METRICS

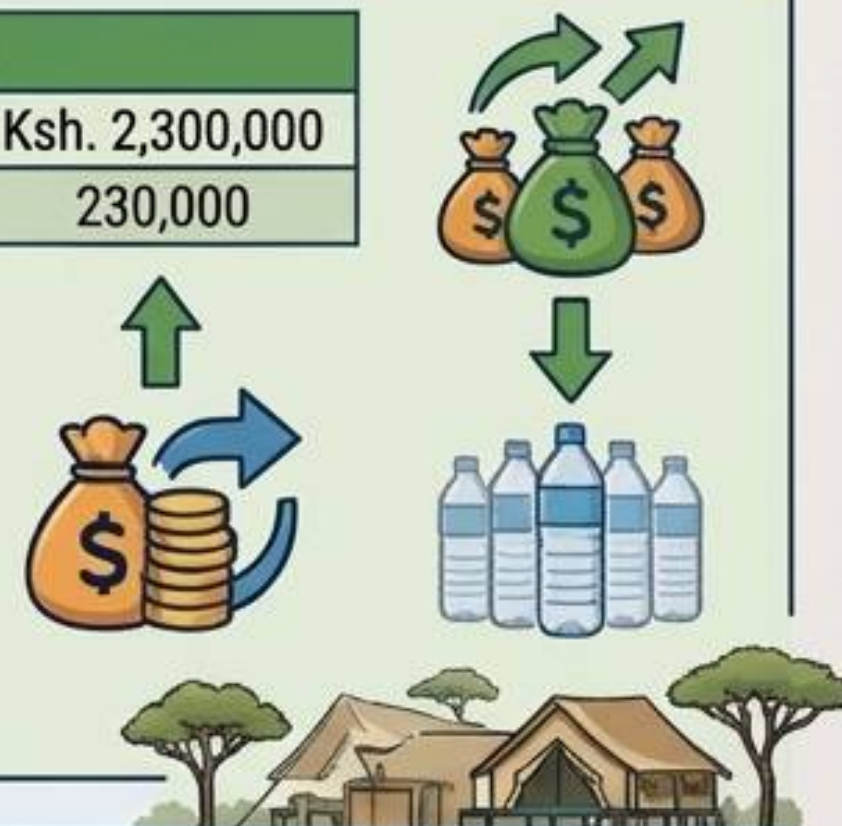
1. Current Scenario: 18.9L Bottled Water

Number of Staff:	110
Individual daily consumption:	3 l
Daily cooking use:	100 l
Total daily consumption:	$330 + 100 = 430$
Number of 18.9L bottles used daily:	$430 / 18.9 = 23$
Cost per 18.9L bottle:	Ksh. 400
Total daily cost:	Ksh. 9,200
Monthly cost:	Ksh. 276,000
Annual cost:	Ksh. 3,312,000



2. New Solution: Nano Box

Nano box cost:	Ksh. 2,300,000
Annual Maintenance cost:	230,000



FINANCIAL IMPACT & ROI ANALYSIS

1	Current Annual Water Cost:	Ksh. 3,312,000
2	Nano Box Investment:	Ksh. 2,300,000
3	Annual Maintenance (Opex):	Ksh. 230,000

Step 1: What do you actually save each year?

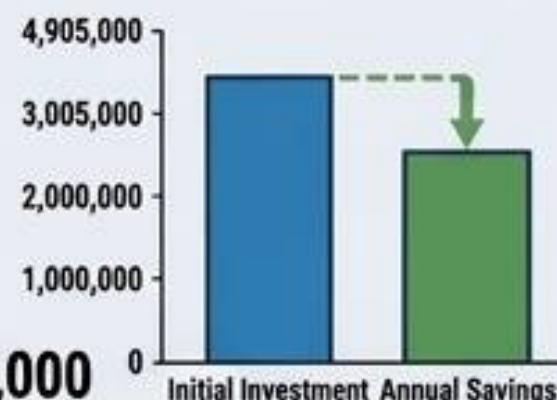
You used to spend: Ksh 3,312,000 / year

Now you spend (maintenance only): Ksh 230,000 / year

👉 Real annual savings: $3,312,000 - 230,000 = \text{Ksh } 3,082,000$



$$\text{Annual Savings (First Year)} = \frac{\text{Current Annual Cost} - \text{Total Solution Annual Opex}}{3,312,000 - 2,530,000} = \text{Ksh. 782,000}$$



Step 2: Payback Period (simple and correct way)

You compare investment vs yearly savings:

$$\text{Payback Period} = 3,082,000 / 2,300,000 = 0.75 \text{ years}$$

Final Answer (very important):

👉 Payback period $\approx$ 9 months



This is Ishara, Mara. The community has greatly benefited from the intervention. Previously, they relied on a reverse osmosis (RO) system that broke down almost every week, causing frequent disruptions. With the introduction of the Nano box, they now have a more reliable and sustainable solution for clean water.



The Zambia community project has benefited from the deployment of the Nano Box system, which has improved access to reliable, cost-efficient water filtration and enhanced daily water security for users.



The MFI Nano Box has enabled the company to significantly reduce water-related operational costs by improving filtration efficiency and minimizing maintenance requirements.



This mosque in Ngong previously experienced difficulties in accessing clean water; however, following the installation, the community now enjoys reliable access to safe and clean drinking water.



**Aga Khan Sports Center
previously relied on small
under-sink RO systems, that
were unreliable and unable
to sustainably meet demand.**



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Q & A

*Thank
you!*