



# **GREY WATER TREATMENT & REUSE ON HOUSEHOLD LEVEL**

# At end of presentation you will be able to:

- ▶ Define GW (grey water)
- ▶ Know source and average quantity of GW generated on household level
- ▶ Know about quality of GW
- ▶ Answer “ why reuse GW?”
- ▶ Know application of treated GW
- ▶ Technologies for GW treatment on household level

- ▶ GW is waste water that includes water from **baths, showers, hand basins** and **washing** machines

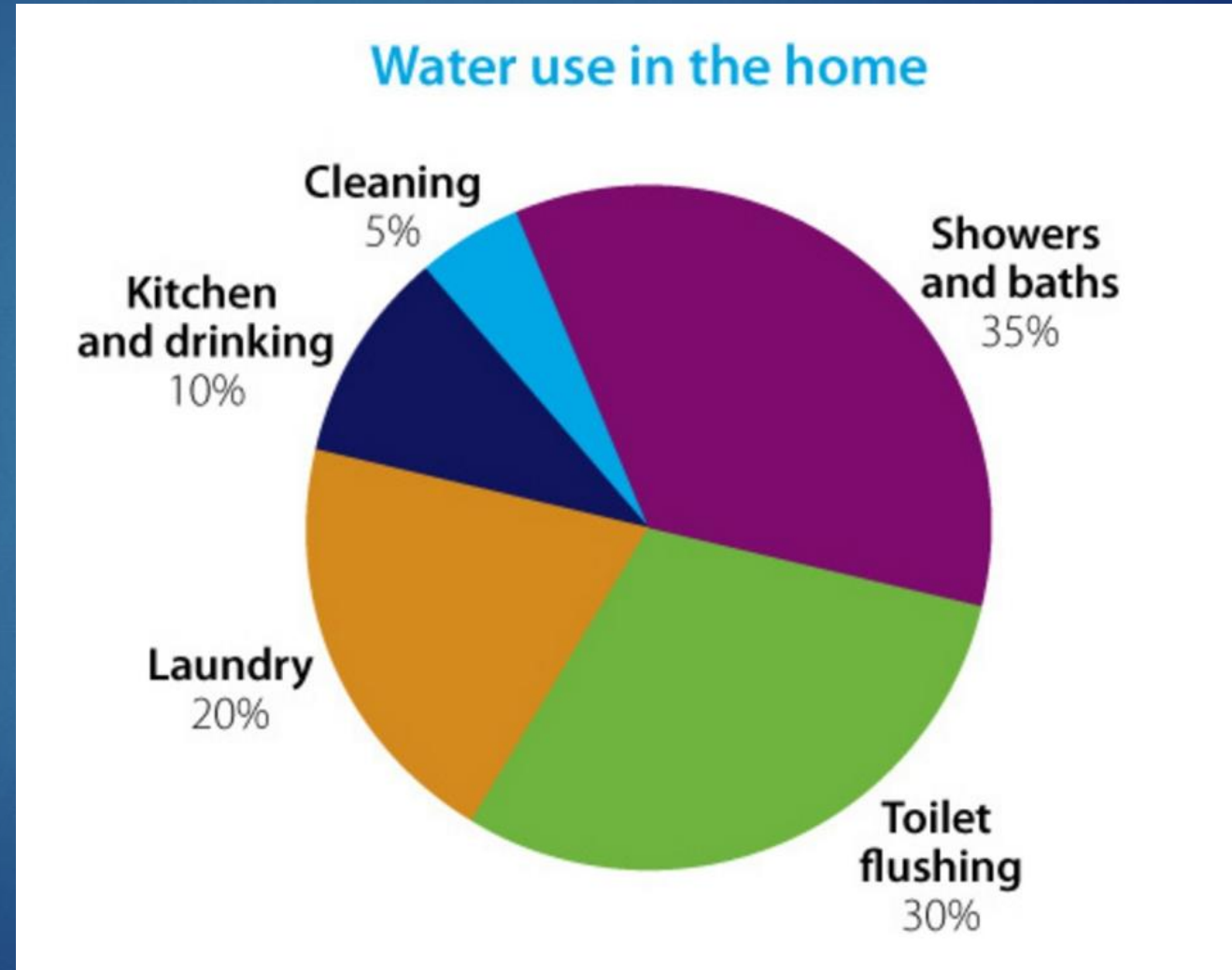
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but excludes waste water  
from **toilets** and **kitchen**

GW varies regionally and between households but is generally between 50% and 80% (about 2/3 ) of household water.



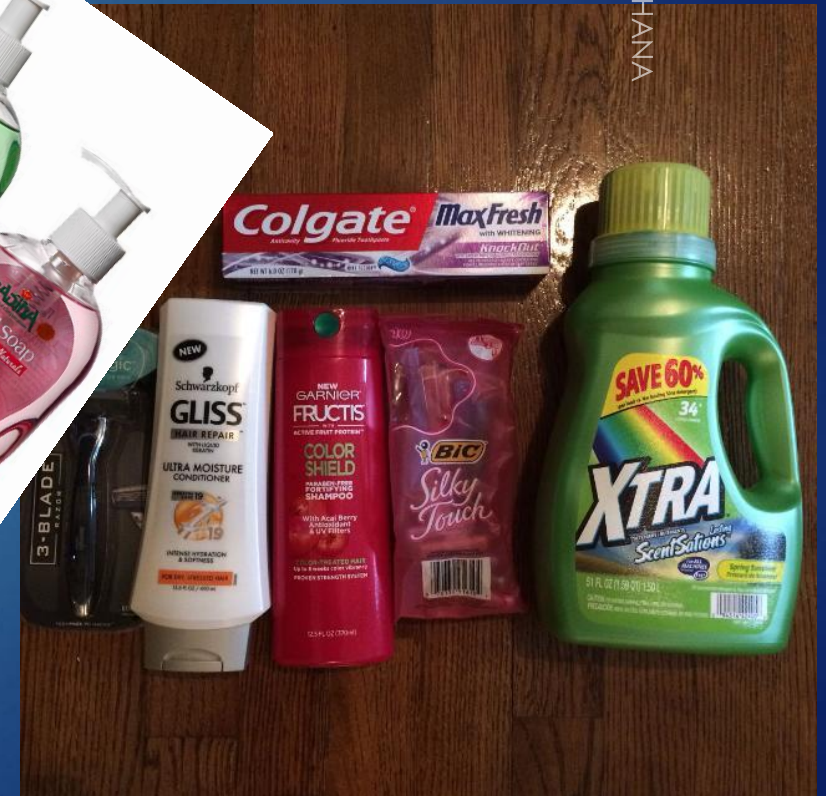
# What Grey Water Contains ??

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It is neither fresh nor polluted. Its contents is a result of personal hygiene, detergents used, cosmetics used as well as dirty cloths

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(Soap, Shampoo,  
Toothpaste,  
Detergents and  
Hairs,.....



# Why GW reuse ?

- ▶ *Save precious drinking water for.....*

**Communities without  
enough drinking  
water**

**If we don't save the  
drinking water, the glass  
will be totally empty**



- ▶ *GW doesn't depend on season or variability of rainfall*

# Why GW reuse ?

- **Reduce potential of environmental pollution.**

- **Save money**

Each person requires 135-150 lit/day so GW generated will be about 72 lit/day. we can recycle about 60 lit/day which cost around 150 RWF/ person/ week

## Save Environment



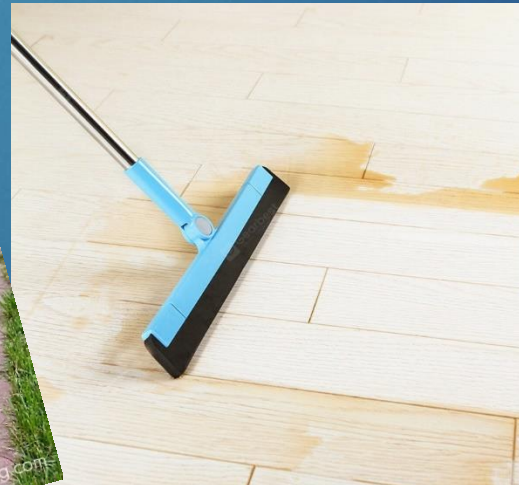
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# Reuse applications of treated GW on household level

- ▶ Watering Gardens
- ▶ kitchen gardens Irrigation
- ▶ Toilet flushing
- ▶ Car washing
- ▶ Floor cleaning
- ▶ Dust control
- ▶ Construction activities



# Technologies for GW treatment on household level 9

*Grey water is easier to treat and recycle because of the low levels of contamination.*



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# Major GW Treatment stages

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removal physical  
particles

- Screening (mesh)
- Sedimentation tank

Filtration ( removal  
turbidity, color, odor,  
microbes .....

- Bio-sand filter
- Bio filter
- Horizontal subsurface wetlands
- Activated media and carbon filtration
- Membrane Bioreactor
- Bio balls
- Trickle filter
- Ceramic filter
- Sand filter

Disinfection

- Chlorine
- UV light

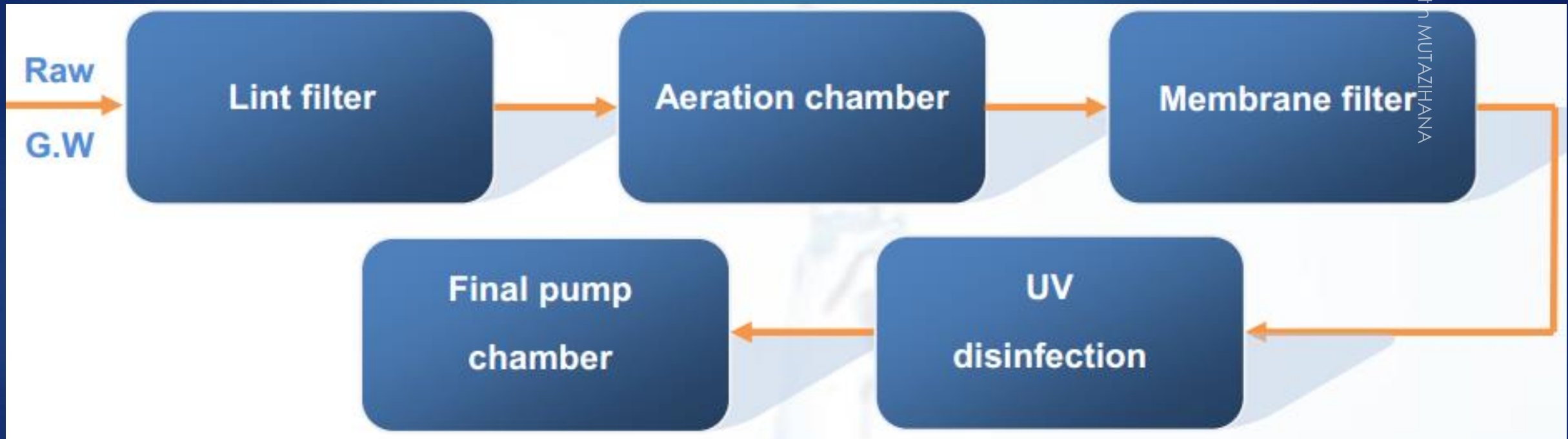
**Effluent  
(treated  
water)**

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# Example of a GW treatment system design diagram

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# Examples of innovations in GW treatment / equipment for single family homes & multi-housing

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[Aqua2use - Model Aqua2use GWTS - greywater treatment company](#) By [Matala Water Technology Co., Ltd.](#) based in **Wu Chi Town, Taichung 435, TAIWAN.**



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[Remosa - Model GREM - Greywater Treatment Plant](#) By [Remosa - Recubrimientos y Moldeados s.a.](#) based in **Súria, SPAIN.**



[ECOVISION - Model 500 - Greywater Recycling System](#) By [Aquartis World](#) based in **Beloeil, QUEBEC (CANADA).**



### Aquatech - Greywater Recycling System

Recycling of greywater by means of aerobic treatment and bio membrane technology.

By [Aquatech Pressmain](#) based in **Colchester, UNITED KINGDOM**.



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Aqualoop - Water Treatment and Greywater Recycling System. By [INTEWA GmbH](#) based in **Aachen, GERMANY**.



### Eco Smart - Greywater Recycle System

By [ECO Smart](#) based in **Luxury Hill, NAMIBIA**.



# Conclusion

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GW TREATMENT if properly done, is great potential alternative water source for purposes such as irrigation, toilet flushing and others.

The main barrier for wider and faster dissemination of suitable greywater management systems on household level is the lack of knowledge and experience in that field, especially in developing countries.

Scientific knowledge is sparse regarding greywater characteristics and adequate greywater treatment systems/technologies allowing a proper and safe disposal or reuse of greywater.

Grey water is easier to treat and recycle because of the low levels of contamination.

What are you going to do to promote GW treatment and reuse on household level in Rwanda ?????

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# THANKS