

We are not too young to be involved!



Our plants,  
our  
responsibility

SAVE WATER  
SAVE LIFE AND  
SAVE THE  
WORLD

**GROWING REGENERATIVE LOCAL CULTURES  
LINDA KABAIRA – COUNTRY COORDINATOR SCOPE  
ZIMBABWE**

**FSL CLUSTER MEETING 22/04/2021**



**Water is Life, Every drop counts. Harvest Water, plant Water and recycle Water !!**

# **Designing homestead for integrated waste management**

## **Waste-FEW-ULL**

**BY LINDA KABAIRA**



# Designing homestead for integrated waste management

## Content outline

- ◆ Identify inefficiencies in our food-energy-water nexus
- ◆ Implications for Waste Management
- ◆ Waste Management Principles
- ◆ How design can help us using examples of integrated water management
- ◆ Policy implications - brainstorming

# Waste-FEW-ULL

## RE-BUILD CONCEPT

*...How do we move from  
rhetoric to reality?*

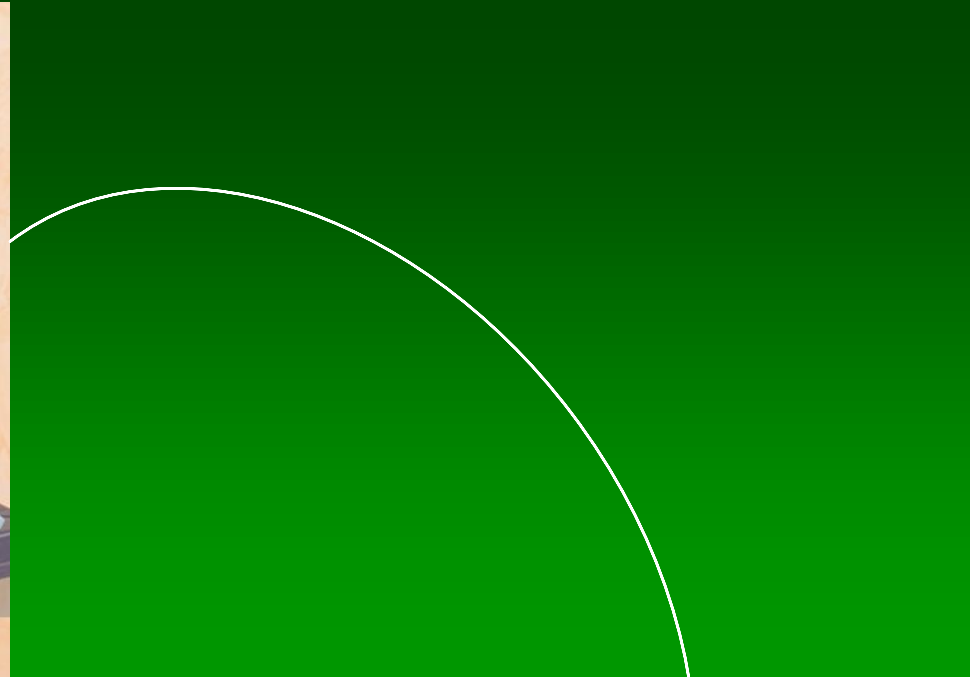
*Proximate Issues:*

**What are the waste  
management problems *at a  
household scale?***

*Cause and effect?*

# What's in our waste stream?





# waste

- ◆ Any substance discarded after primary use.

the inevitable byproduct of human activity and endeavour  
a *relative* concept: “One person’s trash is another person’s treasure”

## Homestead/ household waste

- ◆ Household solid waste
- ◆ Waste water – grey and black
- ◆ Surface runoff, agrochemicals and fertilisers



# Some Principles of waste management in practice:

*Rs*

waste avoidance

*Use materials in continuous cycles*

preparation for re-use

*Separate waste at source*

recycling

*Composts, composts*

other waste recovery

*Make new things from the primary waste*

disposal

# Rethinking waste management & sustainability:

- ◆ the concept of needs, particularly the essential needs of the poor & vulnerable

➡ **EQUITY**

- ◆ the idea of limitations (ecological, technological, and social) which affect the environment's ability to meet present and future needs

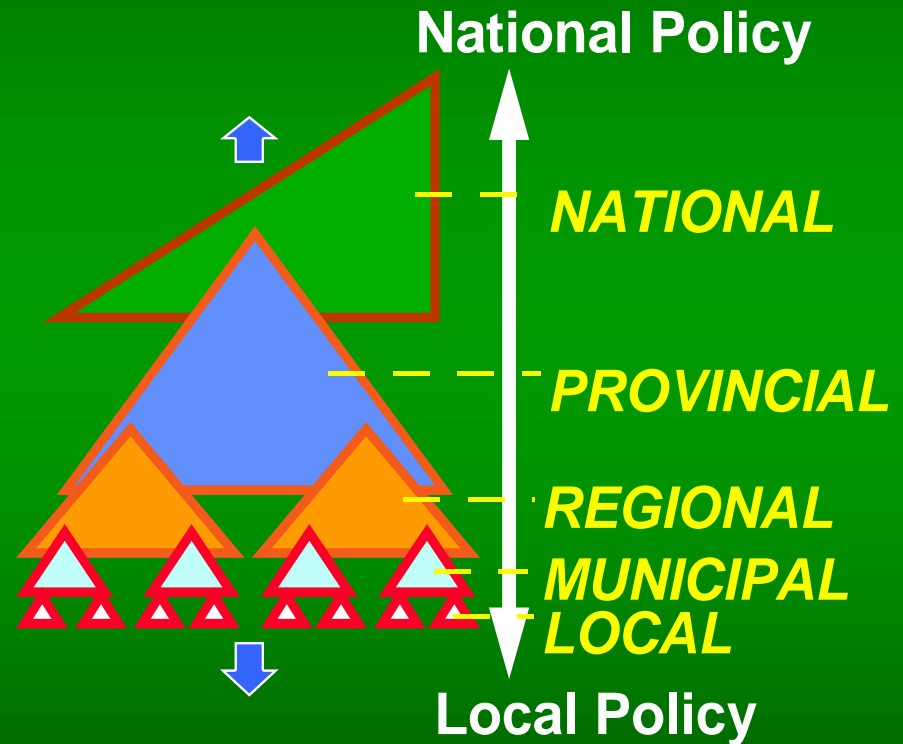
➡ **LIMITS TO GROWTH**

*(quantitative and qualitative)*

-> *living within the regenerative and assimilative capacities of the planet*

# Guideposts for Sustainable waste management

1. Use materials in continuous cycles.
2. Use continuously reliable sources of energy.
3. Encourage desirable human traits (equity; creativity; communication; coordination; appreciation; intellectual and spiritual development).

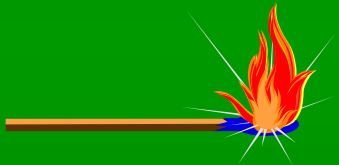


# Three basic methods of waste disposal



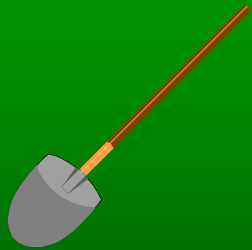
## ◆ open dumping

– on land, in inland waters, or at sea



## ◆ burning

– open fires to modern incineration



## ◆ burial

– garbage pits to engineered sanitary landfills

# Did you know?

- ◆ Shower: 10L per minute (1 person approx 8 mins)
- ◆ Bath: 150L per tub fill
- ◆ Washing Machine: 80- 100L per load
- ◆ Brushing Teeth (tap running): 5L per minute (1 person = approximately 2 mins)
- ◆ Drinking/Cleaning/Cooking: 10L per day
- ◆ Hand Basin: 5L per use (approx 1 minute)
- ◆ Toilet Flush (single): 6L per flush
- ◆ Garden watering (hose): 15L per minute -Drip System: 6L/hour
- ◆ Car Wash: 200L per wash
- ◆ Hosing Hard Surfaces: 15L per min

# What can be done?

## GREY WATER ACTION

- ◆ Waste water generated in households or office without faecal matter
- ◆ Sinks, showers, bath, washing machines
- ◆ This converts the 5l from handwashing basin into the flushing



*Grey water recycling, from the sink into the cistern for flushing the toilet*

# GREY WATER reuse at SCOPE Chitubu ecovillage



*Grey water from the kitchen dishes channeled to a banana and kitchen garden*

***NB; Acceptability of grey water is affected by what it was primarily used for. Acceptability is lower where contact is minimal.***

# GREY WATER





# Recycling wastewater/ Urine recycling and recovery

- ◆ Collecting pee into liquid fertiliser
- ◆ Toilets for pee only and pooh only



*Urine boasts nitrogen-phosphorous-potassium (N-P-K) ratio 10:1:4. Made up of +95% water with remaining nutrients made up of urea, creatinine, dissolved ions (Chloride, sodium, potassium)*

# DRY COMPOSTING WATERLESS TOILETS



# SEPERATION OF SOLID WASTE



**WASTE SEPERATION  
BINS**



**COMPOST**

# Waste water - runoff

- ◆ Surface and overland flow

# Surface and overland flow



# Did you know?

- ◆ You can harvest water that is enough for your annual household use?
- ◆ Multiply your rainfall (mm) by your roof surface area ( $m^2$ ) being used to catch rainwater
- ◆ Example; 220m<sup>2</sup> house can harvest up to 127600 litres annually which is enough for a household using 10600 litres per month

# Alternatively we can harvest into household water requirements







# Recycling Reusing



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