



NAKURU ROSA PROJECT



NETSSAF INTERNATIONAL CONFERENCE

24TH – 27TH SEPTEMBER, 2008



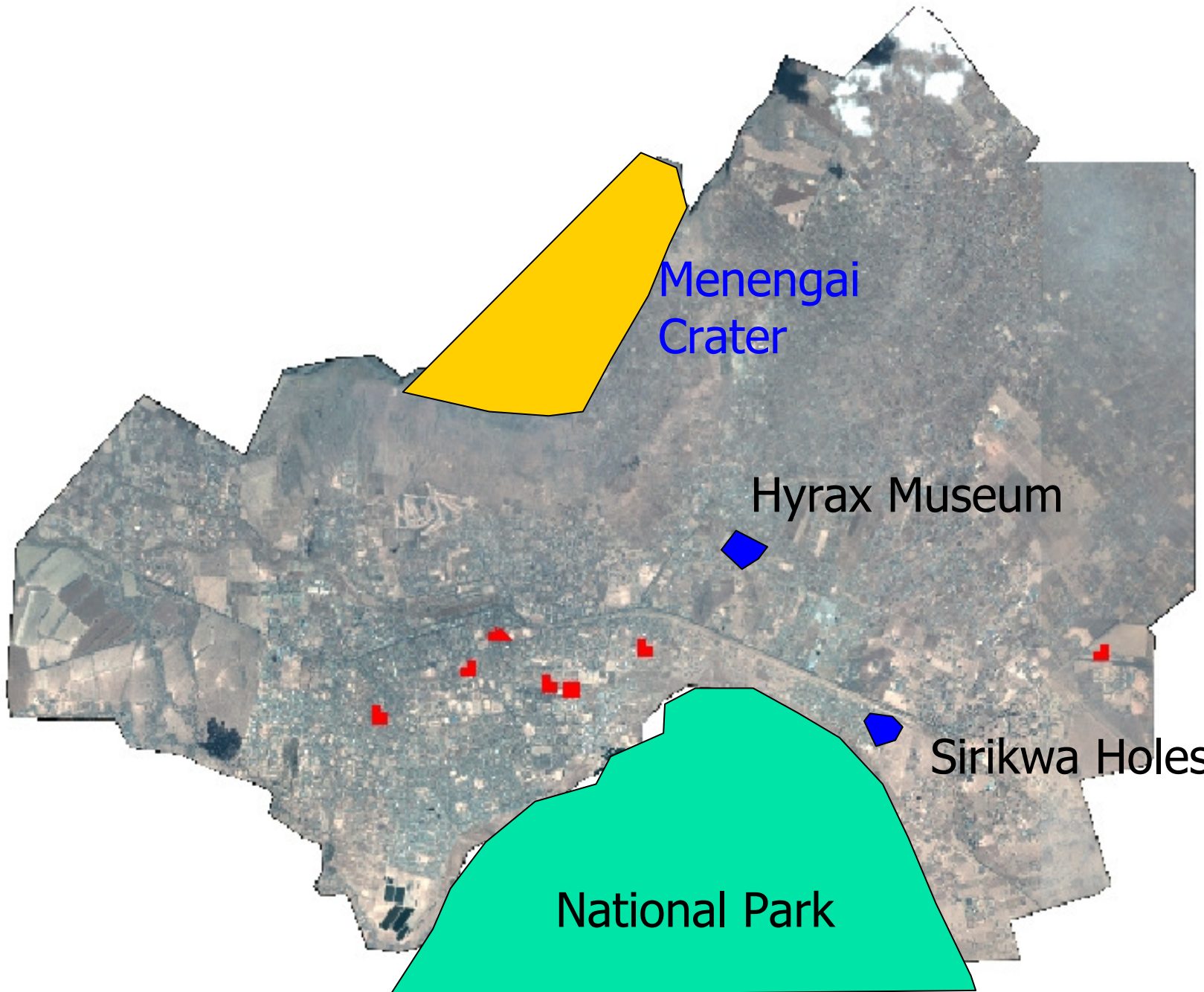
Presented by :-

**Benedict M. Mutua, ROSA PROJECT, NAKURU
kenya**

AT OUAGADOUGOU, BURKINA FASO

NAKURU MUNICIPALITY

1. Is the fourth largest town in Kenya after Nairobi, Mombasa and Kisumu
2. It is an agro-based industrial town and the capital city of Rift Valley Province
3. It lies 160Km North-West of Nairobi city
4. The town started as a railway station in the beginning of the 20th century, 1905
5. It gained Municipality status in 1952
6. It is situated on an altitude of 1859 M above sea level
7. Covers an area of 290 Sq Km. 188 Sq km. is in the National park and 102 Sq Km. is the urban area.



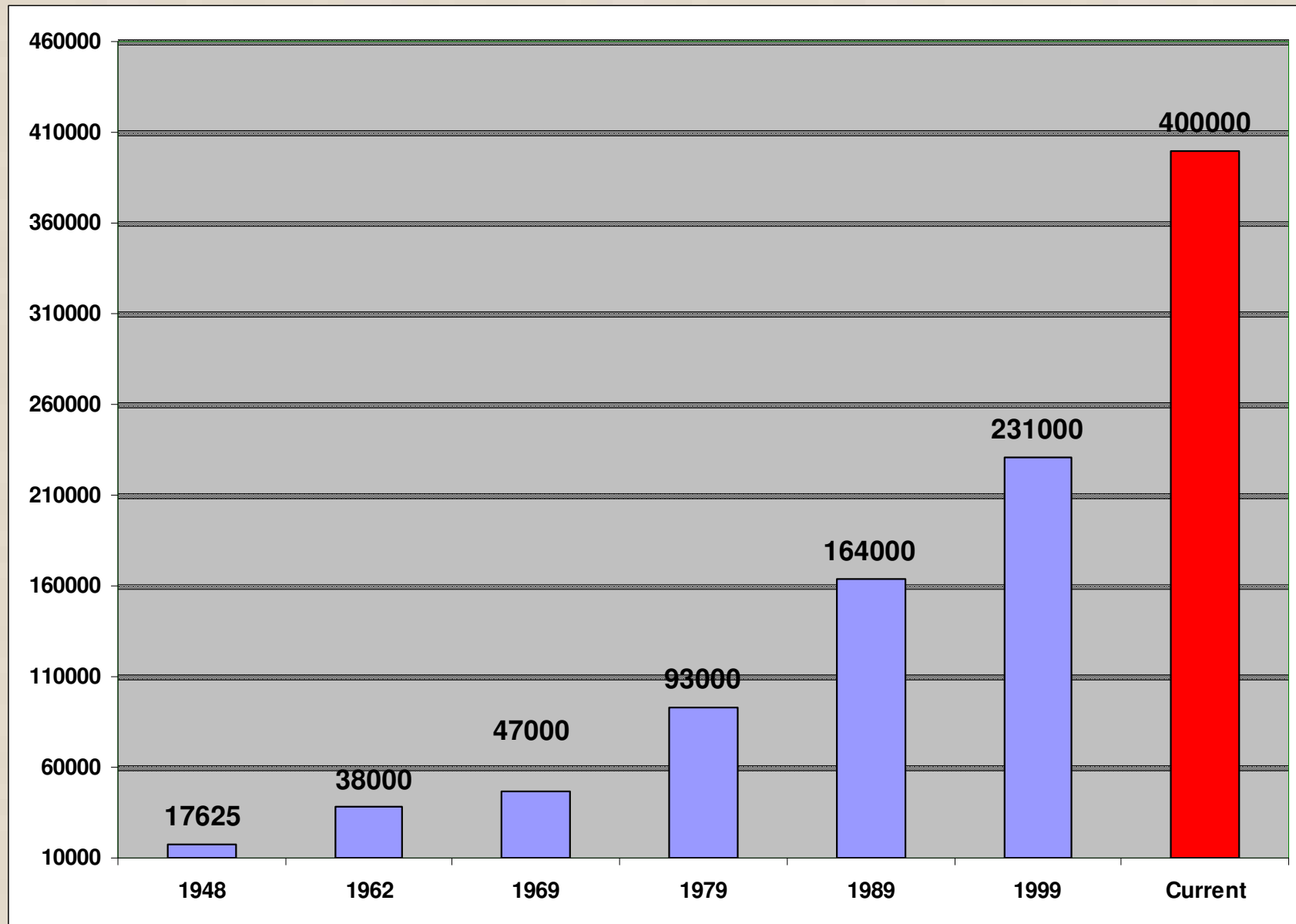
Menengai
Crater

Hyrax Museum

Sirikwa Holes

National Park

Population growth in Nakuru



SANITATION CHALLENGES IN NAKURU

- **Waste Management**

 - Domestic waste

 - Council collects – 30%

 - Private Sector collects – 30%

 - 200 tons mixed waste in a day

- **Water Requirements – 75,000 Cubic meters/Day**

- **Production 35,000 Cubic meters/Day**

- **Less than 1/2 Supply to the city**



Poorly Managed Storm Water Drains



Poor Solid waste management



Sewer blockages



Unplanned settlement structures



Other Challenges include

- Uncontrolled construction and development
- Low sewer coverage and adverse effect of pit latrines as the only sanitation option in the low income areas
- Insufficient supply of drinking water and its contamination
- Low environmental awareness among the population on sustainable environmental practises
- Low/ inefficient enforcement of environmental bylaws
- Inadequate management of solid waste
- Poor storm water drainage system

IMPLEMENTATION PLAN

INTRODUCTION

- Nakuru Rosa team have divided implementation for the pilot projects into phases (Phase I,II & III) though the phases may overlap.
- Phases depend on various parameters including income levels, socio-cultural factors and strategic logistics.
- The designs and preparation of BQs for phase I projects are complete and undergoing legal approvals.

Implementation Process



Implementation of Pilot Phase I

**Site 1: Residential Plot – 28 households.
3UD toilets, a soak pit, a urinal, and wetland**



Site 2: Hilton Settlement

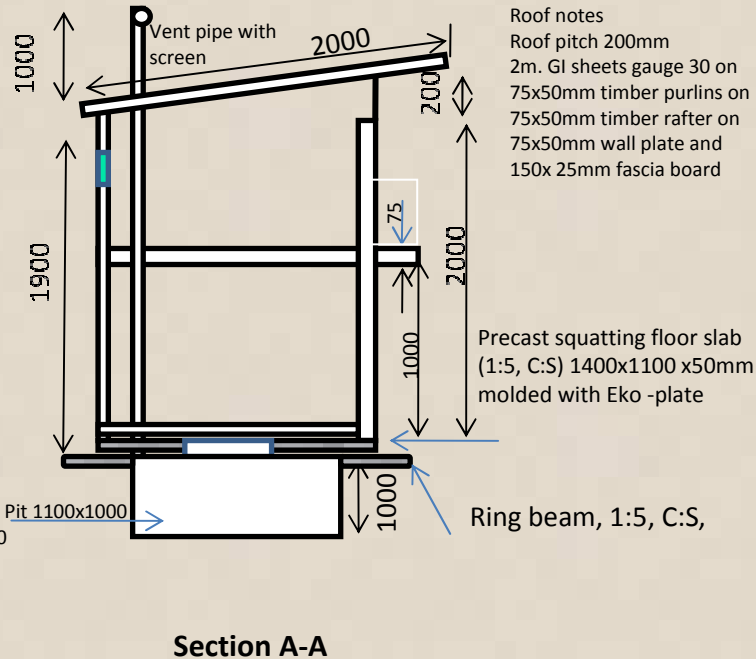
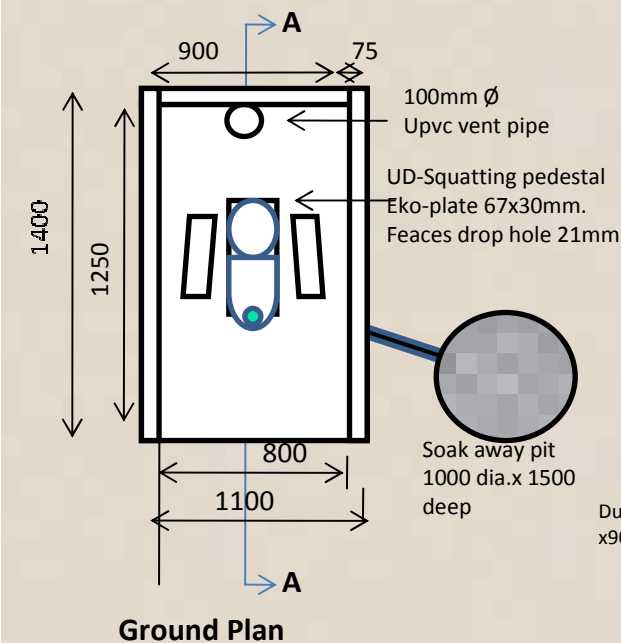
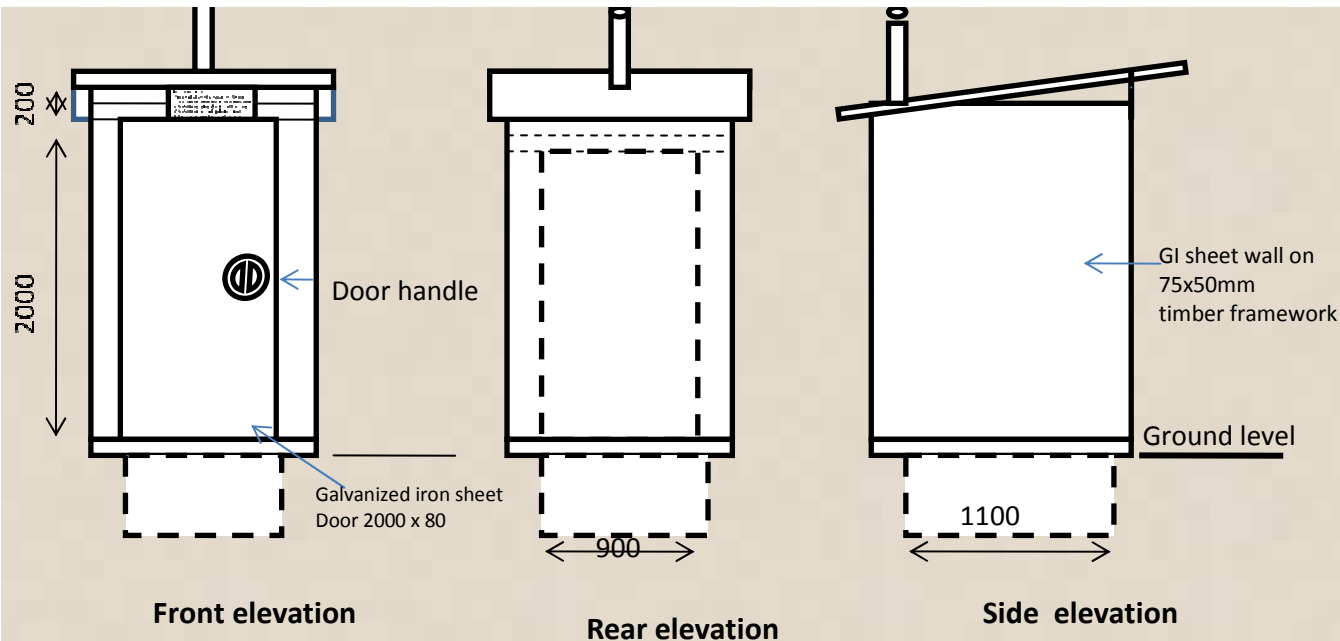
100-150 Users

2 UD, Hand wash basin & a urinal



Two Shallow Pits In The Settlement





- General Notes**
1. All dimensions are in mm
 2. Walls are constructed of GI sheets gauge 30, 2m high
 3. Superstructure framework is 75mm x 50mm timber
 4. Pit is 0.9 x 1.1 x 1.0m deep
 5. Door is constructed onsite by GI sheets
 6. 100mm dia. uPVC Vent pipe extends 1 m above the roof
 7. Diverted urine is drained into a soak away pit
 8. Squatting slab is precast concrete 1400x1100x50mm thick reinforced with wire mesh. Mix 1:5 cement: sand
 9. Roof notes
 - 2m. GI sheets gauge 30 on 75x50mm timber purlins on 75x50mm timber rafter on 75x50mm wall plate and 150x 25mm fascia board

| | |
|--|-------------------------|
| Egerton/MCN ROSA Project | |
| UD-Aborloo Toilet at Goto Dumpsite | |
| Designed & drawn by : Edward W. Muchiri | |
| Checked by: _____ | Building Inspector, MCN |
| Approved by: _____ | Engineer/Architect, MCN |
| Scale: _____ | Date: _____ |

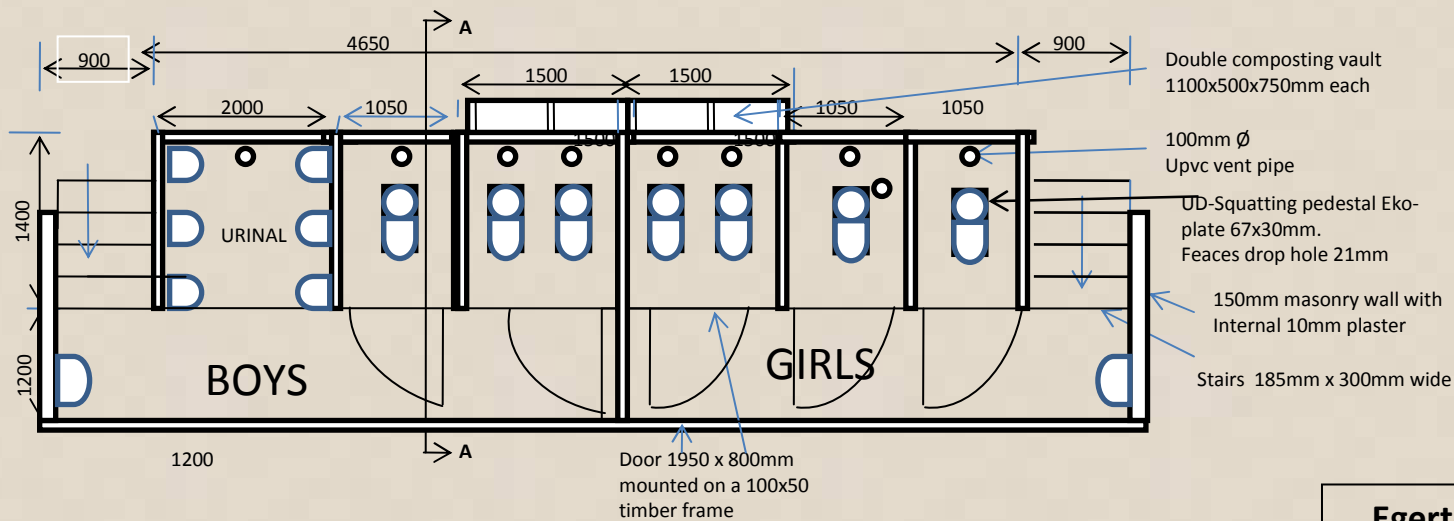
Implementation Cont.

Site 3: Crater view Sec. Sch: 250 students & 15 members of staff

**7 UD toilets; 3 for girls 2 for boys & 2 for the teachers and 7
urinal basins**

Agric. demo plot





Ground Plan

General Notes

1. All dimension are in mm
2. Squatting slab is precast concrete 1400x1100x50mm thick reinforced with wire mesh. Mix 1:5 cement: sand
3. 100mm compacted hardcore
4. 75mm plain concrete on plastic dpc
5. Rear Steel door 900 x 700mm
6. Standard door with frame 1980 x 800
7. 150 mm masonry walls
8. 100mm dia pvc pipe vent, extending 1000mm above roof
9. Roof pitch 200mm
10. GI sheet gauge 30 on 75 x 50 purlin on 75x50 rafter on 75x50 wall plate. 150x25mm timber fascia board
11. Vault dimensions 900 x 1100 x 700 mm
12. Double composting vault 500x1100x700mm

Egerton/MCN ROSA Project

UD- Toilet at Church & Nursery School at London estate

Designed & drawn by :
Edward W. Muchiri

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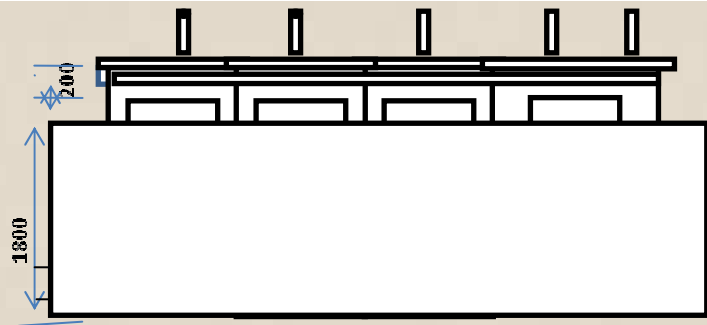
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Site 4: Church and Nursery school

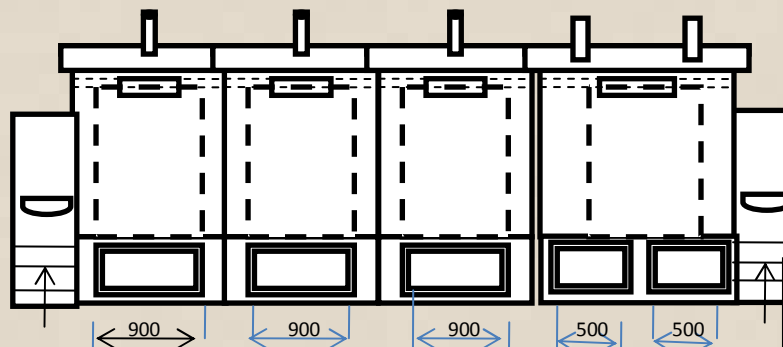


50 church members & 30 pupils

3UDs toilets: 1 for men, 1 for women, 1 for children & soak pits.



Front elevation

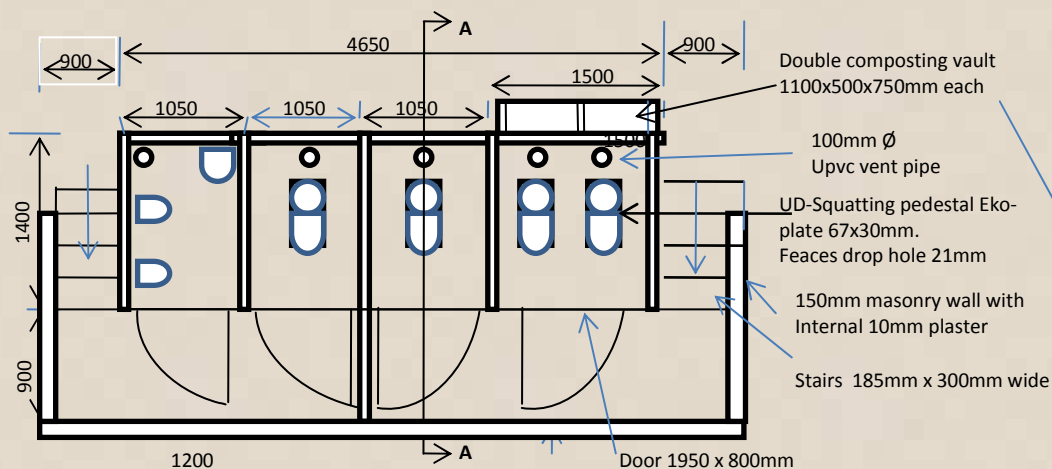


Rear elevation

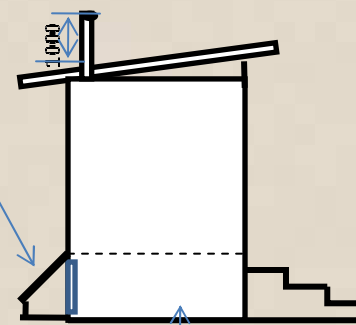
Hand washing basin

General Notes

1. All dimensions are in mm
2. Squatting slab is precast concrete 1400x1100x50mm thick reinforced with wire mesh. Mix 1:5 cement: sand
3. 100mm compacted hardcore
4. 7.5mm plain concrete on plastic dpc
5. Rear Steel door 900 x 700mm
6. Standard door with frame 1980 x 800
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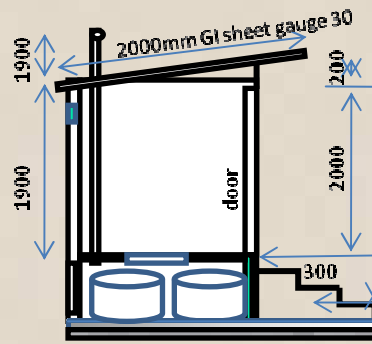
Ground Plan



Vault 1100x900x750

Side elevation

Door 1950 x 800mm mounted on a 100x50 timber frame



Section A-A

Precast squatting floor slab (1:5, C:S) 1400x1100 x50mm molded with Eko-plate

Stairs 185mm high per step. 300mm width

Foundation concrete slab 75mm depth On 100mm compacted hardcore

Egerton/MCN ROSA Project

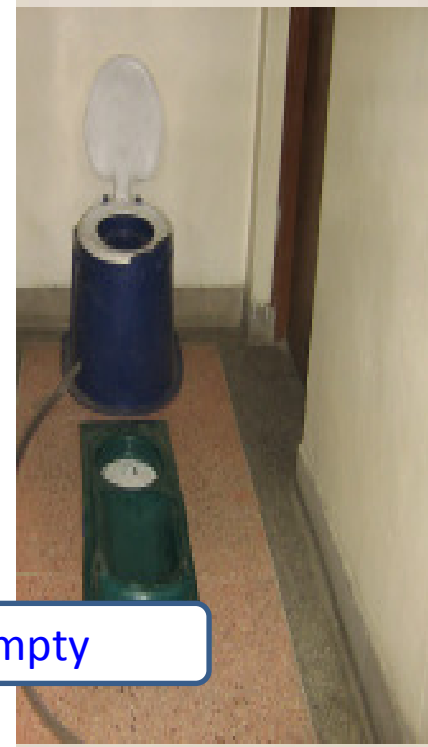
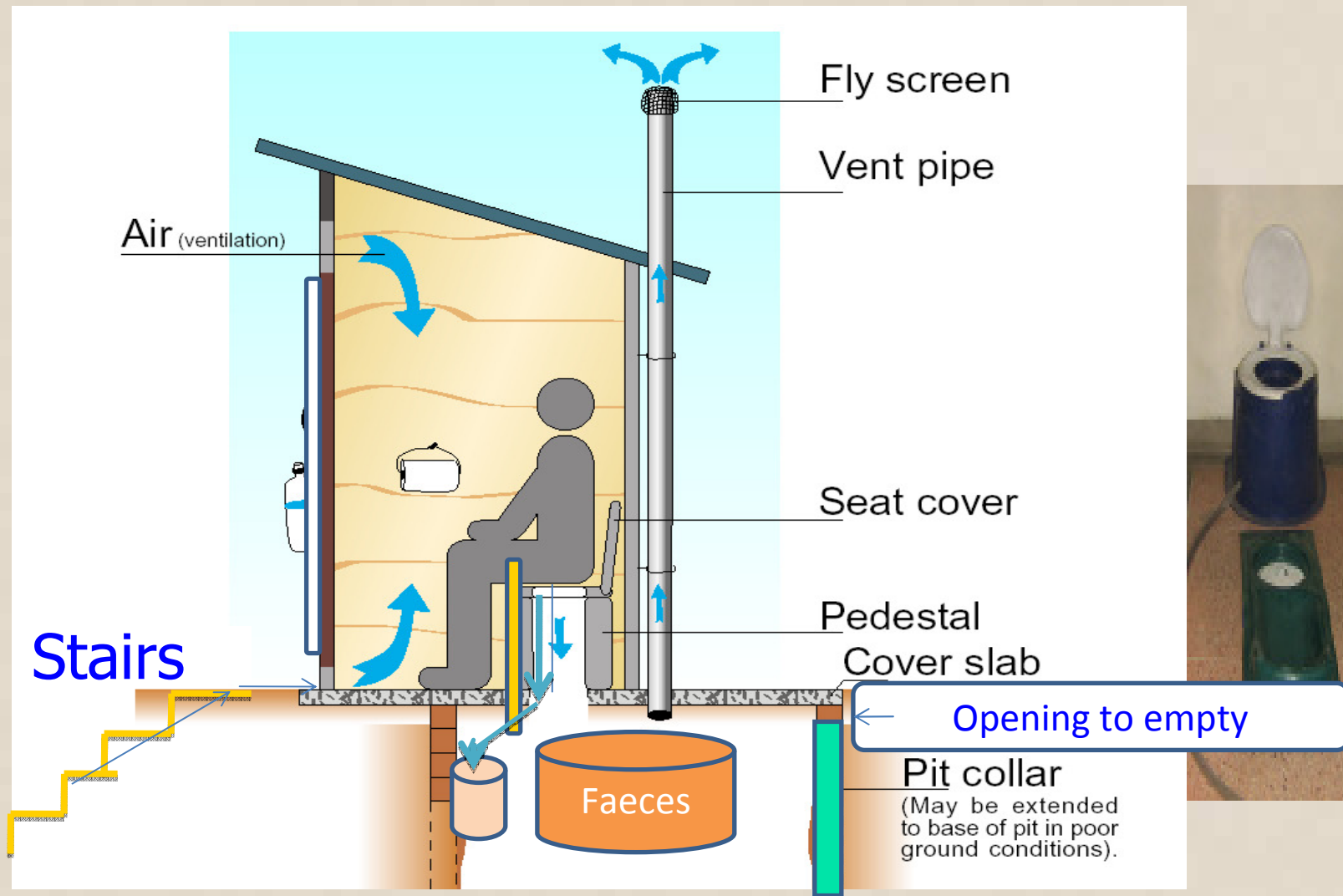
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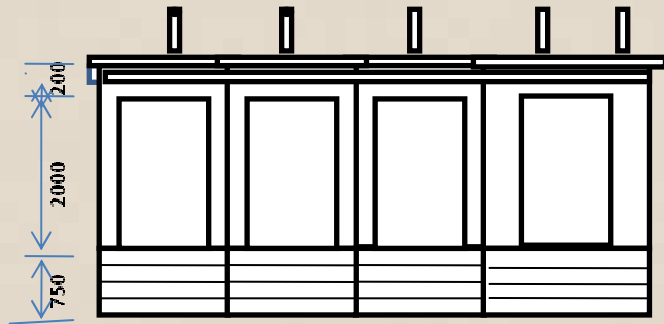


Financing

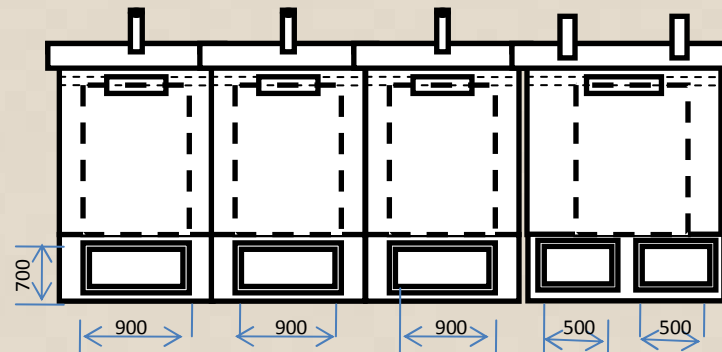
- At the pilot stage there is **no willingness** to contribute money for the construction by landlords/ house owners
- However, they are **ready and willing to contribute** in labour and materials.
- Piloting will be **100% financed** by ROSA but for up-scaling and sustainability some micro-finances have been identified that can give soft loans/revolving funds.

ROSA'S ACHIEVEMENTS SO FAR IN NAKURU

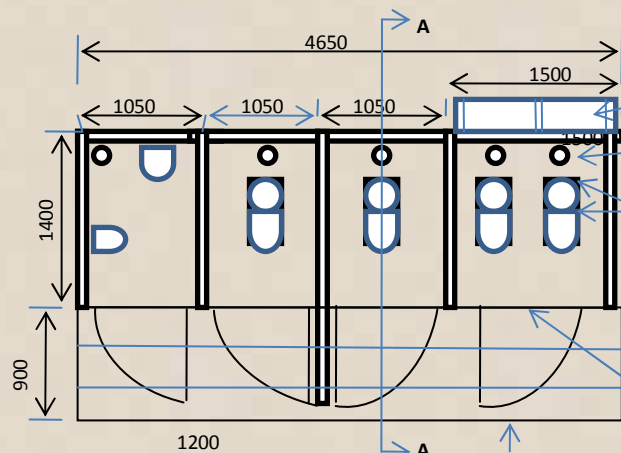
- ROSA conducted a Baseline Survey covering the entire municipality between March and August, 2007.
- Findings from the baseline study were analyzed and have been used in the development of various draft versions of a Strategic Sanitation and Waste Plan (SSWP) for Nakuru, with the final draft due in November.
- Currently research is on-going in WHO guidelines, O&M and Settlement Structures Grey water and on Financing of sanitation some of whose preliminary findings have been used in the implementation.



Front elevation



Rear elevation



Ground Plan

Double composting vault
1100x500x750mm each

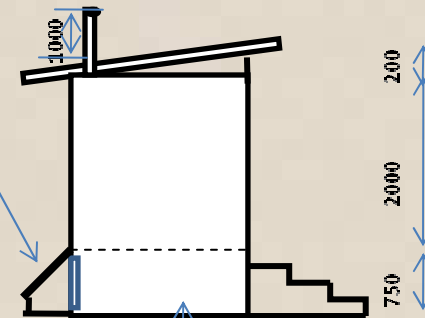
100mm Ø
Upvc vent pipe

UD-Squatting pedestal Eko-
plate 67x30mm.
Feaces drop hole 21mm

150mm masonry wall with
Internal 10mm plaster

Door 1950 x 800mm
mounted on a 100x50
timber frame

Stairs 185mm x 300mm wide

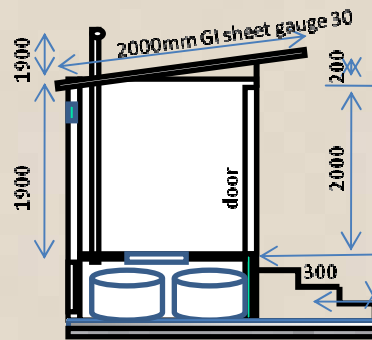


Vault 1100x900x750

Side elevation

General Notes

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Section A-A

Precast squatting floor slab
(1:5, C:S) 1400x1100 x50mm
molded with Eko -plate

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Foundation concrete slab 75mm depth
On 100mm compacted hardcore

Egerton/MCN ROSA Project

**UD- Toilet at
Residential plot at Hilton estate**

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Implementation/Piloting



Pilot Unit at a Church/Nursery school



Double vault UDD



5 male urinals

ROSA team members at the official opening of the new toilet facility

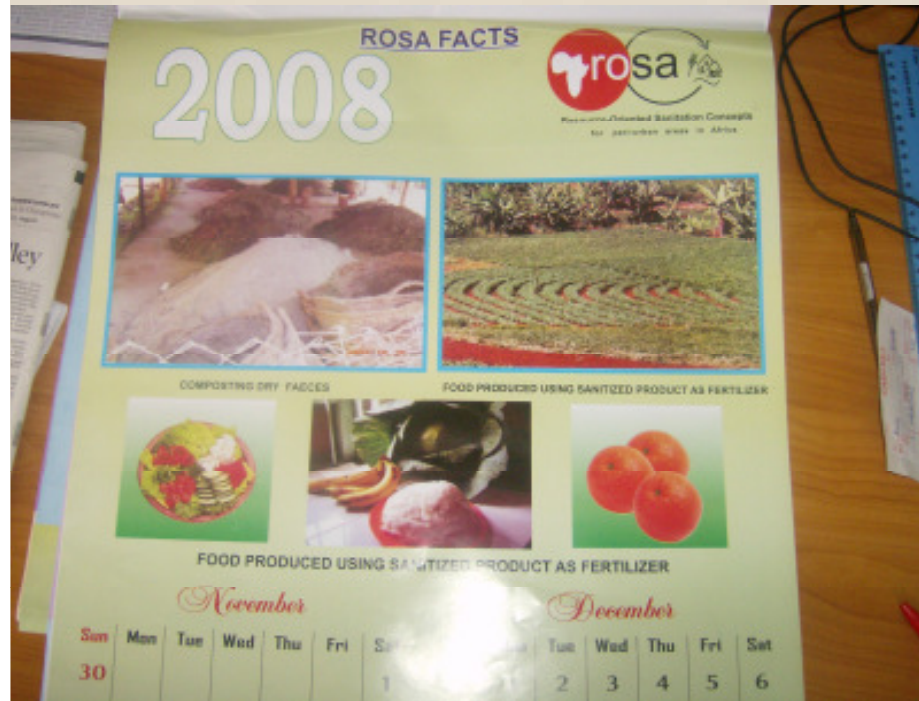


The Nakuru ROSA team has developed several Information, Education and Communication (IEC) materials including posters, brochures, A0 canvas banners, UD toilet models and calendars for awareness creation on sustainable sanitation



A0 Canvas banners explaining ROSA concepts

More IEC materials



ROSA 2008 Calendar



Posters and UD toilet models and banners

Awareness creation workshops on Sustainable Sanitation (EcoSan)



Awareness workshop at a High school



Community awareness creation at London/Hilton

International Exhibitions

- ROSA team members participated in the Eastern Africa Water Association (EAWA) Exhibition in Kisumu city, Kenya 13th-14th June, 2008. where it emerged the overall best exhibitor winning a Trophy
- Egerton University Research week and International Conference, 16th -18th September, 2008



EAWA Trophy

International Conferences

The team has attended and participated in a number of conferences including:

- Sustainable Sanitation Alliance (SuSanA) Conference, 16th-17th February, 2008 at Durban, South Africa
- Moi University 4th Annual International Conference, 29th July-2nd August, 2008 at Moi University Eldoret
- Egerton University 3rd Annual Research week and International Conference, 16th – 18th September, 2008.

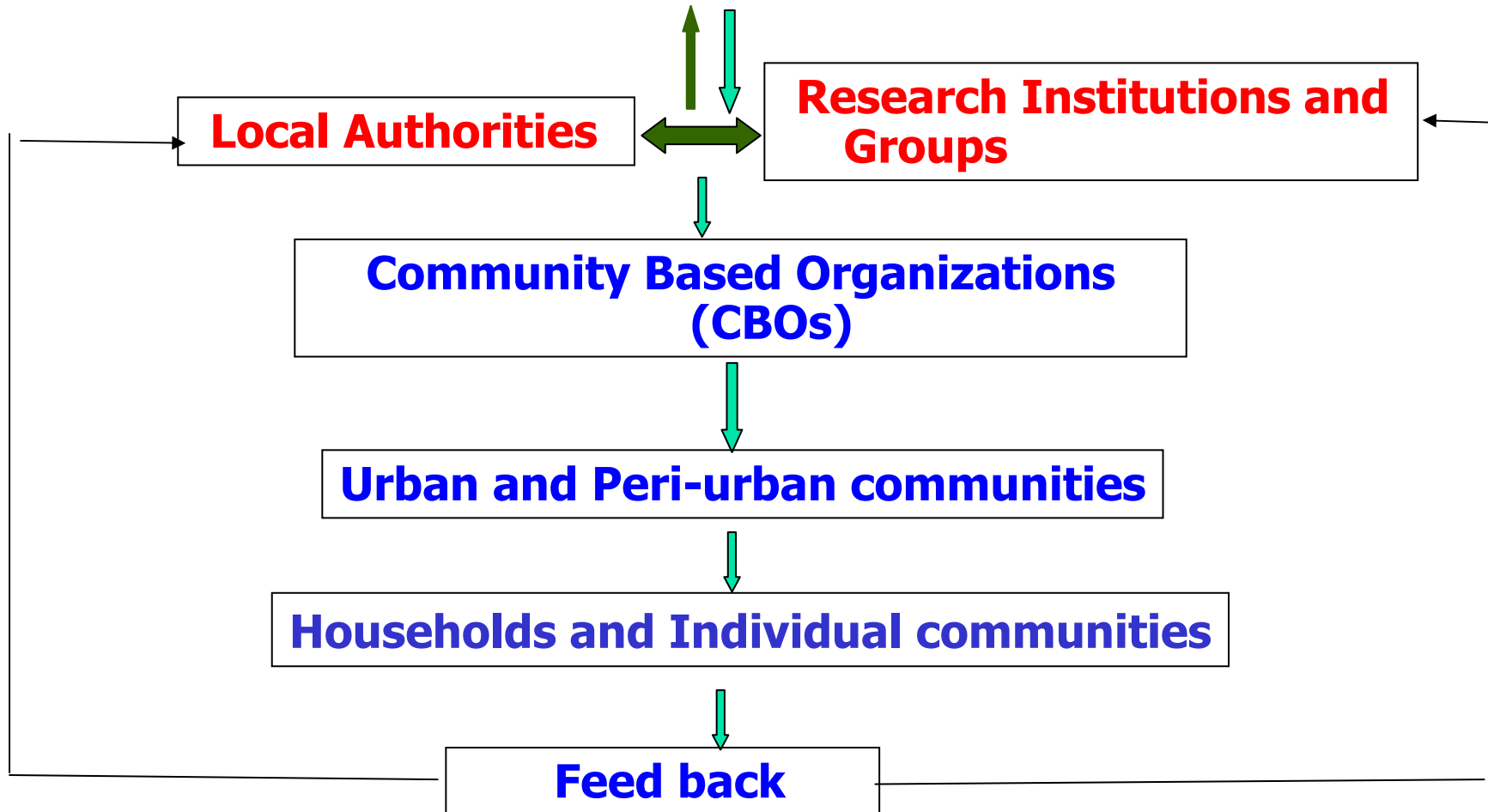
EAWA Exhibitors



The team that represented ROSA in the Exhibition

Institutional Set up

Local Consortium



Partners involved in Sanitation

- ISSUE II
- Local Sanitation Initiative group

Implementation Challenges

- Awareness and acceptability
- Cultural barriers to new concepts of ecological sanitation
- Unplanned settlement structures
- Financing implementation
- Operation and maintenance at community level
- Up scaling of sanitation

THANK YOU