



WORLD
in Stockholm,
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WATER
WEEK

Presentation

Presentation from the 2008 World Water Week in Stockholm

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World Agroforestry Centre
TRANSFORMING LIVES AND LANDSCAPES

Achieving Food Security and Sanitation Coverage through Water Harvesting and Conservation Technologies

Case Examples from Sub-Saharan Africa



Outline

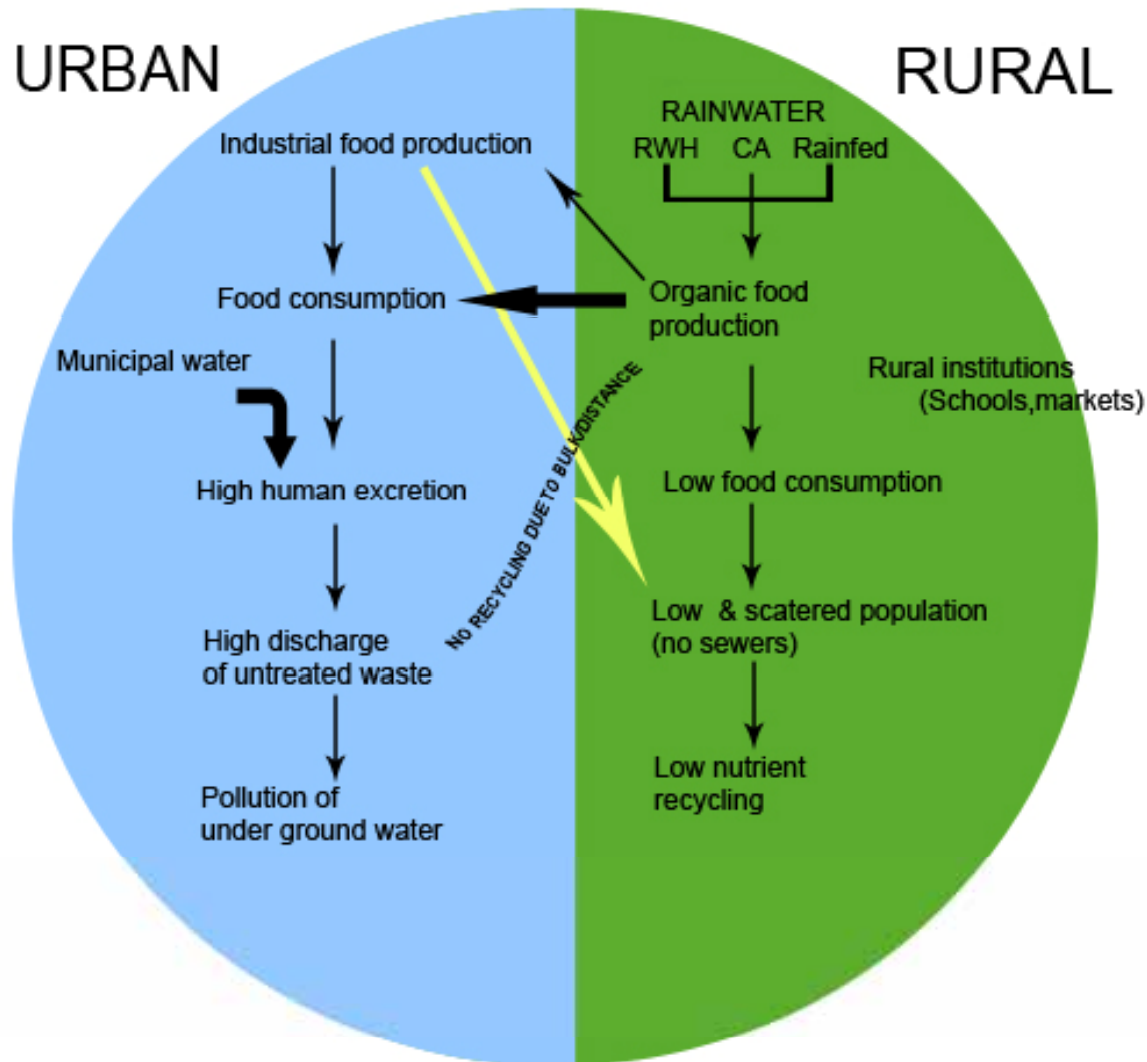
- General Rural-Urban context: Water-Food-Sanitation Nexus
- Rainwater Harvesting Systems
- Conservation Agriculture
- Productive Sanitation
 - Rural Homestead Level
 - Rural Institutional Level
- Fully integrated system
- Conclusion



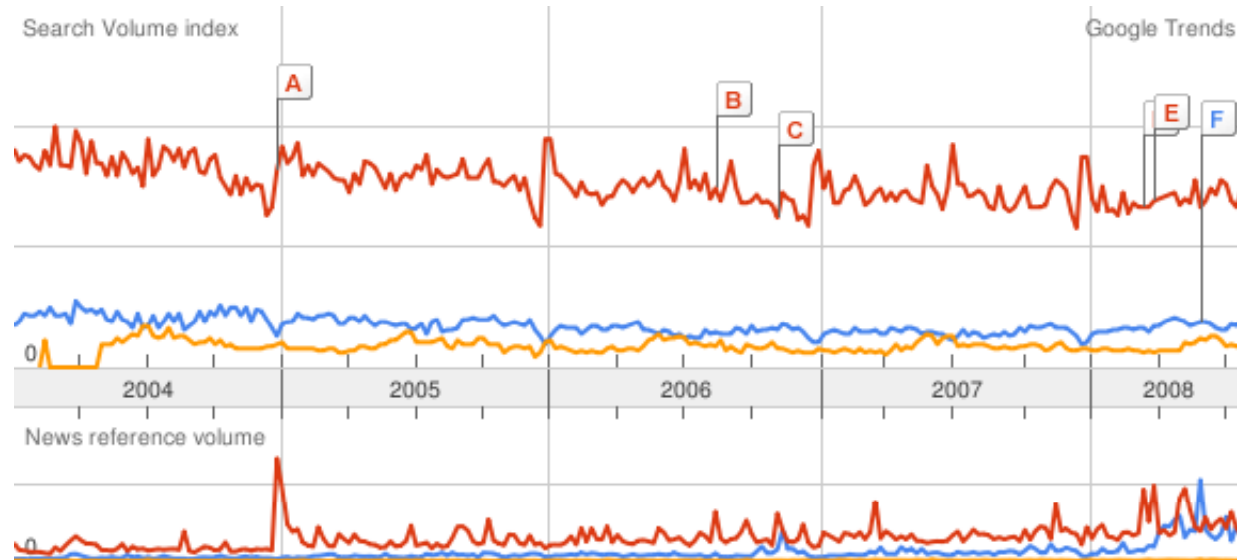
General Context



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Food Security, Sanitation and Water Harvesting nexus



Source: Google Trends, 2008

- Sanitation
- Food Security
- Rainwater Harvesting



Food Security, Sanitation and Water Harvesting nexus



- Despite its importance, Sanitation is disconnected with Food Security and Water Harvesting,
- Much attention has been on WATER and SANITATION for drinking and hygiene
- “Productive Sanitation” is virtually NON-EXISTENT



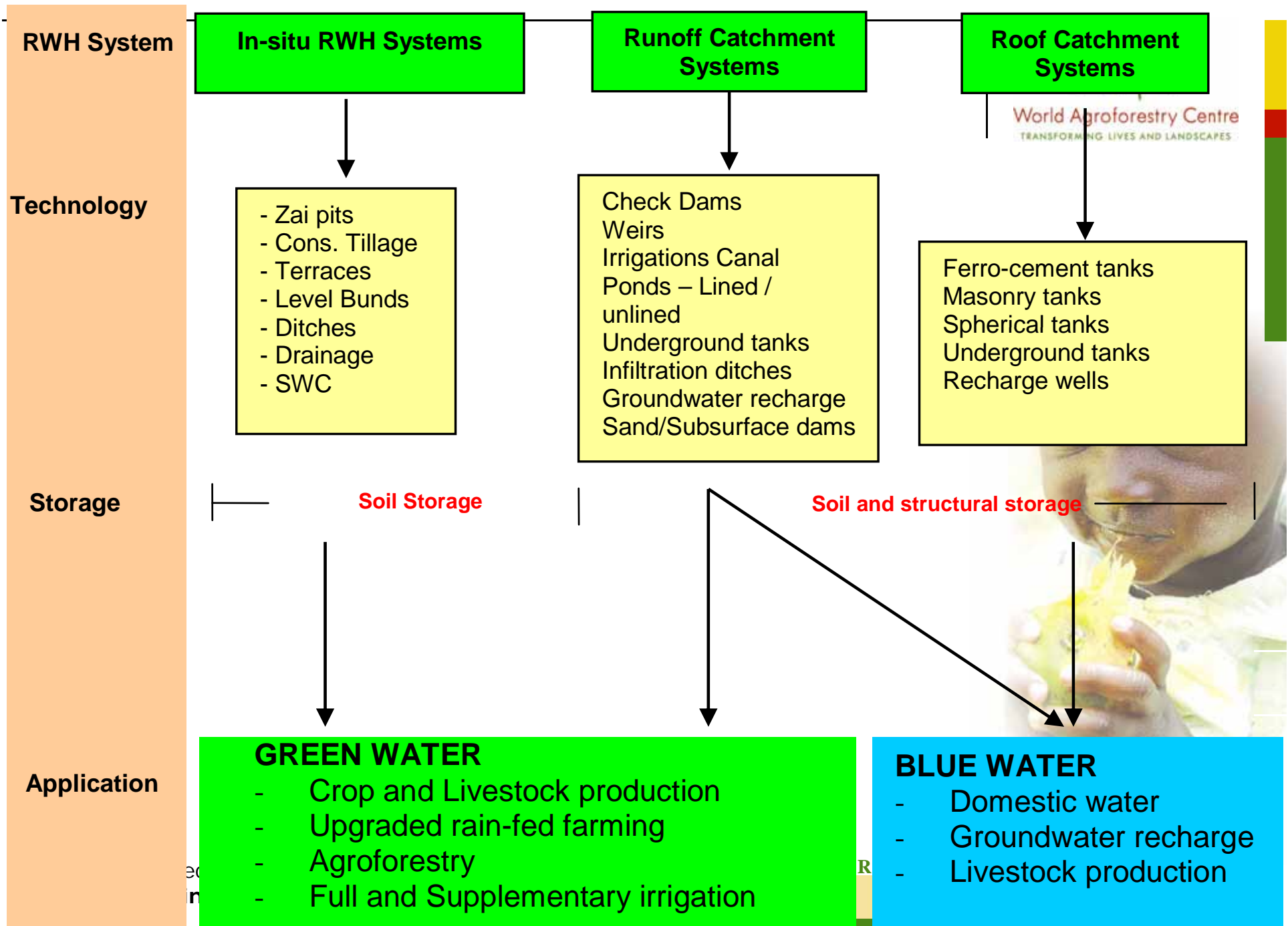
Causes of Food Insecurity

- Climate Change resulting in increased frequency of Droughts and Floods
- Environmental degradation
- Inadequate policies
- Conflicting trade rules between rich and poor nations
- Prolonged lack of investment in rural economies by poor nations – Account for 75% of hunger



RAINWATER HARVESTING SYSTEMS











**Food Security, Productive Sanitation and Water Harvesting
By Maimbo Mabanga Malesu & Alex Oduor**

CONSERVATION AGRICULTURE





Food Security, Productive Sanitation and Water Harvesting
By Maimbo Mabanga Malesu & Alex Oduor

WORLD AGROFORESTRY CENTRE

September 12, 2008

PRODUCTIVE SANITATION

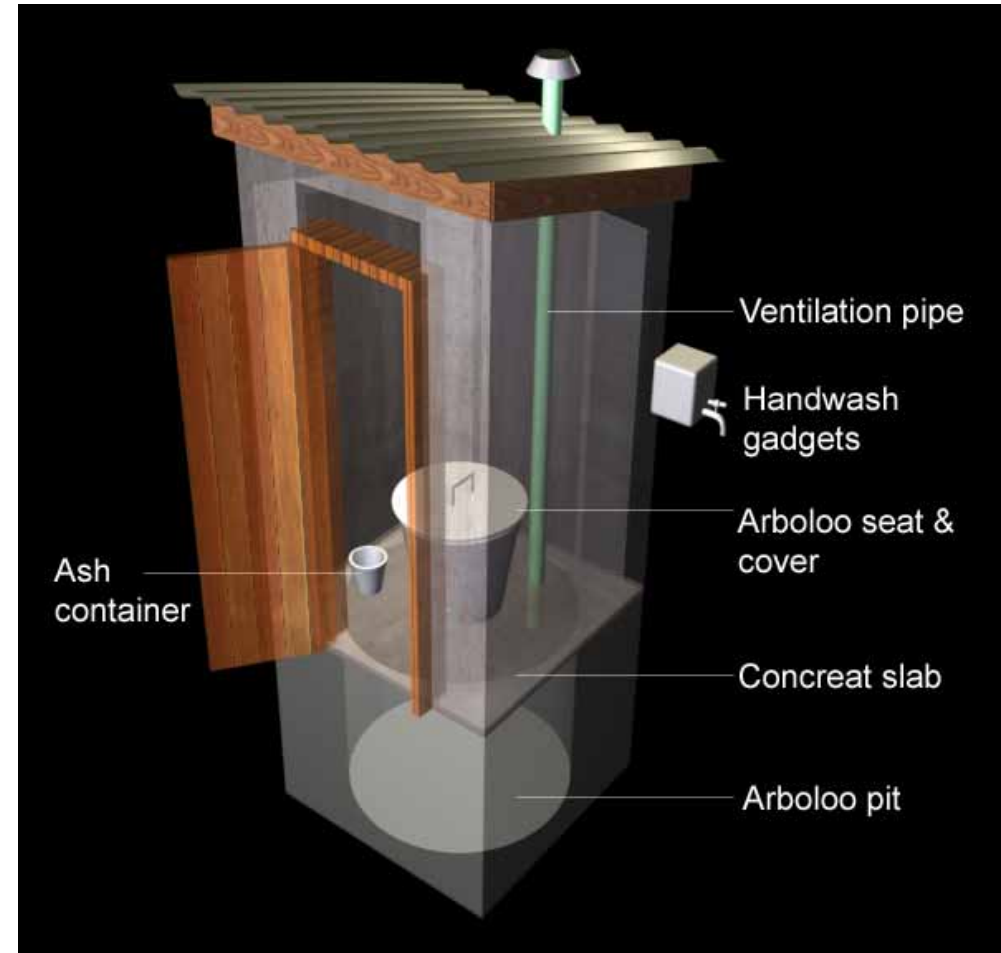
Homestead scale



THE USE OF MOBILE ARBOLOOS

KUSA & KAVILO CASE EXAMPLES

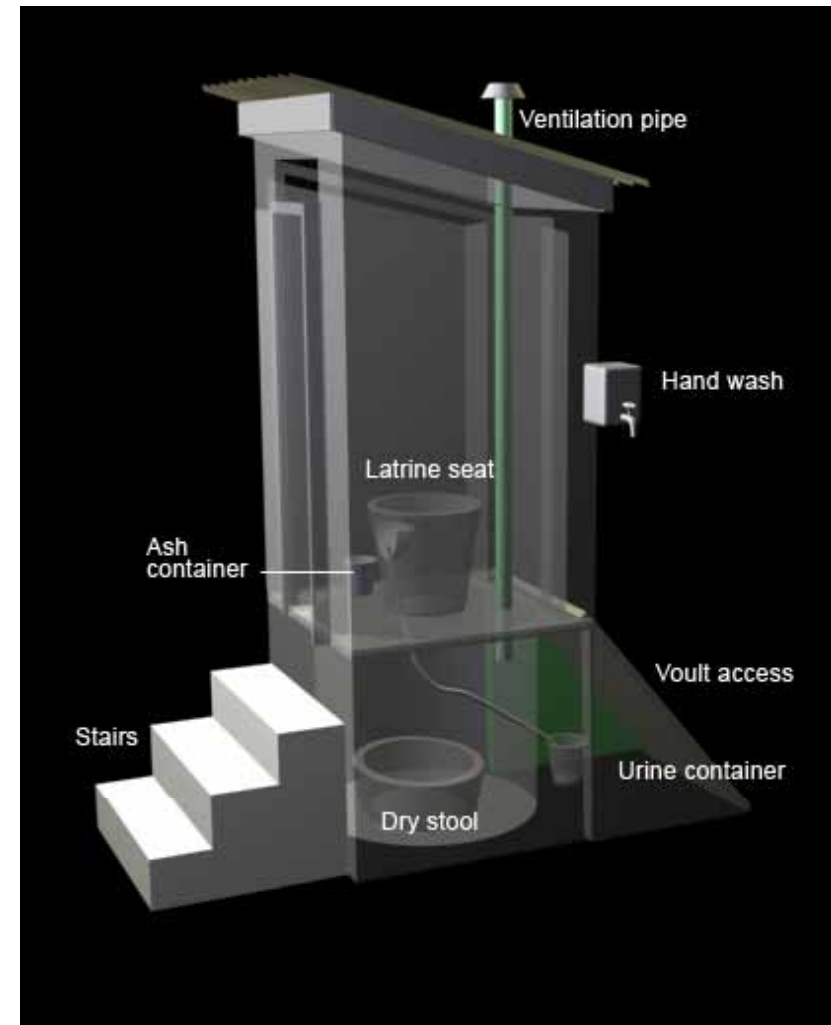
This is a *sanitation-fertility nexus* that utilizes shallow squat pits with portable slab & framework for future relocation. Soil or ash is added to the fecal matter to enhance decomposition. Trees are then planted in previous pits.



THE FIXED ARBOLOOs

These are shallow pits raised on pedestals. They have amenities for ash, stool and urine collection. The urine is diluted for direct application.

The fixed arboloo can accommodate RWH-sanitation-fertility nexus. They too have inadequate capacity for bio-energy generation.



PRODUCTIVE SANITATION

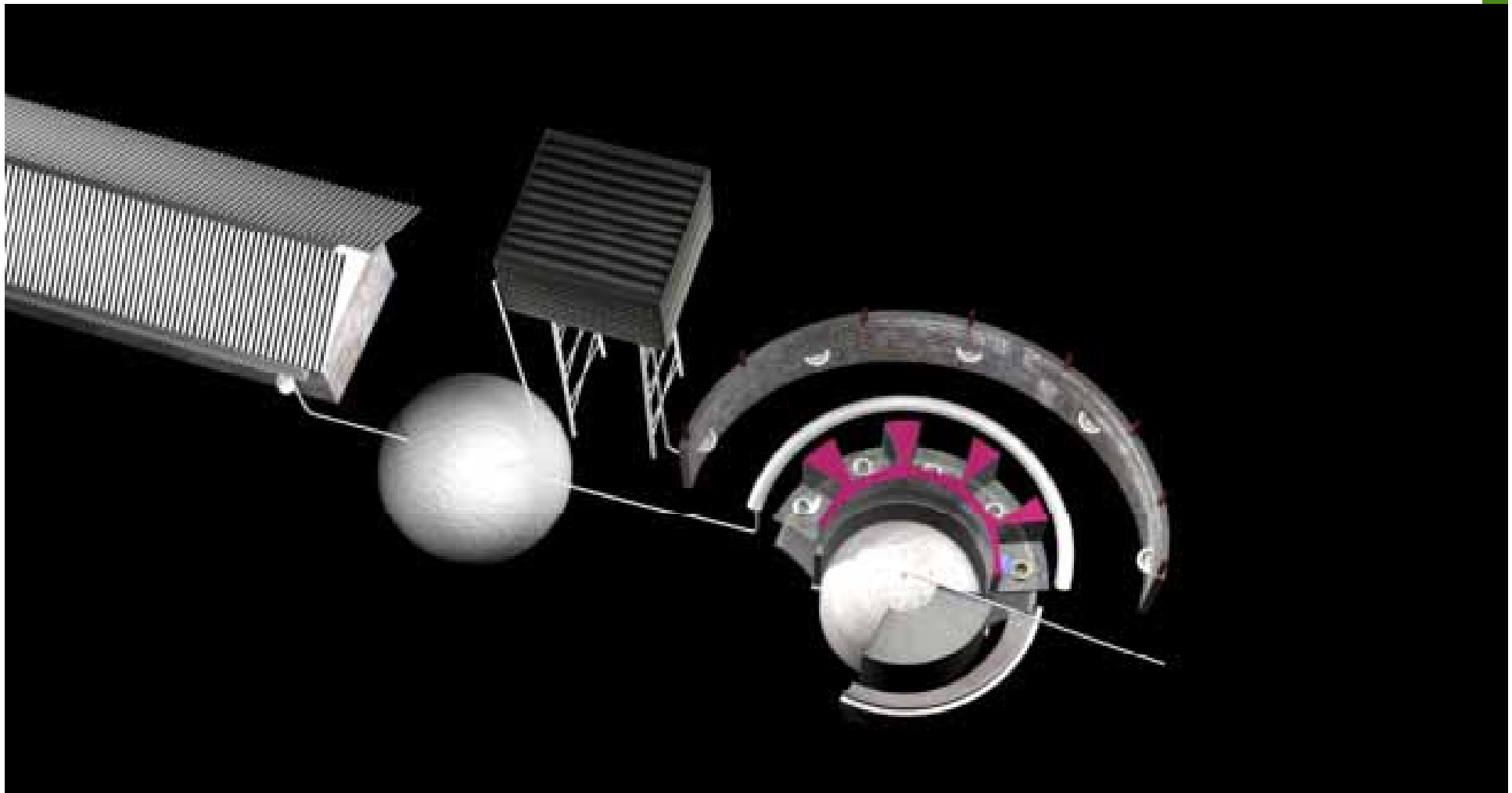
Rural institutional scale



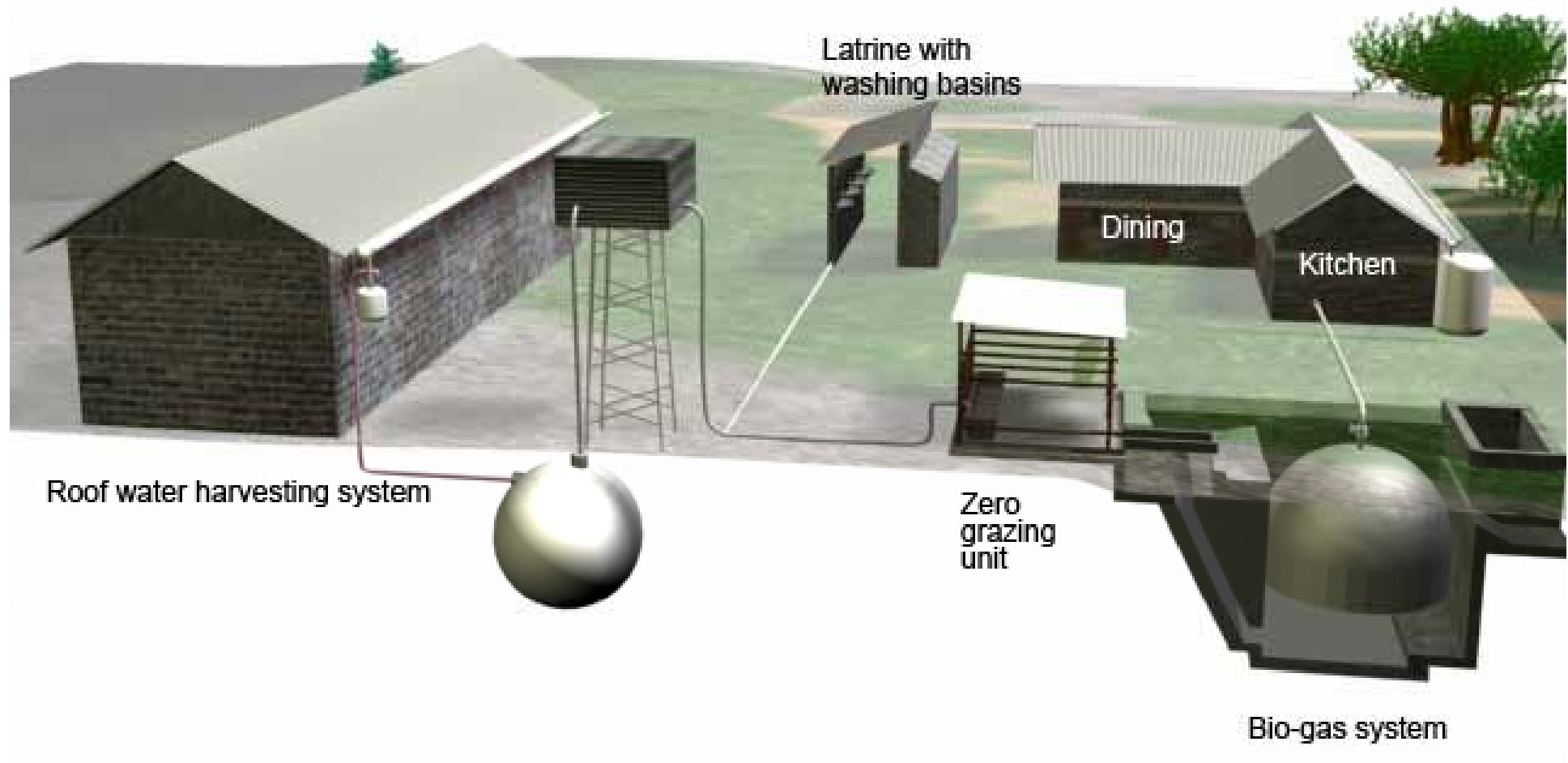
SEMI-CIRCULAR BIO-TOILET DESIGN FOR RURAL SCHOOLS



SEMI-CIRCULAR BIO-TOILET DESIGN FOR RURAL SCHOOLS



FULLY INTEGRATED WATER-SANITATION- FERTILITY-ENERGY NEXUS



CONCLUSION

- For the *Water-Food-Sanitation* Nexus to balance, the human waste in the urban areas generated from food sourced from the rural farms needs to be recycled and returned.
- There is need for revival, capacity building and scaling up of best practices in Rainwater Harvesting Systems so as to enhance food security
- Conservation Agriculture has the potential to improve production efficiency and maximize the benefit from productive sanitation interventions
- Productive Sanitation can contribute to household food security through fruit tree production and home gardening.
- Due to challenges of distance and bulkiness of humanure, productive sanitation for the rural settings can be achieved by tapping the potential of institutional populations such as schools and markets
- Fully integrated system achieves recycling of water, nutrients and energy at rural homesteads and institutions



**Thank
You**



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