

DOMESTIC RAINWATER HARVESTING IN SOUTH AFRICA: CHALLENGES AND OPPORTUNITIES

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INTRODUCTION

WHAT IS RAINWATER HARVESTING



Rainwater harvesting (RWH) describes the **small-scale** concentration, collection, storage, and use of rainfall for productive purposes.

Three broad categories



WHY RWH?

Old technology currently revived

African Ministers' Council on Water



Escalating environmental and economic costs of centralised water supply.

Adaptation to Climate Change



This school in Virginia harvests about 1060 m³ of water per year.

ASSUMPTIONS

Water and money savings
(reasonable pay-back period)

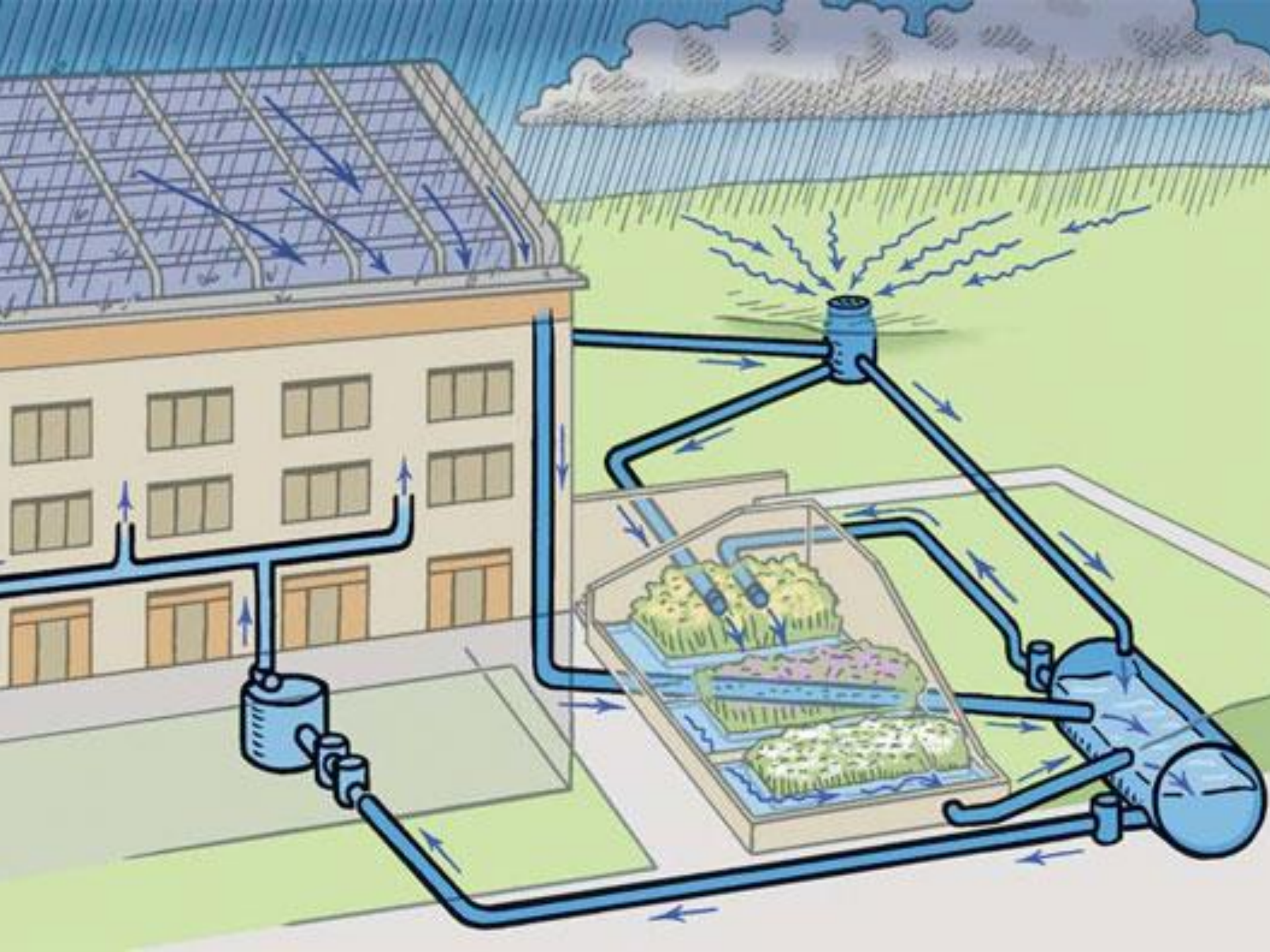


Storm water reduction



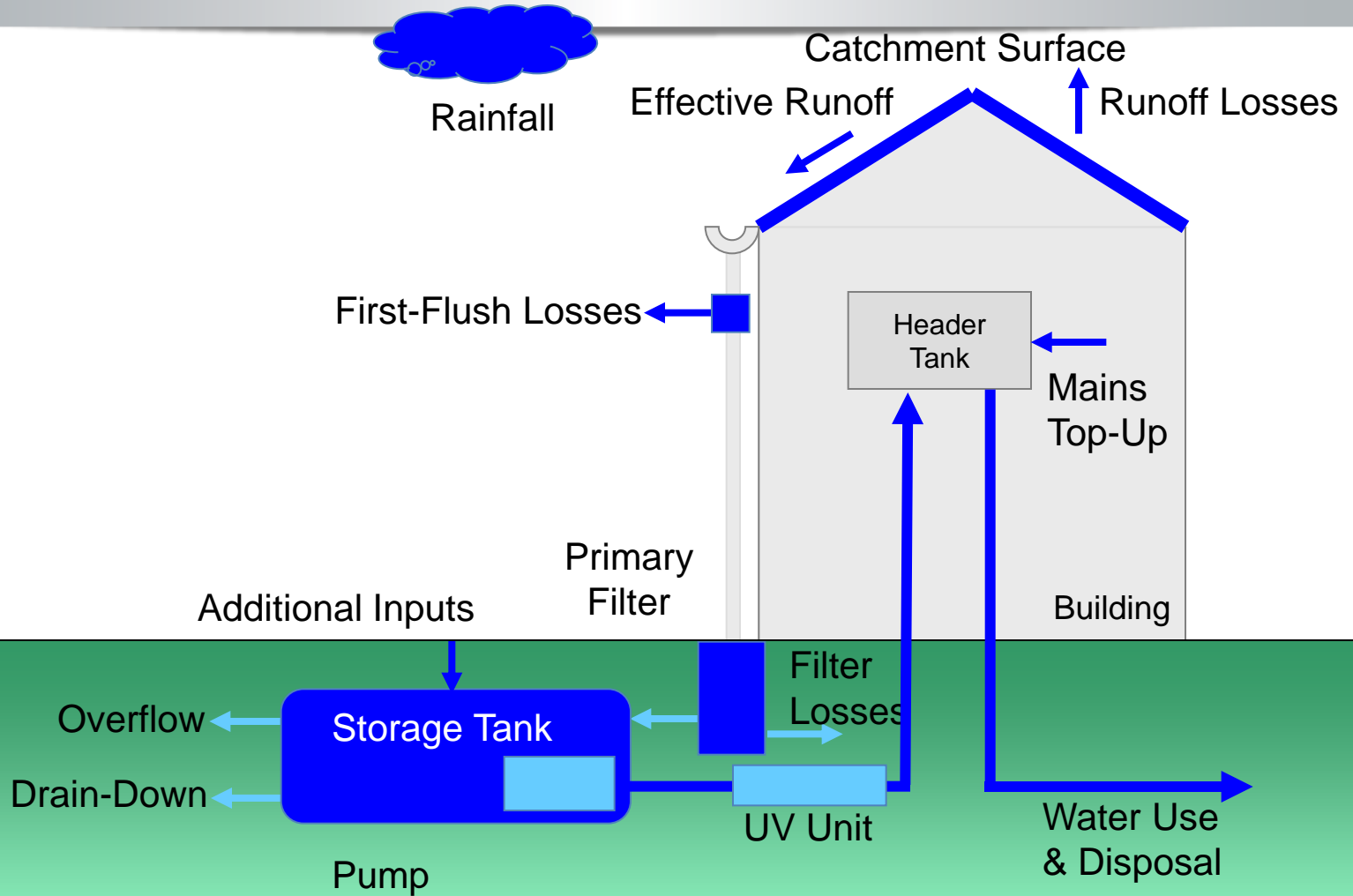
“SIMPLE” RWH SYSTEM







RWH: BASIC CONCEPT



TANKS



CHALLENGES

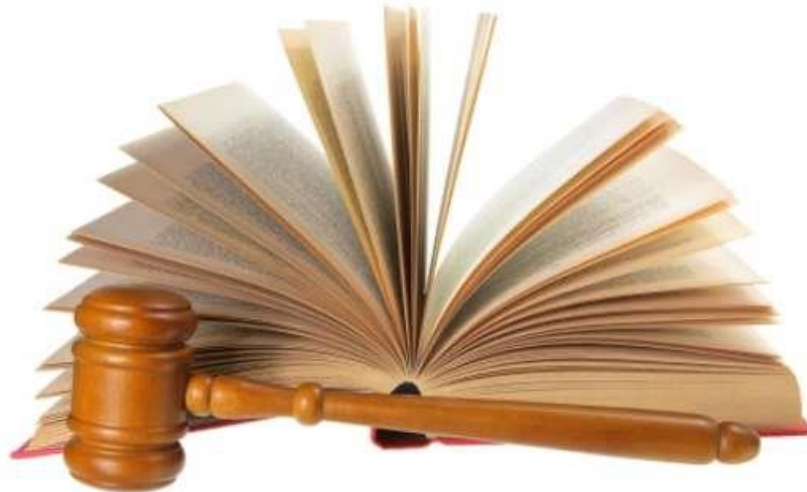


LEGAL STATUS OF RWH IN SA - NWA

National Water Act (*Act No. 36 of 1998*)

Chapter 4, Part 1, § 22: Permissible water use

- *store and use runoff water from a roof;*



LEGAL STATUS OF RWH IN SA - WSA

The Water Service Act (Act No. 108 of 1997)

Chapter 1, § 6

- Subject to subsection (2). *no person may use water services from a source other than a water services provider nominated by the water services authority having jurisdiction in the area in question. without the approval of that water services authority.*



legally /'li:gəli/ a
law
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laws, written r
Parliament an

LEGAL STATUS OF RWH IN SA - REGULATIONS



We need specific regulations

By-laws?

Building code (filtered,
disinfected, dyed **blue** or
green)

Public works department

Health agencies

INSTITUTIONS



No national umbrella body that coordinates RWH

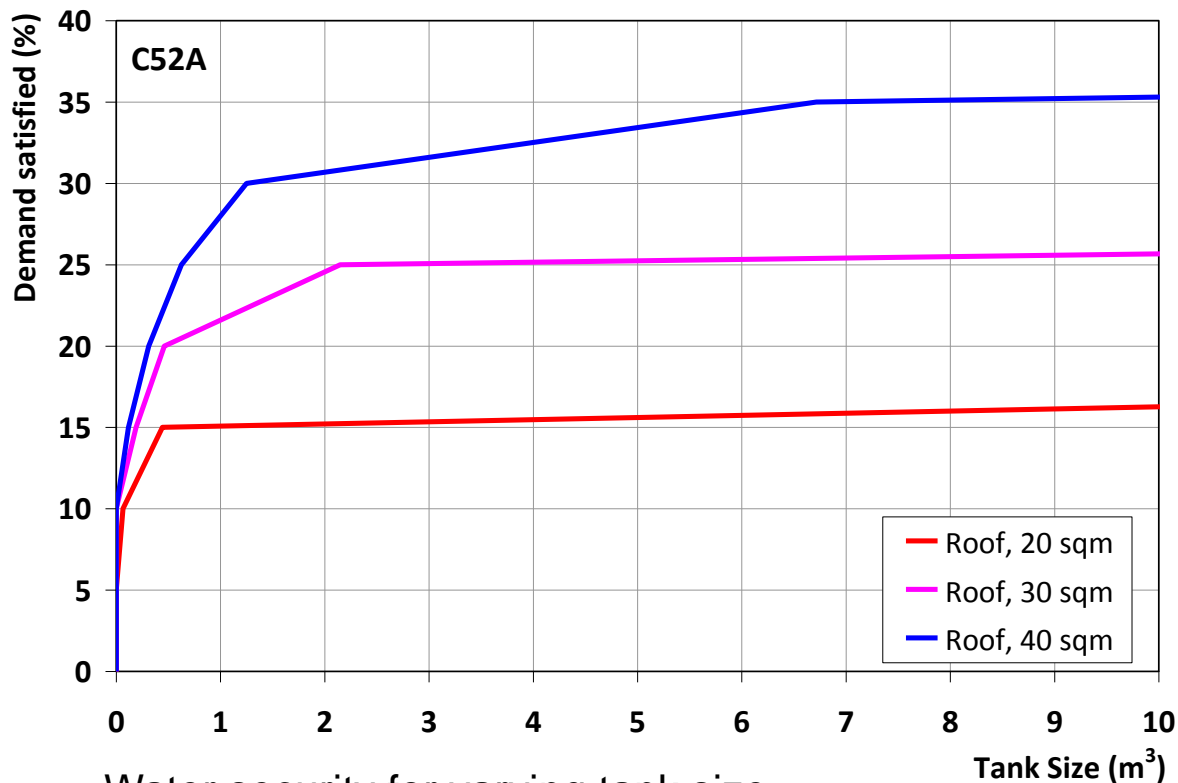
DWA, WRC, Association

Lack of guidelines (installation, operation and management)

Permissible uses for harvested water tend to vary depending on the climate and reliability of the water supply (EPA, 2013)



TECHNICAL – SIZING/OPTIMISING



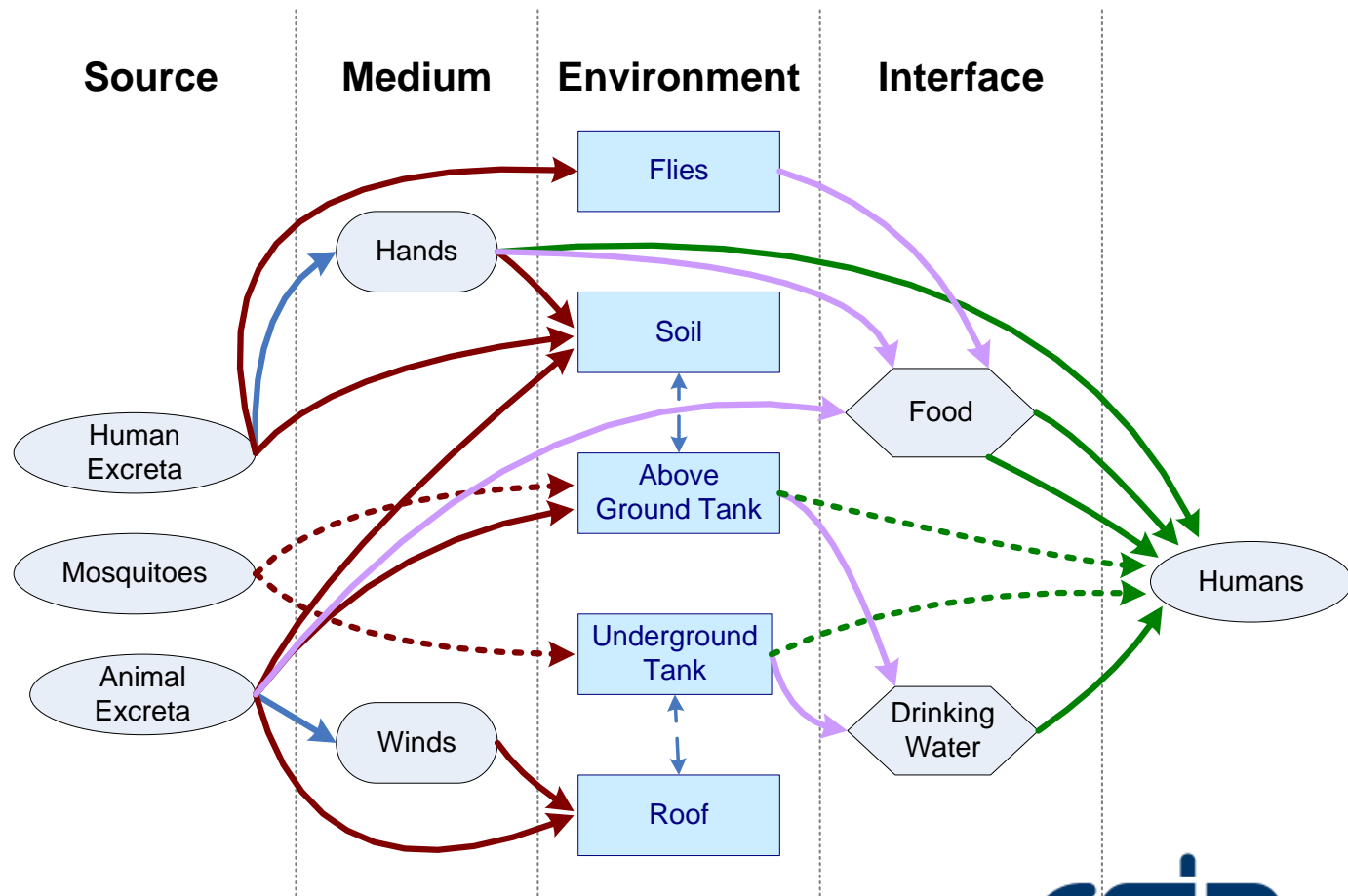
Water security for varying tank size and different roof areas in C52A

Systems are not optimised

Existing RWH models are not validated

No evidence of their use by manufacturers and commercial users.

TECHNICAL - WATER QUALITY



TECHNICAL - WATER QUALITY – ROOF TYPE

Asbestos



Copper



Galvanised



Tiles



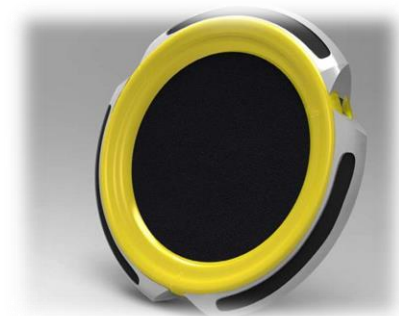
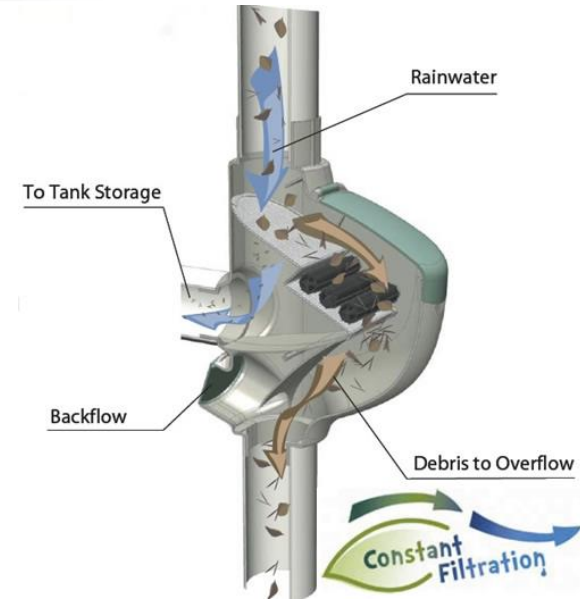
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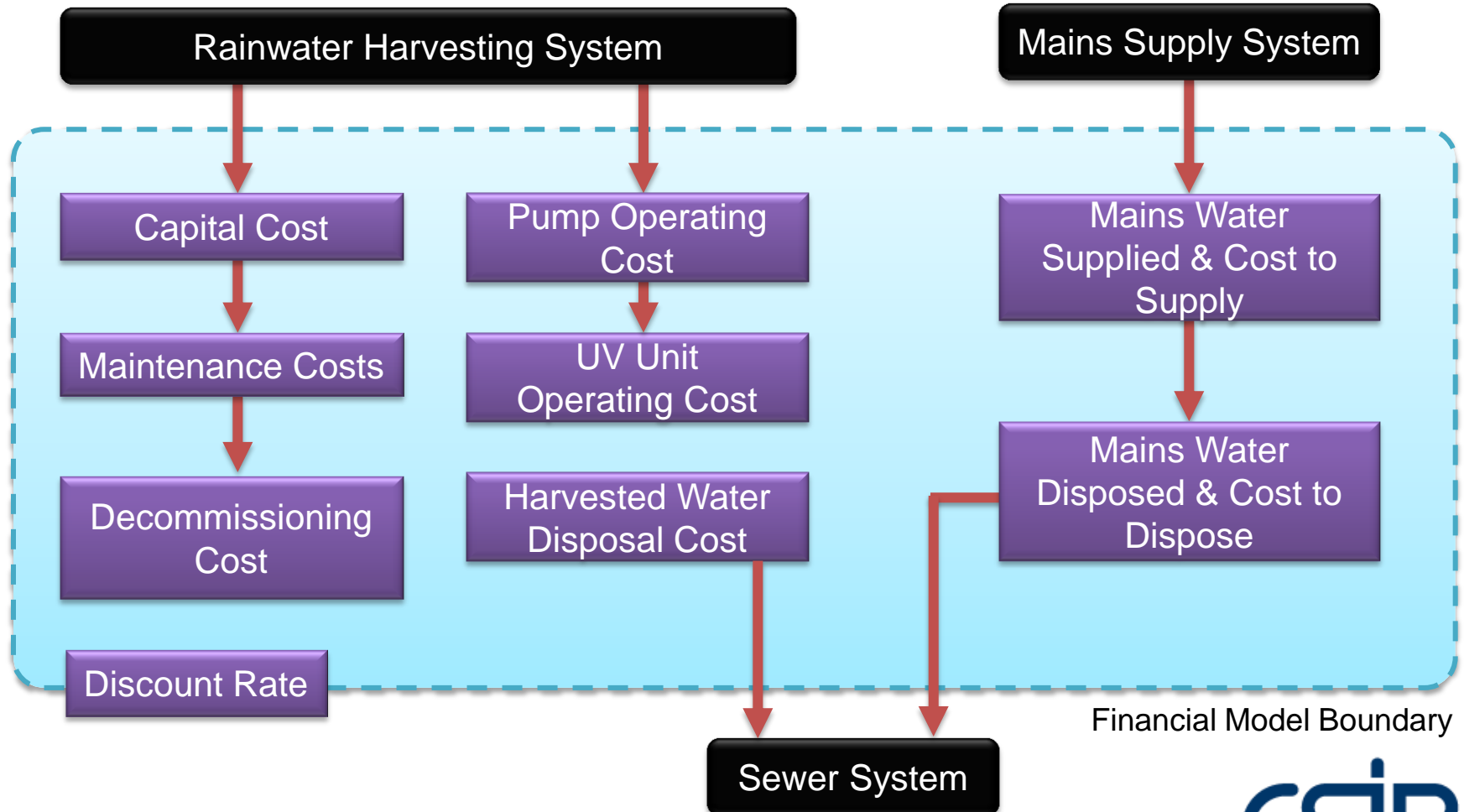
Tiles



TECHNICAL - WATER QUALITY – FILTRATION DEVICES



FINANCIAL

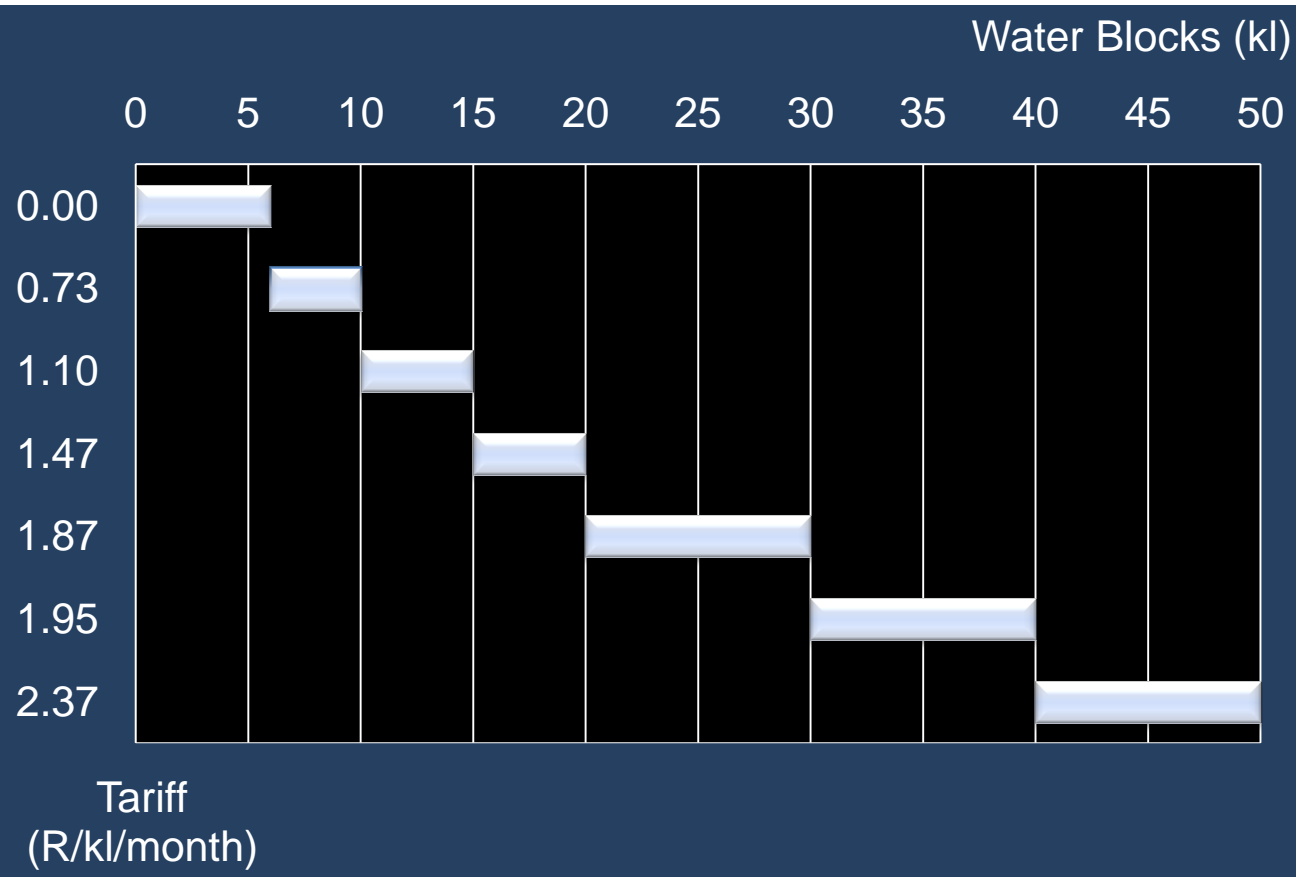


(Roebuck and Ashley, 2007)

OPPORTUNITIES



COST OF WATER SUPPLY

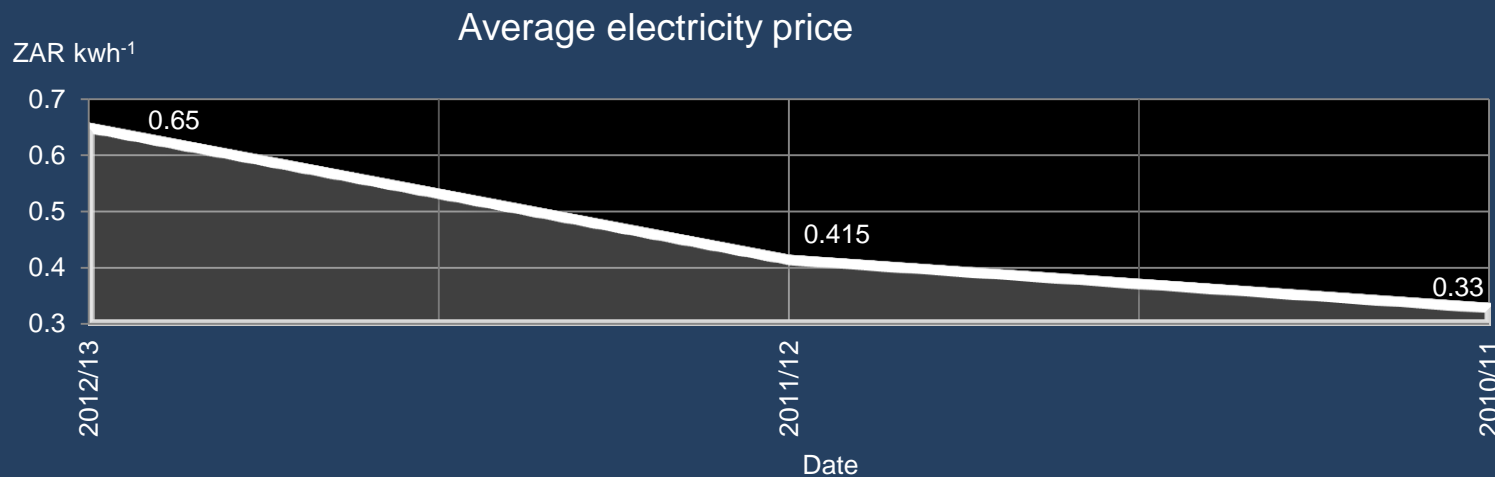
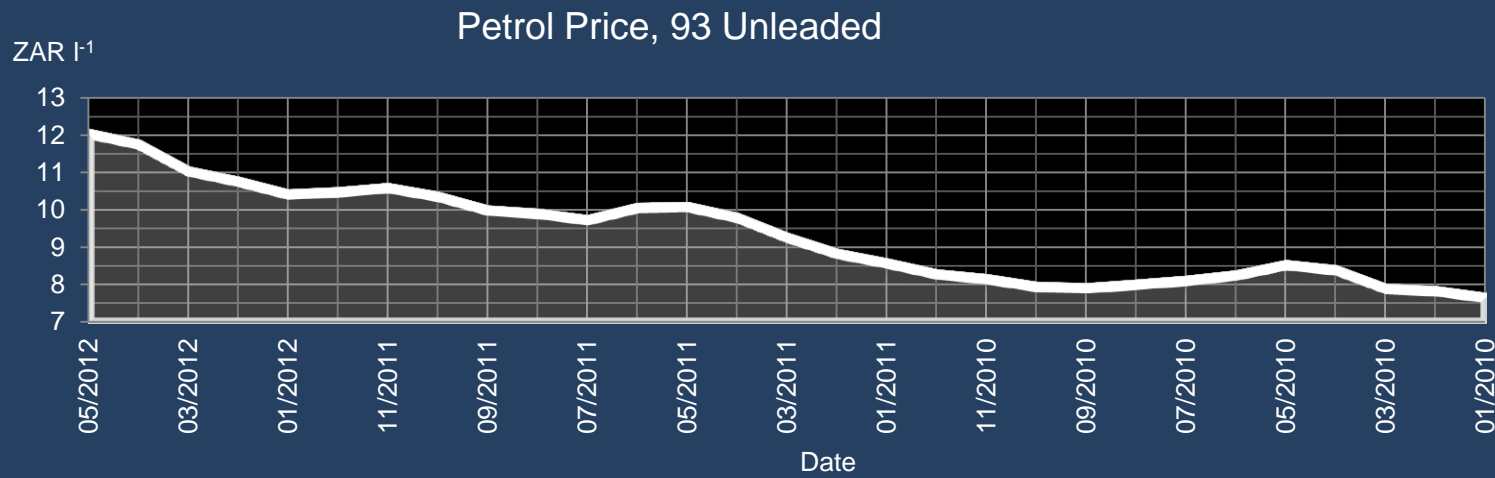


Cost tariff structure for the city of JHB

Likely to increase

- Energy cost
- Chemical cost
- R573bn over 10 years for the total water value chain.

ESCALATING ENERGY COST



RECONSTRUCTION AND DEVELOPMENT PROGRAMME



CSIR
our future through science

ON-GOING AND PAST RWH PROJECTS



Point of use disinfections systems designed for domestic rainwater harvesting (DRWH) tanks for improved water quality in rural communities



Low income housing project in Kleinmond
Rooftop rainwater harvesting and household water security in a changing climate environment



Life cycle costing of rainwater harvesting in two African cities:
Johannesburg and Nairobi



Johannesburg Water project?

Others???



SUMMARY

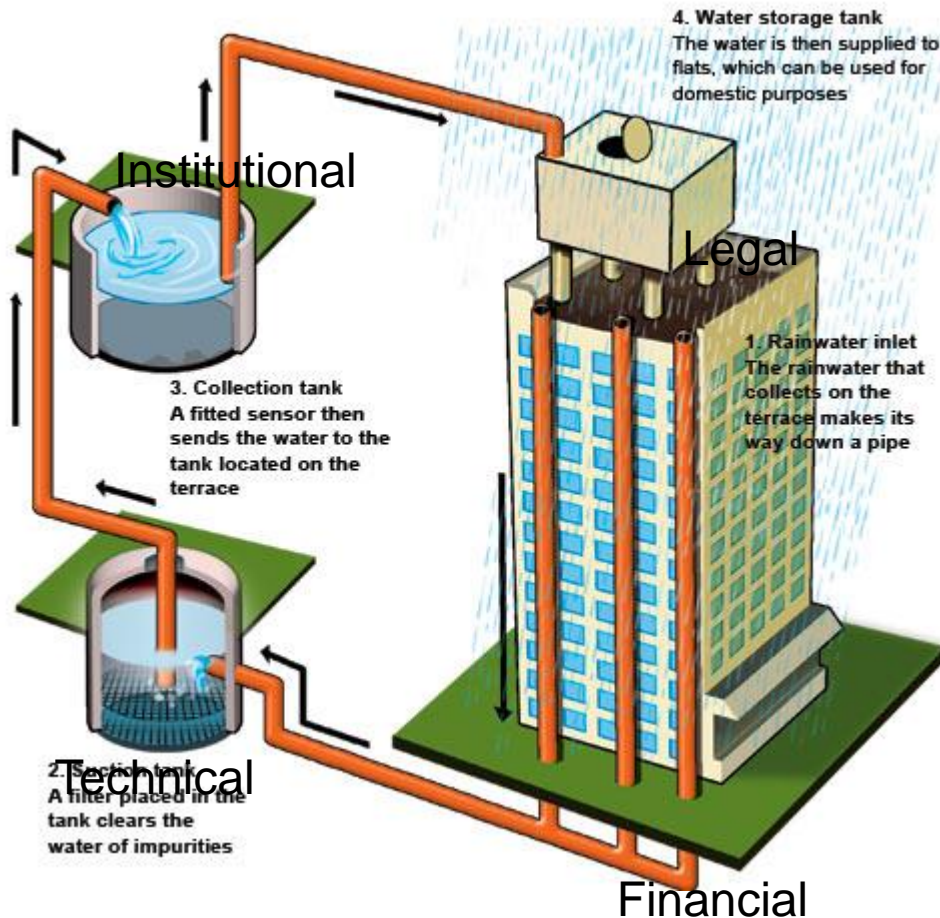
Challenges



Opportunities



SOME QUESTIONS



- Long-term financial performance and viability of RWH (Thresholds?)
- RWH and storm water
- RWH a buffer against drought
- RWH for groundwater recharge
- RWH reliability
- RWH regulation
- RWH guidelines
- RWH in informal settlements
- Etc

Thank you