



UNIVERSITY *of the*  
WESTERN CAPE

# Mountains and mountains of disposable diapers in rural South Africa

Catherina Schenck,  
Charlotte Nell

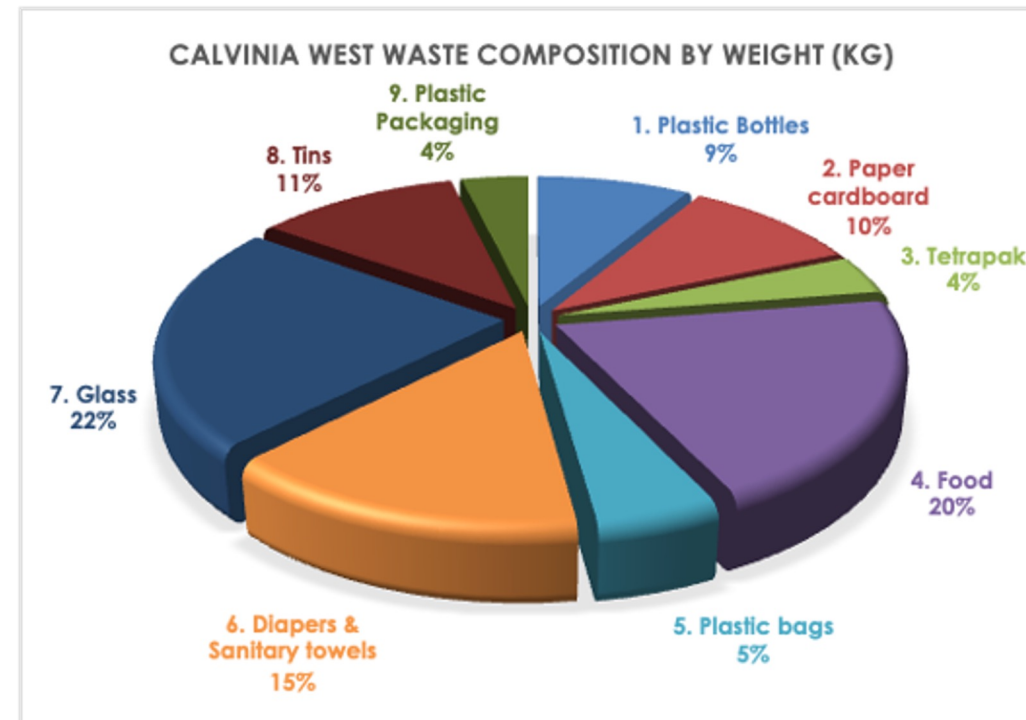
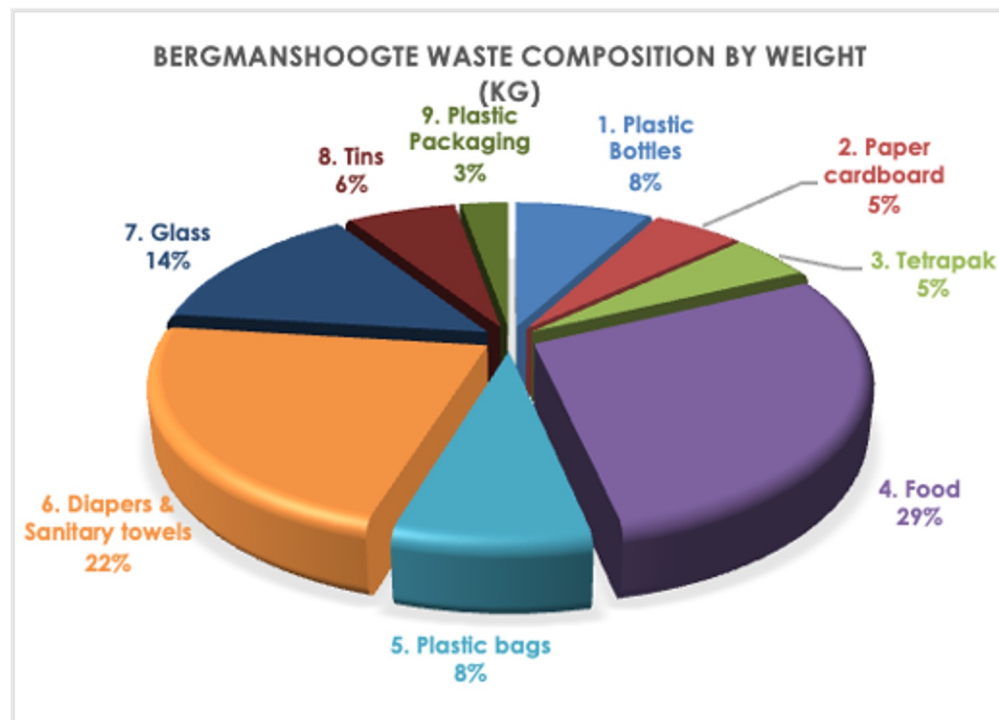
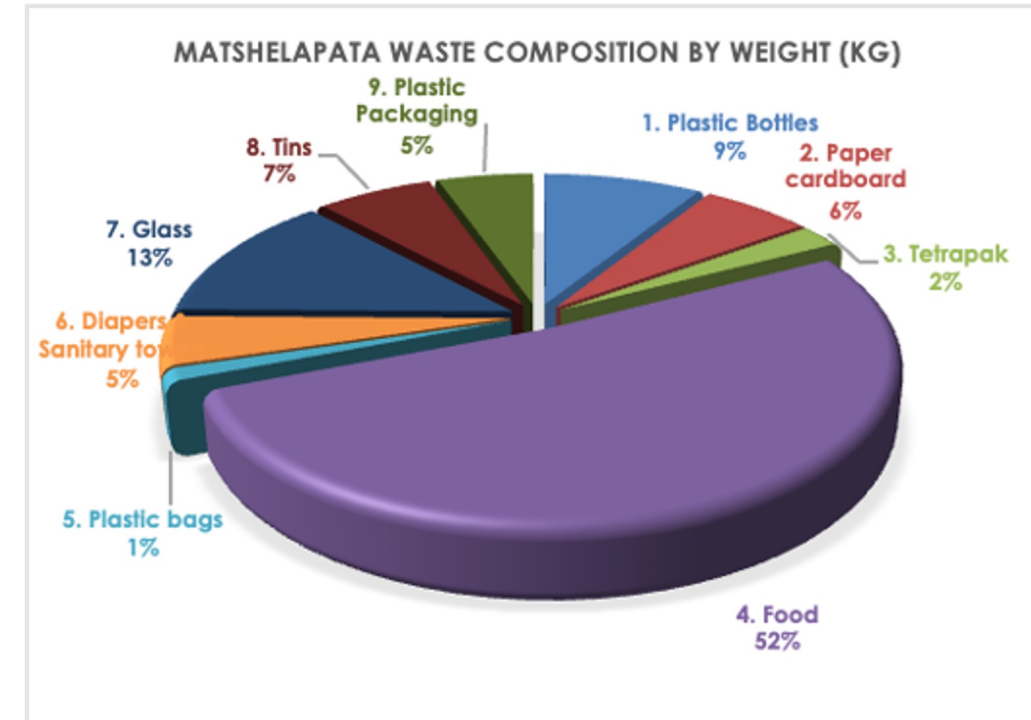
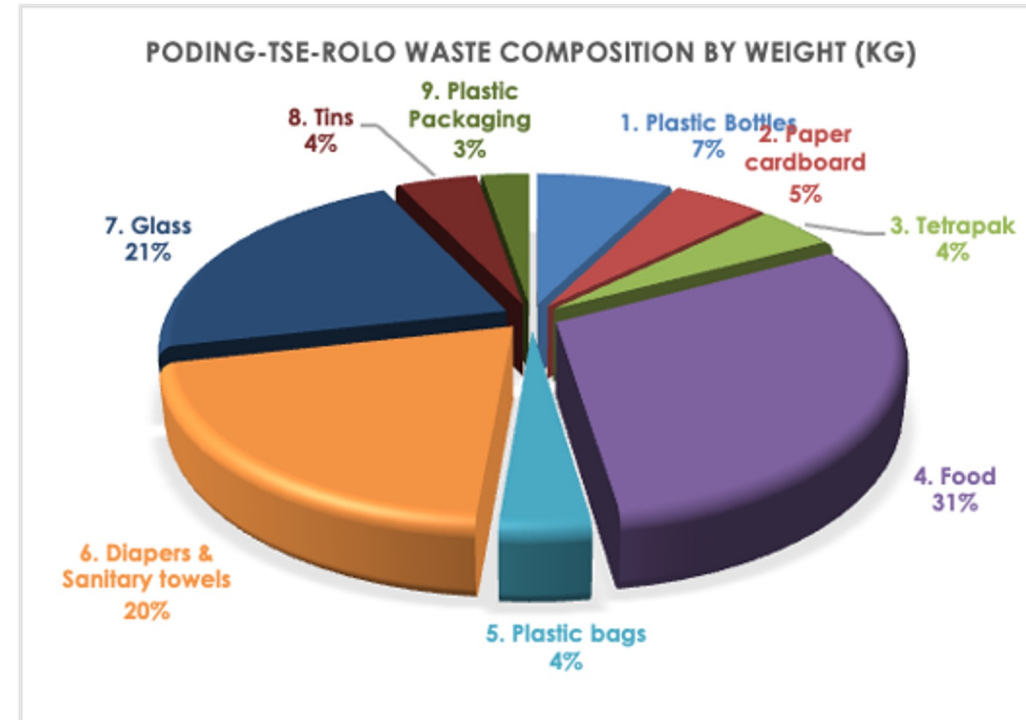
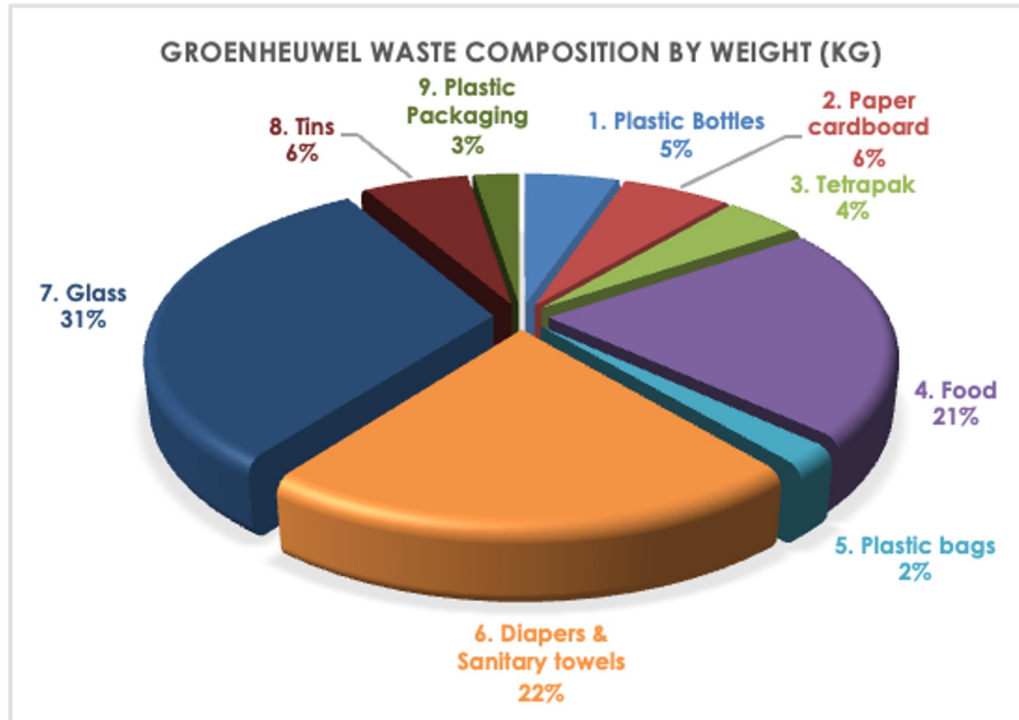
DSI/NRF/CSIR Chair in Waste and Society  
University of the Western Cape,  
Aquila Environmental





# 'Discovering' the dilemma

## 2019-2022 Clean City/Towns project: Awareness of fate of uncollected disposable diapers



**← Diapers and sanitary towels: significant portion of waste (by weight) in several areas →**



UNIVERSITY of the  
WESTERN CAPE

# Separation and discarding





# Clean yards and dirty rivers

Illegal dumpsites in Megoring, Limpopo



**Legend**

● Illegal Dumpsites

Limpopo -Google earth





# Background and aim of studies

**2022 - 2024**

Conducted the same research in 4 different low-income areas:

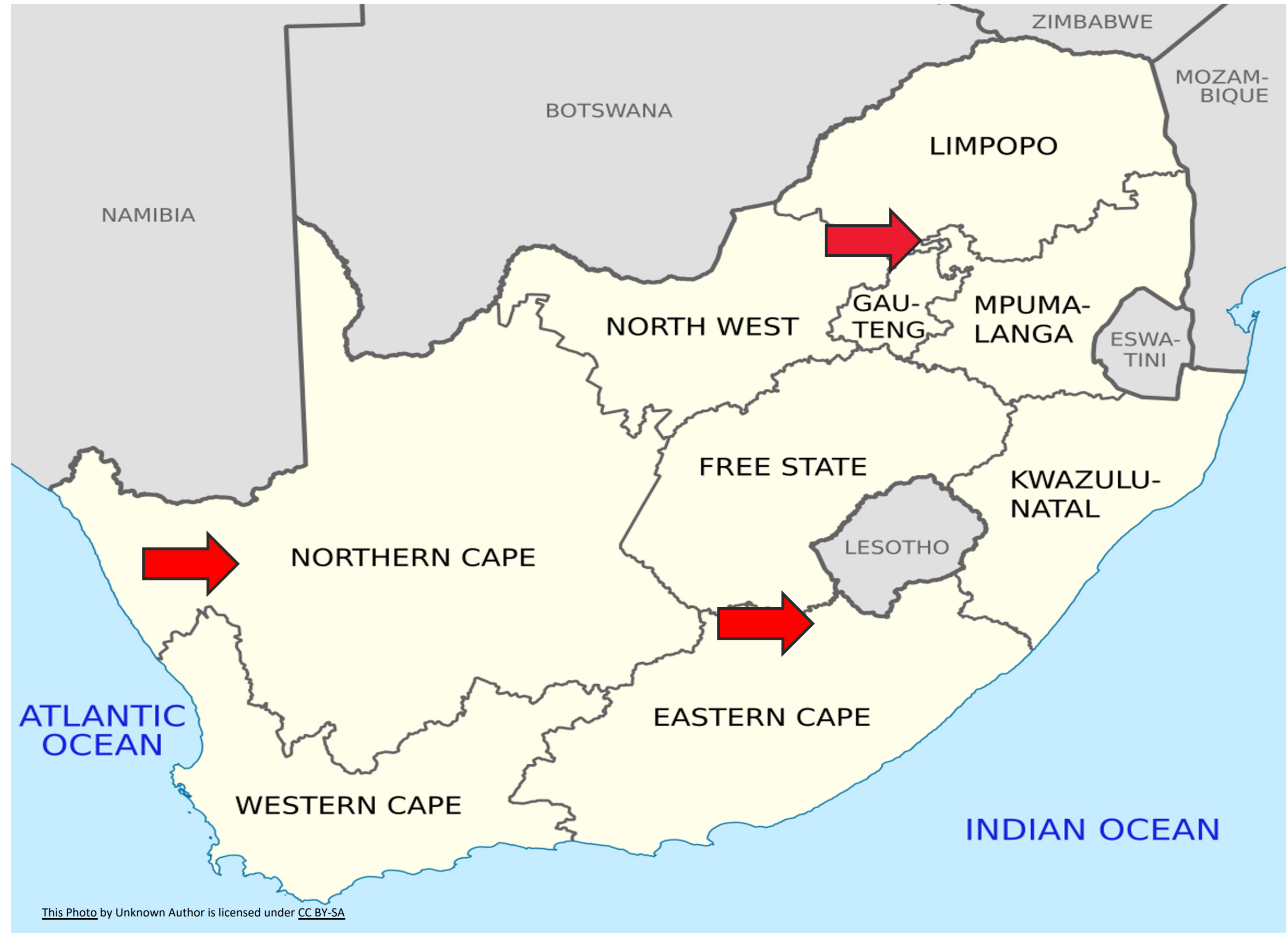
- 8 villages in rural **Kruger to Canyons Biosphere** (K2C) in Mpumalanga and Limpopo provinces (CSIR funded)
- **Calvinia-West** township, Northern Cape (CSIR funded)
- 3 villages in **K2C** (Kimberly-Clark funded)
- Rural **Matatiele**, Eastern Cape, 'Smart Nappy' Pilot Project (Nedbank Green Trust funded)





UNIVERSITY of the  
WESTERN CAPE

# Locations of studies





# Research methodology

## ❖ Quantitative data collection - Questionnaires completed

K2C (2022) 1575

Calvinia West 193

K2C (2023) 157

Matatiele 504

## ❖ Focus group discussions

## ❖ Mapping communities

## ❖ GIS Mapping of dumped diapers: K2C, Calvinia-West

## ❖ Member-checking meetings





UNIVERSITY *of the*  
WESTERN CAPE

# Results







# Biographical data: caregivers with babies

Evaluation Criteria	K2C (2024)	K2C (2023)	Calvinia- West (2023)
<b>Gender</b>	83% Female	97% Female	92% female
<b>Average age</b>	32 years	32 years	31 years
<b>Number of children wearing diapers per household</b>	3	1	1.3
<b>Unemployment</b>	??	71%	70%
<b>Government social grant recipients</b>	92%	97%	97%



UNIVERSITY of the  
WESTERN CAPE

# Challenges in rural areas: Inadequate collection and improper disposal

- Only 60% of South African households received a regular, weekly waste collection service (in 2023).
- There is a huge discrepancies in collection between urban (84.4%) and rural (12.5%) areas.

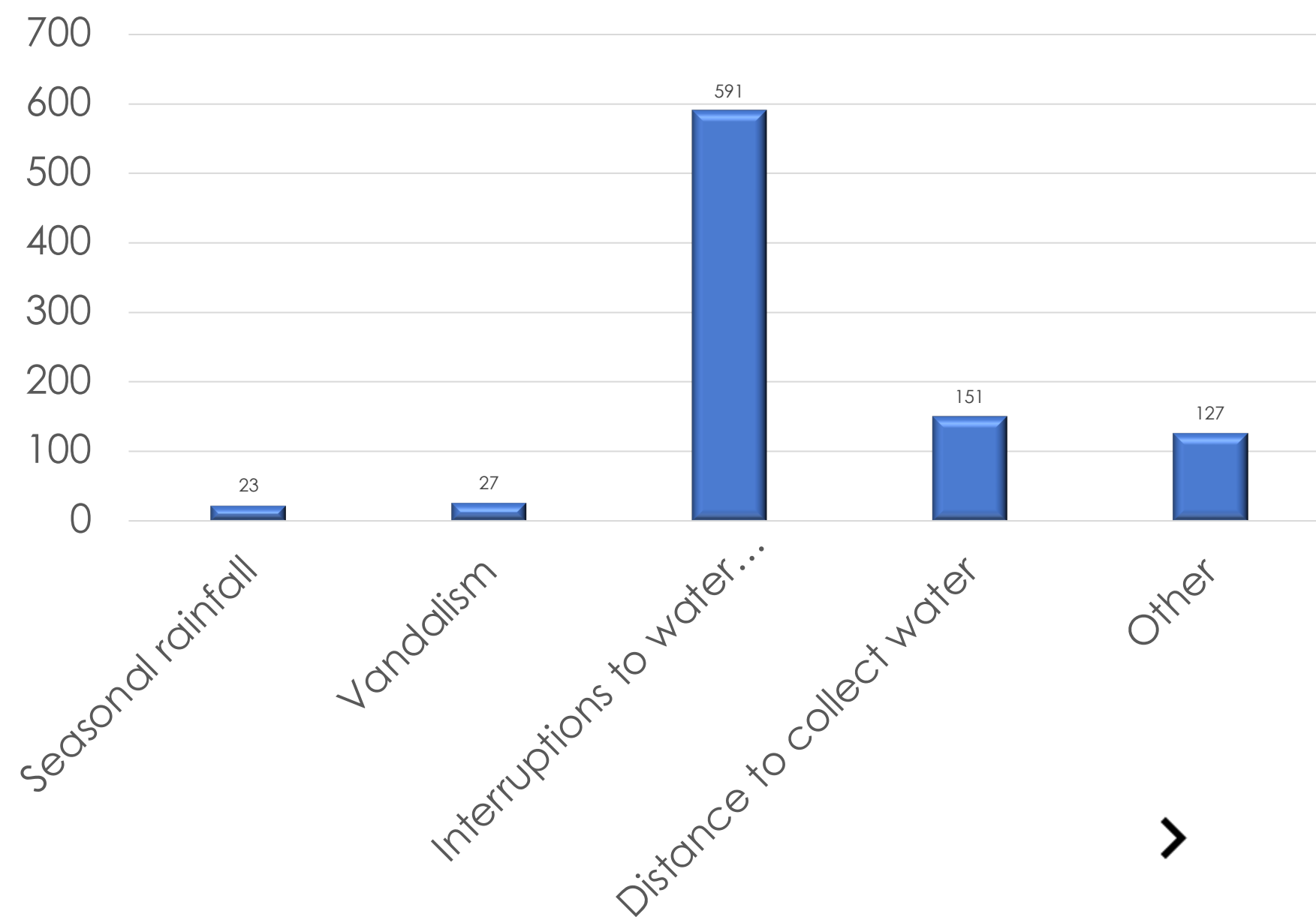




# Waste and infrastructural barriers

- ❓ **K2C:** No running water and pit toilets; no electricity; no WM
- ❓ **Calvinia:** Weekly WM; no bins or bags; electricity if and when can afford. Taps in yard or house
- ❓ **K2C:** 80% water from borehole/ community tap; 99% pit latrines; 64% no WM, 44% skip bins
- ❓ **Matatiele:** 52% water from taps, 33% from local water sources

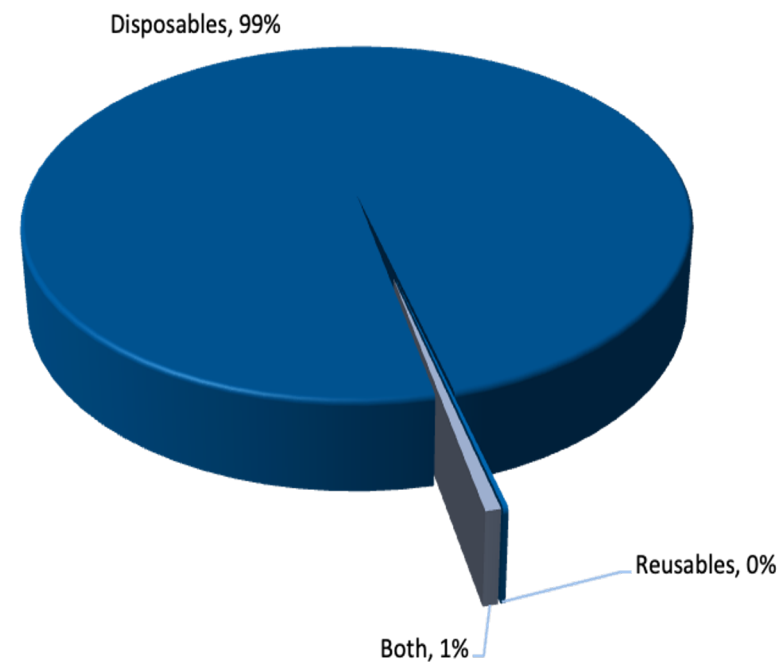
## MAIN REASON FOR NOT HAVING ACCESS TO WATER



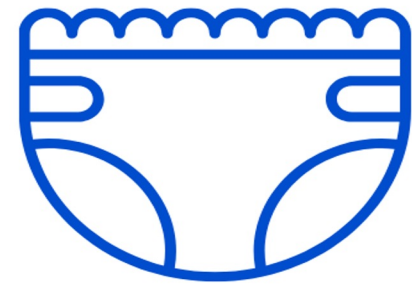


# Nappy preference and reuse

Calvinia: Types of diapers used



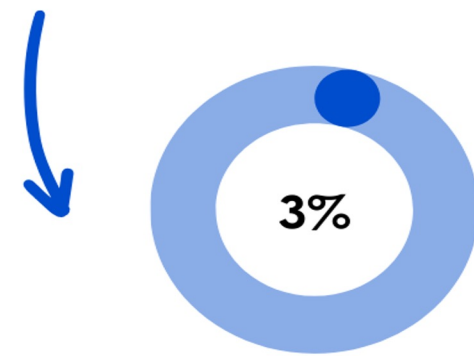
## Langa



100% use disposable nappies



0% reusable

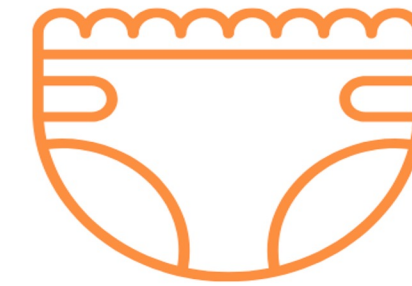


reuse disposable nappies 1 - 2 times

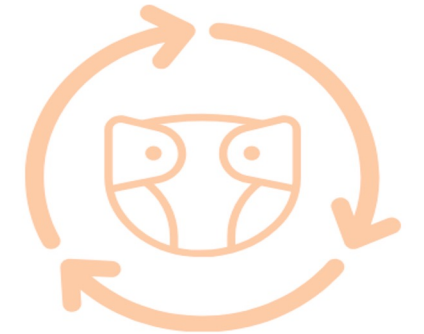
### The process:

- Sometime the nappy is not too dirty when my child is constipated i remove the stool and reuse it to save money.
- When my child is constipated i remove the hard stool and let my child use it again.
- If the stool is hard and not sticky I will remove it and use the nappy again.
- If the stool is dry and nappy is not wet from urine - I use a wipe to remove the stool and put it back on.

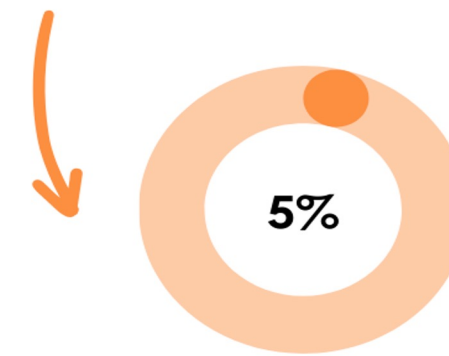
## K2C



91% use disposable nappies



9% reusable



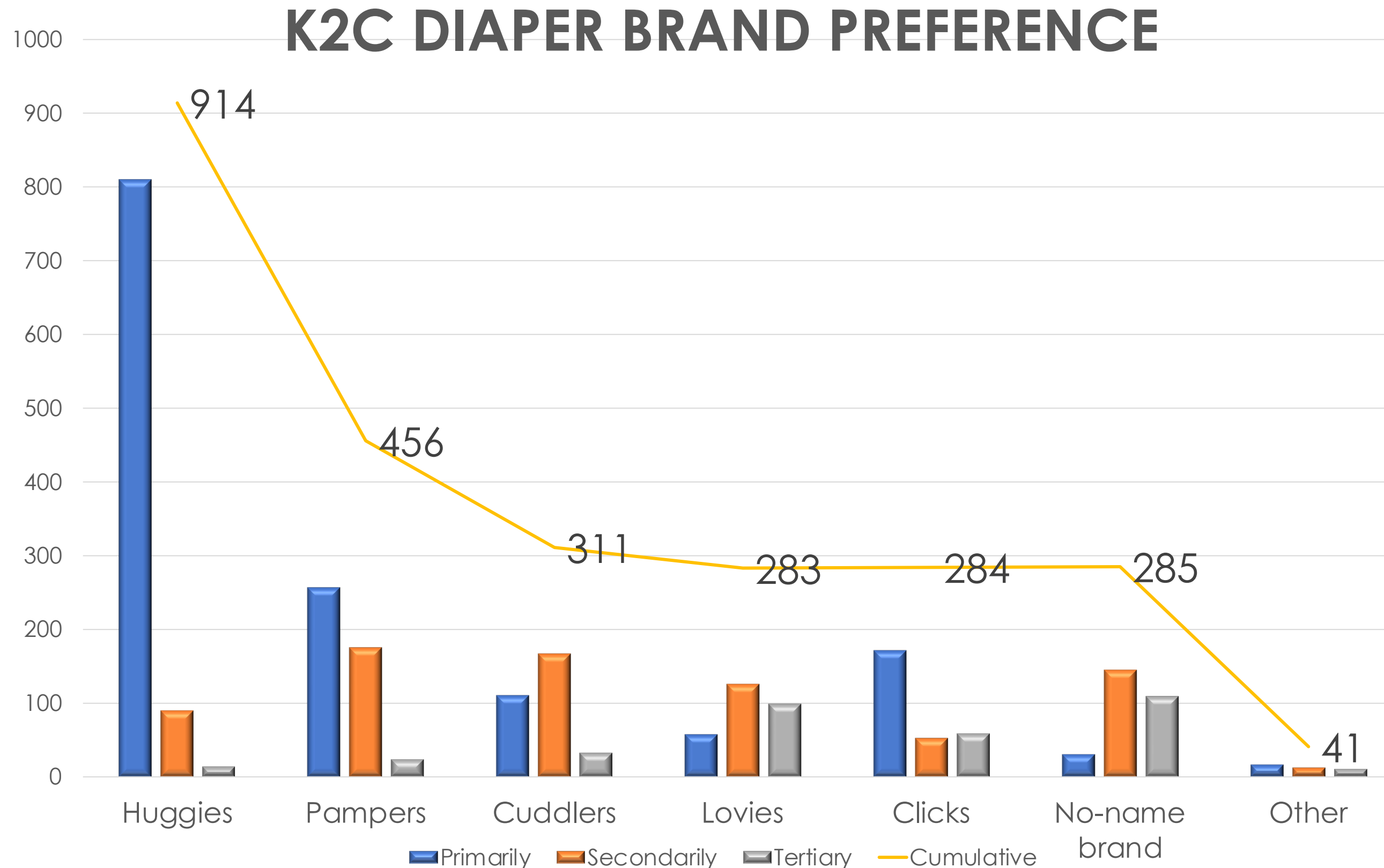
reuse disposable nappies 1 - 2 times

### The process:

- First empty the stool, then wash after you dry the nappies.
- Empty the stool, dry them, also wash them.
- First dry then later wash them after emptying the stool.
- Rinse and dry them.
- Empty the stool, wash and dry them after.

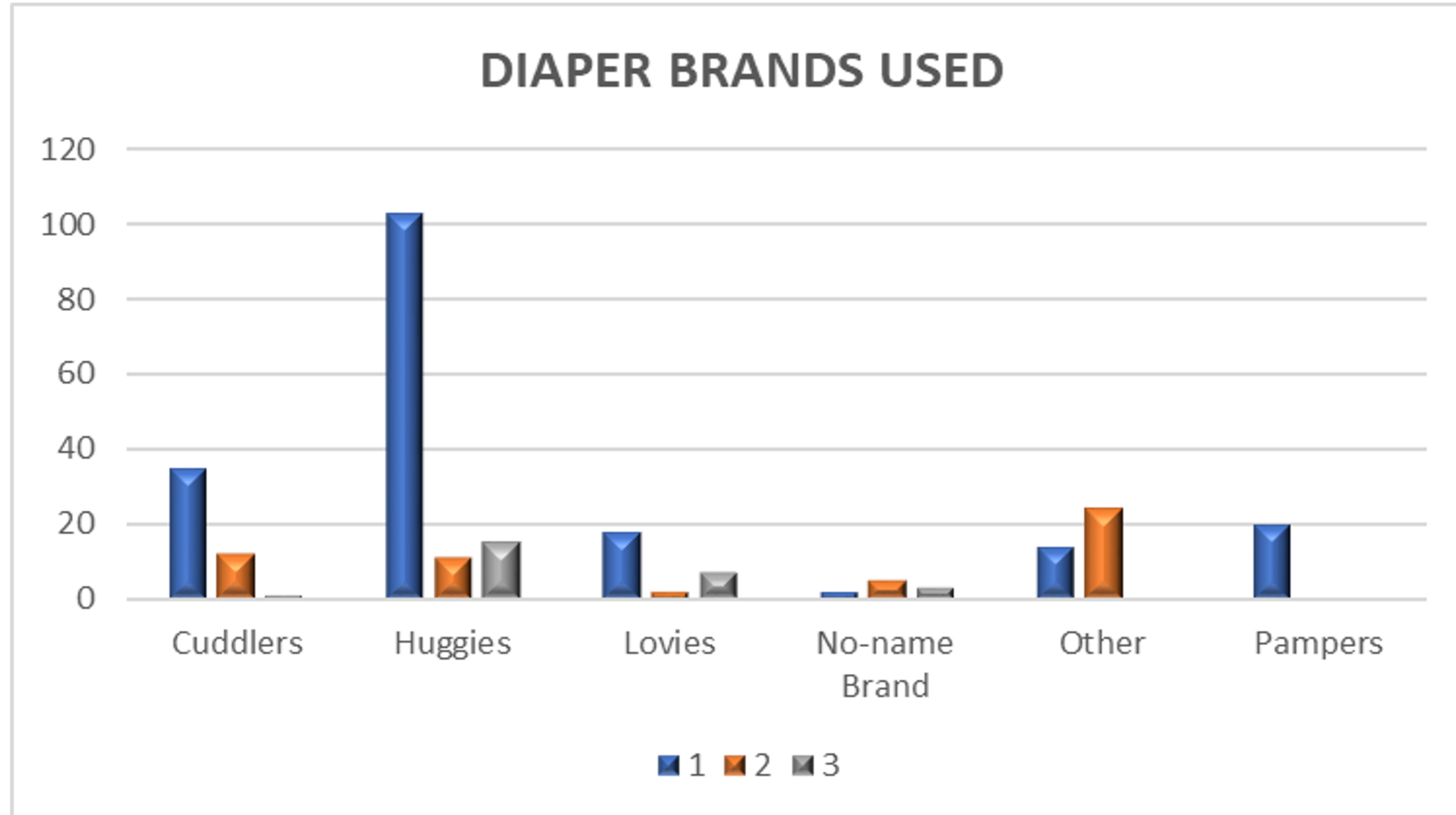


# Nappy brand preference (K2C, 2023)





# Nappy brand preference (Calvinia-West)





UNIVERSITY of the  
WESTERN CAPE

# Nappy brand preference: K2C and Langa



Langa: **13%**  
K2C: **38%**



Langa: **28%**  
K2C: **59%**



Langa: **38%**  
K2C: **15%**



Langa: **17%**  
K2C: **9%**



Langa: **1%**  
K2C: **32%**

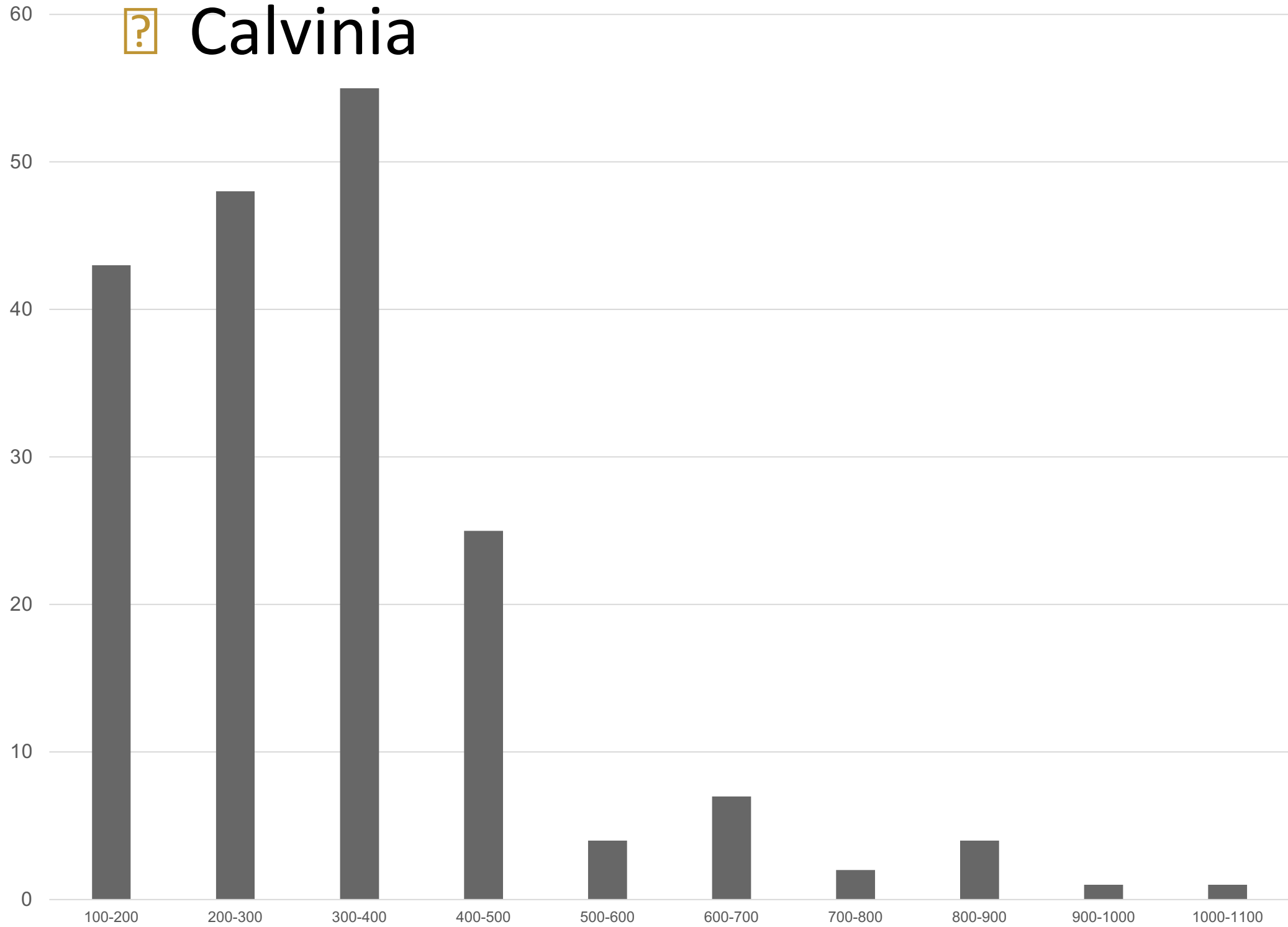
OTHER

Langa = Somali shop: **2%**  
Langa = No name brand: **1%**  
K2C = DisChem Baby: **1%**

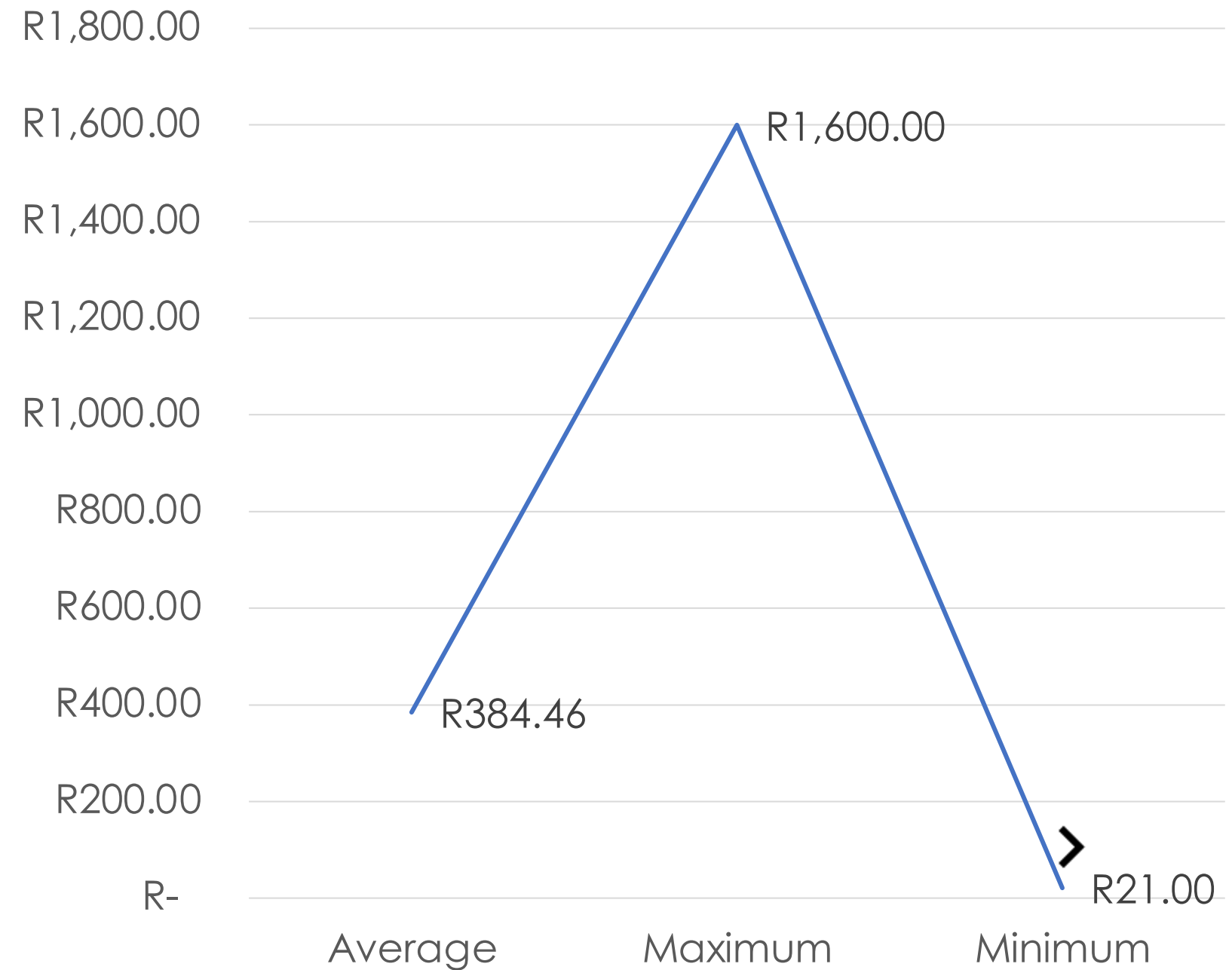


# Spending on nappies

## ? Calvinia



## K2C-MONEY SPENT ON NAPPIES PER HOUSEHOLD







UNIVERSITY of the  
WESTERN CAPE

# Separation of nappies

? Do you separate used nappies from other types of waste?

N = 149 / 157

Langa

YES | 32%



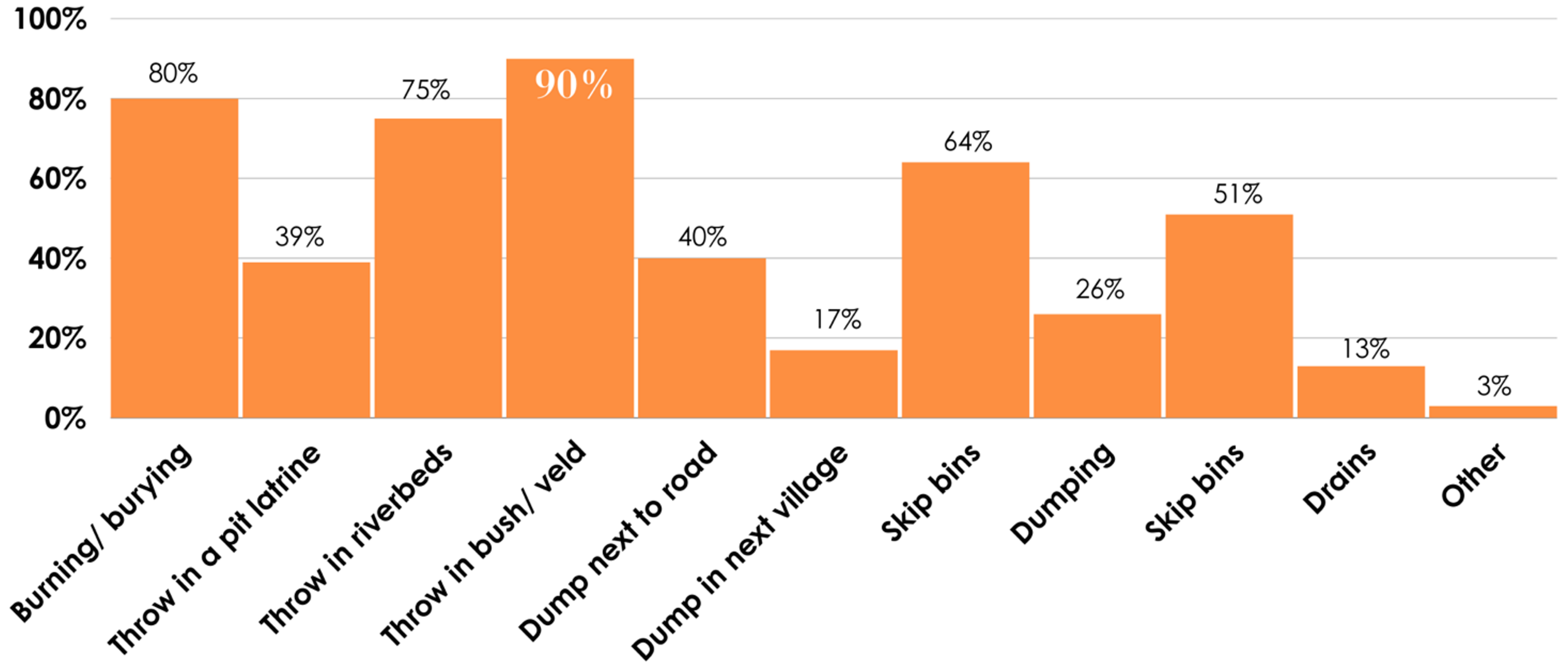
K2C Biosphere

YES | 76%





# Diaper disposal preference (K2C 2023)





UNIVERSITY of the  
WESTERN CAPE

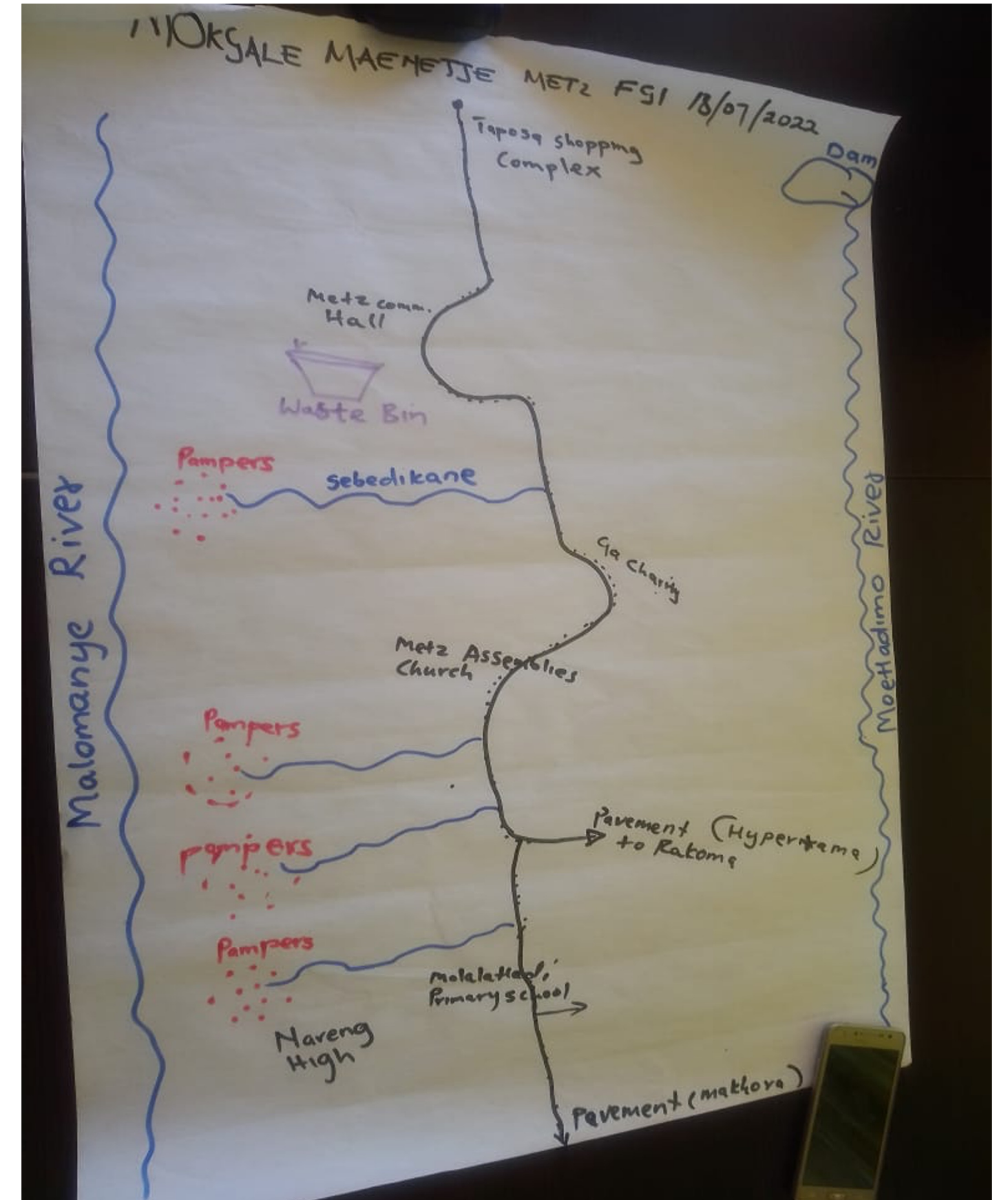
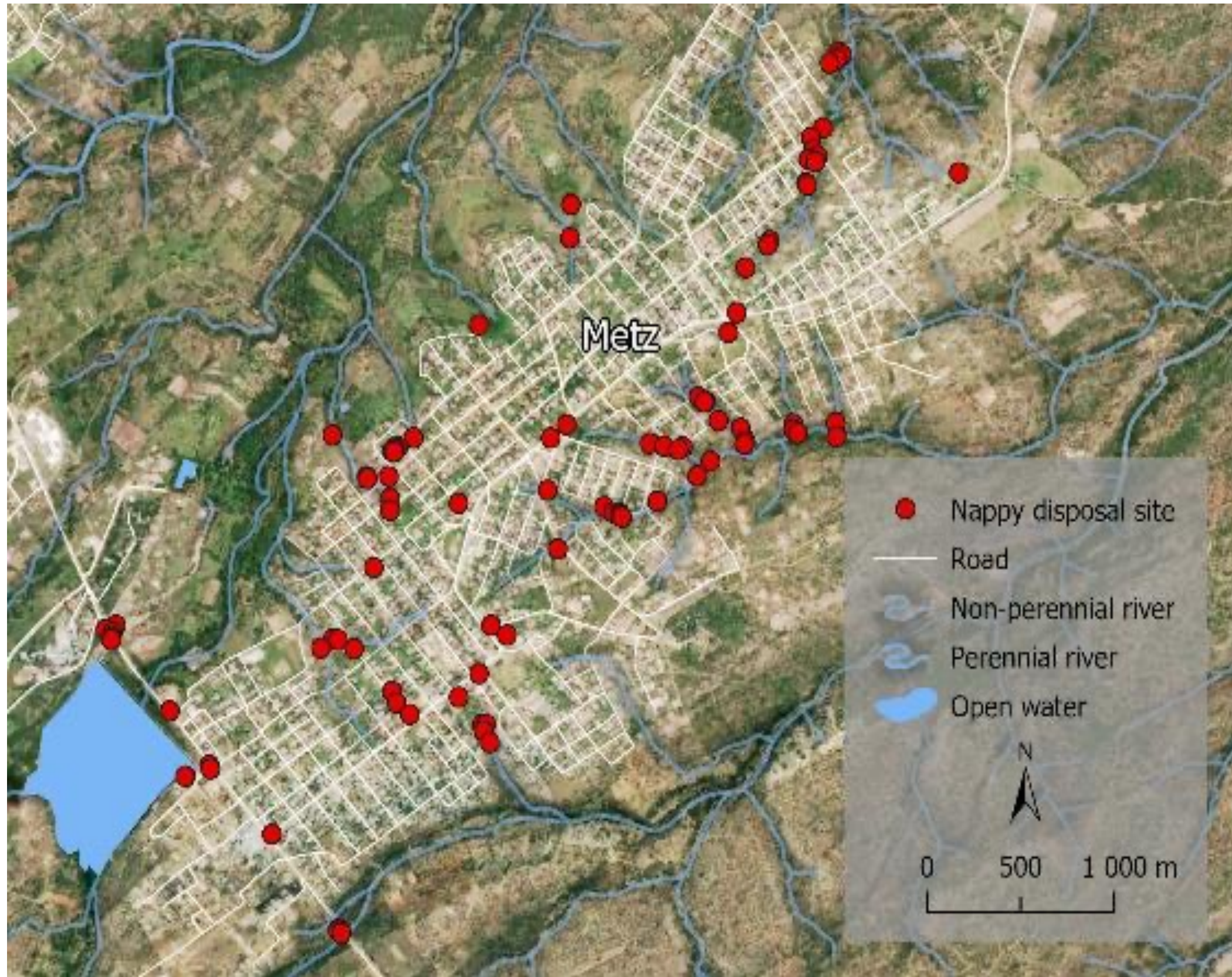
# Disposal preference of diapers

- ❑ Landfilling
- ❑ Burning (difficult)
- ❑ Burying
- ❑ Dumping
- ❑ Pit latrine



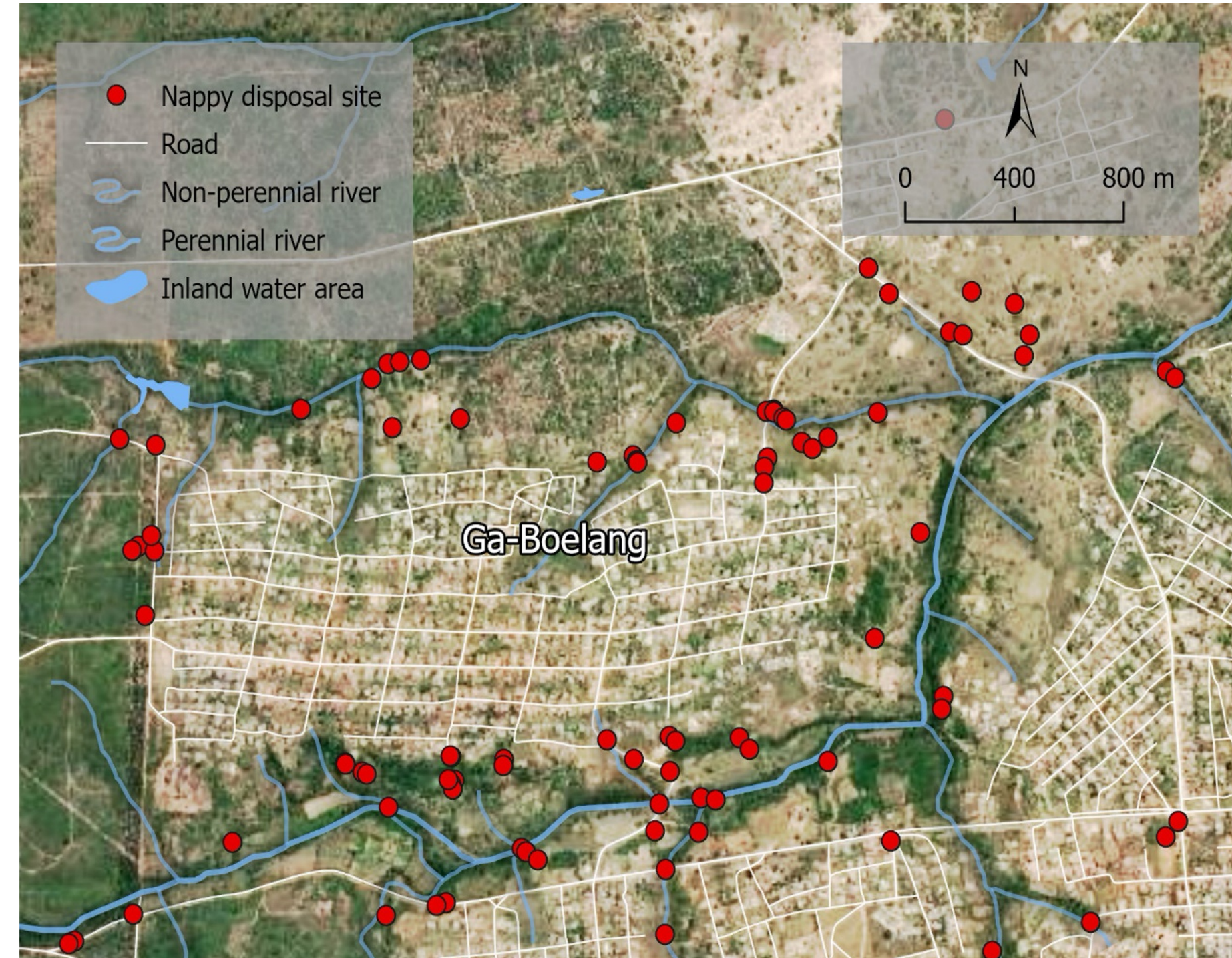


# Disposal of nappies





# Disposal of nappies



# **DIAPER WASTE CALCULATIONS** **BUSHBUCKRIDGE MUNICIPALITY**

1. **1,172,000 diapers** per day generated

2.  $1,172,000 \times 365 \text{ days} = 62,780,000$  diapers per year

3. Each diaper weighs 0.23 kg on average  $\times 62,780,000 = 14,439,400$  kg per year

4.  $14,439,400$  kg diaper waste per year = 14,439 tons of diaper waste per year

5. Diaper density:  $210 \text{ kg/m}^3$

6.  $12 \text{ m}^3$  skip can handle 2.52 tons of diaper waste per skip

7.  $14,439$  tons of diaper waste divided by 2.52 tons per skip = 5,729 full skips per year

8.  $5,729$  full skips per year divided by 365 days per year = 16 skips filled per day

# DIAPER WASTE CALCULATIONS MARULENG MUNICIPALITY

1. **1.37,000** diapers per day generated (Prof Johann Joubert -UP)
2.  $37,000 \times 365 \text{ days} = 13,505,000$  diapers per year
3. Each diaper weighs 0.23 kg on average  $\times 13,505,000 = 3,106,150$  kg per year
4.  $3,106,150$  kg diaper waste per year = 3,106 tons of diaper waste per year
5. Diaper density:  $210 \text{ kg/m}^3$
6.  $12 \text{ m}^3$  skip can handle 2.52 tons of diaper waste per skip
7. 3,106 tons of diaper waste divided by 2.52 tons per skip = 1223 full skips per year
8. 1223 full skips per year divided by 365 days per year = 3.4 skips filled per day



# Health-socio-cultural impact

- **Health concerns**

“sickness”; children play with it”; “water quality deteriorate”; “pollute drinking water”; “concerned about children”; traditional practices.

- **Shame and image of the community**

"It gives a bad impression of our community and there is no longer any pride in the community"

- **Affects overall health and well-being**







# Environmental impact

- Animals/livelihoods affected
  - ❖ goats, pigs, cattle, game die
- Water quality deteriorates
- Biodiversity
- Sewerage systems: blocked
- Polluted environment
- Air quality affected by burning



***“our beautiful area is damaged”***





# Conclusions and recommendations

- ❑ Nappies are a complex problem- transdisciplinary research and practice needed
- ❑ **Co-design locally relevant waste management solutions**
- ❑ **Small scale solutions for communities to manage the diapers effectively**
- ❑ **DFFE strategy for AHP products to be commented on**
- ❑ Extended producer responsibility policy needed for the producers and retailers to become involved
- ❑ Capacitating municipalities and communities
  
- ❑ <https://kruger2canyons.org/links-2/>





UNIVERSITY *of the*  
WESTERN CAPE

AQUILA  
· ENVIRONMENTAL ·

# Thank You.

# Questions?