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TRANSFORMING WASTE INTO HOPE:
A COMMUNITY-DRIVEN SOLUTION IN THE KRUGER TO CANYONS BIOSPHERE RESERVE

Prof. Catherina Schenck (Principle investigator, UWC)
Shoki Mafogo (Principle Implementer, K2C)
Mpho Mativandlela (K2C)
Prof. Linda Godfrey (CSIR) *(presenter)*



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PROJECT TEAM

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Professor Catherina Schenck
Dr Antoinette van der Merwe

AQUILA ENVIRONMENTAL

Charlotte Nell (PhD)
Monique Coetzee

KRUGER TO CANYONS BIOSPHERE REGION

Mpho Mativandlela
Shoki Mafogo
Marie-Tinka Uys
Lethabo Rasakanya
Dumisa Khoza
Vusi Tshabalala

PROJECT FUNDERS

CSIR
Touching lives through innovation

science, technology & innovation
Department:
Science, Technology and Innovation
REPUBLIC OF SOUTH AFRICA

Professor Linda Godfrey
DSTI through the Waste RDI Roadmap and Circular Innovation South Africa

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BACKGROUND TO THE PROJECT

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PROBLEM IDENTIFICATION: CLEAN CITIES/TOWN PROJECT 2020-2022



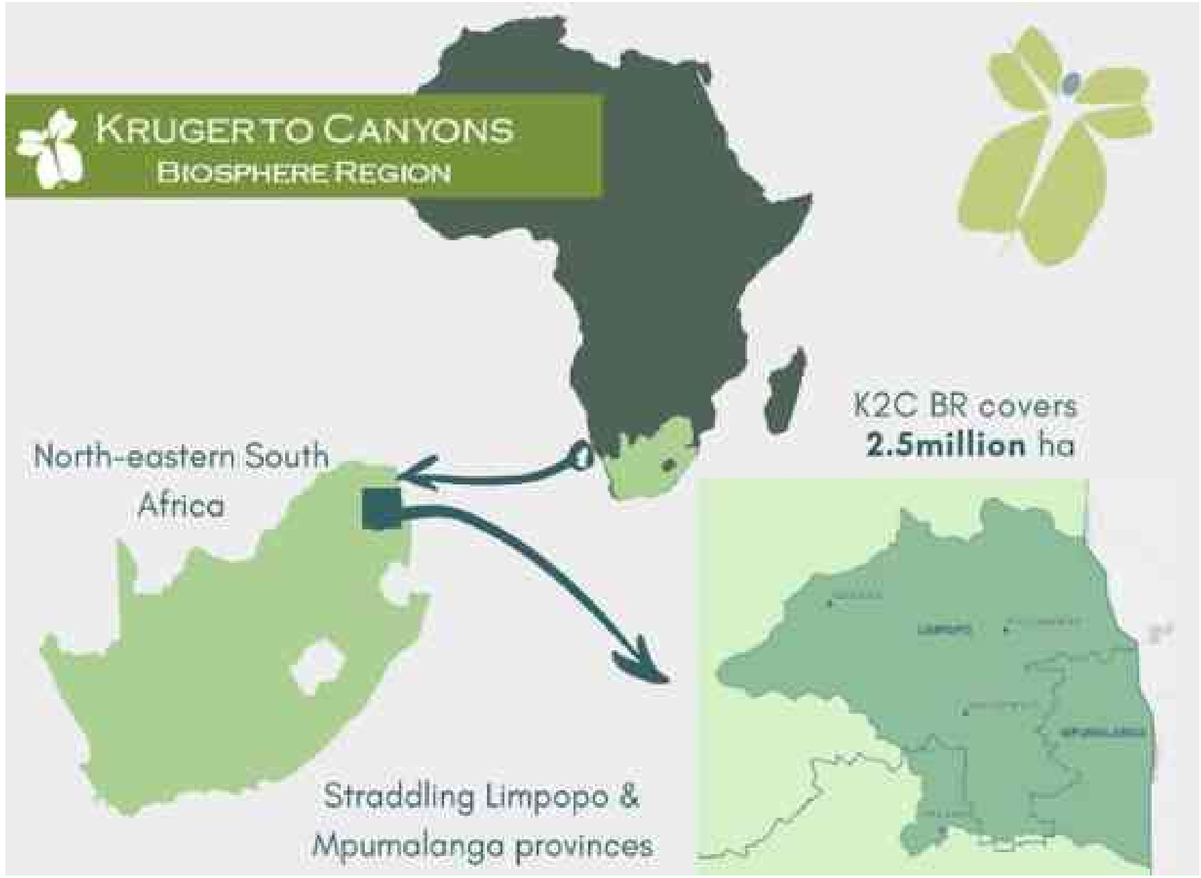


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PROJECT LOCATION AND TIMELINE

PROJECT LOCATION

- Unserved rural area
- Strategic water source and biodiversity area
- Managed by municipal and traditional councils





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TIME OF THE AHP IN K2C

2020-2022

Problem Identification

Clean Cities & Towns Project (Waste RDI Roadmap): diapers HUGE problem in K2C

2022 -2023

Problem Qualification

Baseline assessment. 200 000+ nappies generated in K2C per day.

2024-2025

Co-creation

Reusable AHP requested and piloted by 2 communities in K2C (Phiring & Malaeneng)

2025-2027

Scaling

(This presentation)
Scaling the pilot and introducing reusable sanitary pads.

BEYOND

Full roll-out

Finalize the deal and launch the product with an integrated marketing strategy.

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BASELINE STUDY

ASSESSING THE STATE OF AHPs (2022 – 2023)

1. **Quantitative data collection**

- 1575 care givers completed questionnaires

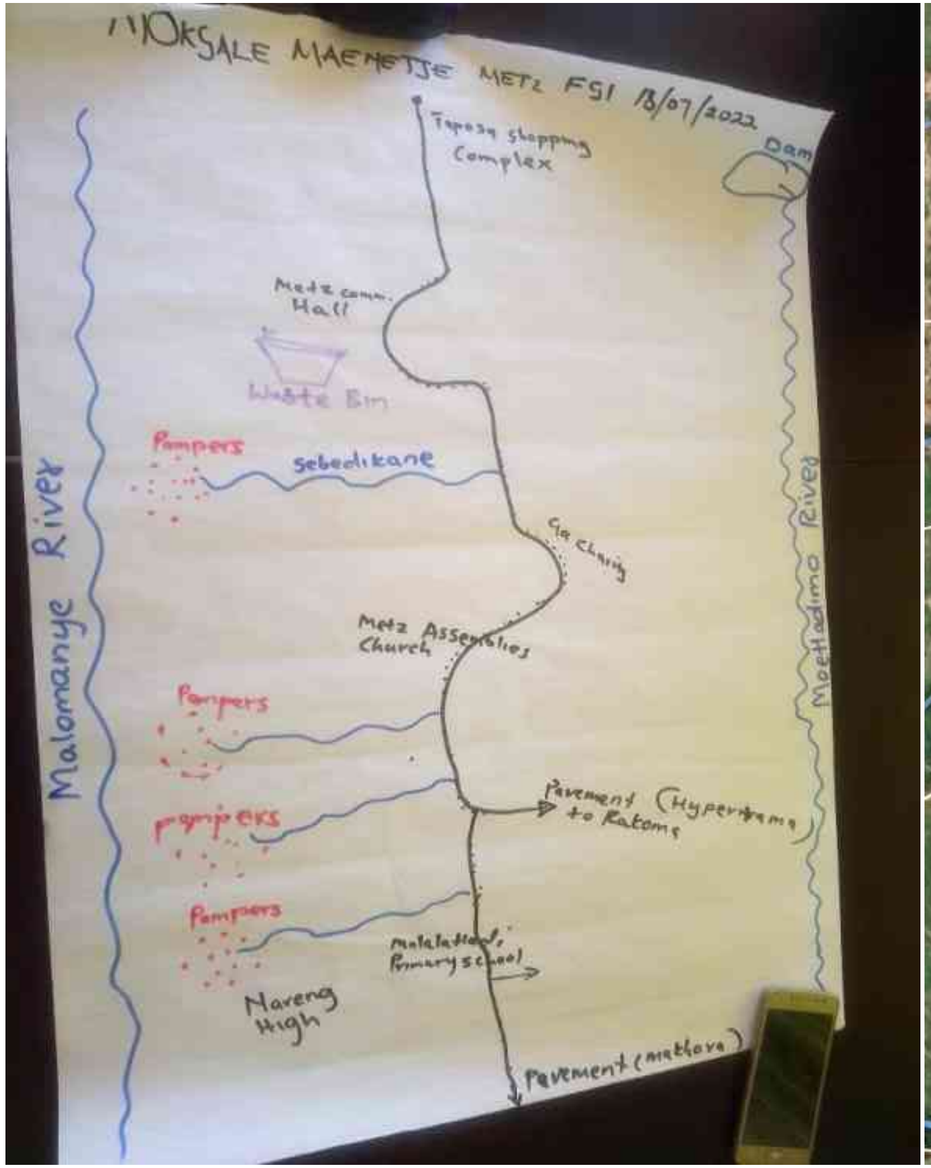
2. **Qualitative data collection**

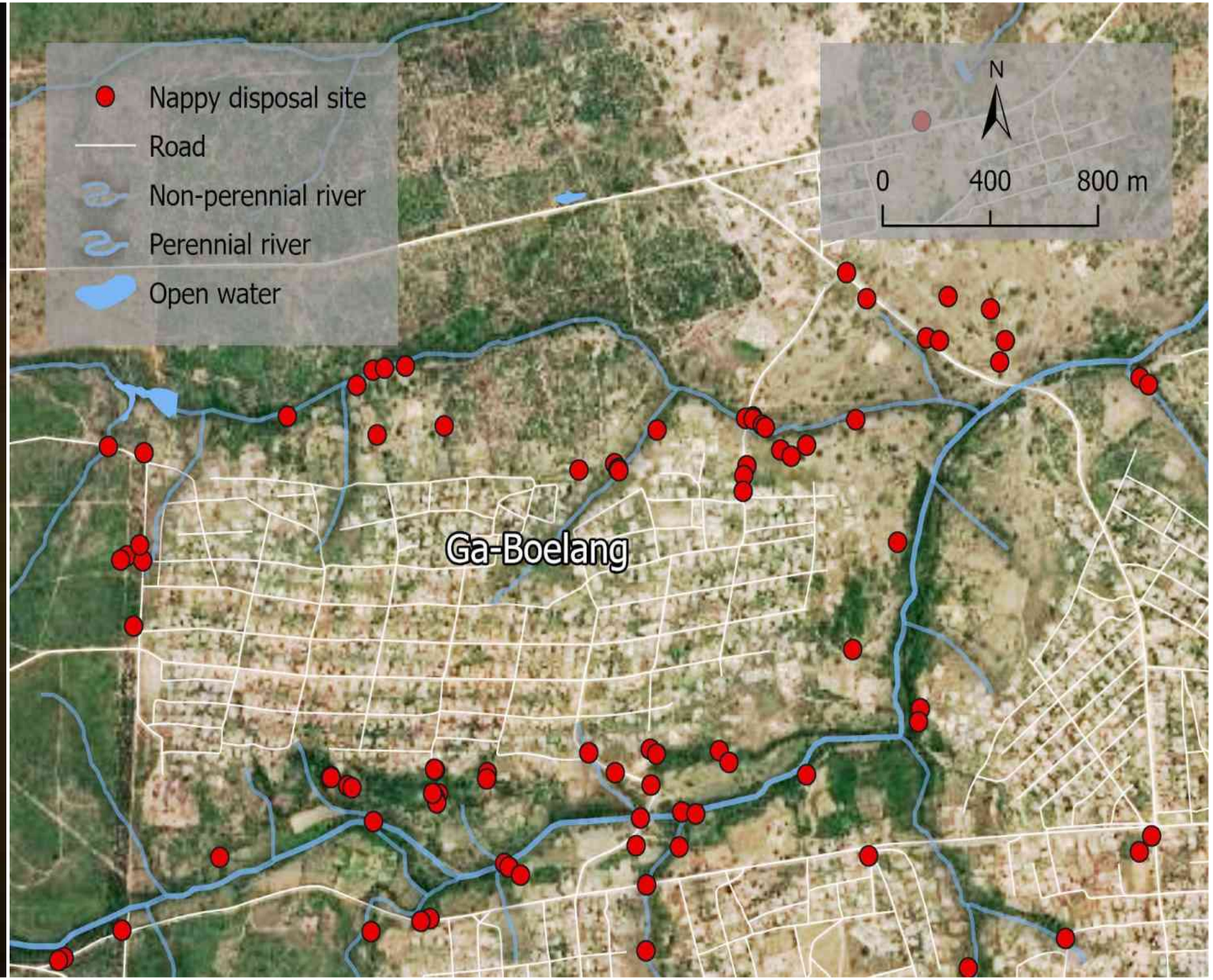
- 18 focus groups
- GIS mapping of dumped nappies
- Drawings of dumped nappies
- Feedback/member checking session



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FOCUS GROUPS, MAPPING & GPS MAPPING





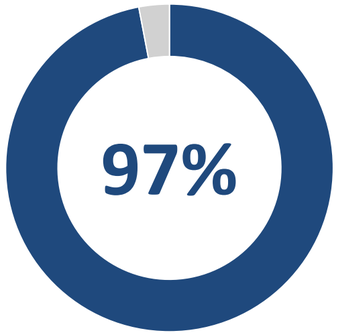
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FINDINGS

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SUMMARY OF THE MAJOR FINDINGS

Disposable nappy use

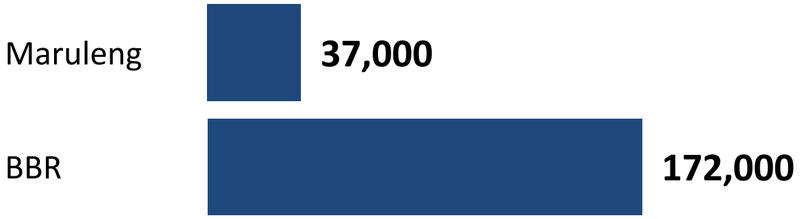


of caregivers use them

Why:

- Convenience
- Accessibility
- Water scarcity
- "Fashionable"

Nappies generated per day



90% of respondents are grant dependent

The household cost

R385

spent on nappies per child per month, on average (CSG =R500)

R14 000,00
over 3 years

How nappies are disposed of

Burning **Burying** **Dumping**

A threat to

Human health **Animal health** **Environment** **Livestock** **Cultural practices**

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SEPARATION AND DISPOSAL







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CO-DESIGNING SOLUTIONS AND COLLABORATIVE GOVERNANCE IN THREE VILLAGES 2023-2024

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INNOVATIVE SOLUTIONS: CO-CREATING COMMUNITY GOVERNANCE SYSTEM

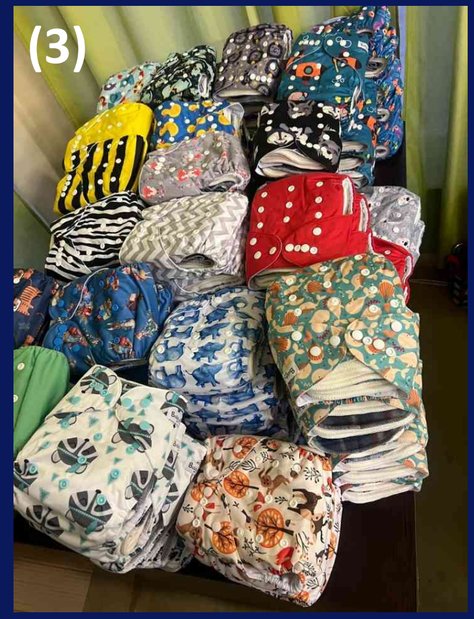










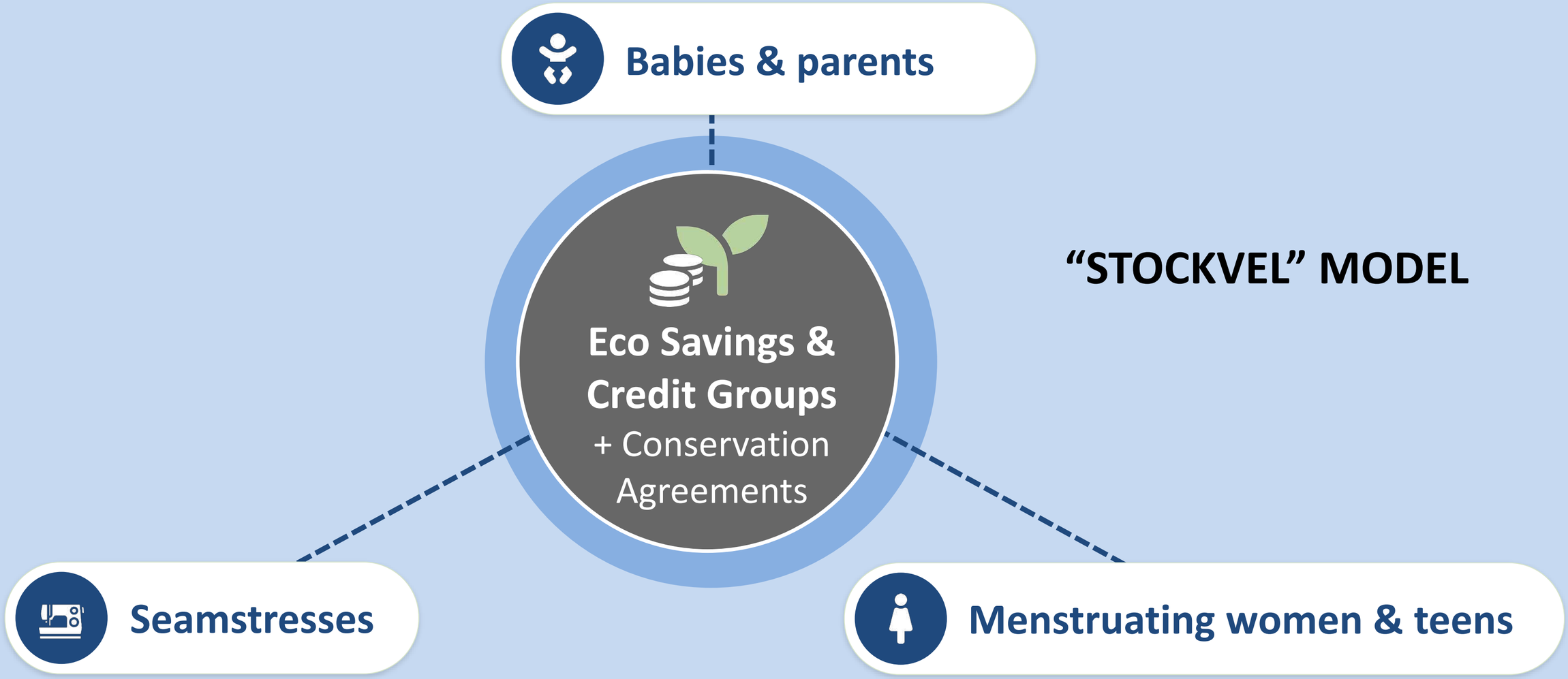


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SUSTAINABLE SCALING OF CLOTH NAPPY PROJECTS 2025 - 2027

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COMMUNITY GOVERNANCE MODEL



“STOCKVEL” MODEL

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SCALING PHASE PROCESS

PATHWAY 1

Reaching Mothers through Savings Groups

1 Co-creation Workshops



Communities identify needs and co-design solutions.

2 Savings Groups



Moms organised into Eco-Savings and Credit Groups.

3 Conservation Agreement



Communities sign Conservation Agreement with K2C.

4 Starter Pack Distribution



Reusable nappy starter packs provided through the savings groups.

5 Monitoring & Support



Ongoing monitoring, support and usage tracking.

6 Loan Repayment



Affordable repayments strengthen the revolving loan fund.

7 More Beneficiaries



More mothers gain access as the fund revolves.

PATHWAY 2

Creating Livelihoods through Local Production

1 Co-creation Workshop



Community identifies opportunities for local production.

2 Seamstress Training



Local women trained in reusable pad production and business skills.

3 Production



Seamstresses produce high-quality reusable sanitary pads.

4 Awareness



Awareness sessions in communities, schools and savings groups.

5 Sales



Products sold to community members and at local markets.

6 Income Generation



Sustainable income for seamstresses and local enterprises.

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SOCIETAL IMPACT

EARLY CHANGE & EMERGING IMPACT

From AHP access to behavioural change, livelihoods and a circular community model

1 ADOPTION OF REUSABLE NAPPY STARTER PACKS

Mother aire using, maintaining and continuing to use reusable nappies

45
households reached
45 reusable nappy starter packs distributed

R1,666
value per starter pack

96.2% satisfaction among monitored mothers

100% reported maintaining and cleaning nappies

100% continued using reusable nappies

100% of all monitored mothers would recommend reusable nappies to any other mom

Extracted from March to September 2026 M&E results

2 LOCAL PRODUCTION AND LIVELIHOODS

Reusable pads are being produced, sold and generating income for seamstresses

344
reusable pads produced and sold
out of a 300-pad project target
(>100% achieved)

Income already generated for local seamstresses

Continuous production and marketing of pads

Local seamstresses from Phiring and Malaeneng creating livelihood opportunities and skills development

Reusable pads are available at the **Hoedspruit Farmers Market every Saturday of the month.**

3 SAVINGS GROUPS, REPAYMENTS AND SYSTEM CHANGE

Repayments have started, strengthening a revolving model for more beneficiaries

184
savings-group members
across
10 savings groups established

Mothers are part of savings groups linked to the AHP project.

Savings
Members save regularly as part of the savings groups.

Repayments done
Mothers have started repaying for starter packs through their savings groups.

Repayments support buying more reusable nappies
Funds remain within the savings group to purchase additional starter packs for more mothers.

Strengthens financial resilience
Builds financial literacy, group governance and long-term sustainability of the AHP model.

FROM AHP ACCESS THROUGH OUR METHODS »

ADOPTION
Mothers are using and continuing to use reusable nappies

→ **LOCAL LIVELIHOODS**
Reusable pads are produced, sold and generating income for seamstresses

→ **COMMUNITY FINANCE**
Savings groups are functioning, repayments are supporting more beneficiaries

Early evidence shows that the AHP model is moving beyond product distribution towards **sustained adoption, community finance and local livelihood creation** — contributing to reduced household expenses and reduced disposable AHP pollution.

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SUMMARY OF THE BROADER IMPACT

FROM HOUSEHOLDS TO NATIONAL POLICY

Economic impact

184+ rural families now use eco-savings groups

Environmental impact

Fewer disposable nappies entering rivers and ecosystems. Conservation agreements signed

Community governance

Elected village committees manage multi-stakeholder programmes, with women and youth in leadership

Policy influence

Findings informed South Africa's national disposable AHP strategy (DFFE)

Academic impact

First-ever life cycle assessment of disposal practices in rural unserved communities
PhD Student

Scalable model

Governance framework replicated across the biosphere region and adapted for other waste streams

Collaborative strength

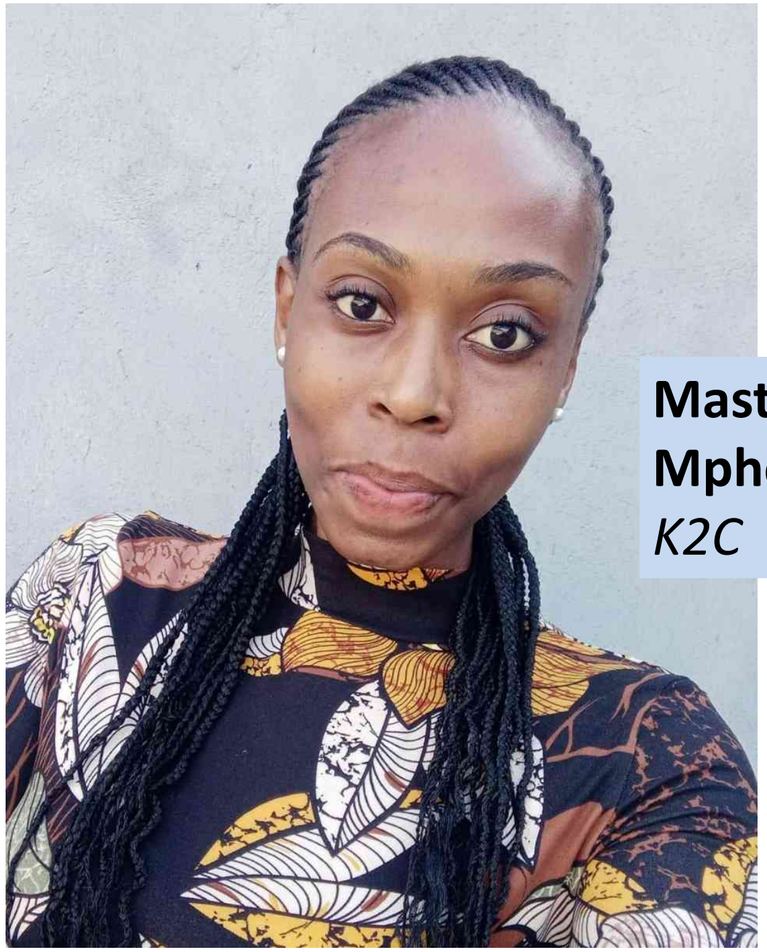
Universities and communities as equal partners, uniting academic rigour and indigenous knowledge

AHP Waste Forum

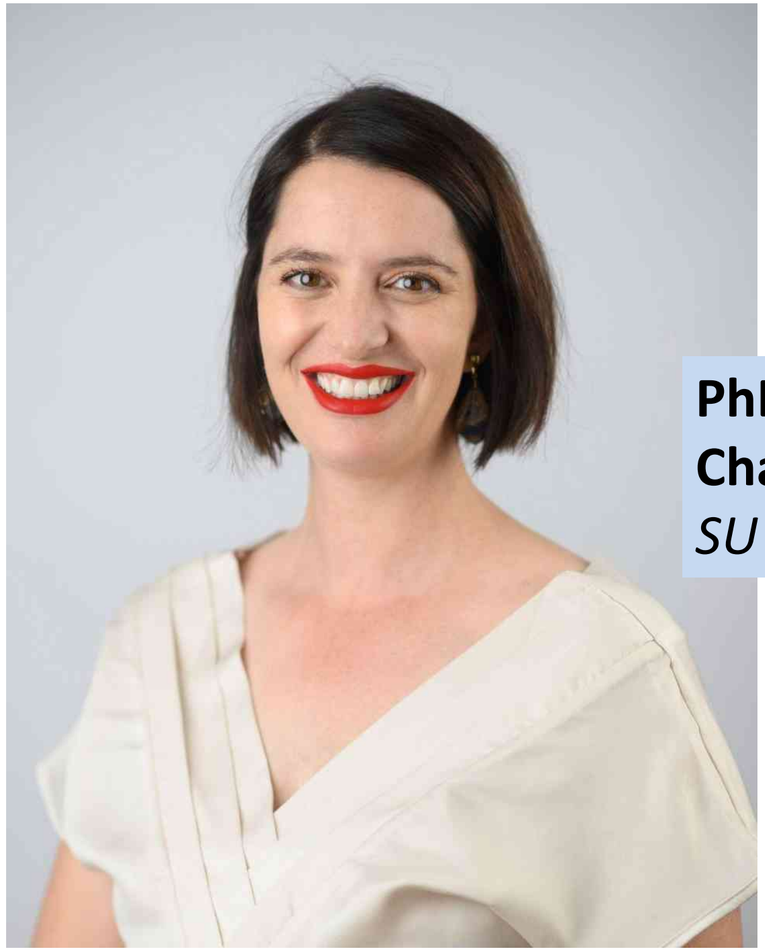
Contributed to the establishment of the South African AHP Waste Forum

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ACADEMIC IMPACT



Masters Candidate
Mpho Mativandlela
K2C



PhD Candidate
Charlotte Nell
SU

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WHAT MADE IT WORK

CRITICAL SUCCESS FACTORS



Local partner

Irreplaceable

Critical to the project. Without K2C, the project is a non-starter



Co-creation

Non-negotiable

Collaborative, participatory, community-based solutions. Intensive in time and input



Facilitative leadership

Crucial

Leadership that facilitates, enabling partners and communities to work together



Project sustainability

Imperative

Universities and communities work as **equa**l partners, strengthening social cohesion and economic opportunities.

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ACKNOWLEDGING THE K2C TEAM



This project demonstrates that biosphere reserves can be laboratories for addressing global challenges at local scales

This university-community partnership has transformed waste management practices across three rural villages in the Kruger to Canyons UNESCO Biosphere Reserve, directly benefiting over 1,500 households while protecting one of South Africa's most important conservation landscapes.

The video "*Our Waste*", was awarded 2nd prize by the International Solid Waste Association's (ISWA) in 2024



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DSTI/NRF/CSIR Chair
in Waste and Society

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Thank you!

https://wasteroadmap.co.za/research/grant-019/
https://wasteroadmap.co.za/research/grant-054/
https://wasteroadmap.co.za/research/grant-059/
https://usaf.ac.za/transforming-waste-into-hope-a-community-driven-solution-in-the-kruger-to-canyons-biosphere-reserve/