

FROM RESEARCH DATA AND COMPUTATIONAL METHODS TO POLICY INTELLIGENCE AND SOCIETAL IMPACT



RESEARCH SOFTWARE AS AN ENABLER AND RESEARCH OUTPUT

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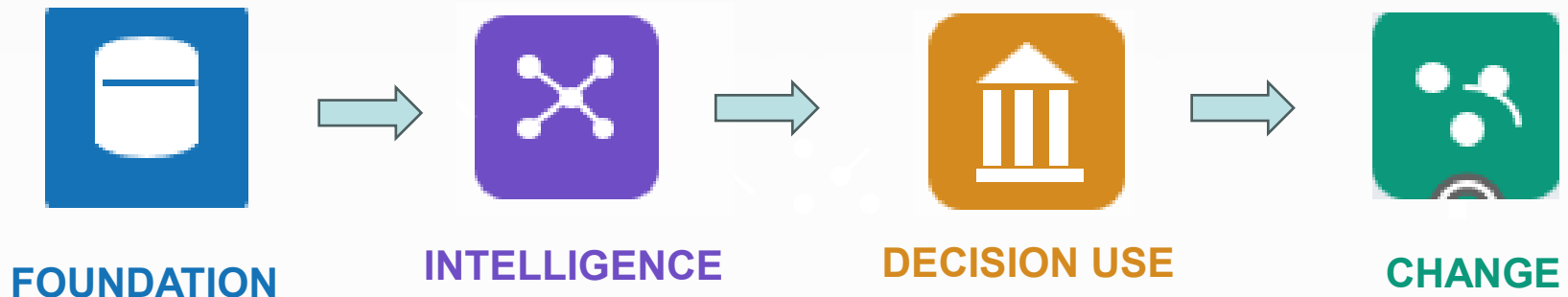


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The presentation storyline

Four connected pillars of the HSRC research-to-impact pathway



Research data

- National household surveys,
- Longitudinal studies,
- Administrative records,
- Qualitative evidence and
- Research programme data

Computational methods

- Statistics
- Modelling
- AI

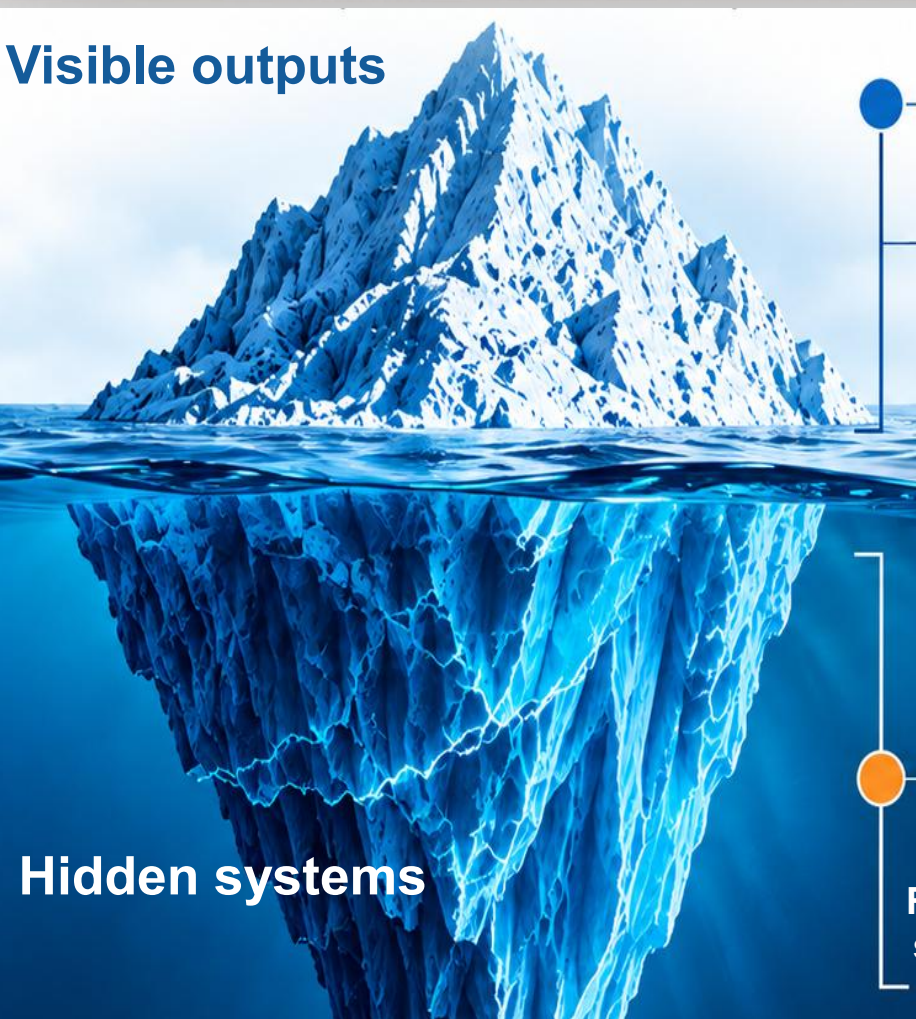
Policy intelligence

- Evidence
- Options
- Uptake

Societal impact

- Outcomes
- Equity
- Learning

The invisible infrastructure behind research evidence



Visible outputs

VISIBLE OUTPUTS



Reports



Journal
articles



Dashboards



Datasets



Policy
briefs

INVISIBLE INFRASTRUCTURE



Research
software



Code and
algorithms



Data
management



Computational
systems



Metadata
and
standards



Governance
and ethics

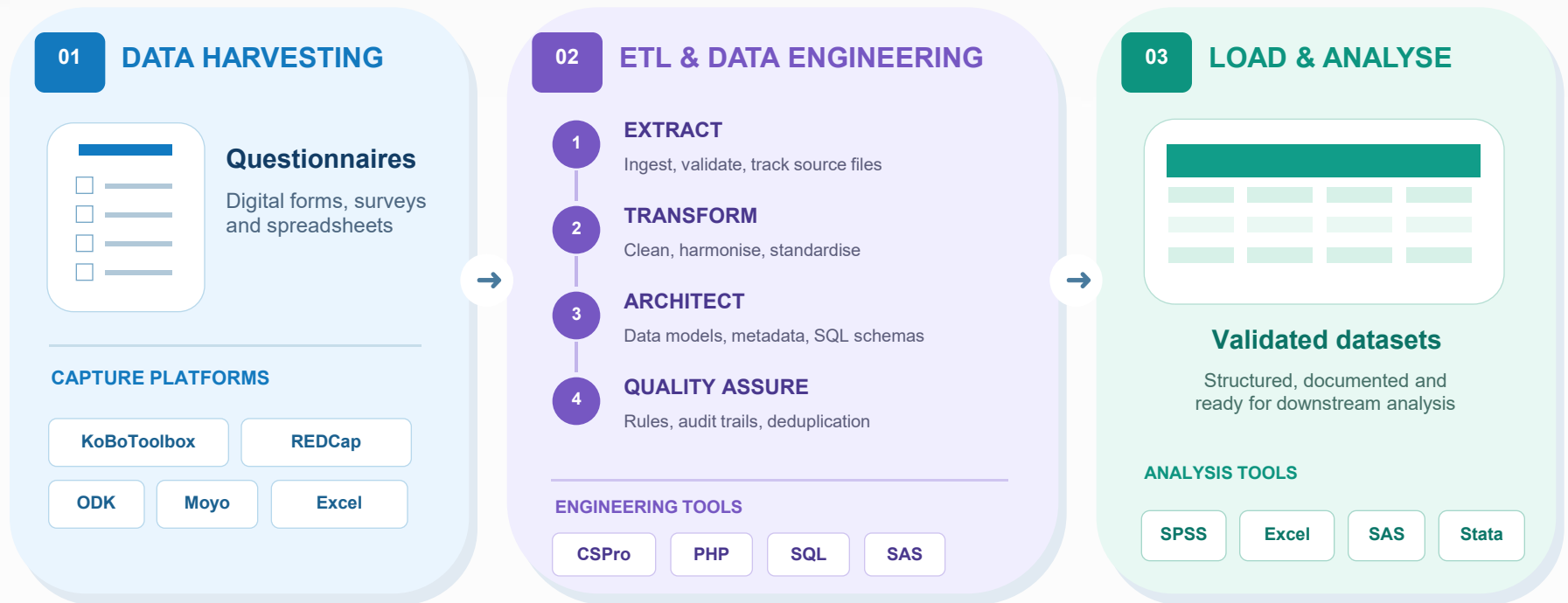


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Research outputs are the visible tip of a much larger ecosystem.



The Research Data Collection and ETL



The Research Computational Methods

01

STATISTICAL & STRUCTURAL MODELLING

**SPSS • Excel • Stata • R
Python • SAS
Mplus • AMOS**

Survey analysis, regression, latent variables, SEM and longitudinal models

02

COMPUTATIONAL MODELLING & AI

**MATLAB • Python
AWS AI**

Machine learning, forecasting, optimisation and computational analysis

03

SYSTEMS & POLICY SIMULATION

**Stella Architect • Vensim
AnyLogic**

Feedback loops, system dynamics, intervention scenarios and policy options

04

QUALITATIVE & AI-ASSISTED ANALYSIS

**ATLAS.ti AI • NVivo AI
MAXQDA AI Assist**

Coding, themes, text exploration and qualitative interpretation

AI-ENABLED VISUALISATION & DECISION INTELLIGENCE

Power BI Copilot • Amazon Quick Sight • Tableau AI • Qlik Sense / Qlik Answers



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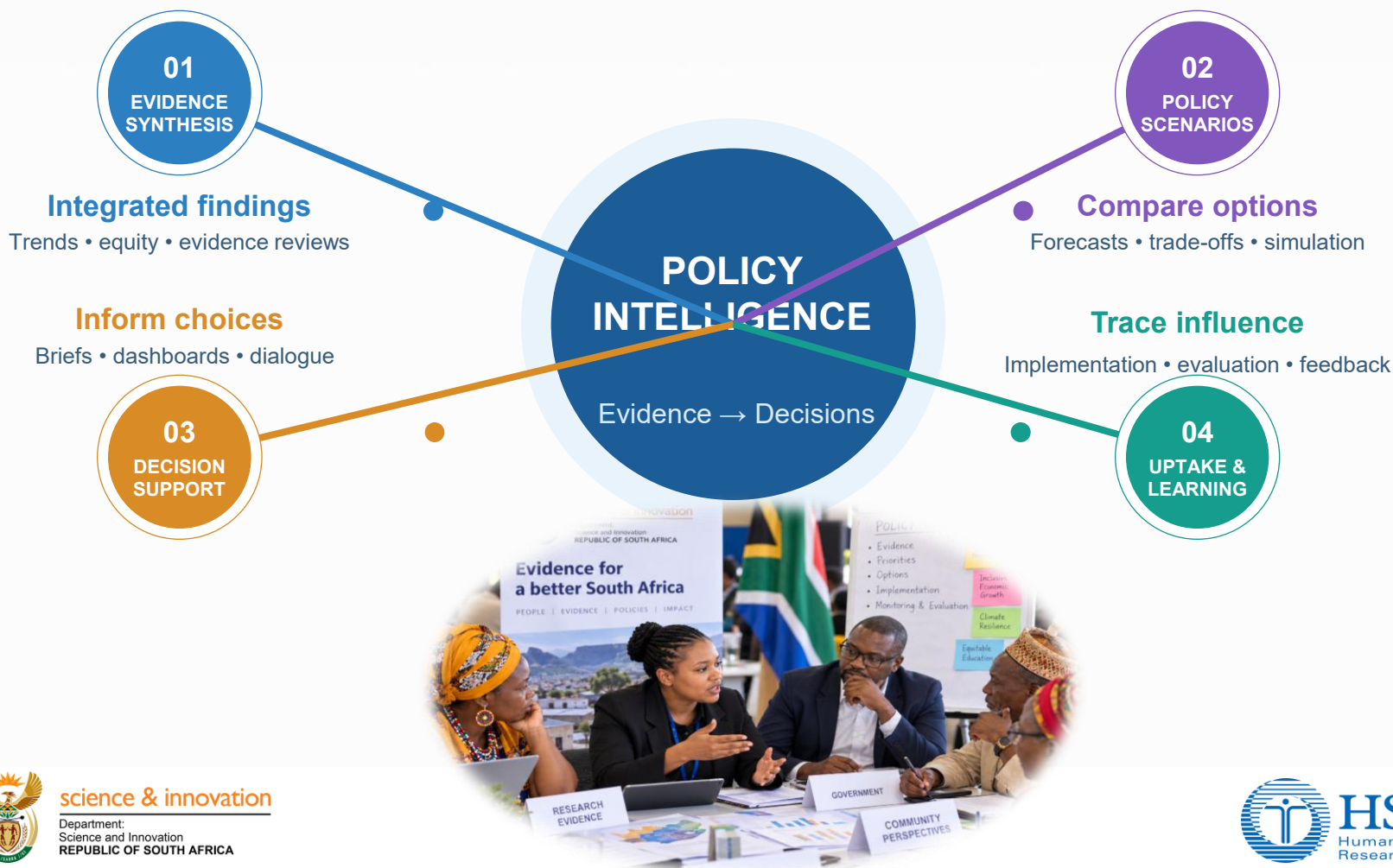
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Decision Use & Policy Intelligence

How evidence moves into policy choices, action and learning



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Impact Story 1 : Critical Zones Africa



P1 Knowledge Generation

P2 Capacity Strengthening

P3 Ecosystem & Collaboration

P4 Policy & Societal Influence

P5 MEAL Intelligence & Adaptive Learning

P6 Habitability & Resilience

Reporting Year

All

Quarter

All

Institution / Site

All

Indicator

All

Gender (where recorded)

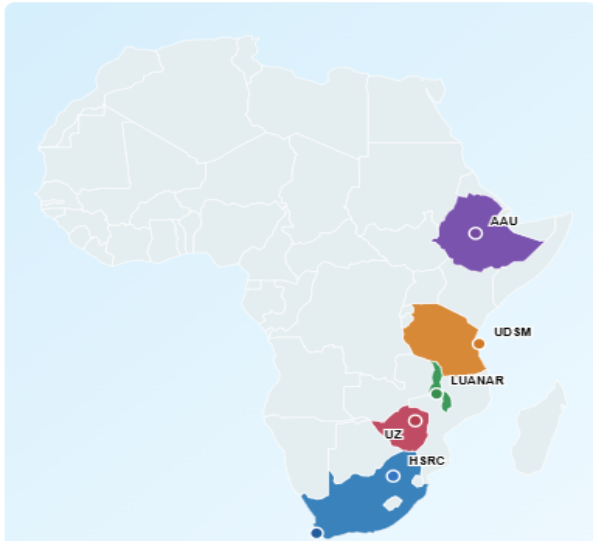
Country

All

Clear filters

P2 — Capacity Strengthening · Fellows (SI 1.1), programme support staff (SI 1.2), training (CI 2.1), supervision (CI 2.2), conferences (CI 2.3), functional research support offices (CI 3.1), and partnerships (SI 1.9). The programme-reported total is 45 fellows; the uploaded tracker resolves 44 distinct site + Unique_ID combinations.
Selected scope: All six sites · All year · All quarter · All gender · 394 matching source records.

CZA Sites Across Africa



45

Fellows · programme-reported

Tracker has 44 distinct site + fellow IDs; reconcile 1

45

Support staff records

SI 1.2 · reporting-period records

32

Training records

CI 2.1

24

Research support office records

CI 3.1 · repeated site-year reports

88

Supervisor records

CI 2.2

70

Conference records

CI 2.3

26

Partnership records

SI 1.9

41%

Female share

Gender-recorded P2 records

P2 Records by Institution



P2 Records by Gender

Impact Story 2: SANHANES Study

MARCH 2025
DATA SUPPLIED BY



THE HEART
AND STROKE
FOUNDATION
SOUTH AFRICA

THE SUGAR SCALE

Stage	What we demonstrate
Research data	Dietary intake, nutrition and population-health evidence
Computational methods	Survey statistics, econometric modelling and policy scenario analysis, as applicable to the selected study
Policy intelligence	Evidence on potential tax effects, distributional consequences and health outcomes
Policy action	South Africa's Health Promotion Levy, 2018
Societal outcomes	Changes in purchases and sugar intake, with longer-term health effects requiring post-implementation research on beverage purchases



Impact Story 3: SASAS Study

A nationally representative repeated cross-sectional time series — not a panel tracking the same people

2003



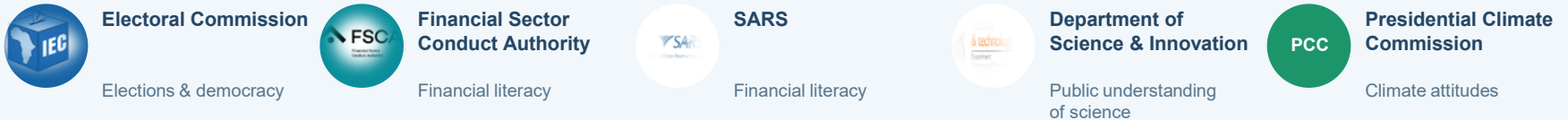
2026

ANNUAL SURVEY SERIES

~3,500 adults aged 16+ per round | All nine provinces



DOCUMENTED EXAMPLES OF COMMISSIONING ORGANISATIONS & POLICY PARTNERS



POLICY VALUE • Long-run trends • Electoral attitudes • Financial literacy • Science & climate perceptions

Sources: HSRC SASAS project pages and HSRC 2023 retrospective. Client / partner examples are not an exhaustive list.



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Impact Story 4: SABSSM Study

Two Decades of HIV Evidence for Policy

Six national population-based survey waves • Repeated cross-sectional series • HIV biomarkers + behaviour



Household interviews + voluntary blood specimen collection

POLICY AND PROGRAMME USE

National HIV, TB & STI strategy

Evidence to monitor progress against the National Strategic Plan and HIV targets.

ART coverage & 95–95–95 monitoring

Measures treatment reach, viral suppression and remaining gaps.

Targeted prevention and services

Identifies needs among young women, men and provinces; informs programme dialogue.

Policy contribution ≠ sole causation: SABSSM informs strategies, monitoring and targeting alongside other evidence.

Conclusion: From Computation to Societal Value

- **Building AI and computational capacity** through training, advanced methods and partnerships.
- **Advancing digital transformation** with stronger data systems, platforms and analytics.
- **Generating national evidence** through SASAS, SABSSM and other long-running studies.
- **Informing AI policy and governance** through research on responsible and inclusive AI.
- **Strengthening research partnerships** for locally relevant innovation and shared expertise.
- **Translating evidence into societal value** through policy engagement, research uptake and impact tracking.

