

WATER RESEARCH
COMMISSION
ANNUAL PERFORMANCE
PLAN
2020/21



WATER RESEARCH COMMISSION

ANNUAL PERFORMANCE PLAN

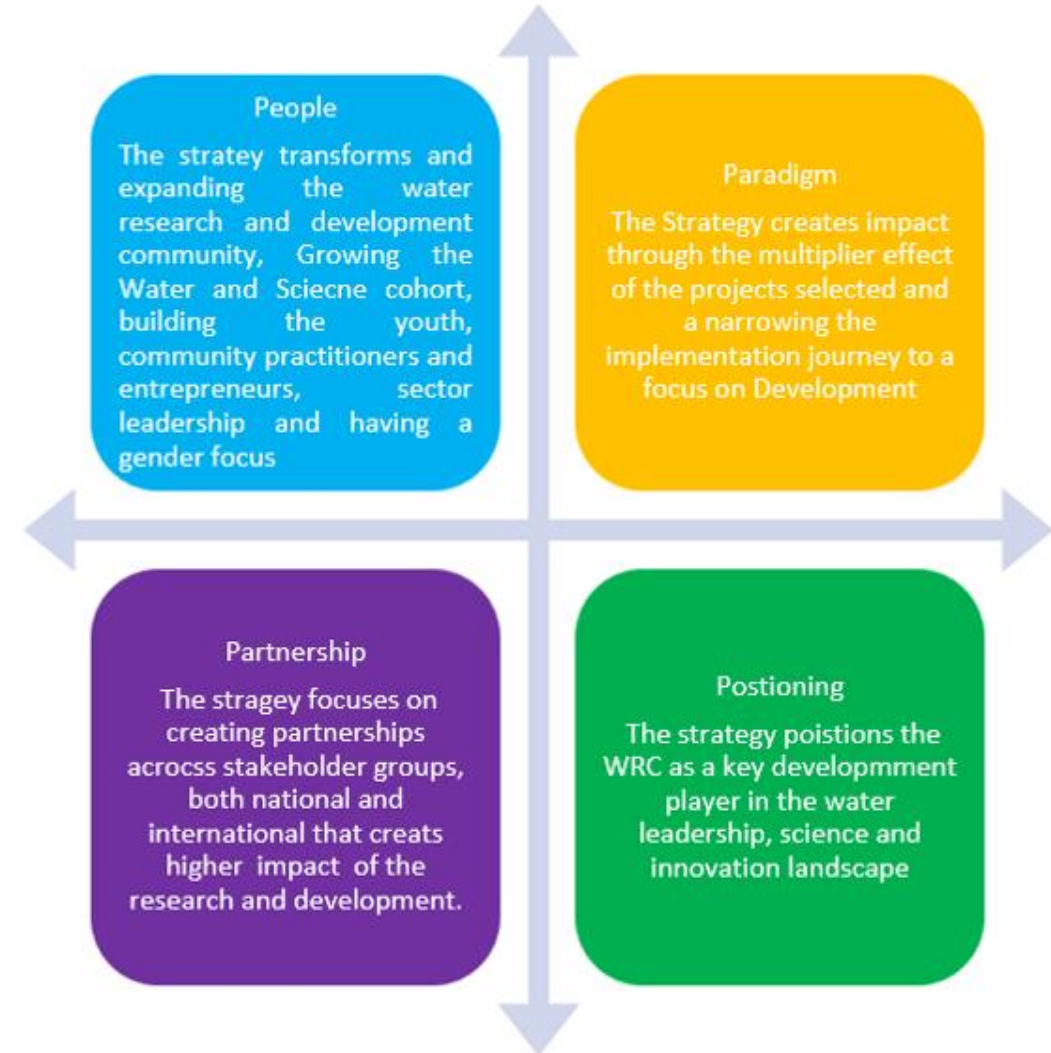
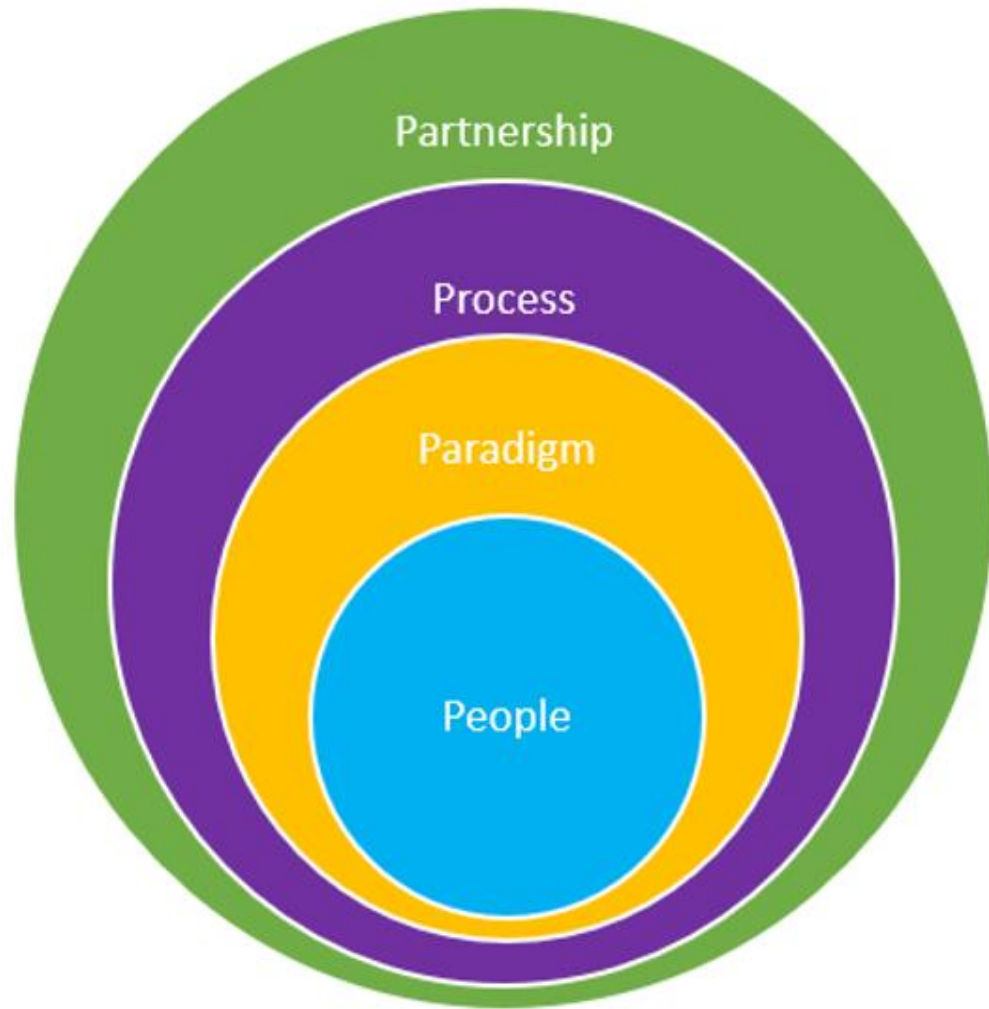
2020/21



Primary Purpose of the WRC



Four Core principles

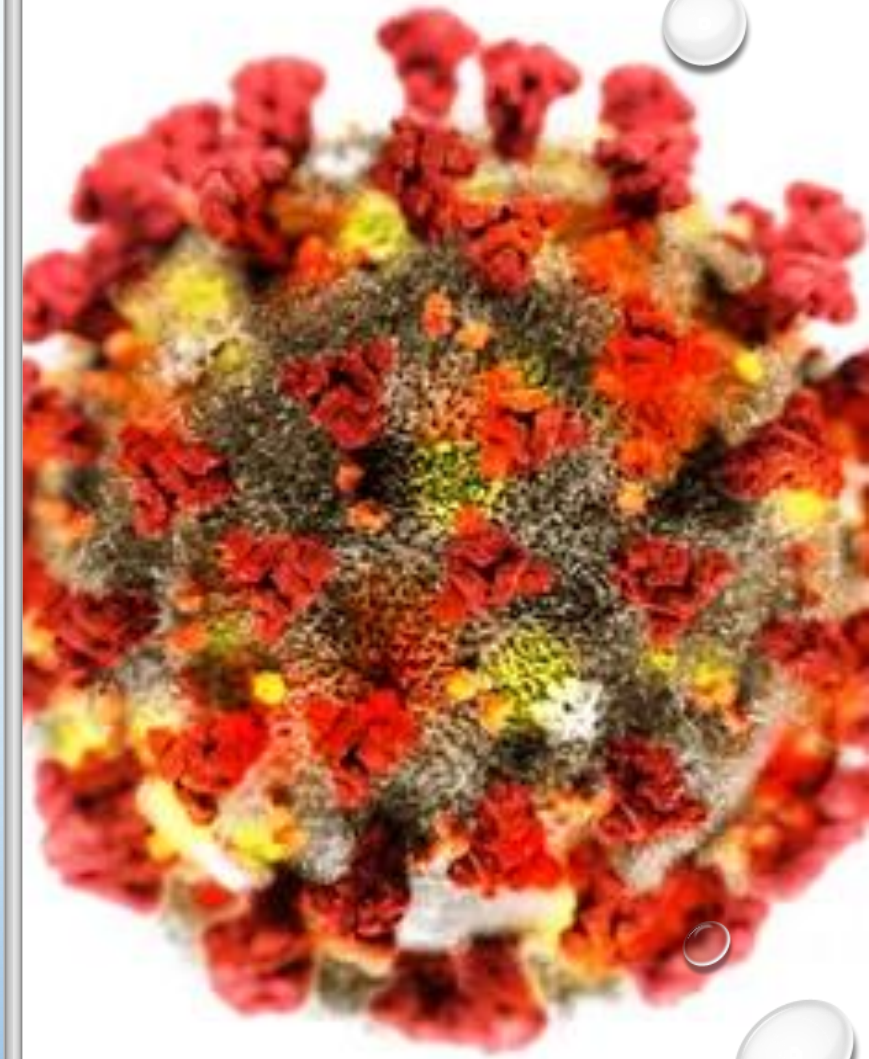


THE COVID 19 FACTOR

There will be financial implications associated with both the lockdown and the concomitant expected slow economic recovery

The suspension of the university academic calendar has already impacted the research and capacity building targets.

This is also true for all community-based projects.



THE COVID 19 FACTOR

Plethora of new RDI demands for covid 19 containment and response.

New virtual modalities hold promise.

Adjusted financials and app is likely.

Financial Overview

Description	Budget estimates 2020/21	Budget estimates 2021/22	Budget estimates 2022/23	Budget estimates 2023/24	Budget estimates 2024/25
Levy income	273 740 816	287 493 771	301 432 023	315 900 760	331 063 996
Leverage income	53 455 518	56 128 294	58 822 453	66 645 930	82 604 935
Interest income	4 650 220	4 185 198	3 766 679	3 390 011	3 051 010
Sales/commercial income	6 621	6 952	7 286	7 635	8 002
Miscellaneous income	131 178	137 737	144 349	151 278	158 539
Total income	331 984 354	347 951 953	364 172 788	386 095 614	416 886 482
Fixed costs	12 286 461	13 148 412	14 104 178	15 130 629	16 233 059
Running costs	14 048 371	13 575 342	14 556 676	14 965 695	15 227 969
Human resource costs – support	88 116 391	94 976 944	102 907 094	111 545 463	120 931 983
Human resource costs –RDI	33 675 984	40 270 813	47 043 230	51 788 438	56 600 224
Research, development and innovation costs	175 286 681	177 328 953	176 033 221	184 854 554	198 542 822
Corporate expenses	2 903 151	3 048 308	3 195 638	3 350 090	3 512 008
Capital expenditure	5 667 315	5 603 181	6 332 752	4 460 744	5 838 417
Total expenditure	331 984 354	347 951 953	364 172 788	386 095 614	416 886 482

- Inflationary impact on the income and expenditure budgets over the planning period have been pegged at around 5% in line with the National Treasury 2020 MTEF Technical guidelines.
- Levy income is impacted by consumption volumes which in general has shown declining trends
- The WRC intends filling 12 new positions that are mainly focused on pursuing and supporting the entities strategy around impact, bolstering in-house research capacity and business development.
- The expenditure on RDI equates to more than 60% of total WRC expenditure
- The WRC partnership model is key in driving increasing leverage funding which increases from some 26% to 32% over the planning period.

The Core Principles of the strategy is implemented through the investment in the multiplier effect of the strategic orientated goals of **WRC Knowledge Tree**



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Empowerment of communities

The WRC's each year strives to increase the number of projects funded that include communities that are not only the end users of research but are active participants in the research. The aim is to have a direct positive impact on the livelihood of the communities in which the research project is conducted by transferring knowledge that builds capacity that would assist with post project sustainability.



Inform policy and decision-making

The WRC will inform policy and decision making by commissioning research projects that generate appropriate evidence-based knowledge that will guide decision making, influencing the development of policy, practice or service provision, shaping legislation and alters behaviour. This allows for the deeper understanding of policy issues and the reframing of debates with the use of appropriate knowledge.



Develop innovative products and services for economic growth

With the knowledge generated from the research projects, the WRC is able to capitalise on projects that produce new intellectual property or have the ability to introduce innovations that create new or improved technologies, products and services that can be used in the real economy.



Drive sustainable development solutions

The WRC's prioritises those projects that provide solutions for sustainable development. These projects must produce knowledge contribute to providing sustainable solutions in the areas of environment, economy, and community.



Promote transformation and redress

Each year the WRC actively strives to increase the number of female and youth project leaders on its funded projects and with the knowledge generated from the research aims to promote socio-economic development by providing solutions that reduces poverty and inequality in communities.



Enhance human capital development in the water and sanitation sectors

Each project that is selected and funded by the WRC is required to have high levels of student participation in the project. Each year, the WRC strives to increase the number of Post-doctoral PhD and Masters students on its projects which further increases development in the sector. The WRC also focuses on providing support to historically disadvantaged institutions through mentorship. Emphasis is further placed on building capacity in the science community both in South Africa and Africa by encouraging black project leaders to manage WRC projects.

Alignment of the WRC Strategy to directly support the Strategy and Goals of the Minister of Human Settlements, Water and Sanitation; And DWS



Figure 5. WRC's contribution to the DWS Strategic Outcome-Oriented Goals

Knowledge Tree Goals



**NEW
KNOWLEDGE &
INNOVATIONS**

**HUMAN CAPITAL
AND SKILL**

**PRODUCT AND
INDUSTRY
DEVELOPMENT**

Poverty, Unemployment, & Inequality eradication

MAJOR IMPACT AREAS

**Water
Security**



**Proper
Sanitation**



**Food
Security**

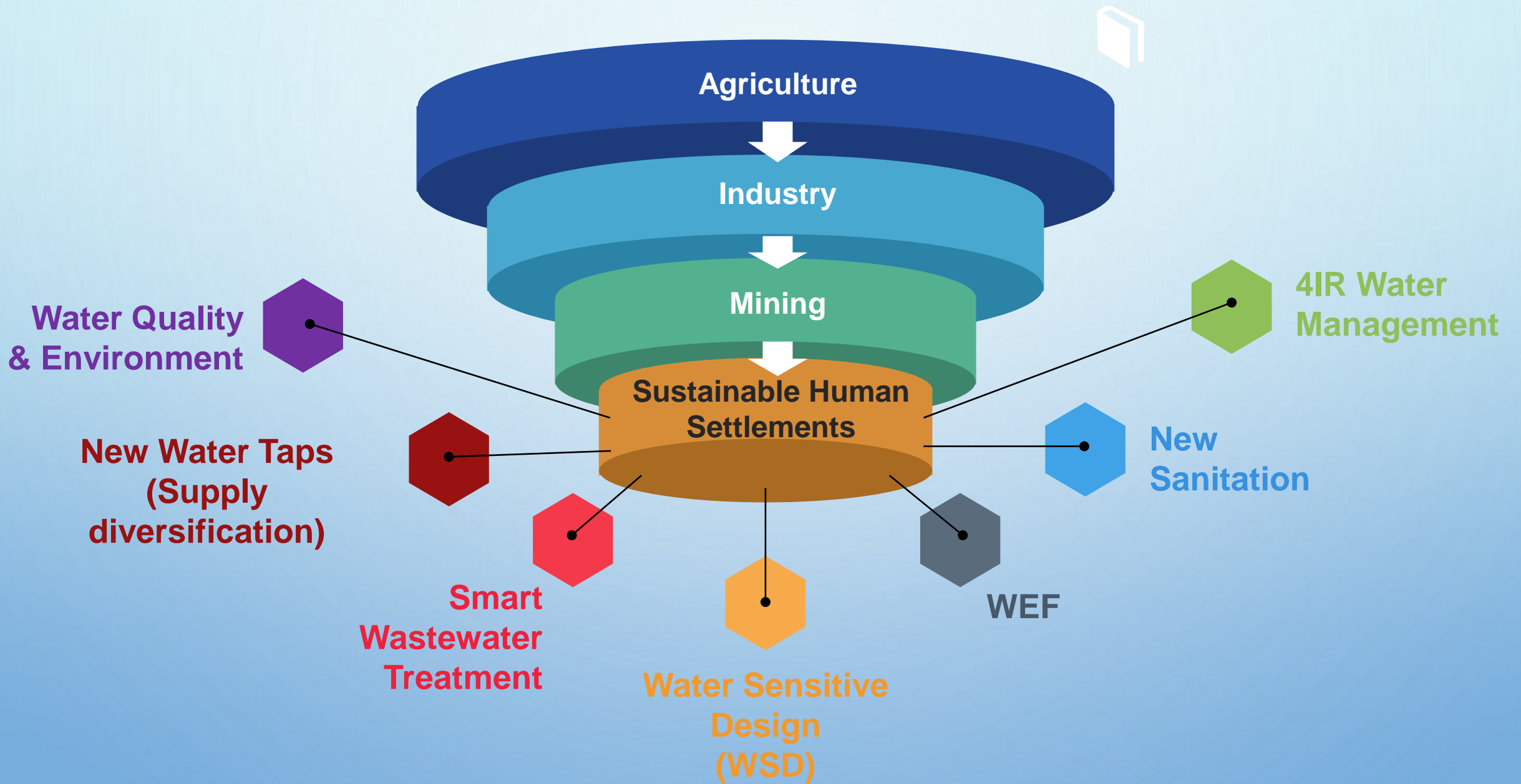


**Energy
Security**



**Water
Quality**





Water Innovation improving

Human Settlements

Water Quality & Environment

4IR Water Management

New Water Taps (Supply diversification)

Sustainable Human Settlements (urban and rural)

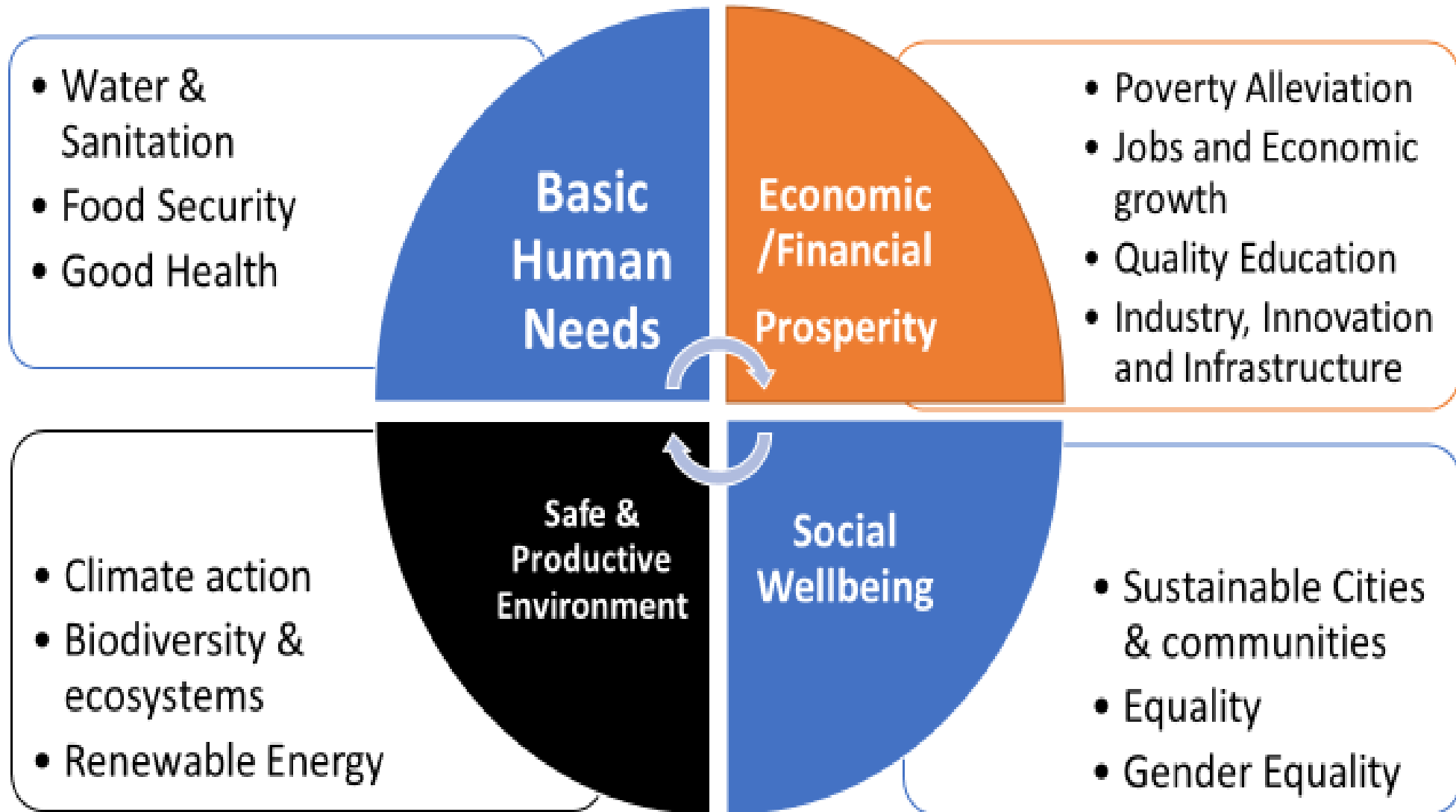
New Sanitation

Smart Wastewater Treatment

Water Sensitive Design (WSD)

WEF

ADDRESSING THE SDGs



GROUNDWATER USE

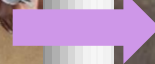
- URBAN GROUNDWATER IS HEAVILY UNDERUTILISED.
- GROUNDWATER CAPACITY AT THE LOCAL LEVEL IS RESPONSIBLE FOR ... AND NO ... Y.



Example:
SARB water demand = 112 kl/d, which can be fully met by the estimated yield of basement groundwater =155 kl/d. This is discharged into stormwater system.

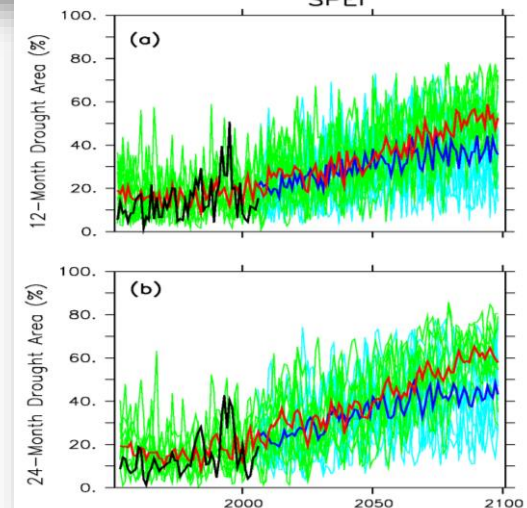
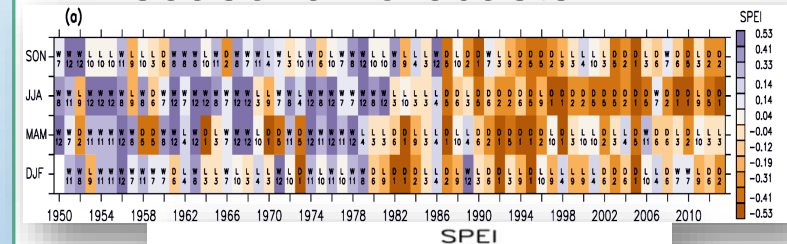
Multiple Uses of Water Services

- Established framework to assist communities in managing their water supplies.
- Community-driven schemes:
 - It is cost effective
 - Reduces vandalism
 - Improves food security
 - Stimulates local economies



Climate Change

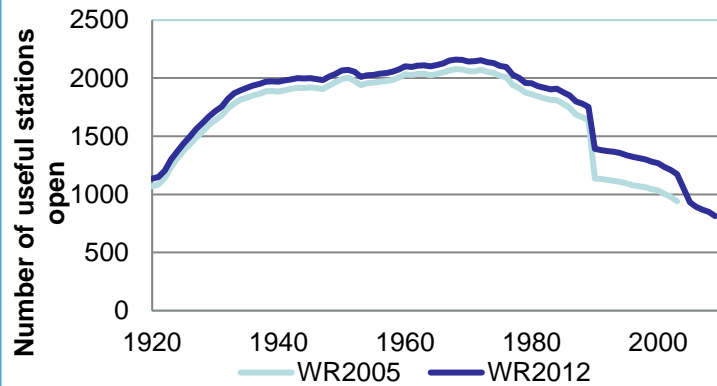
- Science is well-established for predictions and forecasts.
- Southern Africa will become drier.
- Climate Advisory Panel established by the WRC for seasonal forecasts.



WATER AND RELATED DATA

- WATER AND RELATED DATA AVAILABILITY IS A PROBLEM FOR DECISION-MAKING.

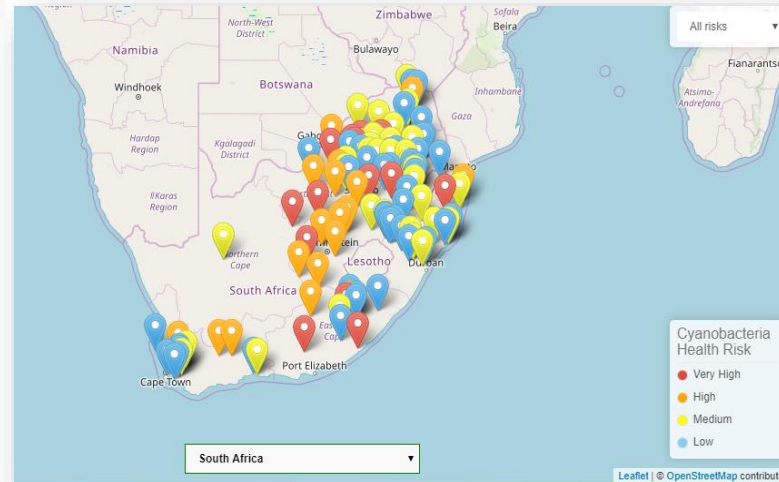
Declining weather stations - All WMAs



- NEW MONITORING TOOLS AND APPLICATIONS ARE REQUIRED.
- DEVELOPMENT OF WATER 4IR, BIG DATA PROTOCOLS & AI REQUIRE RDI ATTENTION.

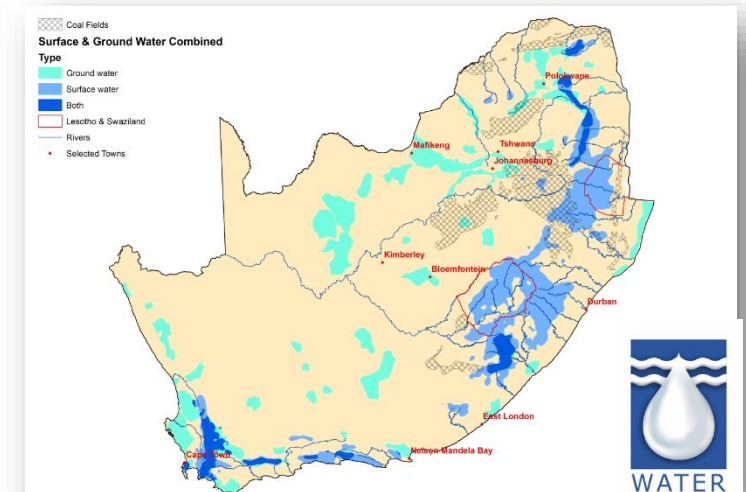
Remote Sensing

- **Earth Observation and Remote Sensing** for monitoring water resources.
- Improvement of **rainfall prediction**
 - Use effective systems
 - Allows **real-time or near real-time** data



Strategic Water Source Areas & Ecological Infrastructure

- Mapped and characterised.
- 10% of land surface provide 50% of runoff.
- Requires urgent protection and management.



IMPROVING WATER SECURITY

- ENSURE **HIGH QUALITY WATER SUPPLY** TO ALL KIND OF SETTLEMENTS (**INFRASTRUCTURE MONITORING AND IMPROVEMENT**);
- ENSURING **SAFE DRINKING WATER QUALITY**
- GOOD **INFRASTRUCTURE MANAGEMENT, OPTIMISATION AND REDUCING WATER LOSSES**
- IMPROVING **WATER USE BEHAVIOUR CHANGE AND EFFICIENT USE**

Efficient Water and Sanitation Options

- The WRC **SaNiTi – sanitation transformation initiative** – is established
- Innovating new **off –grid low energy/water sanitation solutions**
- Building a new **sanitation economy** through industrialisation.
- Demonstrating novel sanitation technology (**SASTEP**)
- Deriving **beneficiation**

Water Sensitive Design Settlements

- Tapping into the potential of **urban drainage, stormwater, rainwater harvesting** and **reuse**.
- Aligning to **food and energy security**
 - conduit hydro and hydroponing
- Better spatial planning for **water security**.

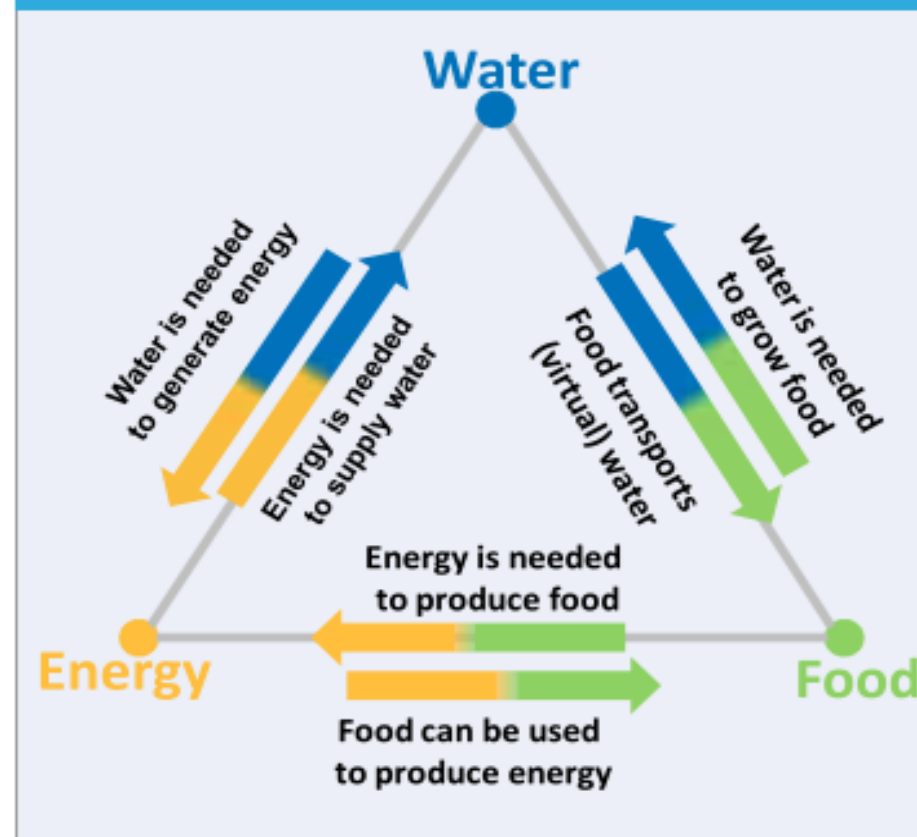
FARMERS AND HOME/ SCHOOL GARDENING



Water- Energy- Food Nexus

The WEF nexus is linked to several SDGs initiatives

THE WATER-ENERGY-FOOD NEXUS (UNU, 2013)



Improving food security and nutrition

- Improving **water uses** by crops and increasing **yields**.
- Increasing **nutrients levels** in crops
- Improving **crop choice** to improve food security





SUSTAINABLE HUMAN SETTLEMENTS: BEYOND NEW HOUSING MATERIAL

INNOVATION OPPORTUNITIES FOR:

- INFORMAL SETTLEMENTS
- FUTURE HOUSE
- FUTURE VILLAGE /TOWNHOUSE

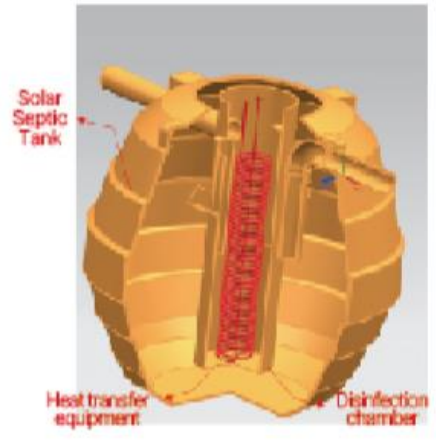
Designs of the future house with integrated water and energy systems.

- current WRC SASTEP programme can contribute to future sanitation

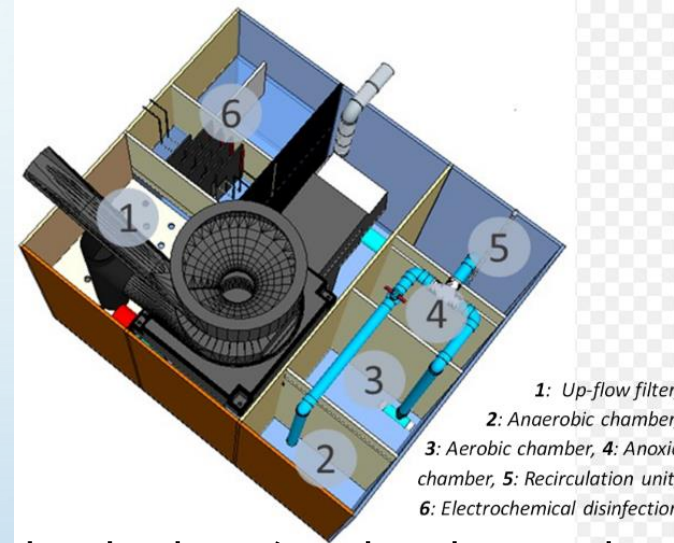


Future sanitation

SANITATION DEMONSTRATION



Solar septic – advanced septic tanks



Zyclone – low end technology (rural and peri-urban)



Future - modern



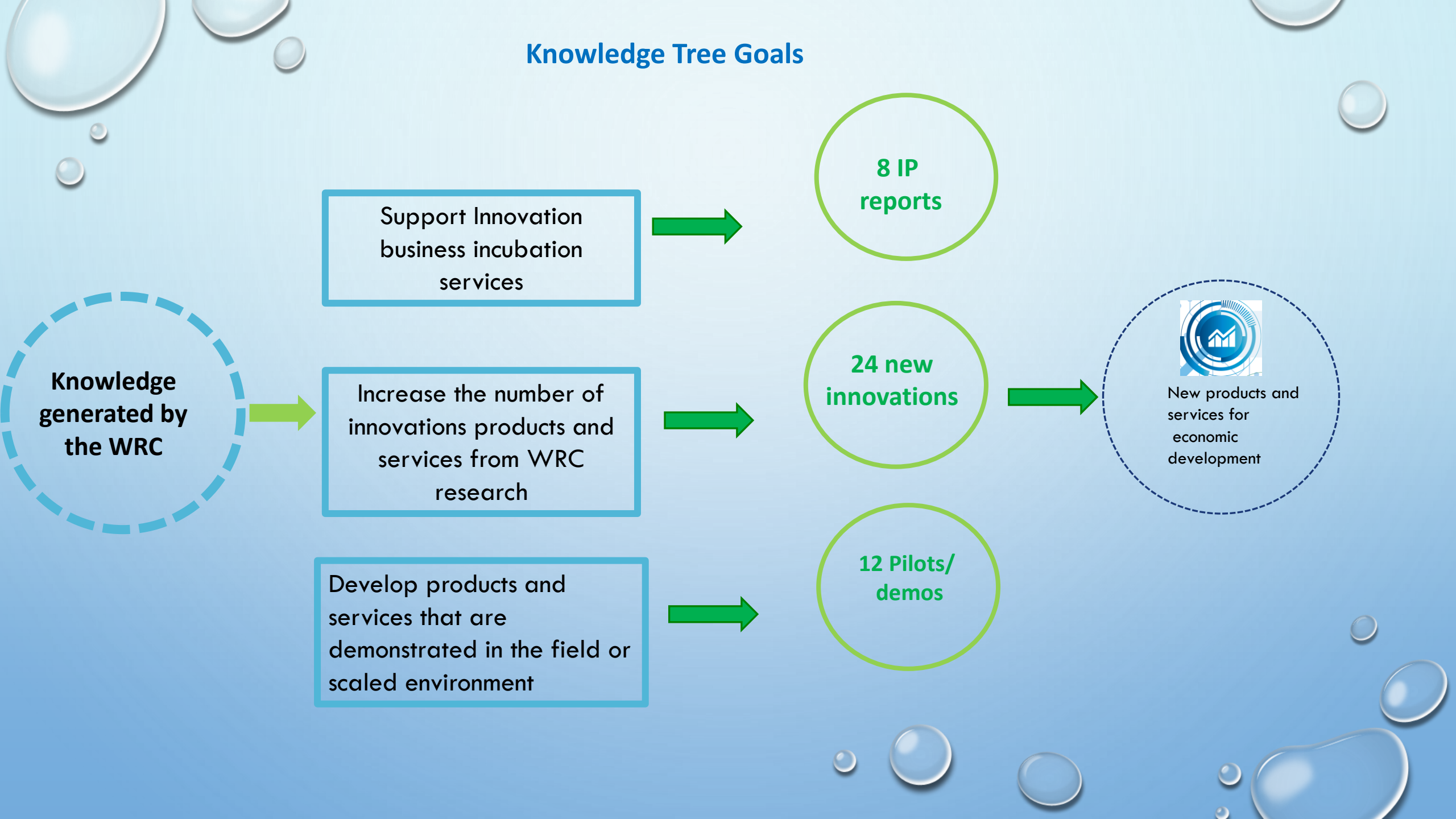
Full recycle – communal toilets



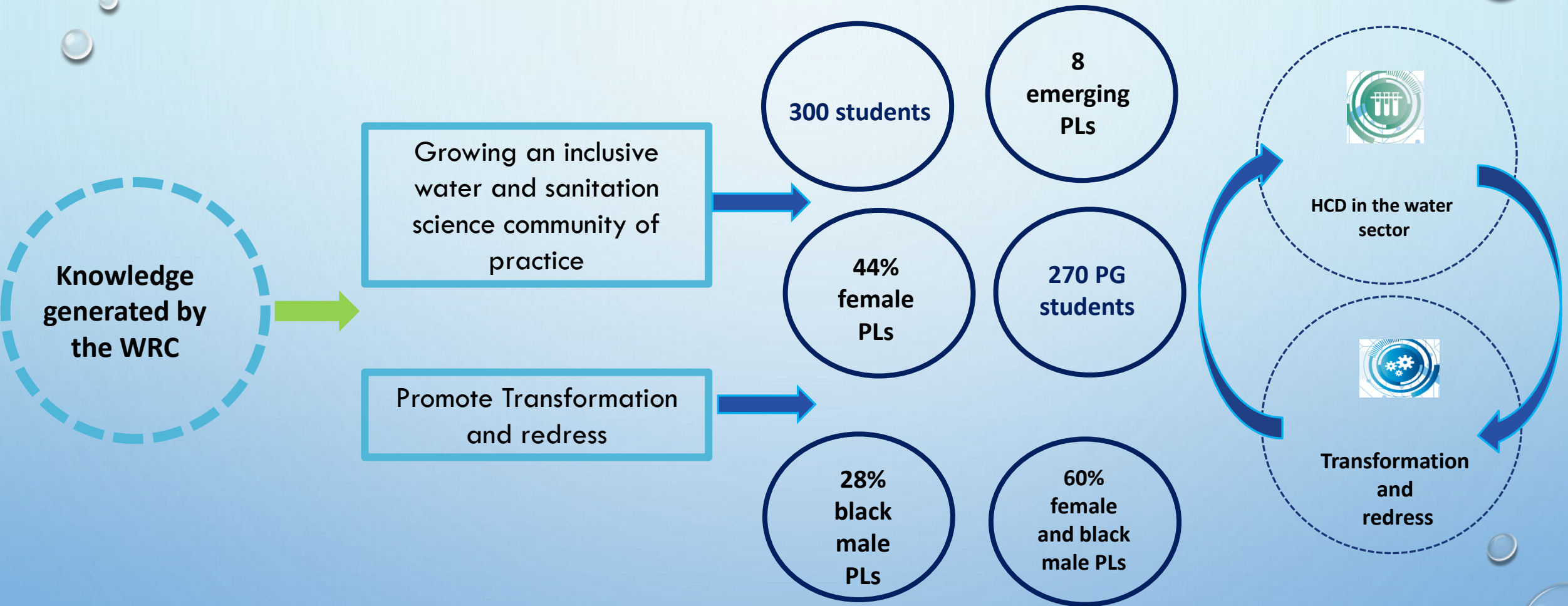
Innovations:

1. Advanced septic tanks
2. Mobile sludge treatment systems
3. Thermal toilet systems
4. Full recycling toilet systems

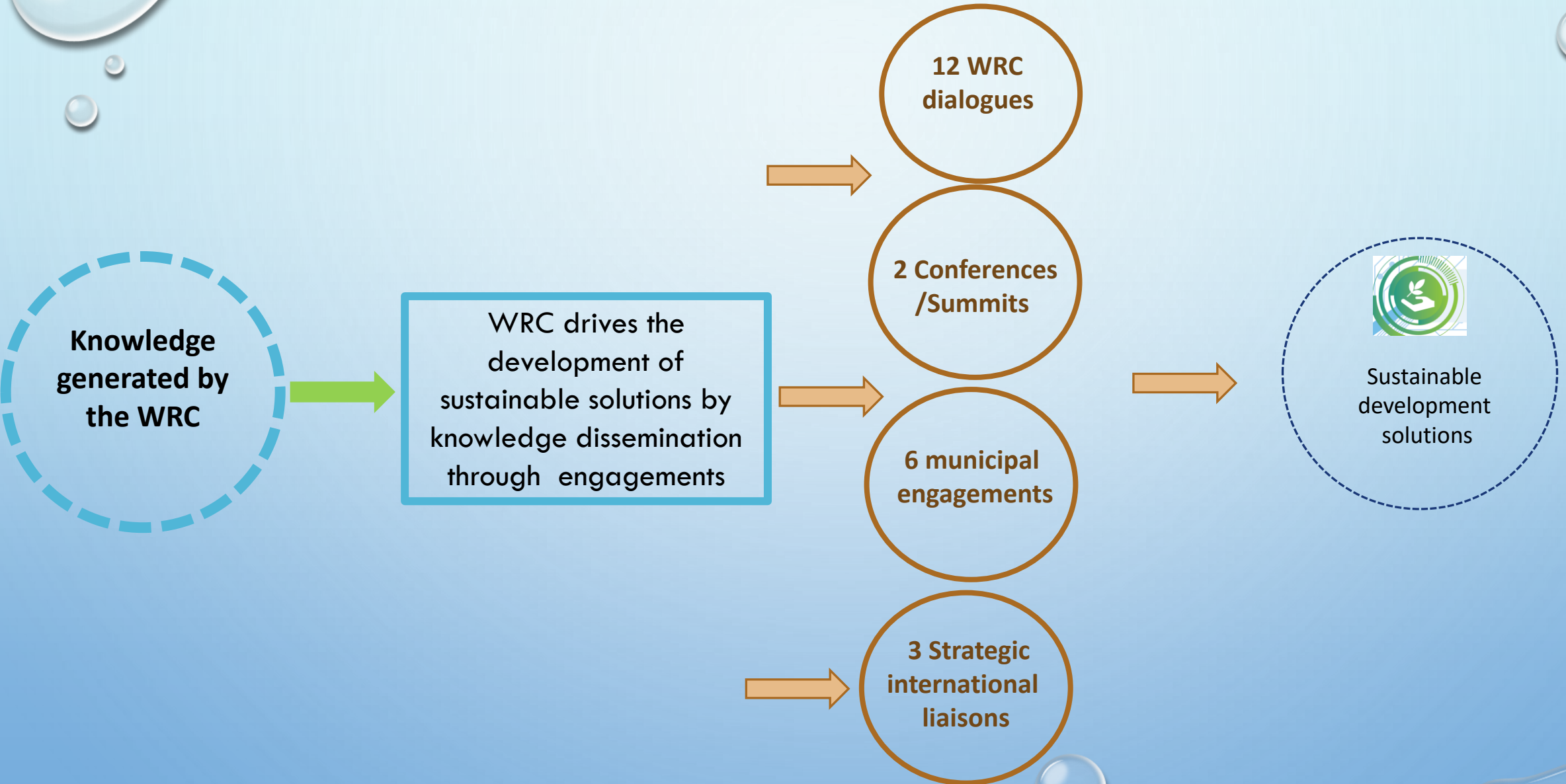
Knowledge Tree Goals



Knowledge Tree Goals



Knowledge Tree Goals



Knowledge
generated by
the WRC

WRC drives the
development of
sustainable solutions by
knowledge dissemination
through engagements

12 WRC
dialogues

2 Conferences
/Summits

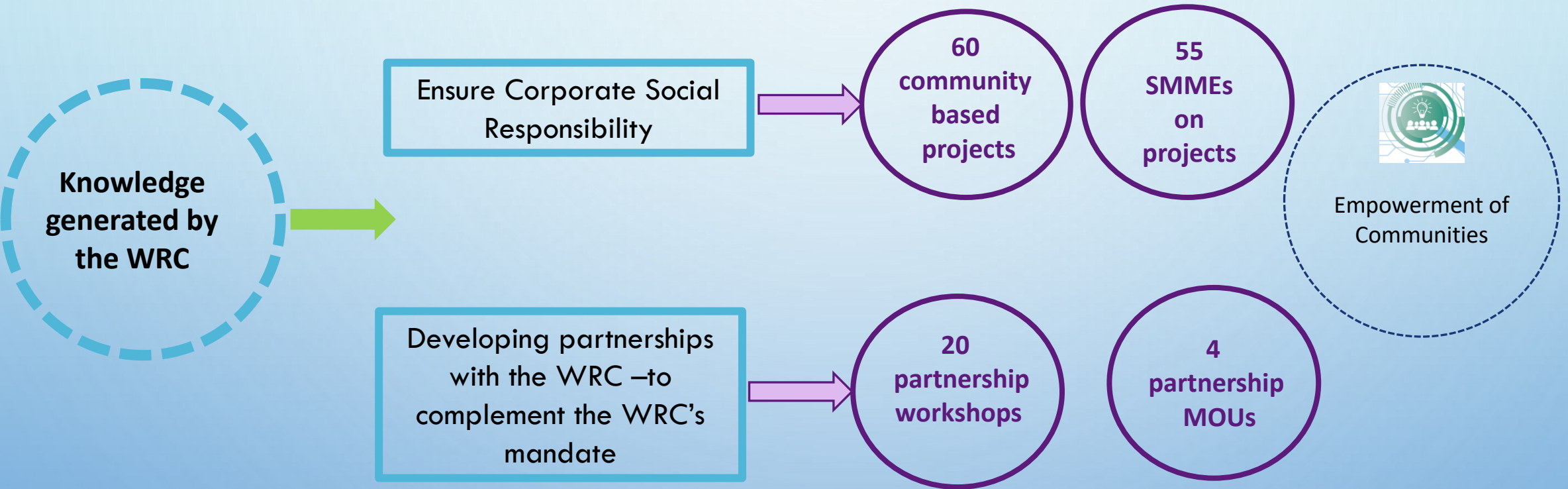
6 municipal
engagements

3 Strategic
international
liaisons

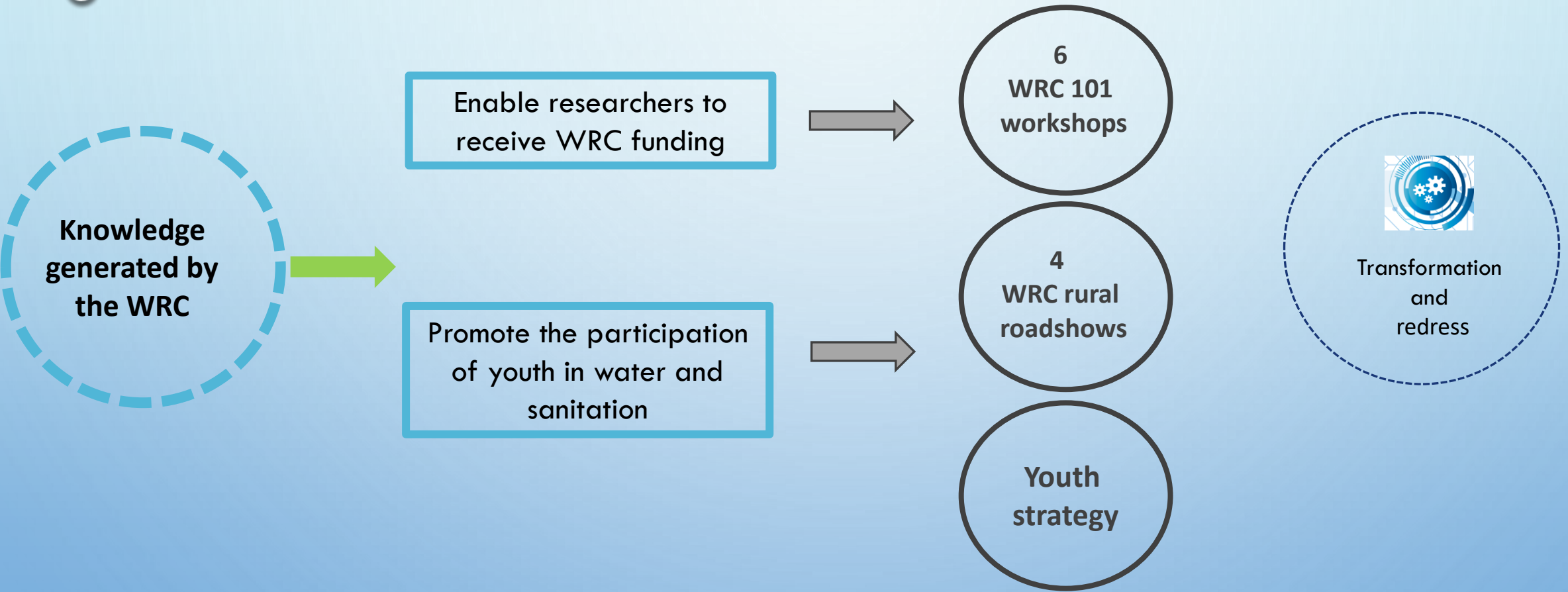


Sustainable
development
solutions

Strategic Goals



Knowledge Tree Goals



Knowledge generated by the WRC

Enable researchers to receive WRC funding

Promote the participation of youth in water and sanitation

6 WRC 101 workshops

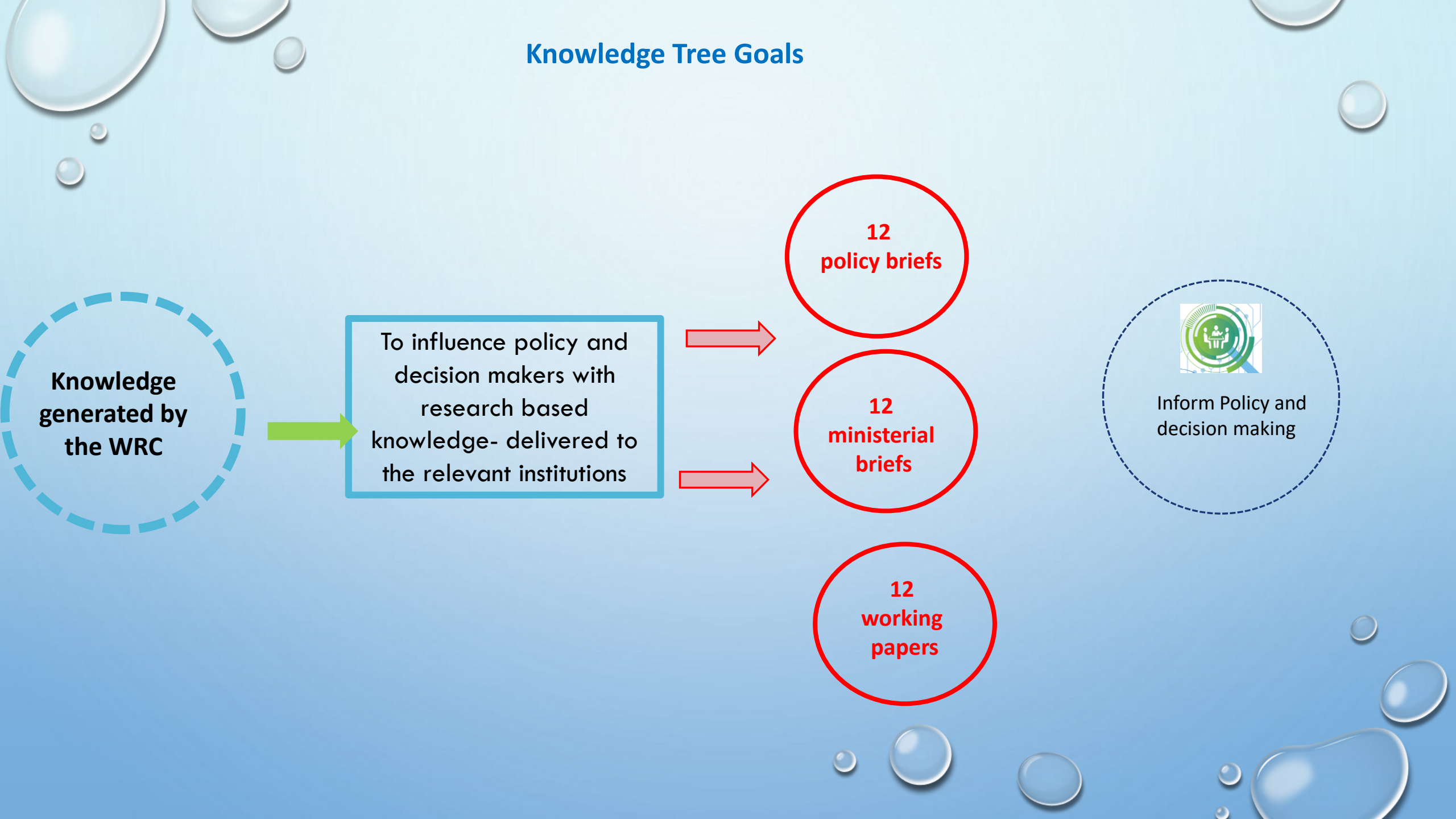
4 WRC rural roadshows

Youth strategy



Transformation and redress

Knowledge Tree Goals



**Financial and
Income
sustainability**

**Funding of
research
projects
250 for
2020**

**Initiate contracts that
increase leverage funding**

Response to audit results

**Achievement of
unqualified opinion**

**4 new contacts
increase
leverage**

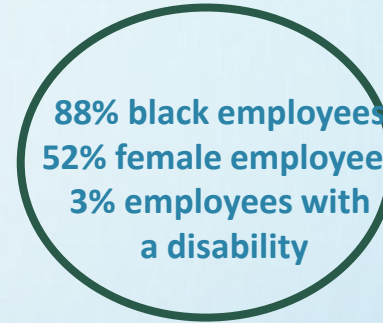
**100% of audit
queries
addressed
External &
Internal Audit**

**Unqualified Audit
Opinion**





Promote transformation and redress



Promote Employee development



