

# SMALLHOLDER FARMERS

## Bridging the water divide: Climate-resilient pathways for smallholder farmers in the Western Cape

*In the quiet valleys and windswept plains of the Western Cape's historic towns, a slow crisis is unfolding. It doesn't announce itself with a single cataclysmic event, but with the relentless drip of drought years, the creeping decay of old pipes and furrows, and the quiet frustration of farmers watching crops wilt for lack of water. Yolandi Schoeman reports.*



For South Africa's smallholder farmers, often the backbone of local food systems, water insecurity has always been a fact of life. But climate change is turning a challenge into an existential threat. The Western Cape's rainfall patterns have become erratic, droughts more prolonged, and competition for scarce resources fiercer than ever. When your farm relies on seasonal streams or a gravity-fed furrow system laid down decades ago, a single season of failed rains can mean the difference between a harvest and hunger.

A Water Research Commission-funded study, conducted by the Cape Peninsula University of Technology (**WRC Report No. 3194/1/24**), provides a comprehensive examination of this unfolding crisis. It examines not just the weather and the pipes, but the governance structures, economic inequities, and institutional gaps that determine who gets water, when, and how. And crucially, it offers a set of climate-resilient pathways that could transform vulnerability into resilience.

### **Beyond the weather: The three-headed challenge**

The study's starting point is clear: water scarcity for smallholder farmers is not simply about "less rain." It's the result of three interconnected challenges:

- Climate change impacts

Increasingly frequent droughts, unpredictable rainfall, higher evaporation rates, and extreme weather events are placing unprecedented stress on water systems. For farmers, this means shifting planting calendars, crop losses, and increased costs for irrigation.

- Ageing and inadequate infrastructure

Across the Western Cape's smallholder farming communities, irrigation channels leak, storage tanks are too small, and pumps sit idle for want of repairs. The research found that while some

new infrastructure exists, maintenance is inconsistent, and replacement cycles are slow. Even cost-effective gravity-fed systems are underused because farmers without secure land tenure are reluctant to invest in upgrades.

- Governance and institutional gaps

Policies and regulations exist, but their implementation often bypasses smallholders. The inability to enforce water-use rules or to include small-scale farmers in decision-making processes has left many marginalised. Structural inequities, rooted in South Africa's history, mean that commercial farmers are often better positioned to secure water rights, access subsidies, or influence local water allocation.

This combination creates what the researchers call a "governance-infrastructure-climate" nexus, a tangle of issues that can't be solved in isolation.

### Farmers on the frontline

The study's fieldwork spanned 15 historic towns in the Overberg and West Coast Districts, places like Genadendal, Elim, Goedverwacht, and Barrydale. Here, smallholder farmers are innovating under pressure. Some are pooling resources through cooperatives, others are experimenting with conservation agriculture, crop diversification, and organic methods to make the most of every drop. Rainwater harvesting tanks and small farm dams have become lifelines. Yet these are often stop-gap measures – important, but insufficient for prolonged droughts.

The interviews reveal a stark reality: resilience exists, but it's often isolated. Many promising initiatives lack the support, finance, or coordination to scale up and benefit entire communities.

One farmer in Tesselaarsdal summed it up: "We know how to farm with less water, but we can't do it alone. Without support for infrastructure and fair access, our efforts stay small."

### The infrastructure story: Pipes, pumps, and possibilities

The research team assessed the condition of agricultural water infrastructure using indicators such as adequacy, dependability, equity, and efficiency. With regards to storage, they found that many farmers rely on JoJo tanks or small on-farm dams, important but insufficient to bridge long dry periods. Challenges are also experienced with the conveyance of water – ageing gravity-fed channels and leaking pipes lose precious water before it reaches fields.

Where pumps exist, they are often old, inefficient, or broken. Few systems have functioning measuring devices, making it difficult to track and manage usage. Responsibilities for upkeep are often unclear, especially where infrastructure crosses multiple land parcels or falls under ambiguous governance.

Upgrading this infrastructure isn't just about replacing old parts, it requires clear management responsibilities, secure land tenure, and financing models that work for smallholders.

### Water governance: The human infrastructure

Water governance in South Africa is underpinned by strong

legislation – the National Water Act (1998), the Water Services Act (1997), and more recent strategies like the National Water Resource Strategy (2023). Yet in practice, smallholder farmers often find themselves on the periphery of decision-making.

The study applied selected OECD principles of good water governance, looking at transparency, inclusivity, capacity, and equity, and found consistent gaps:

- **Transparency and communication:** Many farmers are unaware of the processes for securing water rights or reporting infrastructure problems.
- **Participation:** Local water management bodies exist, but smallholder representation is weak, and women farmers in particular are underrepresented.
- **Capacity:** Catchment management agencies (CMAs) and water user associations (WUAs) often lack the staff and funding to engage meaningfully with all stakeholders.
- **Equity:** Historical inequalities continue to shape who has secure water access and who doesn't.

The result? Decisions that affect smallholder water security are often made without their full involvement, undermining both trust and effectiveness.

### The research highlighted several important insights:



#### Water as the biggest bottleneck

Nearly every farmer interviewed noted that water availability determines what and how much they can produce.



#### Fragmented government support

Farmers receive assistance but programmes are often uncoordinated, short term or misaligned with local needs.



#### Weak farmer organisations

While some cooperatives exist, most are poorly resourced and lack strong leadership.



#### Gender and youth gaps

Women and young people are underrepresented in smallholder networks.



#### Potential in diversification

Farmers who grow multiple crops or combine crops with livestock fare better in terms of resilience and income.



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## Seeds of change: Climate-resilient pathways

Using the Three Horizons Framework, the researchers worked with farmers, government officials, NGOs, and private sector stakeholders to envision practical pathways to a more secure water future.

Five priority shifts emerged, the first being the need to strengthen water governance and capacity. The final report recommends strengthening policies, digitising licensing systems, and building capacity in CMAs and WUAs. There is also a need to foster inclusive partnerships with NGOs and the private sector.

The second shift is to modernise agricultural water infrastructure. The researchers recommend investing in upgrading irrigation networks, storage facilities, and measuring devices. Dedicated maintenance funds should be established and technologies such as drip irrigation and rainwater harvesting incentivised.

There should also be a shift towards climate-resilient farming. “Expand access to drought-tolerant seeds, seed banks, and training in conservation agriculture. Support crop diversification to reduce dependency on water-intensive crops,” the researchers say.

The fourth priority shift is enhancing farmer participation and equity by creating local water management councils with strong smallholder representation. Support should be provided for gender-sensitive approaches and finance models that work for marginalised farmers.

The last strategy is fostering collaboration and innovation. “Support farmer cooperatives, multi-stakeholder innovation hubs, and private sector investment in rural water solutions. Integrate traditional knowledge with modern technology,” the

report recommends.

## From policy to practice: The next steps

The research doesn't shy away from the hard truth: solving smallholder water insecurity in the Western Cape will require both top-down and bottom-up change. From above, this means sustained policy attention, targeted funding, and institutional reform. From below, it means empowering communities to co-manage resources, innovate, and hold decision-makers accountable.

The authors also identify priorities for future research, including using remote sensing, geographic information systems (GIS), and smart irrigation to improve efficiency; integrating traditional practices into governance and adaptation strategies; testing innovative financial models (microfinance, blended finance, public-private partnerships) to sustain infrastructure and farmer support; and applying ‘peace engineering’ to design water systems that reduce conflict and foster cooperation.

## Why this matters beyond the Western Cape

While the study focuses on the Overberg and West Coast Districts, its lessons are national, and even global. Across southern Africa, smallholder farmers face the same three-headed challenge of climate stress, ageing infrastructure, and governance gaps.

In a water-scarce country like South Africa, ignoring these challenges risks not just local food security but rural livelihoods, social stability, and economic resilience. The stakes go beyond agriculture – healthy smallholder systems are central to rural economies, cultural heritage, and biodiversity stewardship.

## A call to action

The image that emerges from this research is not one of despair, but of untapped potential. Smallholder farmers are already adapting, innovating, and collaborating, but their efforts are too often fragmented and under-resourced. By aligning infrastructure investment, governance reform, and climate adaptation in a coherent, inclusive strategy, South Africa can turn its most vulnerable farmers into leaders of resilience.

As one cooperative leader in Barrydale put it during the study's workshops: “We don't just need water to survive. We need a system that sees us, hears us, and works with us.”

The water is scarce. The time is short. But with the right pathways, the Western Cape's smallholder fields can still be places where resilience grows.

To access the report, *Infrastructure Performance, Water Governance and Climate Change Impacts on Water Resource Management for Smallholder Farmers in the Western Cape, South Africa* (WRC Report No. 3194/1/24), visit: <https://www.wrc.org.za/wp-content/uploads/mdocs/3194%20final1.pdf>