# POLICY BRIEF

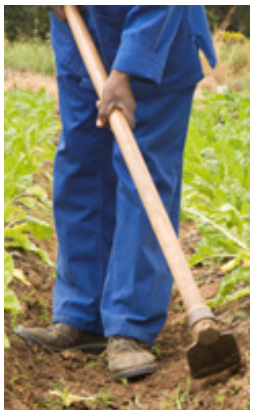
**September 2018**
The WRC operates in terms of the Water Research Act (Act 34 of 1971) and its mandate is to support water research and development as well as the building of a sustainable water research capacity in South Africa.

# Appropriate entrepreneurial development paths for homestead food gardening and smallholder irrigation crop farming in KwaZulu-Natal Province

***In South Africa, most smallholder irrigation schemes are found in areas where the incidence of rural poverty is the highest. Smallholder irrigation presents opportunities for reducing rural poverty by enabling farmers to produce multiple times a year, boosting productivity, raising income and enhancing rural employment creation and food security among households. However, the sector faces various challenges that have undermined its potential to make any meaningful contribution to rural livelihoods.***

***In order to improve the situation, the Water Research Commission (WRC) funded a five-year study to first take stock of the resource endowments/incentives and how these can be utilised to enhance the performance of smallholder irrigation. The study assessed the opportunities, challenges and prevailing constraints for expanding land under crop irrigation activities and determined strategies for unlocking the bottlenecks to improve the productive use of irrigation water in smallholder irrigation farming. Ultimately, the study proposes differentiated entrepreneurial development pathways for enhancing the contribution of the sector to establish small farming businesses and the achievement of the national development objectives.***

## Background



Where conditions are favourable irrigation schemes can raise the income of farmers. Water management in agriculture may boost productivity and income by providing adequate water throughout the growing season, thus contributing to higher yield quality of production and water use productivity of food crops under irrigation.

The available evidence indicates that natural and human resources on most, if not all, smallholder irrigation schemes in South Africa are utilised far below potential. Given the semi-arid circumstances and potential impact of climate change, increasing emphasis must be placed on higher efficiency of water use under irrigation.

For this purpose, ways must be found to enable more productive farming practices, more competitive and profitable farming on irrigation schemes. This, in turn, requires that an assessment be made of the goals and aspirations of current and potential farmers to improve the economic performance of farming enterprises.

The general objective of the WRC study was to review and evaluate appropriate development paths for expansion from homestead food gardening and smallholder irrigation farming, increased water use productivity of crop production and improved livelihoods on selected smallholder irrigation schemes.

To this end, specific objectives were pursued, namely to:

- Evaluate natural, physical and financial assets with specific attention to irrigation farming potential
- Evaluate human and social assets, with particular attention to entrepreneurial spirit and management capabilities within incentives of secure land tenure, water use rights and leadership in organisational structures
- Determine the aspirations and goals of farmers to expand irrigation crop production from homestead food gardens to irrigations plots and/or from one to more than one irrigation plot

- Formulate and test appropriate development paths for establishing sustainable farming businesses with crop enterprises to increase food security, profitability and employment opportunities on smallholder irrigation schemes.

## Study method

The research was conducted in and around four irrigation schemes in KwaZulu-Natal (Makhatini, Ndumo-B, Tugela Ferry and Bululwane). Stratified random sampling was used to select the participants, and a total of 674 smallholder farmers were interviewed (342 scheme irrigators, 99 independent homestead food gardeners, 68 independent irrigators, 76 community food gardeners and 89 non-irrigators).

Recognising the importance of understanding farmers' decisions and behaviours to agricultural and rural developments, the study took a psychological and behavioural economics perspective to provide the road map to realise the returns on investment in the smallholder irrigation sector.

Several qualitative and quantitative methods of data analysis were used, i.e. descriptive statistics, multivariate statistics (principal component analysis and cluster analysis), regression analysis (e.g. least squares regression, general linear model, double hurdle, mixed logit, Tobit, Heckman and ordered logit models) and thematic content analysis.

## Results and recommendations

Overall, the study has shown why it is of critical importance to take the mindset and human behaviour as the locus of interventions to improve the performance of smallholder irrigation schemes. The evaluation of the human and social assets focused on the extent to which smallholders (in and out of the schemes) in South Africa can run farming as a business, as well as the extent to which endowment in these assets, including psychological capital, enhance on-farm entrepreneurship and water use productivity.

The concept of psychological capital was introduced to incorporate the farmers' key asset, their mindset and its impact on their capacity to make use of available opportunities despite the prevailing constraints. The study confirmed the role of positive psychological capital in taking advantage of opportunities, facing constraints and mobilising/managing other resources.

**Farmers who are endowed with positive psychological capital (confident, hopeful, optimistic, and resilient) were found to be more persistent and productive despite prevailing constraints and challenges (such as market access)**. Concomitantly, the results showed that the majority of smallholder farmers had less confidence in themselves, with many becoming dependent on government handouts.

In terms of psychological capital, the study identified six farmer typologies among smallholder irrigators. These were:

1. Risk taking and opportunistic farmers
2. Ambitious, optimistic but social grant reliant farmers
3. Young and educated
4. Farmers with access to information but limited access to credit
5. Risk-taking and opportunistic but with limited access to credit
6. Mixed farming and psychological capital endowed.

For all farmers, there were three important aspects related to psychological capital that were found to reduce the interest and hence participation in expanding irrigated crop farming. These are resilience or capacity to absorb the impact of shocks, willingness and ability to take risk and capacity to delineate goals in farming.

The results further show that the on-farm entrepreneurship index generated was dominated by motivated farmers who perceived their farms as a means of making a profit and ambitious farmers who also understand how to motivate people. Other factors include gender, farming experience, education level, psychological capital, participation in scheme irrigation, main occupation and irrigation scheme distance from homestead.

Scheme irrigators were found to have the lowest levels of entrepreneurial competency. Capital endowment of any kind is not effective in isolation. **Thus, government's exclusive focus on infrastructural investment, with no due consideration of the human and social dimensions of collective management of the schemes, has to be revisited**. With male farmers being more entrepreneurially skilled than female farmers, entrepreneurial skills training needs to target women.

Most smallholders exhibit tendencies synonymous with low entrepreneurial spirit. A considerable number lack confidence in farming and thus do not view smallholder farming as profitable in the long term. They are also not endowed with a business mindset.

In addition, most smallholders do not consider farming as a business, but a way of life. A significant proportion of farmers would not be in farming if they had other options. Most smallholders do not distinguish farm operations, implying that one cannot tell if the farm is making a profit or loss. Only a few keep records, albeit inconsistently.

The key rural development challenges that have locked the entrepreneurial spirit include the poor quality of services rendered to farmers (mainly training and agricultural extension), the insufficiency or lack of cooperative governance, and issues related to access to water/land/finance/markets.

Regarding credit, easy consumption credit at high cost is depleting rural livelihoods and making rural people vulnerable. Regarding market access, marketable surplus from irrigation farming is not earning farmers the income they deserve due to lack of profitable markets, high transaction costs and lack of norms of reciprocity, middlemen retaining most of the profit margin and farmers' failure to consistently supply the desired quality of homogeneous produce.

The potential to transform homestead food gardening and smallholder irrigation farming is complicated by the heterogeneity of smallholder farmers. Smallholders in and around the irrigation schemes have diverse attributes in terms of their resource endowments, objectives in farming, constraints, opportunities and mindsets.

**Future on-farm entrepreneurial development paths should be pursued based on the nature of the development domain (i.e. farmer typology) as each type of farmer would require different packages of technology, farming practices and other factors of production**.

The study showed that agricultural policies and interventions targeting smallholder farmers in irrigation have to account for their heterogeneity and the complexity of their farming system. **It affirms that the 'one size fits all' approach does not work and technologies, extension services, farm management practices, innovations and development pathways should be context-specific and speak to the heterogeneity.**

The research further demonstrated that heterogeneity in the smallholder irrigation sector happens at two levels, i.e. the farmer (psychological capital endowment, market access, collective action and access to credit) and geographic area or what can be called the spatial dimension of heterogeneity. At the farmer level, complexities are inherent due to differences in resource endowment and the ability of the farmers to identify and utilise available opportunities.

Finally, the study demonstrated that not all smallholder irrigators have the potential to be successful on-farm entrepreneurs. This forms the basis for the development of the different entrepreneurship development pathways.

**Certainly, interest and willingness, capability and commitment are key in the whole process. Farmers who are not keen and who are content with their status quo cannot be forced to participate in the on-farm entrepreneurship development programme.**

Government and its partners should be able to identify interested farmers with high entrepreneurial spirit for the programme. This is not to say that those not interested in expanding their smallholder irrigation activities should be ignored. However, depending on who they are, their current level of production and land use rights, among other factors, can also be targeted.

**Accompanying report:**
*Appropriate entrepreneurial development paths for homestead food gardening and smallholder irrigation crop farming in KwaZulu-Natal Province* (**Report No. 2278/1/18**). For content-related queries please contact Executive Manager, Dr Gerhard Backeberg [gerhardb@wrc.org.za]; Tel: (012) 761-9300