Land and water resources management in South Africa\textsuperscript{1}

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Introduction

South Africa’s water resources are managed by the government Department of Water Affairs and Forestry (DWAF) and DWAF also allocates water to sector users.

The National Department of Agriculture (NDA) takes the lead in integrating initiatives in the agricultural water use sector.

I will use the following framework to give an overview of South Africa’s land and water resources.

1. Land resources
2. Water resources
3. Importance of irrigation farming
4. Legal framework and institutional arrangements
5. Integrated land and water management: current state of affairs

1. Land Resources

1.1 Scope of agricultural water use
Approximately 40 000 small-scale farmers, 15 000 medium-to-large-scale farmers, 120 000 permanent workers, and an unknown number of seasonal workers are involved in irrigation farming, which consumes approximately 51% of South Africa’s water on some 1.3 million


hectares. Irrigation farming contributes 25 to 30% of South Africa’s agricultural output.

Agriculture is crucially important to the basic food security of the poor, who constitute 40% of the population of 42 million, and who are overwhelmingly concentrated in rural areas and (peri-)urban townships.

1.2 Land and climate
Less than 20% of South Africa has a sub-humid climate with a mean annual rainfall higher than 750 mm. Soils in this part of the country are generally less suitable for intensive cultivation. The rest of the country has an arid to semi-arid climate with medium to high water deficits relative to crop needs. Most cultivable soils occur in these regions. In large parts of South Africa, water supplementation through irrigation is essential for economic crop production.

Irrigation can be either permanent, supplementary or occasional. The largest concentration of permanent irrigation in South Africa occurs in the 250-750 mm rainfall zones.

2. Water Resources

2.1 Water availability
The mean annual rainfall of South Africa (497 mm) is well below world average.

2.2 Surface water resources
Only 8.5% of the low average annual rainfall of South Africa (497 mm) finds its way to rivers as runoff. The mean aggregate runoff is 53 000 m$^3$. Some rivers are of joint interest to South Africa and neighbouring countries.

2.3 Water availability for irrigation
Irrigation uses about 51% of South Africa’s surface water resources. More and more dams have been built over time. Virtually all the large irrigation schemes are supplied from storage dams.

3. Importance of irrigation farming
3.1 Economic linkages between irrigation farming and the rest of the economy

By 1994, 62% of consumers' food expenditure in South Africa represented forward linkages (1,65 times farmers' gross revenues). Agriculture and construction are the industries with the highest labour multipliers in South Africa; between 101 and 241 employment opportunities are created by a R1 million increase in the value of agricultural production. A contraction in agriculture production brings about a similar decline in employment. The total impact of a 10% change in agricultural output is a change of 1,2 to 1,4% in the economy as a whole. The multipliers of irrigation farming appear to have similar magnitude as agriculture as a whole. It is the economic and social lifeline of many rural areas.

3.2 Commercial irrigation farming

The intensity of commercial irrigation farming varies according to economic location, soil and water quality and stability of water supply. Profitability varies accordingly. Grains typically yield gross margins of R1 000 to R2 800 per hectare, vegetables often yield gross margins of R5 000 to approximately R10 000 per hectare and some fruits may be associated with gross margins of R15 000 to R23 000 per hectare.

Labour absorption also varies among crops. Tomato production can absorb between 3 600 and 10 000 labour hours per hectare p.a., while clementines and satsumas engage 3 600 to 3 900 hours per hectare per annum. At the other end of the continuum, lucerne production utilises between 100 and 230 labour hours per hectare p.a., whilst irrigated grain production absorbs only 40 to 70 hours.

3.3 Small-scale irrigation farming

South African small-scale farmer irrigation schemes are beset with problems. These include scheme management, project planning and design, security of tenure, size of units, farmer participation, water management, debts, product prices, marketing, inputs, and services concerned with research, extension, mechanisation and other types of support.
There are 202 small-scale farmer irrigation schemes involving some 47,500 ha. Only 37% of participants are commercially oriented. The remaining 63% are foodplot holders who may sometimes sell some produce.

4. Legal framework and institutional arrangements

4.1 Background
South Africa’s previous water law (1956) applied the rules of the well-watered colonising countries of Europe to the arid and variable climate of South Africa. Water was mostly used by a dominant group which had privileged access to land and economic power. The victory of democracy in 1994 demanded that national policy on water use and the water law be reviewed.

South Africa’s new National Water Act (Act 36 of 1998) provides for a fundamental reform of water resources law, for the conservation of a scarce resource, and for the equitable allocation of water for beneficial use.

4.2 Key elements of the Water Act
Some of the key elements which guide water management in South Africa are that:

- The status of the nation’s water resources as an indivisible national asset was confirmed and formalised.
- National government act as the custodian of the nation’s water resources and its powers in this regard is exercised as a public trust.
- Only that water required to meet basic human needs and maintain environmental sustainability will be guaranteed as a right. This will be known as the Reserve.
- In shared river basins, Government is empowered to give priority over other uses to ensure that the legitimate requirements of neighbouring countries can be met.
- The new system of allocation will be implemented in a phased manner, beginning in water management areas which are already
under stress. This system of allocation will use water pricing, limited term allocations and other administrative mechanisms to bring supply and demand into balance in a manner which is beneficial in the public interest.

- The riparian system of allocation, in which the right to use water is tied to the ownership of land along rivers, was effectively abolished. Transitional arrangements will, over time, ensure an orderly, efficient and gradual shift in water use allocations as and when necessary.

- Water use allocations will no longer be permanent, but will be given for a reasonable period, and provision will be made to enable the transfer or trade of these rights between users, with Ministerial consent.

- To promote the efficient use of water, the policy will be to charge users for the full financial costs of providing access to water, including infrastructure development and catchment management activities. This will be done on an equitable basis and according to the realistic reasonable programme which has already been begun.

- All water use, wherever in the water cycle it occurs, will be subject to a catchment management charge which will cover actual costs incurred.

- To promote equitable access to water for disadvantaged groups for productive purposes such as agriculture, some or all of these charges may be waived for a determined period where this is necessary for them to be able to begin to use the resource.

- All major water use sectors must develop a water use, conservation and protection policy, and regulations will be introduced to ensure compliance with the policy in key areas.

- Provision will be made for the phased establishment of catchment management agencies, subject to national authority, to undertake water resource management in these water management areas.
4.3 Institutions for water management

4.3.1 Catchment management agencies (CMAs)
CMAs are statutory bodies established under the Act. A CMA manages water resources within its Water Management Area. South Africa has been divided into 19 Water Management Areas as part of the progressive development of the National Water Resource Strategy.

CMAs must develop and implement a catchment management strategy for the water resources within their Water Management Area. Catchment management strategies must be in harmony with the National Water Resource Strategy.

Every Water Management Area is different and has specific requirements. See map enclosed.

4.3.2 Water User Associations (WUAs)
A WUA is a statutory body established by the Minister under Section 92 of the Act. WUAs are, in effect, cooperative associations of individual water users who wish to undertake water-related activities for their mutual benefit.

The broad role of a WUA is to enable people within a community to pool their resources (money, human resources and expertise) to more effectively carry out water-related activities. Members will thus benefit from addressing local needs and priorities.

5. Integrated land and water management: current state of affairs

South Africa is reviewing its policies in support of agricultural water use by resource limited farmers. The resource conservation goals articulated in the irrigation policy are currently being given effect through the implementation of the Water Conservation and Demand Management strategy for the agricultural sector, with the development of Water Management Plans for two pilot irrigation areas - one smallholder and one large scale commercial scheme.
The Integrated Rural Development Program (IRDP) makes provision for a broad and integrated programme of rural upliftment and poverty alleviation.

Policies are designed with the aim to "mainstream the marginalized". Six sub-sectors of agricultural water use are identified in resource limited agriculture in South Africa.

These are:

- Low-risk household production for food security;
- Market-based Small, Medium and Micro Enterprise (SMME) development (of farmers and agricultural service providers);
- Revitalisation and local integration of former government smallholder irrigation systems, also known as "farmer settlement schemes";
- Transformation of commercial parastatal schemes, previously managed on behalf of government by parastatal Development Corporations in the former Bantustans;
- Land reform beneficiaries on land that may or may not have access to water for irrigation; and
- Joint ventures between resource limited farmers or farm labourers and established commercial partners

Each of the above sub-sectors is facing a series of challenges for which policy solutions are sought.

The NDA will launch a major national initiative under the Water Care programme to mainstream the marginalized through comprehensive and targeted support for agricultural water use activities. This will be called the "Fruits of our Water" programme and will encompass the following aspects:

a) Consistent government policy will be declared for agricultural water use projects
b) Local government capacity and private sector support provision to smallholder agriculture will be actively built in the IRDP priorities
c) Training, credit and markets for high quality produce will be available to all interested small-scale agricultural water users
d) In addition to support for groups, individual farmer initiative will be stimulated, especially for women and youth.

e) Land on irrigation schemes in communal areas will be redistributed in a phased manner to enhance sustainable use of scarce irrigation infrastructure.

References:


WATER MANAGEMENT AREAS

- Limpopo
- Luvuvhu and Letaba
- Crocodile (West) and Marico
- Olifants
- Inkomati
- Olifants/Doorn
- Mzimvubu to Keiskamma
- Mvoti to Umzimkulu
- Limpopo and Letaba
- Crocodile (West) and Marico
- Olifants
- Inkomati
- Olifants/Doorn
- Mzimvubu to Keiskamma
- Mvoti to Umzimkulu