



South Africa's Land Resource in the Water-Energy-Food (WEF) Nexus Context

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The role of land in the South African landscape

Investment in agriculture is widely recognised as a key precondition to achieving goals related to inclusive growth, improved food security, the creation of jobs and wealth, and the reduction of poverty. To achieve these goals there needs to be certainty with regard to the security of property rights, the mechanisms by which land ownership is governed, and the optimal utilization of land. Land use can be broadly categorized into five types i.e. agricultural, residential, commercial and industrial, recreational (including nature conservation) and land for public services such as roads and rail lines, reservoirs, etc. In South Africa 70% of all land is used for agriculture i.e. field crops, horticulture and livestock production.

Competition for land and water, always present, is becoming more prevalent across all sectors of the economy. The sustainable management of these finite resources will ultimately determine the ability of South Africa to deliver against the increasingly interconnected and complex agenda around improved livelihoods, while maintaining and protecting the planet.

Land-use planning should therefore entail a multi-disciplinary approach, combining deep knowledge of the full value chain and the interconnections across different sectors. It all begins with the land – knowing how to sustainably manage the resource, while at the same time balancing the complex agendas of civil society, government, individual citizens, and different sectors. For example, the highest and fastest growing concentration of poor and vulnerable households are based in urban centres, and they require efficient and commercialised value chains to secure a consistent supply of food at affordable prices. In parallel, rural economies, food markets and household food consumption and nutrition can be enhanced significantly by smaller sized, informal but productive farmers and value chains in remote areas. These divergent needs motivate dual market support structures and require continuous innovation towards optimal land-use and stewardship.

Agricultural activities are directly dependent on the availability and quality of natural resources, particularly land and water. While the availability of land has featured strongly in South Africa's growth and transformation policy agendas, this piece focusses on presenting a more detailed view of the quantity and quality of South Africa's land resource, and how this impacts the agricultural use and viability of land resources in sustaining South Africa growth objectives.

Land-use and the competition for available land

South Africa has a total land surface of 122 million hectares, of which 84.8 million hectares are classified as agricultural land but only 13.8 million hectares (11%) were cultivated in the form of field crops in 2020 (DFFE, 2020). Cultivated land in this sense encompasses all cultivated land or fields, whether currently used for agricultural production or not. It includes planted pastures, dryland and irrigated field crops, orchards and subsistence agriculture. **Table 1** summarises South Africa's land use in broader categories. Note that even though the agricultural sector is the largest land user, the sector faces strong competition for high potential land resources from other sectors such as mining (see BFAP's report on "[The Balance of Natural Resources: Understanding the long term impact of mining on food security in South Africa](#)", BFAP, 2015). The next section will unpack the quality of South Africa's land resource in more detail.

Table 1: Summary of National Land Cover

	National Land Cover (ha)	Percentage of total land
<i>Residential</i>	3 217 992	2.6%
<i>Commercial</i>	81 666	0.1%
<i>Industrial</i>	95 937	0.1%
<i>Roads Rails</i>	135 826	0.1%
<i>Water</i>	647 030	0.5%
<i>Mines</i>	303 757	0.2%
<i>Woodland</i>	18 777 108	15.4%
<i>Plantation Forest</i>	2 064 698	1.7%
<i>Shrubland</i>	31 344 538	25.7%
<i>Grassland</i>	33 910 464	27.8%
<i>Wetland</i>	1 055 663	0.9%
<i>Barren</i>	12 467 773	10.2%
<i>Eroded</i>	434 958	0.4%
<i>Agriculture</i>	13 827 407	11.3%
<i>Fallow Land Old Fields</i>	3 716 330	3.0%
Total	122 081 145	

Source: DFFE (2020), compiled by BFAP (2022)

Land capability

The land capability dataset classifies South Africa’s surface area into most to least suitable profiles for “natural or unimproved rain-fed (dryland)” production, based on soil (30% consideration), climate (40%) and terrain (30%) characteristics. The land capability classification does not take current crop cultivation, crop suitability or unique agricultural land (i.e. micro-climates) into consideration. When only considering climatic, soil and terrain related variables, marginal and non-arable land is arguably not “intended” to be cultivated for agricultural purposes. However, due to other factors including location, good resource management practices, farmers’ ingenuity and planning, etc. at least some of South Africa’s actual field crop cultivation does take place on marginal and non-arable land capability classes.

Only 9.3% of South Africa’s land can be classified as having high agricultural potential and 65% of the high potential agricultural land is found in Mpumalanga, KwaZulu-Natal and Limpopo Provinces (**Figure 1**).

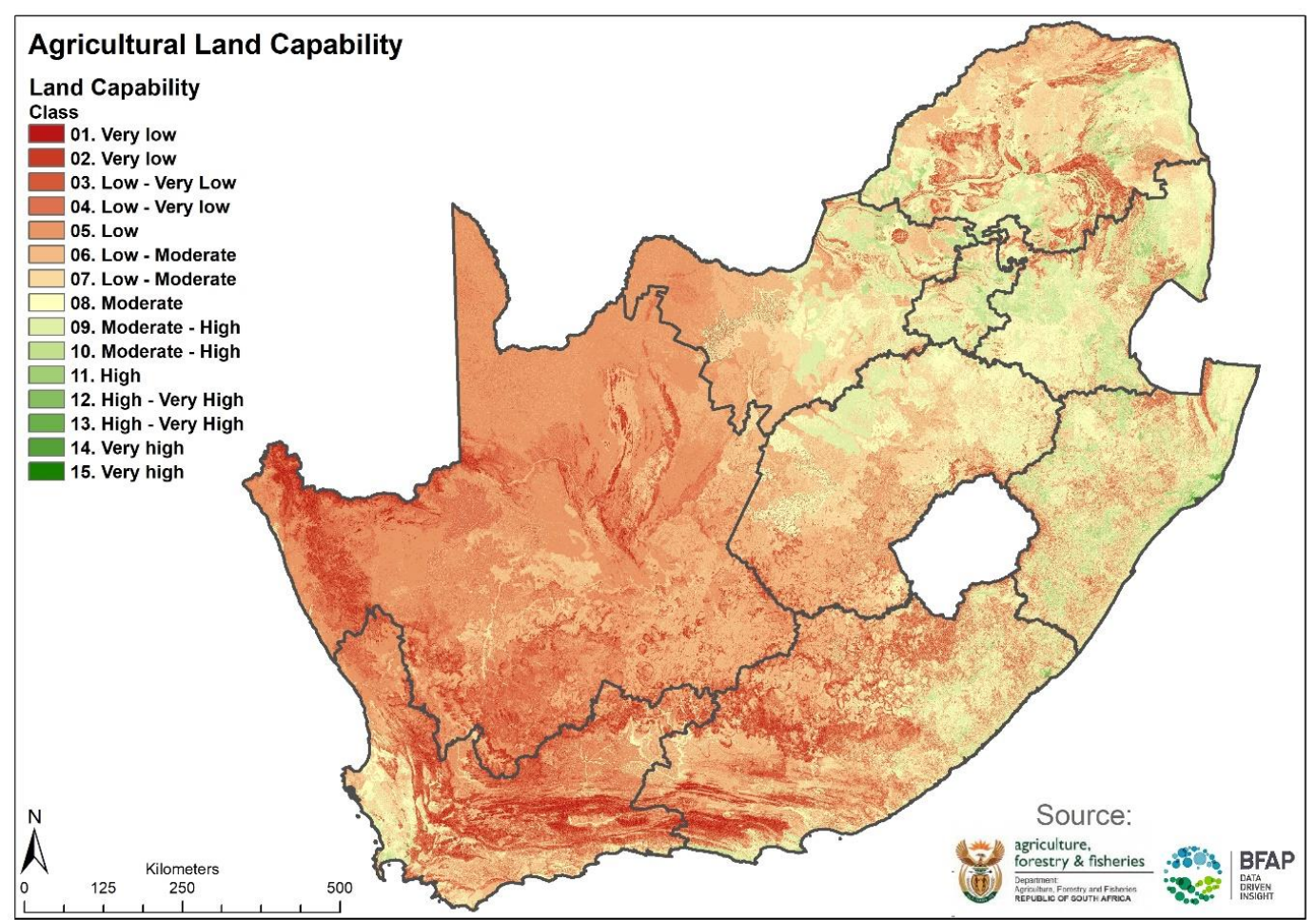


Figure 1: South Africa's agricultural land capability
 Source: DAFF (2019) & BFAP (2019)

The large tracts of cultivated land falling outside of the high land capability classification, as well as the high-land-capability area not currently cultivated, highlights the caution with which land capability datasets should be used as a base layer in policy making. Instead, key aspects such as infrastructure and access to market, water availability for irrigation, unique soil characteristics, risks related to terrain and soil management (e.g. erosion), to name a few, need to be carefully considered as well. Furthermore, the latest national land-cover statistics indicate that 46% (5.13 million hectares) of South Africa's total high potential agricultural land is unlikely to ever become (or move back into, in the case of mines) arable agricultural land, since it is covered by natural forest and shrubland, built-up areas, planted forest, waterbodies and wetlands, as well as barren and eroded land and mines.

In addition to understanding the total area under cultivation it is also critically important to understand the soil capability in relation to agricultural productivity and competitiveness. Most cultivated fields in Mpumalanga, Gauteng and KwaZulu-Natal are on high capability soils while in the other provinces, the highest proportion of cultivated fields are on marginal capability soils. In the Free State over 1.7 million hectares of cultivated fields are on marginal to non-arable soils. In the Northern Cape 36% of all cultivated fields (just under 100 000 hectares) are on so-called non-arable land. This is largely made possible through the use of irrigation; thereby contravening the natural climatic capability of the region (**Table 2**) and again highlights the critical importance of understanding the interconnections between water and land allocation, use and management.

Table 2 - Field Crop Boundaries per Land Capability Class

Land Capability (LC) Class		High	Moderate	Marginal	Non-arable	Total
Mpumalanga	Total (LC) Hectares	2 246 547	2 309 327	2 059 958	750 178	7 366 010
	Hectares Cultivated ¹	629 097	504 977	149 611	6 714	1 290 399
	% of hectares cultivated	46%	42%	12%	0%	
Free State	Total (LC) Hectares	1 040 681	2 710 414	6 853 371	2 374 450	12 978 916
	Hectares Cultivated	750 827	1 314 830	1 583 915	206 487	3 856 059
	% of hectares cultivated	19%	34%	41%	5%	
North West	Total (LC) Hectares	1 347 721	1 638 746	5 004 238	2 491 112	10 481 817
	Hectares Cultivated	479 859	680 559	990 660	158 172	2 309 250
	% of hectares cultivated	21%	29%	43%	7%	
Limpopo	Total (LC) Hectares	2 095 211	2 618 803	5 580 407	2 255 438	12 549 859
	Hectares Cultivated	432 609	421 662	483 493	27 828	1 365 592
	% of hectares cultivated	32%	31%	35%	2%	
Gauteng	Total (LC) Hectares	596 535	493 248	437 936	117 910	1 645 629
	Hectares Cultivated	223 183	119 474	43 491	2 389	388 538
	% of hectares cultivated	57%	31%	11%	1%	
KwaZulu-Natal	Total (LC) Hectares	2 522 663	2 185 723	2 754 571	1 428 974	8 891 931
	Hectares Cultivated	388 229	222 478	174 731	31 961	817 399
	% of hectares cultivated	47%	27%	21%	4%	
Eastern Cape	Total (LC) Hectares	1 086 153	1 776 631	6 805 093	7 221 222	16 889 099
	Hectares Cultivated	340 388	371 519	473 219	106 924	1 292 050
	% of hectares cultivated	26%	29%	37%	8%	
Northern Cape	Total (LC) Hectares	118	38 255	9 094 512	28 114 580	37 247 465
	Hectares Cultivated	15	9 350	163 004	95 810	268 180
	% of hectares cultivated	0%	3%	61%	36%	
Western Cape	Total (LC) Hectares	230 039	748 215	3 127 355	8 454 170	12 559 779
	Hectares Cultivated	73 726	285 734	1 109 391	432 540	1 901 391
	% of hectares cultivated	4%	15%	58%	23%	

Source: DAFF (2019), GTI (2019), BFAP (2019)

Within the context of understanding land capability, one needs to factor in land that is classified as high potential but has been degraded due to poor management practices. Degraded land includes eroded and barren land as classified in the national land cover datasets. Eroded land is defined as permanent or semi-permanent, non-vegetated erosion surfaces, typically represented by gullies, dongas and / or sheet erosion areas. Barren land can be described as bare non-vegetated surfaces; these areas are typically prone to devolve into eroded land. Eroded land is of particular interest in regions where high-potential soils and climatic suitability coincide with relatively steep terrain and high agricultural production densities. Without proper management practices in such areas, potentially productive agricultural land is threatened by degradation and would be very costly, if not impossible, to rehabilitate.

In total, eroded land has increased from 219 400 hectares in 2013 to 435 000 hectares in 2020 (99% increase), while barren land increased by 250 000 hectares (2%) over the same period (DEA, 2020; DEA, 2018). 98 000 hectares (22% of total eroded land in 2018) classified as eroded land in the 2013 land-cover is still eroded in the 2018 land-cover classification; however, an additional 338 000 hectares are classified as eroded in the 2018 land-cover that were not classified as eroded land in 2013. The majority of additional eroded land was

¹ Hectares Cultivated represents total area of field crop boundaries, including the following classifications: Irrigated Fields, Plantations, Rainfed Annual Crops / Planted Pastures, Shadenetting, Subsistence / Own Consumption.

previously classified as grassland and shrubland in the Eastern Cape, Free State and Northern Cape; this change can typically be attributed to over-grazing and bad soil management practices.

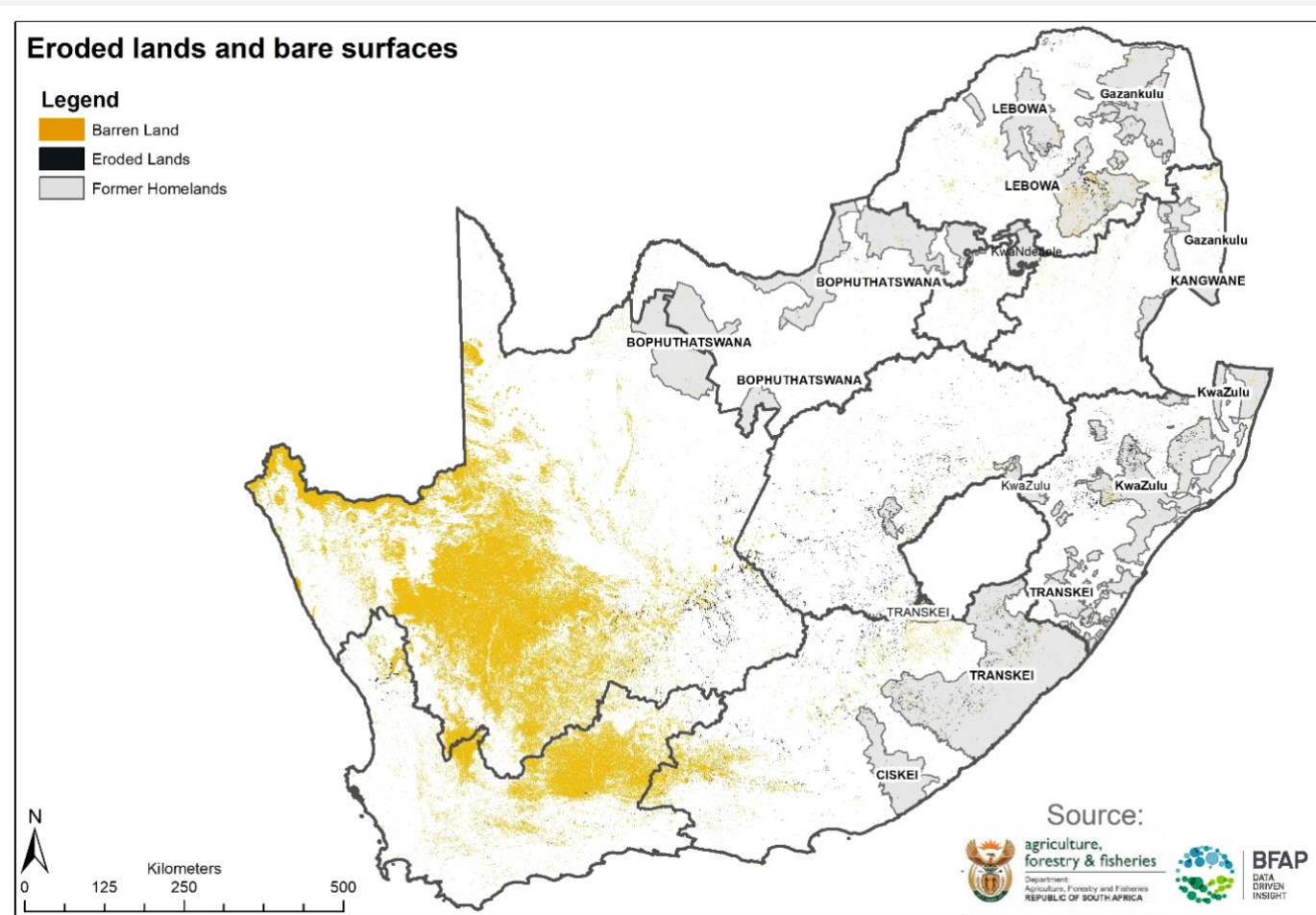


Figure 2: Degradation and former homelands
 Source: DAFF (2019), GTI (2019), BFAP (2019)

Almost all the subsistence field crop boundaries (2 million hectares) are situated in former homeland areas of which a total of 650 000 hectares (31%) is on high potential agricultural land. However, according to the 2018 land cover (DEA, 2018), 440 000 hectares of land in the former homelands are barren or eroded. 13% of the total barren or eroded land constituted high potential arable land that has likely gone out of production for a longer period of time.

In Conclusion

From the information presented on South Africa’s quantity and quality of land and land use, it is clear that a collaborative and trans-disciplinary approach is needed across sectors in order to ensure the sustainable and productive use of land in our country. Agriculture, and agricultural land use have an important role to play in South Africa’s commitments and contributions towards achieving global net zero goals through the consistent application of sustainable practices and accelerated introduction of innovative technologies and practices, for example regenerative agricultural practices. Furthermore, effective collaboration with other resource intensive sectors such as the water and energy sectors will drive technological innovation and adoption, which aims to mitigate and adapt to the climate change impacts in the Water, Energy and Food (WEF) Nexus. All the while, *productive land use* in both the commercial and rural contexts is critical to ensure food availability and affordability for all South Africans.

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