

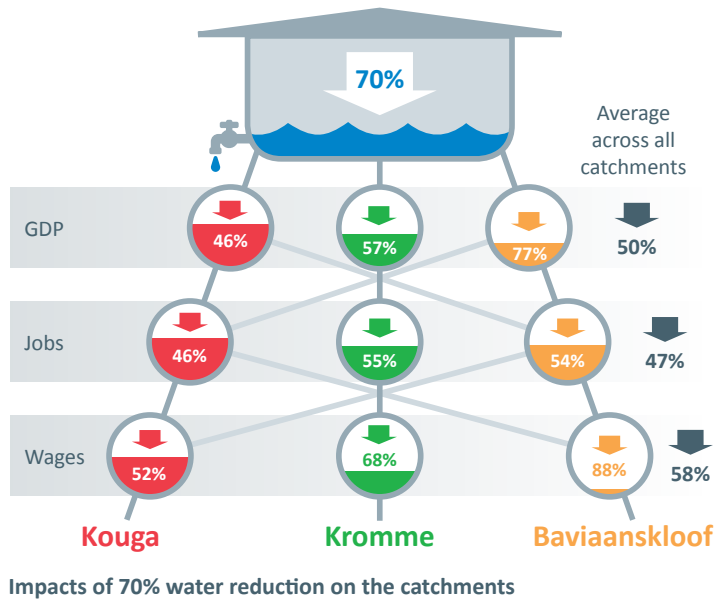


## Economic Baseline and Comparative Analysis of Kouga, Kromme and Baviaanskloof River Catchments

This report briefly summarizes the findings of a comparative analysis that researched the three Eastern Cape catchments Kouga, Kromme and Baviaanskloof regarding their macroeconomic and water profiles. Catchment based macroeconomic data is seldomly considered at municipal level, nor is the economic impact of water insecurity considered within related catchments. Nevertheless, this interconnectedness between upstream catchment development and downstream economic activity and water security cannot be underestimated. This forms a fundamental basis on which catchment management interventions should be considered. In this context, the Algoa Water Fund and the Nelson Mandela Bay Water and Economic Resilience Partnership have identified the three important river catchments Kouga, Kromme and Baviaanskloof in the Eastern Cape as critical catchments and water source areas for economic security in the Nelson Mandela Bay city region. The report titled: “Economic baseline and comparative analysis of Kouga, Kromme and Baviaans River Catchments” explores the impact of water insecurity within three important catchments that supply the Western Supply System of the Algoa Water System.

Through the application of a multi-criteria decision analysis (MCDA) tool, a decision matrix was developed to consider the ‘attractiveness’ of each catchment for funding catchment management activities. Each catchment had elements of interest, but the Kouga catchment was the catchment that ‘ticked most boxes’ overall.

Preliminary findings of the study show that a sustained 70% reduction in water supply, which is in line with the restriction imposed due to the current drought, would affect all catchments severely. It is likely to decrease GDP across the catchments (on average a little below 50%). However, there is disparity regarding impact as Baviaanskloof is seen to be taking the brunt of this with a 77% drop in GDP, while Kromme reflects a 57% drop and Kouga 46% in GDP. In addition, there would be massive job losses (on average 47%). Kromme would be hardest hit with a 55% decline in jobs, followed by Baviaanskloof at 54% and Kouga with 46%. Analysis further shows that the impact on wages would be far worse than the impacts on GDP and jobs. Wages would fall on average by 58%, with an 88% drop in Baviaanskloof, a 68% drop in Kromme and a 52% drop in Kouga.



## Context and approach

Water shortages have severe impacts on economic and social wellbeing of an area. Climate change and increased demand for water apply increasing stress on the ecosystems that supply water to rural and urban areas and create risks for all stakeholders. This is particularly the case for the Nelson Mandela Bay Metro and Sarah Baartman District city regions of the Eastern Cape in South Africa which continue to be severely affected by the ongoing drought experienced in the region, and where many catchments that supply the region and the city of Nelson Mandela Bay have been compromised.

It is important to understand that water shortages are, in many ways, more than just a lack of rainfall and require differentiated approaches to address them. For this, it is crucial to better understand the specific situation of a catchment to be able to adequately address the issues and develop specific measures designed for improving the situation. Moreover, as resources are limited, it is important to evaluate the "attractiveness" of intervention areas to potential funders to help decision makers to focus on the most suitable and maximize synergies for all.

In this context, the Algoa Water Fund and the Nelson Mandela Bay Water and Economic Resilience Partnership have identified three important catchments in the Eastern Cape as critical catchments and water source areas for economic security in the Nelson Mandela Bay city region. These are the Kouga, Kromme and Baviaanskloof river catchments that comprise the Western water supply to the Algoa Water System. This is the critical water system which feeds into the Nelson Mandela Bay city region. While the ecological aspects of these catchments are well-known, their economic

aspects and importance are seldomly considered when planning catchment management interventions.

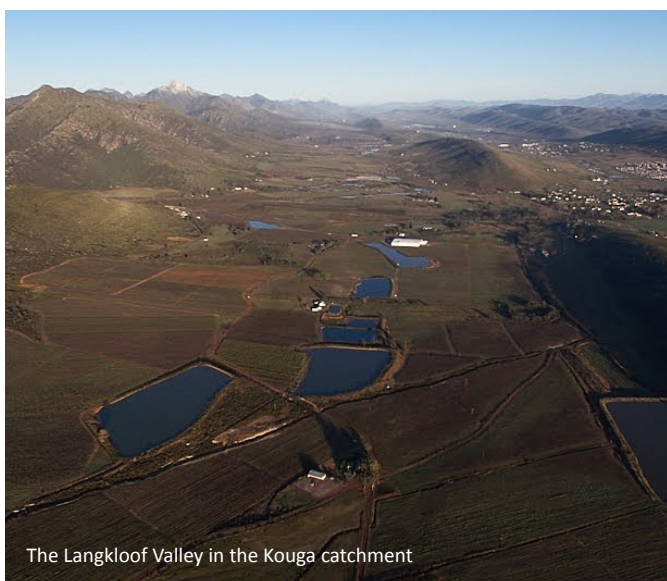
GIZ NatuReS (formerly IWaSP) within the framework of the Nelson Mandela Bay Water and Economic Resilience Partnership and the Algoa Bay Water Fund, commissioned the economics consultancy StratEcon to establish a baseline description of each of the catchments, and develop a means to compare them. The intention was to understand the economic value of each catchment and enable the Algoa Water Fund to identify the most promising catchment for developing a business case and seek potential financial funders for rehabilitation and catchment management activities.

The first step of the analysis focused on collation of data. Data on the physical and economic description of the three catchments was gathered and processed to portray the existing macroeconomic environments. Each catchment was described by its physical characteristics, demographics, economic characteristics, water dependency, and ecosystem and related system services. Subsequently, the catchments were compared with each other according to these characteristics. Subsequently, a multicriteria decision analysis (MCDA) was designed and run to assist in valuing different alternatives based on pre-defined criteria. An MCDA consists of a framework where each alternative is scored against many, often conflicting, criteria (such as social, economic and environmental). Here, the aim was to assess the defined objective of identifying the catchment most attractive for potential funders (of interventions). Since funders are not a homogeneous group with the same interests, they were differentiated into government funders, funders in the catchment, other local funders, and international funders.

Four main issue categories with affiliated sub-issues were identified by the project reference group:

- Economic issues (How important is falling income in each economic sector?)
- Social issues (How important are job losses in each sector?)
- Ecosystem benefits, opportunities and risks (Potential biophysical benefits; Financial benefits from ecosystem services; Ecosystem risks related to)
- Other issues important for funders (Biodiversity and environment; Other funders; Rainfall related)

Subsequently, the issues were scored by assigning a value from 0.0 (low score) to 5.0 (high score). This can be quantitative, if values for each issue are known, for instance the level of employment, or it can be qualitative, if



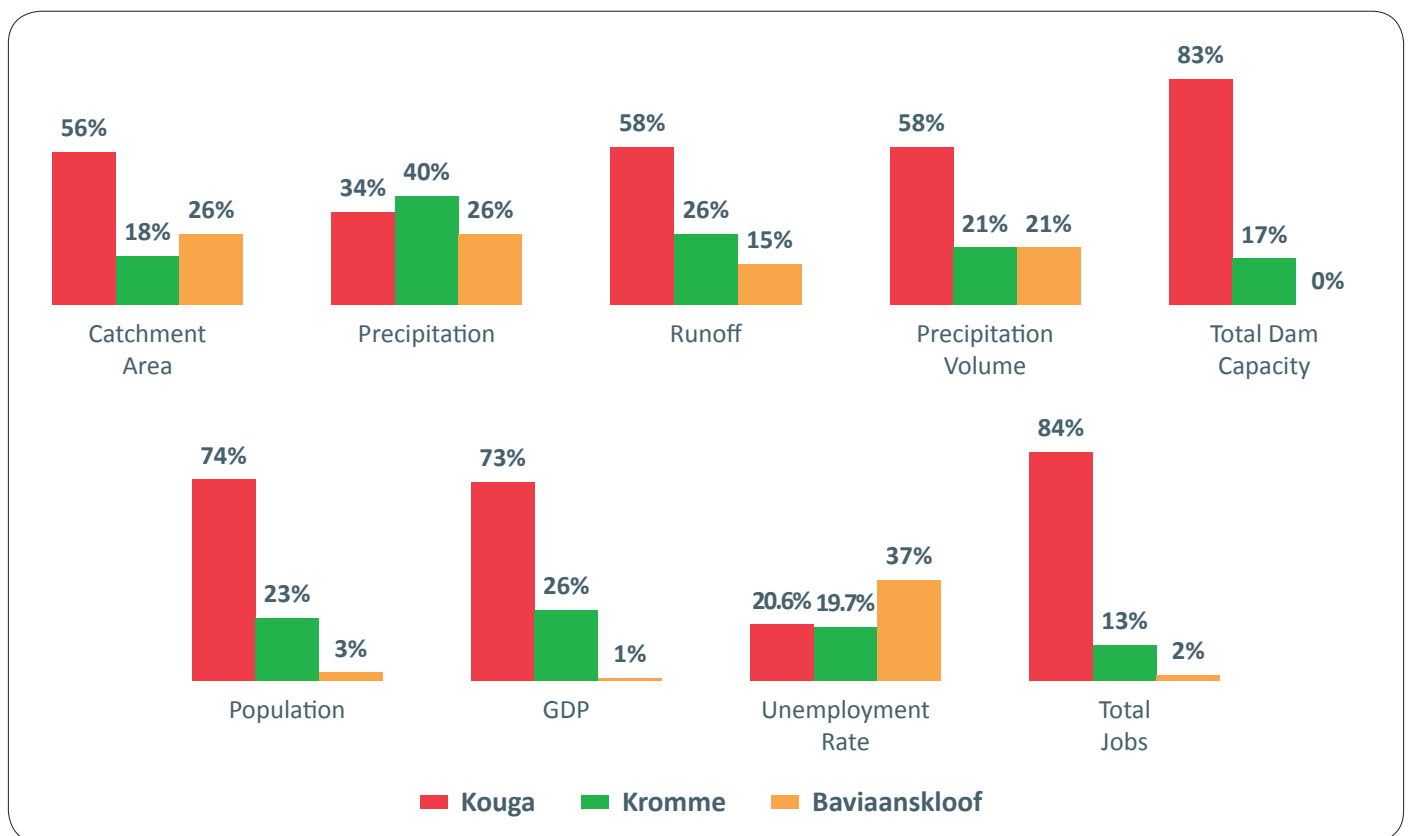
The Langkloof Valley in the Kouga catchment

the values of issues are not known or cannot be measured like the risk to tourism from ecosystem degradation. In the latter case, this was done based on a subjective assessment by stakeholders, which can be revisited later to be supplemented by further stakeholder groups. In addition to the scoring of the issues, they were also subjectively weighted relatively to each other to allow stakeholders to highlight the importance of different issues. This was done by two stakeholder groups 'Living Lands' and the 'Nelson Mandela Bay Business Chamber' with GIZ NatuReS. Finally, an overall score was calculated for each catchment, and they were ranked according to it. The scores then were compared with each other to inform the choice, based on the understanding that the alternative with the highest score provides the best of the compared solutions.

### Main findings of the economic analysis

The three catchments differ according to their physical and economic characteristics. Kouga is the largest of the three catchments (56% of the area). While it has only the second highest precipitation (34%), it has 58% of the runoff, 58% of precipitation volume and 83% of total dam capacity. It also has the biggest population with 23,404 (74%), and the largest share of GDP (73%), but only the second highest per capita income (R 62,043), GDP per capita (R 26,000), and GDP relative to the

area (R 0.5m per km<sup>2</sup>), and has the second highest unemployment rate (20.6%), while having the highest amount of total jobs of the three catchments (84%). Kromme, in contrast, has the smallest area (18%), the highest precipitation (40%), 26% of the runoff, 21% of the precipitation volume, and 17% of the dam capacity. It has the second biggest population with 7,154 (23%), and the second largest share of GDP (26%), but the highest per capita income (R 71,429), GDP per capita (R 37,000), and GDP relative to the area (R 0.6m per km<sup>2</sup>), and the lowest unemployment rate (19.7%) and the second lowest amount of total jobs (13%). While Baviaanskloof has the second largest area (26%), it has the lowest precipitation (26%), 15% of the runoff, 21% of the precipitation volume, and no dam capacity, at all. It is very sparsely populated with only 1,091 (3%), has the lowest per capita income (R27,714), GDP per capita (R17,000), and GDP relative to the area (R 0.02m per km<sup>2</sup>), and the highest unemployment rate (37%) and the least amount of total jobs (2%). Therefore, one may conclude that Kouga has the largest economy, while people in Kromme are wealthier. Baviaanskloof is an area of greater deprivation than the other two, and people are significantly poorer, which can be partly explained by the importance agriculture plays there (almost 80% of its population are employed in the sector and it accounts for 26% of GDP) that is known for lower per capita incomes.



Comparison of the physical and economic characteristics

In line with the catchments' wealth is the water expenditure compared to GDP and the size of the catchment. Accordingly, water expenditure in Kouga is 1.8% of GDP, in Kromme it increases to 2.8% while in Baviaanskloof it is only 0.9%. This result is also reflected when comparing water usage to physical area. In Kouga the expenditure is R 9,900 per km<sup>2</sup>, R 16,700 in Kromme and only R 200 in Baviaanskloof. Therefore, one may say that relatively little water is used in Baviaanskloof, increasing in Kouga, and Kromme being the most intensive water user.

Most critically, the analysis indicates that a sustained 70% reduction in water supply, which is in line with the restriction imposed due to the current drought, would affect all catchments severely. It is likely to decrease GDP across the catchments (on average a little below 50%). However, there is disparity in the impact with Baviaanskloof taking the brunt of this with a 77% drop in GDP, Kromme a 57% drop and Kouga 46%. In addition, there would be massive job losses (on average 47%). Kromme would be hit the hardest (55%), followed by Baviaanskloof (54%) and Kouga (46%). The impact on wages would be far worse than all the other impacts. Wages would fall on average by 58%, with an 88% drop in Baviaanskloof, a 68% drop in Kromme and a 52% drop in Kouga.

## Main findings of the MCDA

While this baseline description already provides a wealth of information, which is very useful in itself, the MCDA helped to shed light on the attractiveness of the catchment to different types of funding for catchment management activities. Kouga scored the highest with an overall average across all potential funders of 4.4, with Living Lands giving an average of 4.6 and NMBBC & GIZ an average of 4.3. It is followed by Kromme that

received an overall average of 2.7, distributed between 2.4 by Living Lands and 2.9 by NMBBC and GIZ. Finally, Baviaanskloof scored the lowest with an overall score of 1.4, distributed between 1.0 by Living Lands and 1.8 by NMBBC and GIZ NatuReS. Therefore, one could conclude that both groups of stakeholders are of the opinion that all potential funders, irrespective of their differences, would prefer Kouga by far. However, this does not include the nuances of the type of funders and what activities they would fund, so that each catchment depending on the respective activities may be of interest to potential funders.

## Policy Implications

- All three catchments are key water catchments for the Port Elizabeth city region but are threatened by water insecurity. A sustained reduction of water supply would have severe negative impacts in terms of decreasing GDP and wages, and job losses, the implementation of specific policies to address the water insecurity is imperative.
- The impact of water insecurity within catchments has economic impacts within the catchments, as well as downstream.
- As these catchments are part of any important agricultural region, predominantly for the export market, economic impacts in the catchments will have economic impacts downstream (e.g. port exports, food processing).
- While the initial focus should be on Kouga to gain quick wins and protect the water supply for the whole region, the other two catchments should not be ignored to avoid (further) deprivation, facilitate future development, and secure the Algoa Water System as whole.

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Hatfield Gardens, Block C, Ground Floor  
333 Grosvenor Street  
Pretoria, South Africa

### Contact:

Jonas Kertscher  
Natural Resources Stewardship Programme South Africa  
E: [jonas.kertscher@giz.de](mailto:jonas.kertscher@giz.de)  
I: <https://nature-stewardship.org/>

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