

WATER FOR THE EMSEZ MEGAPROJECT AT ALL COSTS:

A report into the absence of water governance in the Limpopo
River Catchment

by Dr Victor Munnik

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ACRONYMS

AWARD	Association for Water and Rural Development
BEE	Black Economic Empowerment
CoAL	Coal of Africa Limited (now renamed MC Mining)
CPA	Community Property Association
DEIR	Draft Environmental Impact Report
DTI	Department of Trade and Industry
DEA	Department of Environmental Affairs
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
ECSA	Engineering Council of South Africa
EIA	Environmental Impact Assessment
EJ	Environmental Justice
EMSEZ	Electro Metallurgical Special Economic Zone (south site of MMSEZ)
EWT	Endangered Wildlife Trust
IUCMA	Inkomati Usuthu Catchment Management Agency
IRP 2019	Integrated Resource Plan 2019
LEDA	Limpopo Economic Development Agency
LEDET	Department of Economic Development, Environment and Tourism
LEIP	Limpopo Eco-Industrial Park
LIMCOM	Limpopo River Commission
MACUA	Mining Affected Communities United in Action
MCPA	Malumbwane Community Property Association
MCWAP	Mokolo Crocodile West Augmentation Project
MEJCON	Mining and Environmental Justice Community Network of South Africa
Mm ³	Million cubic metres
MMSEZ	Musina-Makhado Special Economic Zone
MW	Megawatt
SEZ	Special Economic Zone
SOLVE	Save our Limpopo Valley Environment
VMRSF	Vhembe Mineral Resources Stakeholders Forum
WESS	Wildlife and Environment Society of South Africa
WMA	Water Management Area
WWF	World Wide Fund for Nature

EXECUTIVE SUMMARY

This report is aimed at encouraging and supporting democratic decision making about water in the Limpopo catchment of South Africa. It argues that in the absence of water governance for this catchment, as mandated by the Water Act of 1998, a vacuum is created in which high risk ideas such as the EMSEZ and the Musina Dam can and do flourish. The insistence that water will be found for a fossil fuel project in defiance of climate change requirements to sharply ramp down coal use, and to find that water in a closed catchment – that is a catchment in which all water resources are already allocated - are both the results of typical mega project planning that ignores local conditions and strives to overcome natural constraints by bending nature to the developers' will (Flyvbjerg 2013; 2014).

It also argues that the current initiatives of the Department of Water and Sanitation (DWS) to create an extensive catchment management area which will combine the rivers of the Limpopo North catchment with the Olifants and its tributaries, create challenging but exciting possibilities. A formal and inclusive catchment management process can harness the energies of a broad range of actors in the area who felt compelled to object to the EMSEZ plans – if it is done with active and supported citizens' participation.

This report builds on the May 2020 report on water risks of coal driven mega projects in Limpopo¹. On 1 September 2020, interested and affected parties were informed that the draft Environmental Impact Assessment (EIA) report for the proposed Musina-Makhado SEZ site clearance and township development, of the southern site, was available for public review. A large number of organisations lodged objections, both against the substance and the process, and actively campaigned against the EMSEZ. This EIA was widely regarded as a Trojan Horse for the real construction project. The objection process resulted in the formation of a loosely coordinated, very varied alliance of stakeholders in opposition to the EMSEZ project.

The provision of enough water for a water-hungry Electro-Mineral complex, estimated at around 80 mega cubic metres per year in an officially acknowledged water scarce area (see DWS 2016) was a major point of debate, criticism and worry. Appendix U of the EIA report dealt with water issues. The main questions focused on the feasibility of a Musina Dam, which was touted as delivering more than 90% of the water supply of the EMSEZ, although other local

¹ https://www.fes-southafrica.org/fileadmin/user_upload/Water_research_Limpopo_Catchment.pdf

options (e.g. recycling of waste water) and importing water from Zimbabwe were also considered.

In April 2021, a pre-feasibility study was circulated among stakeholders. It revealed plans for

- the construction of a weir in the Limpopo main stem, just downstream of the Beit Bridge. This weir will enable taking up to 60% of the Limpopo's flow, leaving 40% for "ecological requirements" downstream.
- Water will then be pumped to a settling dam, and from there into the Musina and Sand River dams. The pumps will require 130 MW and 208 MW respectively. From here, it will be pumped further to the SEZ site about 50km south with a head of about 260m.
- The Musina dam wall is designed to be 45 m high and 488 m long across the Sand River, yielding 13 Mm³/a without Limpopo water, and 57 Mm³/a with the Limpopo water. Because Limpopo River water has a high sediment load, the life span for the Musina dam would be 12 years before it is silted up. If a sediment filter is installed this could be expanded to 25 years.
- The Sand River dam is planned either 5 or 8 km from the Limpopo in the Sand River, called the Sand River Dam, with a dam wall either 63 m high and 1158 m long, or 80 m high and 2600 m long.
- If these dams are built, a total of 4000 ha will be flooded. The N1 will have to be rerouted, and a bridge over the waters of the Sand Dam built for the R508.
- It will take 8 to 10 years before this water becomes available. This is a very tight schedule, since the Integrated Water Services Report (Appendix U of the EIA) says that there is very little groundwater on the EMSEZ site itself, and warns that within 10 years, the EMSEZ will need a full 80 Mm³/a to function.

In February 2021, field research was undertaken which included interviews with the de jure owners of the land, the Malumbwane Communal Property Association or CPA², and the Dzomo la Mupo Foundation, which expresses and rebuilds deep Venda culture showing the intertwining of landscape, water and spiritual values. Both of these voices are important: the Malumbwane is but one group of people who are part of the actual majority of "diffuse water users" in the area, but whose perspectives and agendas are not taken into account. The Dzomo la Mupo foundation is an exploration and reclaiming of spirituality and an African environmentalism. This report argues that these perspectives should be strengthened and given more attention in decision making processes – including a participatory water governance

² A Community Property Association is a legal entity ... through which land reform beneficiaries could acquire, hold and manage property", see http://www.cls.uct.ac.za/usr/lrg/downloads/Factsheet_CPAs_Final_Feb2015.pdf.

system going forward. The argument is based on observation and analysis of the actors in the broad alliance of objectors, and the perspectives and powers they brought to the objection process:

- Stakeholders who had the required resources, were prepared to vigorously contest the effort by a mega project to force its way into a closed catchment, since this threatened their very survival, thus clearly showing the importance of the politics of water allocation;
- In the absence of leadership from the DWS and strong support for catchment management, the most powerful actors are de facto responsible for water governance, while other voices – although they are from the majority of water users in the area, that is the livelihood and small (emerging) farmers – are not being heard in the debate.

There is an urgent need for decentralised, democratic water governance. The National Water Act (NWA) of 1998 defines the roles of citizens and the DWS in water management. While the water resources of the country belong to all who live in it, the state acts as custodian – not owner – of these resources. Consequently, the Act expresses the clear intention of delegating water resource management to the regional or catchment level and to involve local communities. The need for participatory catchment management becomes acute when a catchment is closed, meaning that further development of water resources, like dams, are no longer feasible, and that existing water users need to improve the efficiency of their water use, and negotiate a redistribution of water resources to allow new users access to water.

The DWS has revealed that it is planning to establish a super Catchment Management Agency in the area covering the Marico and Crocodile rivers in the West, the Mokolo, Lephhalala, Mogalakwena, Sand, Nhelele, Nwanedzi rivers, as well as what is currently the Olifants River – from the Upper Olifants seriously polluted by coal mining (Witbank and Middelburg), all the way to where the Olifants crosses into Mozambique. This will be an area of widely differing stages of development of water governance, with some areas having catchment management forums and others none.

Finally, the report engages with the background dynamics driving water politics in the province: apartheid legacies (big irrigators, white farms, untransformed irrigation boards); the emerging importance of the mining economy, including coal and platinum; municipal provision and the water needs of rural dwellers. It ends with a short list of issues that need to be tackled through participatory water governance that, hopefully, will inform the development of super-CMA in the combined Limpopo and Olifants catchments. These include:

1. The long overdue transformation of the allocation and use of water resources, which currently have more in common with apartheid practices of riparian ownership than the vision of Integrated Water Resource Management in the National Water Act. In particular, the water access of vulnerable groups that form the majority of water users but have access to minimal but crucial amounts of water, needs to be protected and extended.
2. Dealing with current water quality challenges from platinum mines and dysfunctional municipal waste water works, and preparing to deal with the pollution challenges that would accompany a coal fired power station plus a number of steel and other factories, including the northern MMSEZ development so close to an internationally shared river.
3. Rivers in the area need to be protected ecologically, for example through environmental flow regulations. It is these reserves that form the basis of life in the area.
4. Climate change is already changing conditions in the Limpopo water management area, and will continue to intensify.
5. The growth of participatory water governance in the South African section of the international Limpopo basin, can also provide a powerful encouragement to similar developments in other Limpopo riparian countries and increase international co-operation, as the Inkomati Usuthu CMA IUCMA has done with Mozambique.
6. The super Limpopo and Olifants CMA could also represent an opportunity for the DWS to reinvigorate its role as the custodian of the water resources of South Africa. Water governance supported by the state will also provide an opportunity – as we have seen in the IUCMA – to practically support the participation of voices that have so far been drowned out by stronger actors with many more resources at their disposal.

1. Introduction and overview

This report is aimed at encouraging and supporting democratic decision making about water in the Limpopo catchment of South Africa. It argues that in the absence of water governance for this catchment, as mandated by the Water Act of 1998, a vacuum is created in which high risk ideas such as the EMSEZ and the Musina Dam can and do flourish. The insistence that water will be found for a late mega fossil fuel project in defiance of climate change requirements to sharply ramp down coal use, and to find that water in a closed catchment – that is a catchment in which all water resources are already allocated (Muller 2011) - are both the results of typical mega project planning that ignores local conditions and strives to overcome natural constraints by bending nature to the developers' will (Flyvbjerg 2013; 2014).

It also argues that the current initiatives of the Department of Water and Sanitation (DWS) to create an extensive catchment management area which will combine the rivers of the Limpopo North catchment with the Olifants and its tributaries, create challenging but exciting possibilities. A formal and inclusive catchment management process can harness the energies of a broad range of actors in the area who felt compelled to object to the EMSEZ plans – if it is done with active and supported citizens' participation.

This report builds on the May 2020 report on water risks of coal driven mega projects in Limpopo³, summarised in the next section below. Since its publication, a number of important developments took place. On 1 September 2020, interested and affected parties were informed that the draft Environmental Impact Assessment (EIA) report for the proposed Musina-Makhado SEZ site clearance and township development was available for public review, for a period of 50 days (until 22 October 2020). The main EIA report on the website of the Environmental Assessment Practitioner (EAP), DeltaBEC, came to around 800 pages with 20 specialist reports accounting for another 8000 pages. A large number of organisations lodged objections, both against the substance and the process, and actively campaigned against the EMSEZ. This report brings the EMSEZ saga up to date by discussing these developments and what they revealed about the project and the opposition to it.

The provision of enough water for a water-hungry Electro-Mineral complex, estimated at around 80 mega cubic metres per year in an officially acknowledged water scarce area (see DWS 2016) was a major point of debate, criticism and worry. Appendix U of the report dealt

³ https://www.fes-southafrica.org/fileadmin/user_upload/Water_research_Limpopo_Catchment.pdf

with water issues. The Appendix is discussed at some length in section 3 below. The main questions focused on the feasibility of a Musina Dam, which was touted as delivering by far (more than 90%) of the water supply of the EMSEZ, although other local options (e.g. recycling of waste water) and importing water from Zimbabwe were also considered.

In June 22, 2020, a tender was issued for a draft feasibility study for the Musina Dam. The resulting feasibility study (542 pages) was circulated among stakeholders in the ongoing debate around April 2021. The study gives a large amount of detail on the proposed Musina Dam, its dimensions, position and compares it to other, similar construction works in the world. It is discussed in more detail in section 3. The feasibility study has meant that the original, vague statement in the original plans that water will be drawn from the Limpopo, has acquired far clearer meaning. The May 2020 report had warned against withdrawing water from the Tuli Karoo Aquifer. Since the publication of the May report, the EMSEZ promoters have denied an interest in the water from the Tuli-Karoo aquifer.

In February 2021, field research was undertaken which included interviews which gave a better understanding of the situation and wishes of the community closest to the development, and the de jure owners of the land, the Malumbwane Communal Property Association or CPA⁴. Research was conducted with the Dzomo la Mupo Foundation, which expresses and rebuilds deep Venda culture showing the intertwining of landscape, water and spiritual values. Both of these voices are important: the Malumbwane is but one group of people who are part of the actual majority of “diffuse water users” in the area, but whose perspectives and agendas are not taken into account. The Dzomo la Mupo foundation is an exploration and reclaiming of spirituality and an African environmentalism.

This report argues that these perspectives should be strengthened and given more attention in decision making processes – including a participatory water governance system going forward. The argument is based on observation and analysis of the actors in the broad alliance of objectors, and the perspectives and powers they brought to the objection process:

- Stakeholders who had the required resources, were prepared to vigorously contest the effort by a mega project to force its way into a closed catchment, since this threatened their very survival, thus clearly showing the importance of the politics of water allocation;

⁴ A Community Property Association is a legal entity ... through which land reform beneficiaries could acquire, hold and manage property”, see http://www.cls.uct.ac.za/usr/lrg/downloads/Factsheet_CPAs_Final_Feb2015.pdf.

- In the absence of leadership from the DWS and strong support for catchment management, the most powerful actors are de facto responsible for water governance, while other voices – although they are from the majority of water users in the area, that is the livelihood and small (emerging) farmers – are not as prominent in the debate.

There is an urgent need for decentralised, democratic water governance. The DWS has revealed that it is planning to establish a super Catchment Management Agency in the area covering the Marico and Crocodile rivers in the West, the Mokolo, Lephhalala, Mogalakwena, Sand, Nhelele, Nwanedzi rivers, as well as what is currently the Olifants River – from the Upper Olifants seriously polluted by coal mining (Witbank and Middelburg), all the way past the Phalaborwa mining complex, to where the Olifants crosses into Mozambique. This will be an area of widely differing stages of development of water governance, with some areas having catchment management forums and others none.

Reminder of results of previous research

The 2020 research focused on the Mokolo Crocodile West Augmentation Project (MCWAP) as an example of long-run water supply problems in the development of a coalfield (the Waterberg). The MCWAP plans have since shrunk further with the unlikelihood of further coal based development in the area. The research also explored a number of dimensions of the Electro Metallurgical Special Economic Zone (EMSEZ) in the well-established context of water scarcity and climate change in the Limpopo River basin (DWS 2016). Using the emerging critique of mega projects (Flyvbjerg 2013; 2014) as a framework, the report concluded that the EMSEZ was indeed a mega-project with the characteristics of being imposed from afar (a result of international negotiations between China and South Africa within the Belt and Road initiative), which excited the interests of politicians, engineers and business people, and ignored local realities.

But possibly the most interesting and ominous aspect of the project is its defiance of nature – in the form of both water scarcity and climate change. The EMSEZ project team is going to extraordinary lengths to prove that they will in fact procure enough water for the project. They foresee an industrial future (see figure 1 below) unlocked by the creation of a huge new water supply that would support future developments including the Southern EMSEZ site with its coal fired power station and steel and related factories, the Northern MMSEZ site, including agricultural beneficiation, the Limpopo Eco-Industrial Park (LEIP), and another SEZ at Beit Bridge

(a cargo hub). In this vision, there would be water for municipal expansion as well as to support a number of planned coal mines in the area.

Another characteristic of megaprojects also applies in this case: decision making procedures are outside of the normal. The proposed EMSEZ 3000 MW plus coal fired power station is not part of national planning, and neither is the Musina dam. Stakeholders have objected to a number of procedural aspects, not least the seeming conflict of interest in which a provincial department, LEDET, is making decisions about a proposal that one of its own agencies, LEDA, is tasked with proposing.

The previous report also pointed out that the plans for the EMSEZ, as well as the plans to provide water to it, put all other water users in the area at risk. The risk is greatest for the "diffuse water users", the majority of people in the area, consisting mostly of poor rural, female headed households residing in ex-Bantustan areas. Their rights to water, under schedule 1 and general authorisations, are easy to acquire, but also easy to lose, because bigger water users' rights are more formal and stronger in law. As a result of this clear threat, the project faced fierce opposition from a broad range of local interest groups.

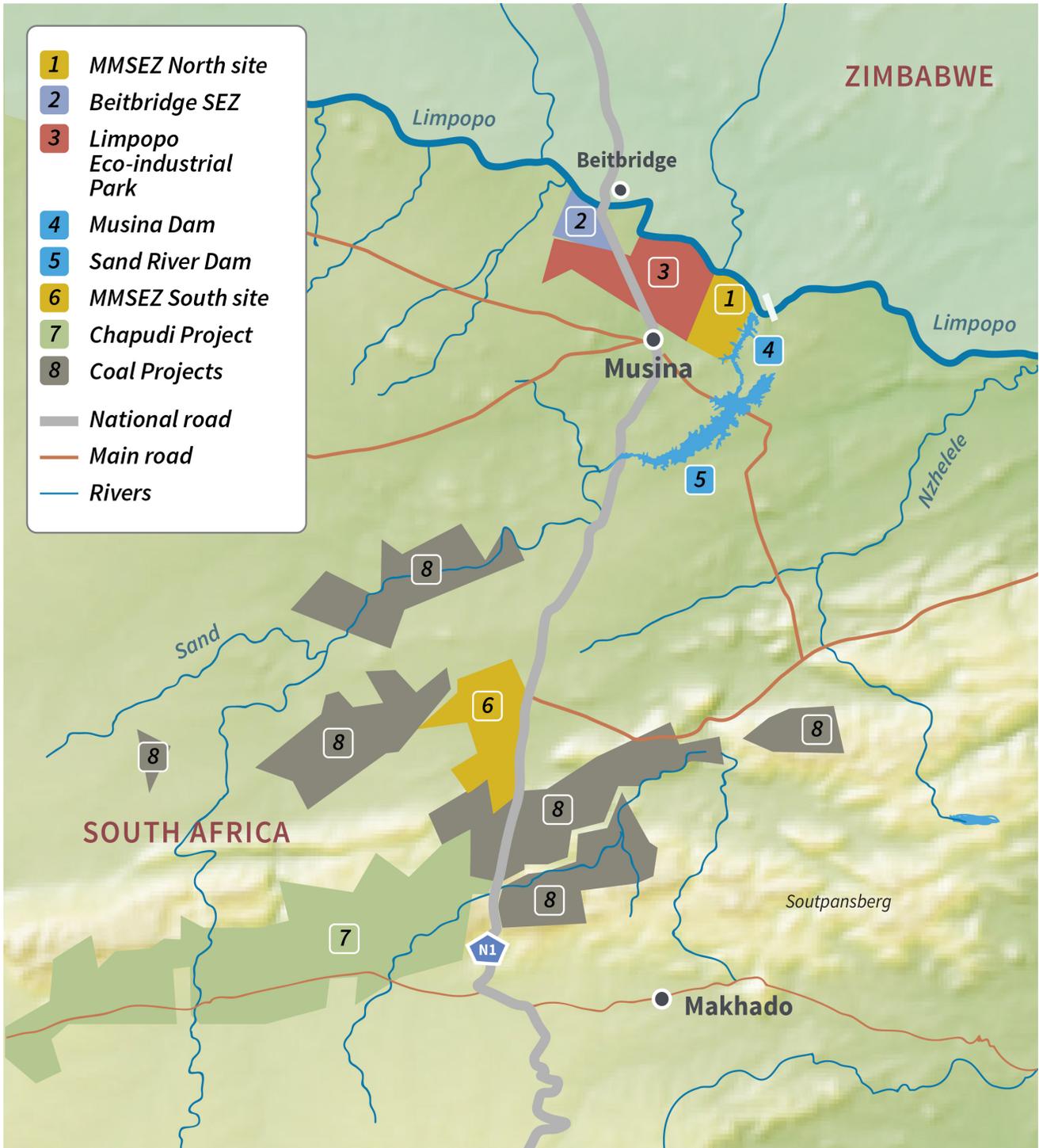


Figure 1: The future in the Musina-Makhado area if the Musina Dam and the MMSEZ become a reality. Map by Toni Olivier, based on a map in the pre-feasibility study.

The 2020 report also warned that:

1. There is no strong market for the steel and related products that would justify this development. In fact, it will represent a threat to the South African steel industry⁵. (Responses to the site clearance EIA in 2020, included disbelief at the weak reports on economic prospects for the EMSEZ.)
2. An unsuccessful project may lead to indebtedness of South Africa to China.
3. Chinese companies may well be offloading their redundant steel factories on South Africa, and offloading greenhouse gas emissions, local air and water pollution, and a large water demand on South Africa.
4. The project has international implications – through its intentions of sharing the water of the Limpopo – which in turn raises questions about water governance, or decision making, between shareholders both in the South African Limpopo catchment, and between the four riparian countries sharing the Limpopo: Botswana, South Africa, Botswana and Mozambique.

These conditions have not changed.

Important new developments are covered in this report, in particular an Environmental Impact Assessment (EIA) for a land clearance project, widely regarded by an alliance of objectives as a Trojan Horse or front for the real construction project. The objection process resulted in the formation of a loosely co-ordinated, very varied alliance of stakeholders in opposition to the EMSEZ project. While the objections were broad in nature, for this report the focus is an analysis of the water plans for the EMSEZ – without which the EMSEZ will not be possible.

For the water dimension, there are two main sources: Appendix U in the EIA, the Integrated Water Services Report, referred to in this text as the Matukane report, which raised questions around the “complexity” (read “lack of feasibility”) of the water supply options. The other is the 542 page pre-feasibility study for the Musina Dam, which became available during the research period. Note that the Musina dam, planned at the confluence of the Sand and Limpopo rivers, in fact consists of two dams – the Musina and the Sand dams. The pre-feasibility study was reviewed by two water professionals. Their work appears as Appendix A in this report.

⁵ <https://www.businesslive.co.za/bd/opinion/2021-08-03-lauren-liebenberg-chinese-run-goliath-at-musina-makhado-is-bad-news-for-ailing-sa-rivals/>

Overview of following sections

This report reports on new developments, and sets out the state of play in water politics in the area⁶. It set out to provide an update on the processes of decision making on the EMSEZ and MCWAP. However, there has not been much movement on the MCWAP, and there are questions about its feasibility. This report therefore focuses on the EMSEZ.

It gives an overview of the new knowledge that has emerged in the EMSEZ EIA in relation to planning for water sources, including (1) current estimations of water demand for the EMSEZ, (2) the proposed Musina Dam and (3) objections to the Water Services EIA (Appendix U) which provided background information confirming that there is no practical water supply for the EMSEZ, but was, however, misinterpreted in the consolidated EIA report.

It presents the perspectives of local communities on water use, including its cultural and religious significance and how that could influence debates on water aspects of the EMSEZ. These perspectives contribute alternative ways of thinking about the mega-project and the trickledown economics of “development” discourse. At the end of the research period, Earthlife Africa worked with the Malumbwane community to do an “eco-mapping” exercise to support the articulation of their perspectives and agendas.

An evaluation is given of the current state and immediate future plans for water governance, in particular progress in the establishment of a Limpopo CMA which was mooted in 2014 but not carried through. In the meantime, these functions are carried out by a proto-CMA housed in the Polokwane regional office. There were some difficulties in getting responses from the proto-CMA, as well as the national DWS spokesperson. This included the question of the capacity of the regional DWS office to deal with anticipated water quality issues from the EMSEZ and MCWAP. A DWS advisor offered the views that the officials must be too busy to engage, and that moreover, when and if water quality problems arise, the capacity to regulate them will follow. The questions are attached as Appendix B.

There seems to be little current involvement by the Limpopo Basin Commission (LIMCOM) in water governance, despite 2010 plans to do so. A recent workshop suggested that its focus is on the immediate issue of erosion control in communal areas to protect soil fertility as well as slow down sediment flows into dams leading to a loss in capacity (volume of water that the dams can hold). LIMCOM declined to comment on questions sent to them.

⁶ The following sections correspond to questions in the FES contract.

The report engages with the background dynamics driving water politics in the province: apartheid legacies (big irrigators, white farms, untransformed irrigation boards); the emerging importance of the mining economy, including coal and platinum; municipal provision and the water needs of rural dwellers. It investigates the dynamics of the effective rule by big users, especially agriculture, and what is needed to enable democratic control over water governance.

The report ends with a short list of issues that need to be tackled through participatory water governance that, hopefully, will inform the development of super-CMA in the combined Limpopo and Olifants catchments.

2. Objections to the Environmental Impact Assessment for land clearance

A major development since May 2020 has been the release of the EIA into the clearing of land for the EMSEZ on the Southern Site⁷. This EIA was widely seen as the terrain for a determined struggle against the project, because it would open the door to the “real projects” without interrogating them. Objections came from a wide range of organisations which shared analyses of the EIA among themselves and co-operated on process issues. In this section we look at

1. the objectors,
2. the most important objections
3. alternatives proposed
4. and (in conclusion) what the wide range of objections might mean.

Wide range of objectors

It is striking that a wide range of organisations, from local concerned stakeholders to national environmental justice and conservation organisations, in many cases supported by lawyers, academic and applied researchers, came together to object to the site clearance EIA. There has also been lively reporting in the media on the issues resulting in a national debate and awareness. The following is an indicative but not exhaustive list of the participants:

- Vhembe Mineral Resources Stakeholders Forum, an alliance of a number of local interests with a track record of opposing coal mining plans of MC Mining (previously known as Coal of Africa) presented by experienced attorney Christo Rheeders;
- the Philip Herd Reserve, a nature reserve on the Nzhelele River near Musina;
- SOLVE, (Save our Limpopo Valley Environment), an alliance of local people including farmers, tourism and hunting farms and local youth,
- groundWork, an Environmental Justice organisation working on industrial pollution and climate change issues,
- Earthlife Africa, an EJ organisation active in Limpopo province, with a track record in Lephalale coal field,

⁷ The southern site is next to Makhado, where the electro mineral complex is to be built – the power station and steel factories. The Northern site is at Musina, where both a transport hub and a light industrial complex for beneficiation of agricultural produce is to be built. The northern site has received clearance and one of its first decisions was to award 8 tenders, including the feasibility study for the Musina dam, which is discussed later in this report. The Southern site is known as the EMSEZ, while MMSEZ stands for both sites.

- Centre for Environmental Rights, environmental lawyers working with groundWork, Earthlife Africa and other organisations
- MEJCON, a national alliance of communities and activists affected by mining
- MACUA – Mining Affected Communities United in Action, a national alliance of communities and activists affected by mining
- WESSA, Wildlife and Environment Society of South Africa, a well established conservation group
- EWT, Endangered Wildlife Trust, another well established conservation group, with conservation projects active in the area
- WWF, World Wide Fund for nature, yet another well established conservation group, with conservation projects active in the area
- Birdlife Africa
- All Rise attorneys, also involved in cases opposing coal mining in KZN (Somkhele and Fuleni)
- Eco-products, a local (Makhado) business that produces oil and cream from baobabs
- Dzomo la Mupo,
- Malumbwane and Mudimeli communities.

Objections to the EIA reports

A large number of objections dealt with the unconvincing reports on accessing water in a closed catchment. This is pursued in detail in the next section. Numerous other objections dealt with climate change, local pollution anticipated from the coal fired power station and proposed steel factories, the disturbance of eco-systems, including birds, and insects, the removal of vegetation, in particular of protected trees including the iconic and culturally important baobab tree, and the destruction of mopane trees, which host the culturally important food known as mopane worms.

There were also a number of objections about the process that was followed and the apparent conflict of interest when LEDET makes decisions about a proposal from its own agency, the LEDA. These are likely to become legal challenges to the process. There are also challenges to the land reform process and the treatment of the owners of the land, the Malumbwane, as well as indigenous spiritual relationships to graves and other sacred places. The objections process resulted in a growing working alliance between a wide ranging group of actors in and beyond the area. This is discussed further in section 6.

Climate change objections

The carbon intensity of the EMSEZ formed the basis of several objections. The planned coal fired power station is not included in current national planning (the Integrated Resource Plan 2019)⁸. It is also in clear defiance of the global 2050 deadline to stop all burning of coal for electricity. The climate change impact report for the EMSEZ (Appendix O, done by Promethium Carbon) found that the project could only go ahead if an ambitious set of low carbon and other emission intensities for the metallurgical plants could be met, and even then, the project would only qualify under a less than 2°C warming scenario and not the more liveable 1.5°C scenario.

For the coal fired power station, the report also set a precondition: “the construction of a coal fired thermal power plant should not be approved unless the plant is fitted with a carbon capture and storage unit that can sequester ALL emissions from the combustion of coal from the starting date of operation” [Appendix O: 3]. A group of Chinese investors immediately declared that they were not prepared to meet these standards.

Appendix O also recommends a reconsideration of the carbon intensities after the first 5 years. According to a supporting letter from Prof Bob Scholes⁹, a climate scientist at Wits University, the carbon emission intensities are unattainable, and the idea of revising carbon intensities after the first 5 years of operation does not make sense.

The Prometheum report rated the impact of the project on climate change as ‘high’ and predicted that “...over the lifetime of the project (it) will consume as much as 10% of the country’s carbon budget. The impact on the emission inventory of the country is therefore HIGH.” (2019: 2).

Ignoring local culture and local knowledge

The WESSA objection shows how the EMSEZ EIA had ignored current and local knowledge about the value of sustainable use of baobab trees in the local economy, specifically for poor rural women. WESSA quotes the research of Dr Sarah Venter, who had established a company in Makhado, in 2005, to produce baobab products which sources directly from rural women and is an incentive to maintain natural habitats.

⁸ At the time of writing, there is pressure, for example from the Presidential Climate Commission, to reduce the allocation of coal based electricity in the IRP 2019.

⁹ Prof Scholes has since passed away.

- Baobab trees produce a fruit that can be processed into a 'superfood' known for its unsurpassed nutritional makeup and becoming increasingly popular on the organic food market. A secondary product is a high value cosmetic oil, known as baobab seed oil.
- The combined value of the baobab powder and oil that can be generated from the trees on the SEZ site alone totals R2 800 000.00 per annum. Regional climatic conditions have resulted in the baobab trees at this site taking 200 years to grow to a size where fruit can be produced. The number of trees the SEZ plans to remove constitutes a total loss to the economy in the region of R569 700 600.00 much of which would have gone directly to local residents and not distant shareholders.
- The suggestion to relocate almost half the baobab trees is ludicrous for two reasons. Firstly, where would these trees be relocated to as they occupy a very narrow environmental niche? Surely the relocation area requires an EIA before it is disturbed. Secondly, the cost of relocating a baobab depends on its girth and the price ranges from R 20 000 to R100 000 per tree. How would the project budget for the extraordinary cost that the proposed relocations would incur?
- A preliminary, alternative business plan for the MMSEZ area indicates that income from harvesting baobab fruit alone could potentially benefit up to 250 women per year with a total income generation of R870 000 per annum. The processing of the fruit would provide up to 40 seasonal and permanent jobs per year.
- Baobabs are ecological keystone species that provide important roosting and nesting sites for many species of bats, birds, reptiles and mammals, as well as fruit and flowers as a food source.

WESSA also objected that the EIA completely failed to mention the mopane worm, a regionally important edible insect. The economic value of mopane worms is most evident at the informal level where the poorest of the poor collect this free and nutritious food and eat it themselves or sell it on to urban markets to generate an income. Mopane worms can be found at many urban centres, including Johannesburg, Potchefstroom and Tzaneen, and are even exported.

Over time, the baobab debate became both absurd and alarming as it became clear that the EMSEZ proponents had no plan and no budget for the supposed offsetting, which involved plans to move the baobab trees and replant them somewhere else.

Tourism and a sense of place

There are many game, hunting and tourism farms in the area, including some affiliated to members of SOLVE. Their owners objected that the EMSEZ would disturb the “sense of place” of these businesses. In the objection lodged by Ekland Safaris – not a member of SOLVE but rather a large tourism and game farm directly south of the proposed EMSEZ site (bordering it), owned by Saudi Arabian prince Mohammed bin Salman¹⁰. This “sense of place” derives from “the extensive areas of natural vegetation and the presence of the iconic baobab tree, combined with healthy ridge and mountain vegetation and the ever-present Soutpansberg mountains in the background, standout koppies and the drainage lines associated with the Sand River. This combination of landscape types is attractive resulting in tourists being drawn to the area to visit the many game farms and nature reserves”¹¹.

There would be noise from the operations of the coal fired power station and the various steel factories, including masses of material being brought onto site. Over time, the whole area would be transformed in such a way that it could no longer serve as a backdrop to tourism and hunting activities. In its comments, the EAP acknowledged that “the proposed MMSEZ project will have a high negative impact on the sense of place of the study area. This impact will negatively affect tourism activities, which include the Ekland Safaris property and its visitors.” This would apply to all tourism and hunting operations in the area, which rely on a “sense of place” to draw their clients into the area.

“Fatally flawed”

Two local groups expressed their opposition in no uncertain terms. The first is the local alliance, SOLVE, who used a barrage of Facebook posts, attended – with many others – public participation events and organised local meetings. According to SOLVE on its Facebook page:

- This Chinese SEZ (Special Economic Zone) must, can and will be stopped. The draft EIA presented at Public Participation meetings in the Limpopo Valley is fatally flawed!
- Water sources for 80 Million Cubic Metres per annum needed is based on fanciful thumb-suck theories, including piping water from Zimbabwe, Botswana and building a dam on the ‘Sand River!

¹⁰ See https://en.wikipedia.org/wiki/Mohammed_bin_Salman

¹¹ This description is taken directly from the EAPs letter to Ekland Safaris, on line as part of Appendix G, copies of letters from stakeholders (objections).

- 6000 Hectares of pristine bush PLUS over 100,000 protected trees (including baobab, marula and mopane) will have to be moved to a yet to be identified “biodiversity offset site”!!!
- The SEZ project’s total emissions from the project being up to 16% of SA’s total carbon budget”
- Over 180 so-called heritage resources are identified, including ‘stone-age’ sites, graves & burial grounds JOBS - fanciful projections of thousands of jobs for locals are a straight falsehood! Jobs will go to Chinese nationals!
- The coal fired power station is being played down by presenters, but it will be built, polluting air & water!
- The future of productive Farming & a growing Tourism industry is under fatal threat!

Another summary was posted on the NOTOSEZ website (www.notosez.org), which argued:

- The negatives of this proposal outweigh the positives, so why has EAP recommended approval?
- The Governance of this proposal is flawed – the same team that are proposing the EMSEZ are appointed to approve it. A national decision making body is needed.
- We object to this being a 120 year deal for a coal power station. This is against every climate goal South Africa committed to achieve.
- 95% of the water needs will come from the Limpopo – and NO impact assessment has been done for the water users and aquifers downstream. The proposal should fail on these grounds alone.
- There is no assessment of the feasibility, environmental impact or other consequences of building two enormous dams in the Sand River.
- Why has a R12.3Bn “unsolicited quote” been received to build TWO dams, from whom?
- The water scientists have made a critical error in their method of assessing the water risk and a review of their work should be undertaken.

Alternatives

A number of alternatives to the EMSEZ were produced during the objections phase and the uneasy lull that followed. Among these are the Malumbwane’s own vision for using the land reform land (see below), Mupo’s vision, as well as the Vhembe Agri Multiplier plan, which proposes a water harvesting for the expansion of irrigation along the tributaries to the Limpopo.

There is also a commissioned piece by international consultants (Systemiq) called “Musina-Makhado Special Economic Zone: An alternative, higher impact model”. Other proposals are in process. This shows that there is energy and commitment in civil society to participate in decision making, specifically but not only in water governance. This argument is pursued further in section 6.

3. The EMSEZ and the new Musina Dam

An area of intense interest and concern has been the provision of water to the EMSEZ. It has become clear that no less than 93% of the EMSEZ water supply would have to come from the proposed Musina/Sand River dam scheme. There are other sources, (1) small sources such as treated waste water works water in Musina and (2) options to import water from north of the Limpopo, which also seem to be conceptual (just ideas) at this stage.

Two documents emerged during the research period, one a report “Integrated Water Services Report”, Appendix U of the EIA, and the other the pre-feasibility study for the proposed Musina Dam, actually two adjacent dams in the Sand River close to its confluence with the international Limpopo River (hereinafter referred to “Musina Dam”). The authors of Appendix U clearly had access to a version of the Musina Dam pre-feasibility report as they refer to it. However, the public had no access until the prefeasibility study was circulated amongst the objectors. Also, the authors of the pre-feasibility study report do not reference the Integrated Water Services Report.

Engineers’ assessment of pre-feasibility study

For purposes of the current report, a team of two engineering professionals (one being a registered professional engineer) were commissioned to assess the pre-feasibility report. (This appears as appendix A to the current report). Their findings were broad, but for the purposes of this discussion we focus on a series of important flaws (author’s remarks follows in brackets):

- There is no conceptual design of the dam(s) and associated infrastructure in the study, making it difficult to judge the pre-feasibility.
- The lack of a conceptual design means that it is not possible to arrive at a possible investment cost for this project and whether the project might be able to pay back to the investors both in economic as well as financial terms.

- The report does not offer a preliminary on-site geotechnical investigation for recommended dam and weir sites (meaning that there could be unanticipated difficulties for construction which may affect costing and construction time).
- The report does not sufficiently address options for institutional arrangements and associated compliance with legislative requirements (nor does it give an estimate of how long it will take to navigate the regulatory requirements). In particular, it is not clear through what process permission from the three other Limpopo riparian countries to construct the weir and also pump a large amount of water from the Limpopo will be sought, and how long that may take.
- The study does not report on any possible engagement with prospective investors such as municipalities, the Department of Water and Sanitation or Lepelle Northern Water to consider integration with existing water supply infrastructure in the area.

Plans for the Musina Dam

The plan for the Musina Dam starts with the construction of a weir in the Limpopo main stem, just downstream of the Beit Bridge. This weir will enable taking up to 60% of the Limpopo's flow, leaving 40% for "ecological requirements" downstream. This is 60% of the estimated flow of 1714 Mm³, which comes to around 1 026 Mm³.

An earlier claim that only "flood waters" will be harvested is not referenced in the pre-feasibility study. A multi-purpose dam with the main function of flood protection, the Mapai dam, is being planned further down on the Limpopo and closer to the floodplains themselves, in Mozambique.

There is a marked seasonal flow pattern in the Limpopo, with high flow from November to April, and a much lower flow (around 10% of the high flow) in the other six (winter) months. The plans suggest that there will be pumping from the Limpopo in the winter months as well. As explained in the previous report (Munnik 2020), the Limpopo River and its shallow and deep aquifers are interconnected, therefore abstraction particularly in the winter months will affect the system as a whole.

According to the proposal for the Musina Dam, the Limpopo River water will then be pumped to a settling dam, and from there into the Musina and Sand River dams. The pumps will require 130 MW and 208 MW respectively. From here, it will be pumped further to the SEZ site about 50km south with a head of about 260m.



Fig 2: Musina and Sand dams as presented in the pre-feasibility study. Map by Toni Olivier.

The Musina Dam is the smaller of two dams that are planned. Its dam wall is designed to be 45 m high and 488 m long across the Sand River, projected to yield 13 Mm³/a without Limpopo water, and 57 Mm³/a with the Limpopo water. Because Limpopo River water has a high sediment

load, the life span for the Musina dam would be 12 years before it is silted up. If a sediment filter is installed this could be expanded to 25 years.

But this won't yield enough water for the EMSEZ and other projected water users. A second, much bigger dam would have to be built at the same time, either 5 or 8 km from the Limpopo in the Sand River, called the Sand River Dam. In the first scenario, the dam wall would be 63 m high and 1158 m long, and in the second scenario (Sand River Dam 2), 80 m high and 2600 m long. Combining the Musina and Sand River (1) dams (with water from the Limpopo) is expected to yield between 225 and 280 Mm³ per annum, and the Musina Dam plus Sand River (2) would yield between 300 and 368 Mm³ per year.

If these dams are built, a total of 4000 ha will be flooded by these developments, much of it in the Musina Nature Reserve. The N1 will have to be rerouted, and a bridge over the waters of the Sand Dam built for the R508. These costs have not been considered in the pre-feasibility study.

The pre-feasibility study claims that it will take 4 years to build the two dams, and 2 years for them to fill up with water. If it takes another 2 years for regulatory permission (including from LIMCOM, as well as a water use license from DWS, and an EIA), it will take 8 to 10 years before this water becomes available. This is a very tight schedule, since the Integrated Water Services Report (Appendix U of the EIA) says that there is very little groundwater on the EMSEZ site itself, and warns that within 10 years, the EMSEZ will need a full 80 Mm³/a to function.

A complex plan in a complex situation

The water impact report¹² by Pretorius and Matukane provided an in-depth context for the water dimension of the EMSEZ plan. However, it showed signs of being produced under pressure. The Engineering Council (ECSA) Registration Number for Mr Matukane, co-author, was missing. Section 9.2, which dealt with the "complexity of water sources", in other words, the discussion of the many challenges and unfounded assumptions in the EMSEZ water planning, remained in note form, pointing to incomplete analysis of these challenges.

The report showed a reluctance to spell out constraints on water supply, preferring to refer to the "complexity" of the situation rather than identify the constraints. This could be the result of the overcautious and deferent way in which the authors of the water report presented their

¹² Matukane and Associates, Appendix U to the EMSEZ EIA

findings – in particular, using the concept of “complexity” as a polite way of pointing out that some plans were impossible. However, a careful reading of the Matukane report – given below – indicates the very real constraints for water supply for the EMSEZ. The contents and conclusions of the water report were not properly reflected in the consolidated EIA report, a serious flaw. Thus, the many reservations and unfounded and unscientific assumptions pointed out in the Matukane report, are ignored in the main report. The Matukane report states, among others:

“...the water demand is substantial if compared to the current water usage in the region. It will become clear that water demand can only be met by current local resources for minimal usage at commencement of the project. As the implementation progresses, the demand for further construction and later process water will grow at an increasing rate, soon to be far beyond what can be met by any possible local supply. Tapping from resources further off, becomes incredibly complex.” (p. 6).

And again:

“The MM SEZ Southern Development site currently has no direct access to any sustainable water resources sources, apart from groundwater. As discussed, the groundwater potential of the area is very low. Over usage will lead to dewatering, with lowering water tables impacting on the environment, and the authorizations and existing commercial interests of others. (p. 39)

This means that construction phase demand for water on the EMSEZ site in Makhado will quickly outstrip locally available groundwater resources. This creates the possibility for local over-use of water, which implies serious risk for other water users in the area. The more unrealistic the timeline for the completion of the Musina and Sand River dams, the bigger these risks will be.

The report warns that the EMSEZ (Makhado site) water demand of 80 Mm³ will be reached “within 10 years of commencement”, and that “for any supply for industrial use, water will need to be transferred from where available to the site.” (p. 39).

So, if the Musina and Sand dams are not built within a shorter time span than 10 years, there will not be enough water for the EMSEZ to operate. This will tempt the complex to use other water – or it will stop operation.

Expensive water, high energy demand

The Matukane report warns: "The infrastructure requirements to achieve this will make the supply of water to this area complex and with a high cost pertaining to both capital and operational expenditure." (p. 40). Even if the Musina dam was feasible, it would be expensive and result in an expensive water supply. The Matukane report states: "with a capital loan of R13,891,615,668 ... repayable over a period of 20 year, and considered at full supply volume, the capital cost portion of the supply is calculated to be R10.86 per cubic meter (including VAT), (see p. 48). However, the later pre-feasibility study states "it appears at this stage of the study that the most viable price for most of the (investment) scenarios is a minimum of R14.50/m³. This pricing will cover up to 24% of the base case construction costs increase and still maintain the expected equity return of 10%." (p. xxiv).

It seems that this price is for water at the Musina and Sand dams. But an extra component to convey this water 50 km far and 260 m uphill to the EMSEZ site would need to be added, if indeed that energy would be available in the national system – calculated by the Matukane report as resulting in an annual electricity bill of R193,500,188 (excluding VAT), and therefore an energy component of the water cost of around R1.67/cubic meter. This indicates a more likely cost of R16.17/m³. For comparison, the charges to most industrial consumers from the Trans Caledon Authority (DWS's dam building agency) for water from the Lesotho Highlands Water Project is R3.33 per kilolitre, while the projected cost for the – also expensive - MCWAP water is R12.67¹³. Raw water tariffs are widely subsidised in South Africa, according to the National Water Master Plan.

However, it is well known that costs on mega-projects like this one can escalate beyond control, which would make the water completely unaffordable, and tempt the developers to turn to other water sources and in so doing, put pressure on other water users.

The other 7%

The Matukane report also points to other scattered and in some cases also conceptual sources. They are:

¹³ See

<https://www.dws.gov.za/Projects/WARMS/Revenue/APPROVED%20TRANS%20CALEDON%20TUNNEL%20AUTHORITY%20-%20RAW%20WATER%20TARIFFS%20%202020-21%20FY%20%202021%2022%20FY%20pdf%20file.pdf>

- Groundwater could be drawn from aquifers on the actual northern and southern sites, but at least on the Southern (EMSEZ) site, these are of low potential and completely inadequate for the first, construction phase.
- There are plans to reuse purified sewage effluent (cleaned sewer water) from the Vhembe and Musina WWTWs, However, these WWTWs are currently overloaded and one of them, Musina Singelela WWTW, is on the list of 40 worst performing WWTWs in SA. Before this water could be used, there would have to be a concerted effort to improve the performance of these WWTWs. This will also require additional capital investment to achieve the reuse.
- Some water currently not used by Musina (again a relatively small amount, 4.4 Mm³) could be ceded by the municipality to the EMSEZ for a limited time period (presumably until the “Musina Dam” is built), and a small amount could be returned to Musina municipality from the copper mine borehole which is currently not in use.
- The Eastern Limpopo wellfield (boreholes along the Limpopo): the report argues that “a considerable volume of water is authorized from the Limpopo along the farms Vryheid, Bokveld and Malala Hoek, approximately 20 Mm³/a will be drawn from this 13 km stretch of Limpopo - Alluvial Aquifer to meet the SEZ requirements. The availability of this water still needs to be confirmed in the Limpopo main-stem hydrological study that is foreseen...” (p. 21). The Musina Dam feasibility study of March 2021 cautions against using any groundwater, as this resource is already overexploited, echoing a position taken in the DWS 2016 Reconciliation Strategy for this area.

Northern options

There are also a number of “Northern options”. This includes:

- The Zhovhe dam in the Umzingwani River. However, it is a very sandy river bed and water released from the dam may not reach the Limpopo, since it is likely to be absorbed into the aquifer. Taking this water will sterilise any recovery in commercial and small scale irrigation along this Zimbabwean river.
- “A further two Zimbabwean options are on the Save River system. The Save River reaches the Indian Ocean approximately 500 km north of the Limpopo River mouth at Xai-Xai. The Tukwi Mukosi dam in the Tugwi River, water relayed via open canal to the Runde River, from where it conceptually can be pumped approximately 185 km to Beitbridge. The Tukwi River flows into the Runde River

further downstream. It was estimated by others that the yield of this dam may render 175 Mm³/a to South Africa.”

- A further potential option is an envisaged dam, referred to as the Runde Tende Dam, higher up in the Runde River. Depending on the wall height, this dam may conceptually render between 215 and 500 Mm³/a to South Africa via a pipe system along the same route as the Tukwi Mukosi Dam water.
- Botswana options including possibilities from the extension of an envisaged Botswana scheme to supply water from the Zambezi - Chobe River to the Maun area”
- The report (p. 9) also mentions the possibility of rerouting the Bubyee- and Nuanetzi Rivers.

High risk for other water users

The Matukane report points out that the reconciliation of water supply and demand in the catchment (DWS 2016), has severely underestimated the industrial water requirement for the EMSEZ which is now set at 80 Mm³/a. The DWS estimate was less than half of that, at 35 Mm³/a. The clear implications are that the DWS-LRS 2017 does not make adequate provision for EMSEZ water demand, and thus (1) exposes other water users to water risk as a result of inadequate planning and (2) the EMSEZ water decisions should not go ahead until the DWS-LRS is revised or updated to take this into account. The report concludes that the impact of the EMSEZ on water resources should be seen as “high negative” and after mitigation “medium negative”.

That this does not deter the developers is alarming, because the risks that plans for the EMSEZ water supply hold for other water users in this water scarce catchment, are very real. In typical mega-project thinking, the developers insist that the constraints of nature can be overcome, and that there is a water solution to the water demands of the EMSEZ, however unlikely these may be. Only now, there are two mega-projects proposed, the one the steel factory-coal fired power station- coal mines complex, and the other two big dams and a complicated water harvesting and storage option in the Sand River.

In light of the lack of feasibility of the plans above, it is highly likely that current water users will be prejudiced if any of the EMSEZ plans are set in motion. This includes the “diffuse water users”,

a large number of poor, rural and often female headed households who use small amounts of groundwater, which can disappear, as it did in Mudimeli with even small disturbances to a groundwater level. It also includes irrigation farmers, small and large scale, who produce food and provide jobs, and are important to the national economy. There is also a substantial danger that these plans could be partially implemented with detrimental effects, which will disturb current water supply arrangements on irrigation scheme, municipal, farm and rural household scale.

Debates around water for the EMSEZ show a remarkably thorough scanning of water resources that may become available in the region. Old ideas and practices – for example storing Limpopo river water in off-channel dams – are also recycled in various forms. But it leaves us with a better understanding of what these resources are. They also show a typical refusal to accept the realities of a closed catchment – a catchment in which all available water resources are already allocated to users. It is typically in these conditions that water governance, through co-operation between water users in the catchment, in which they understand and accommodate each other, becomes an urgent priority. In fact, the DWS has recognised this principle, which was enshrined in the Water Act of 1998, by declaring that it is moving forward with the establishment of a Catchment Management Agency for the Limpopo. This important development will be taken up below.

4. The perspective of local communities on water use

This section focuses on cultural and religious significance of water and nature, and how that could influence debates on water aspects of the EMSEZ. It also focuses on the stakeholders physically closest to the proposed development, the Malumbwane clan. It is based on interviews in early 2021, plus documentation that became available since May 2020.

Community perspectives often refer to a sacred bond between people of the Soutpansberg and the area they live in, particularly people of Venda descent. In the practice of vhoMphatheleni Makaulele of the Dzomo la Mupo (Voice of Nature) Foundation, for example, this is expressed in an original, indigenous knowledge of and relationship to nature.

In perhaps more immediate terms, the Malumbwane community is struggling to keep hold of the land which their Communal Property Association has won back through a process of land

reform. For them livelihoods, land, water use and access to the ancestors via graveside visits all form a continuum in the relationship with the land and nature.

Land alienation and land reform

The area around Makhado (Louis Trichardt) and the Soutpansberg was shaped by a history of land dispossession from the original Venda owners. An early attempt by white settlers was repulsed in 1867, when the inhabitants of Schoemansdal had to retreat inland. Only in 1898, through a military campaign, did the then Transvaal Republic succeed in driving off the land Venda living around the western part of the Soutpansberg (Bergh, ed 1998). However, the Venda clans remained on the land in the rain belt mountains to the East. As a result of this relatively late colonisation, there are a large number of land claims in the area. One of these claims, that of the Malumbwane, is central to debates about the future and desirability of the EMSEZ. During a series of interviews, it emerged that a number of Malumbwane households had serious concerns about both the desirability and legality of leasing their land to the EMSEZ, as well as serious concerns about how that lease was agreed on.

The Malumbwane were removed from white farms on the land where the EMSEZ is planned. They have graves going back generations on those farms. In fact, after the MCPA received the land back, a number of families settled on the farm to look after the graves and keep a watchful eye on developments there. However, a December 2016 agreement, signed by Sam Mulaudzi¹⁴, chairperson of the MCPA at that stage, agrees to a monthly rent of R175 000 for an area of roughly 6 000 hectares, at around 3% escalation per year, for a period of 90 years, with an option to extend for another 30 years. LEDET undertakes to give priority to MCPA members for jobs and SMME opportunities, as well as 5% (in shares) of the property management company, and undertakes to explore the possibility of the MCPA becoming a BEE partner. LEDET gets full management control and the right to conduct studies in the area, and the MCPA agrees that it understands that LEDET intends to develop an EMSEZ and sublet parts of the land.

A November 2017 agreement (also signed by Mulaudzi), confirmed the MCPA as the prime partner with responsibilities to organise participation on behalf of the Malumbwane community, and to present a list of trainees from the community.

In interviewees conducted in February 2021 with some Malumbwane community members, they confirmed that they had selected a number of youth for training in skills that would be necessary to use the land they had won back. They also have very clear plans about how they would use

¹⁴ Mr Mulaudzi passed away in April 2021.

that land: They would go to farm on most of the land-claim area they got back. They would resettle plus-minus 350 households on the land, building a township themselves, not having it built for them by an outside developer. They would also settle on their 'land reform' farms near Waterpoort to the West. They would keep the lodge – that is not where they wanted to go and live – and negotiate a concession with someone who would run the lodge and a game farm. They intended to develop the farms, and for that reason young people from the Malumbwane were sent to study how to farm with cattle, pigs and aquaculture.

The interviewees were adamant that the community had participated in taking each and every one of these decisions. The community mandated that the steering committee of the MCPA, consisting of elected community representatives, were mandated to oversee the running of those farms already allocated to them, to protect the whole area, and if there are interested outsiders, the committee would listen to what they wanted, and come back to the community to discuss and decide together. There was a mandate to negotiate, but not to decide on behalf of the community.

The achievements of the committee, according to a committee member who was interviewed, were to (1) negotiate with interested white farmers who wanted to lease the land for a game reserve (2) negotiate about a railway line that was proposed to pass through the land. The community did not complete its term of five years. In August 2018, an election for a fourth committee was suddenly held, and under suspect circumstances. The election was immediately shrouded in controversy, about how it took place, the role of land reform officials, the participation of people who were not seen as being part of the MCPA, and fraudulent use of MCPA funds etc. These concerns were discussed in an exchange of letters between the MCPA and the Department of Rural Development and Land Reform, but not resolved. In the first half of 2021, the Malumbwane community, with the support of Earthlife Africa, undertook an eco-mapping exercise, in which they expressed their aspirations for using the land they had won back through land reform¹⁵.

The Voice of Nature

Dzomo la Mupo (the voice of nature) is an organisation aimed at the rediscovery of black people's original spiritual relationship to nature. It offers an alternative to an instrumental view

¹⁵ <https://www.dailymaverick.co.za/article/2021-06-29-saving-the-holy-ghost-eco-mapping-the-past-to-preserve-the-future/>

that sees nature as consisting only of resources to be used in making money. The founder of Dzomo la Mupo (hereafter, Mupo¹⁶), vhoMphatheleni Makaulule, has made her life's work to recover an African spirituality closely connected to nature. Makaulule grew up in a traditional way, surrounded by elders. Her father instilled in her a love of rivers, sacred spaces, culture and the elders. After finishing university in 1988 (with a BA education) she went back to learn from the elders herself, and to create spaces for young people to learn from the elders. It was not easy to bring back African spirituality in this way. Christian missionaries had taught the local people that their beliefs were satanic. The locals believed them, and crushed their sacred water beads. Apart from reversing this painful history, there is also much to learn, for example "people nowadays are not concerned by rivers, they see them only as places to fetch water. Yet they chop down the trees that keep the rivers healthy."

Makaulule established a traditional homestead using bush material, as a learning centre. That is where the organisation grew from. She connected to traditional healers, farmers etc. around Venda, further afield in South Africa, and even outside South Africa, when she visited the Amazon area. Mupo, which can be translated as "nature", is the core concept that drives her work:

"Mupo is everything not made by humans, it is moonlight and stars, the sand of the river. I wanted to understand how people care for Mupo. The root of my passion was spirituality, the respect that I had learnt from my father, who made sure our family followed the right protocols, for example in harvest time, we would not eat from the harvest before the correct rituals had been done.

"There are many sacred places. Luonde is a big, sacred mountain, where our forefathers originated. It was a dense forest, but it has been changed by forced removals and plantations. We have our family totems – warthogs – at Luonde, my father would give praise to the big warthog of Luonde. These sacred sites have to be protected. As I connected with people, asking how to respond to modern day pressures, we had deep dialogues. We named ourselves voices of nature – Dzomo means to have a big mouth, to be a spokesperson, one with a mandate to speak. That is where the name Dzomo la Mupo comes from. We decided we have to talk about African spirituality, loudly in fact, so that people can see how important Mupo is. We also did practical things, we planted thousands of tree seedlings so that the rivers would no longer be naked."

¹⁶ See website <http://www.thedzomolamupo.org/>.

Dzomo la Mupo became involved in opposing coal-based development as they could see that it threatened their water resources. In 2012 Coal of Africa said they would take water for their coal mines from the Nzhelele and Mutambara rivers. The Mamba group even said they wanted to mine the sacred Lake Fundudzi! Mupo opposes such coal developments “that will destroy the water of life”.

5. Governance in the Limpopo catchment

The processes by which the megaproject and its water supply are developing, raise urgent questions about decision making about water in the Limpopo area, or as it is known in the water sector: governance of water resources. This section:

- provides some background on the water governance mandated by the National Water Act of 1998,
- Gives the example of the Inkomati Usuthu Catchment Management Agency (IUCMA),
- discusses the political dynamics behind the slow roll-out of catchment management agencies and catchment management forums,
- and ends with a short discussion of DWS plans for a super-CMA combining the current Limpopo and Olifants catchments.

The National Water Act (NWA) of 1998 defines the roles of citizens and the DWS in water management. While the water resources of the country belong to all who live in it, the state acts as custodian – not owner – of these resources. Consequently, the Act expresses the clear intention of delegating water resource management to the regional or catchment level and to involve local communities. In the paradigm of Integrated Water Resources Management (IWRM), stakeholders are encouraged to meet regularly – in the case of South Africa in catchment management forums – and together deal with long term and emerging water management challenges. The need for participatory catchment management becomes acute when a catchment is closed, meaning that further development of water resources, like dams, are no longer feasible, and that existing water users need to improve the efficiency of their water use, and negotiate a redistribution of water resources to allow new users access to water.

In a catchment close to the Limpopo, the Inkomati-Usuthu CMA (IUCMA) was established in 2004 (see figure 3 below). It developed a catchment management strategy (CMS) with participation of a wide range of stakeholders, in 2010, based on very broad discussions about a “desired future” for water resources in the catchment. The process empowered stakeholders

to gain an overview of the catchment, its water resources, water quality issues, existing and future uses. It also allowed for the development of familiarity and trust – the prerequisites for working together - between different water users in the catchment, and the establishment of catchment management forums throughout the catchment.

In addition, the IUCMA actively supported the participation and empowerment of historically disadvantaged water users – in actual fact the majority of water users – in catchment management. However, in other catchments, the process stalled. Despite the fact that the roll-out of CMAs and CMFs has been part of DWS planning since 1998, to date only two of the original 19 have been established.



Figure 3: SA’s CMA history in a map. This map shows in different colours the 9 catchment management areas after the planned consolidation in 2012. The original 21 catchments, based on hydrological divisions (following the river basins) are indicated by the white lines and names. Map by Toni Olivier.

In 2012, the number of CMAs in-planning was “consolidated” from 19 to 9 CMAs, with the two existing CMAs expanding their areas of jurisdiction. In 2017, the then Minister of Water and Sanitation, Nomvula Mokonyane, announced the formation of a single CMA, which shocked the water sector because it contradicted the basic principles of IWRM, such as decentralisation and following hydrological boundaries. The decision was reversed by her successor, Gugile Nkwinti. The most recent understanding, according to officials within DWS, is that the nine CMAs have now been reduced to only six, mainly as a result of concerns by Treasury about having too many boards – and the financial risks it represents. This creates the challenge of staying true to a decentralisation principle in very big areas containing several rivers, with issues that may be very different from each other.

The politics of the reluctant roll-out of CMAs

It was difficult to get an appointment to speak to the current proto-CMA in Limpopo, despite several attempts. This may indicate that the roll-out of CMAs is still a tricky subject. Recent research undertaken for the Water Research Commission (Munnik 2020), made an attempt to understand the factors that caused the 20 year delay in rolling out CMAs. These explanations point to dynamics that can also be expected to influence what actually happens in the new Limpopo super-CMA.

The biggest set of dynamics can be called “political”. Underlying the slow roll-out is the broad impression that the ANC does not understand or like the principle of decentralisation, which is however fundamental to catchment management. Officials working on this issue have remarked that there is a lack of understanding of and sympathy for the mandate (in the water law) for catchment management: “Every new minister, who comes with his or her advisers and new top officials into DWS, has to be convinced anew about the need to roll out CMAs. This takes three or so years, and at the end of the period, when the minister is convinced, we get the go-ahead. But then the process is interrupted when the new minister arrives...” (Munnik 2020).

In practice, there has been a lack of strong DWS leadership and clear communication to internal and external stakeholders about the roll-out of CMAs. Early documentation (DWAF, 1998) warned that a decisive and strong change management process would be required to achieve the establishment of CMAs. However, this has not been forthcoming. When the political leadership of the department is unsure about the CMA roll-out, this shows in their communication which in turn creates confusion, uncertainty and unwillingness. The lack of detailed plans ties the hands of DWS officials responsible for the establishment of CMAs in explaining to stakeholders what the future holds.

There is a remaining tension between organising water governance according to hydrological boundaries as opposed to political demarcations. It is true that local and district municipalities are important for water services, and are in turn under provincial oversight. This argument seems to have had some influence in demarcation of the jurisdictions of the nine CMAs (in 2012). The demarcation of the Pongola-Umzimkulu proto-CMA coincides largely with the KwaZulu Natal province, and the new Limpopo-Olifants catchment would include all of the Limpopo province, with some other areas added.

There are also political fears that decentralisation may limit scope for transformation, for example that strong local actors like irrigation boards may stymie water reallocation efforts. Indeed, the transformation of the major water users, irrigation boards, has not been successful. This history of failure has revealed – besides the existence of opposing interests – that there are technical and economic challenges: irrigation boards represent a system of farms and irrigation infrastructure along rivers, which consist of strong legal rights. Ownership of farms with irrigation rights seem the most promising method of transformation. There are also concerns, expressed by some DWS officials, about what may happen to production (output) if irrigation boards are forced into change, as well as environmental damage. These arguments are challenged by other officials who see in them a resistance to the re-allocation of water. The answer would seem to be a careful study of the dynamics of irrigation boards in practice, and then a strategic approach to their transformation (or indeed to a reallocation of water resources to reflect the country's demographics). This implies that water reallocation should work closely with land reform initiatives, rather than on their own. Interviews with irrigation farmers along the Nzhelele revealed a history of attempts to work with the departments of agriculture and water affairs to integrate the ex-homeland irrigation areas upstream with the midstream Nzhelele dam irrigation farmers – but these efforts have floundered, according to these farmers, as a result of broken promises from government.

Trade unions have opposed CMAs because they regard the “agentisation” involved in the establishment of CMAs as a form of privatisation. On the other hand, concern has been expressed by Treasury that CMA boards – like boards elsewhere – are expensive, and not always that good at providing guidance or representing people's interests and agendas.

Some dynamics relate to the politics of work, careers and bureaucracy. An important explanation for the reluctant roll-out so far, is that some regional DWS heads fear losing turf and position to CMAs. The establishment of CMAs – and other institutions in the water sector

outside the DWS – will mean a major devolution of functions away from the Department. The DWS will be left with policy development, strategic planning, regulatory oversight and support. The DWS regional offices will provide institutional and technical support for water resource management and water services and will fulfil coordination and auditing functions, as spelled out in the NWRS2 (DWA, 2013). There may therefore well be reluctance in DWS itself – particularly in Head Office –to accept shrinking functions, budgets and staff numbers, seniority in cabinet, and influence.

Trade union members – apart from opposition to the idea of agentisation – also fear loss of staff benefits, pensions, grades, as well as being required to live and work outside of metropolitan areas or current locations. They may have well established networks, schools their children go to, etc. The DWS officials in this category can be estimated at around 1000 employees.

Evidence from the experience of CMAs is that “CMAs are very attractive to DWS people, they apply to jobs here”. Another added: “We get lots of job applications from DWS officials; once they land here they are amazed at how hard they have to work as part of the normal every day.” One way or another, CMAs have had to fight for their institutional space.

Finally, the question is raised whether CMAs are an overly expensive way of achieving good water resources management? The counter-argument is that water resource management is crucial in South Africa and CMAs represent the best most cost-effective means of achieving that. CMAs need to be funded from user charges as well as from the fiscus in the public interest. Funding all CMA functions from user charges is not feasible or appropriate. Some functions that have a public benefit dimension will need to continue to be funded by the fiscus indefinitely. These dynamics add up to a water governance system that is widely accepted in the water sector, but not by politicians, and possibly not by all water officials. The net result is that old governance patterns continue.

However, the promise of what CMAs can do, remains attractive. The 2020 research, based on the two functional CMAs, found that:

1. CMAs are better positioned to deal with water allocation in light of droughts, current variability and the challenges of climate change.
2. CMAs support resource poor farmers and are well positioned to deal with transformation of water institutions.

3. CMAs are up to date on the licensing of water use, and able to monitor compliance and act on compliance failures.
4. CMAs are able to focus on water quality and protection of water resources against pollution from dysfunctional wastewater works, mines, industry, and agriculture.
5. CMAs are good at engaging the public for awareness, and supporting active participation of stakeholders in water resource management.
6. CMAs are able to plan strategically and respond to challenges through adaptive management.
7. Proto-CMAs are not able to operate to the same effect as CMAs, due to a different work culture.
8. CMAs will be positioned to deal with current failures in the water sector which are necessitating other actors to stepping in to fulfil functions neglected by DWS in catchments.

Limpopo super-CMA

According to national office DWS officials, the Limpopo CMA as it is currently demarcated (area 1 A and B below – from the Marico (Madikwe), via the Crocodile (West) river, where the Mokolo Crocodile West Augmentation Project (MCWAP) is proposed, past the Sand River to the Nzhelele), will go through an establishment phase (starting with the board), and then be expanded to include the current Olifants CMA. In other words, the two CMAs will merge. This will bring together the Olifants, which has been through a significant process of governance development, with the Limpopo which has not. The differences are instructive.

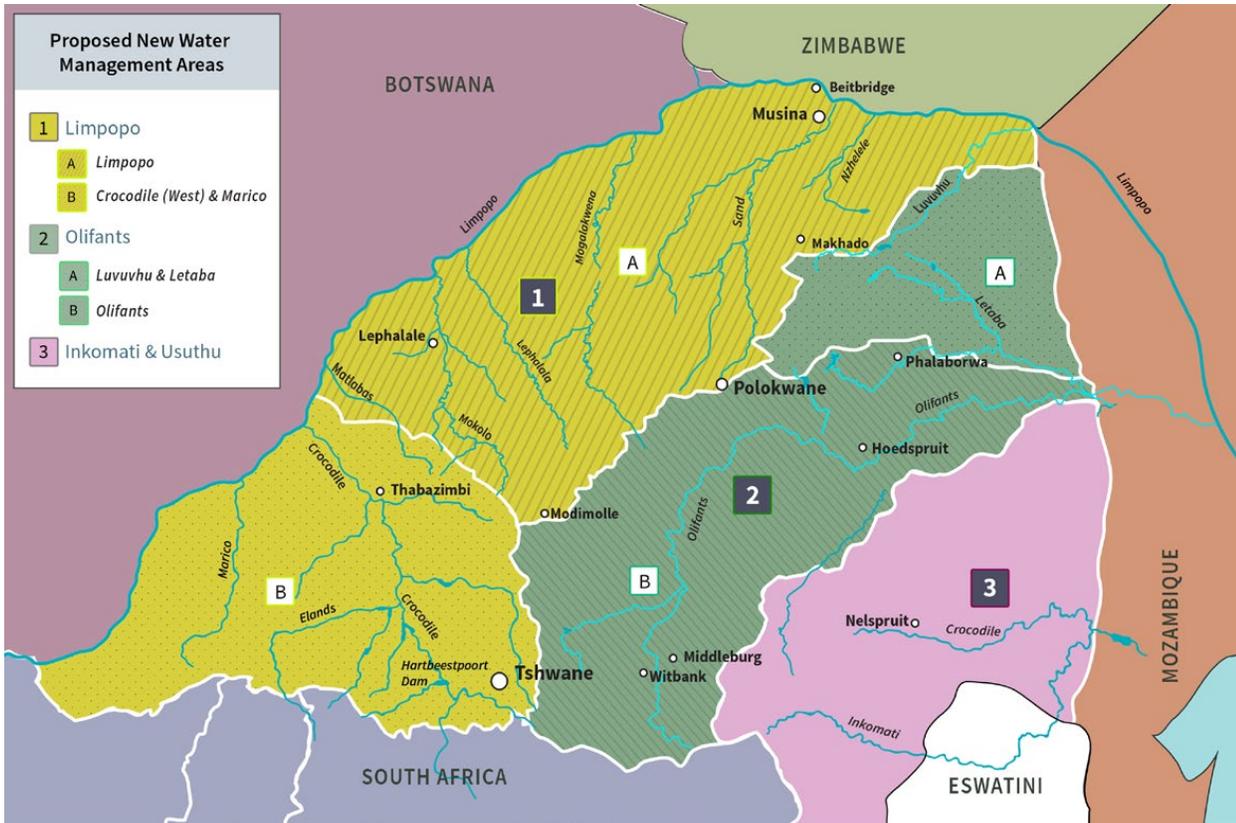


Figure 4: This map shows the proposed new Limpopo super-CMA, incorporating both the existing Limpopo West (in yellow) and the Olifants catchment (in green). The IUCMA area is shown in pink. Map by Toni Olivier.

The NGO, Association for Water and Rural Development (AWARD), has just completed a seven year process building resilience against climate change in the Olifants catchment. In the process, AWARD has improved the capacity for understanding and acting on water resources, biodiversity and climate change challenges across more than 400 institutions and 2000 individuals. Governance capacity was built through the establishment or strengthening of 11 stakeholder networks, and resilience practices built in municipalities, among small and commercial farmers and other groups. This work has introduced new approaches to water management, not only regarding participation, but also adaptive management and an understanding that water management is based on viewing catchments as complex social ecological systems.

The super-CMA will face a range of challenges. This includes the acid mine drainage legacy created by coal mining in the Upper Olifants, in the Emalahleni (Witbank) area, and the Crocodile (West) catchment, which starts with the continental divide in Johannesburg, and

includes the city of Tshwane (Pretoria) as well as the Hartebeestpoort Dam, which is plagued by excessive eutrophication as well as agriculture, mining and industrial pollution along the Crocodile River. It includes irrigation boards and large ex-homeland areas, as well as extensive platinum mining. Part of the challenges – pointed out by the 2016 Reconciliation Strategy, is the state of wastewater works in several areas. Some of these challenges have led to catchment management forums, or equivalents, growing out of citizens action, for example in Tshwane and the Hennops river (Munnik et al, 2016).

6. Water politics in the Limpopo

The various actors that were drawn together in opposition to the EMSEZ, can be seen as resources for a positive, participatory water governance that can properly deal with the challenges of a water scarce catchment. After all, these actors emerged in defence of water resources, biodiversity, the tourism sector, agriculture, existing livelihoods and the spiritual connection that local people have with the land.

An earlier battle against Coal of Africa (now MC Mining) already created alliances, knowledge and methods to oppose coal mining developments. The EMSEZ is seen by many as an extension of that earlier contestation.

The Vhembe Biosphere Reserve¹⁷ is perhaps the largest institution in the area defending ecosystems that will be placed at risk by the plans for the MMSEZ. The VBR is made up of a web of conservation, biodiversity, tourism, research and educational, interests, including indigenous knowledge and rural development aspects. With its international status and intellectual reach, it has been creating a biodiversity and sustainability perspective for the region as an alternative to heavy, fossil fuel based industrialisation. It is strongly anchored in conservation areas, most of them in Soutpansberg mountain range itself, with its very rich high biodiversity, possibly the richest in South Africa. This is strengthened by alliances with the University of Venda (Univen) and other universities worldwide, in ongoing research processes.

¹⁷ The Vhembe Biosphere Reserve is part of a network of 714 UNESCO registered Biosphere Reserves across the globe and one of 9 in South Africa, of which three are in Limpopo. The VBR is the largest biosphere reserve in South Africa, with a surface area of 30 700 km, it stretches from the Shingwedzi river in the KNP to Crooks Corner in the north, bordering the Limpopo River all the way across to Mapungubwe National Park and the Mogalakwena River in the west, down to the Blouberg-Makgabeng and Soutpansberg mountain range in the south.

It has been joined in its opposition to the EMSEZ by biodiversity and conservation based organisations, including the Endangered Wildlife Trust (EWT), the Kruger National Park, World Wide Fund for Nature (WWF), Birdlife South Africa, which all responded in detail to the EIA. Many of these organisations have also expanded into community conservation, stewardship and development projects. They have developed interests and networks around indigenous knowledge. They have also developed the ability to work together.

The Herd Reserve is a small reserve on the Nzhelele river next to Limpopo River (close to Musina), which took a strong interest in the EMSEZ developments, unlike its neighbour, the bigger Maremani reserve (owned by the Danish Aave G. Jensen foundation¹⁸), which did not get publicly involved, although its land may well be affected by the proposed Musina and Sand River Dams.

The big tomato farmers ZZ2 are veterans of the struggle against Coal of Africa, now MC Mining. They are very dependent on access to water resources, including some in off-channel dams along the Limpopo. They are a leading force in the farming community, and have started with sustainable farming and outreach to small farmers in the area.

However, the absence of water governance in the area has meant – along with other factors – that water allocation and use patterns have remained the same as in the apartheid era. As figure 5 below shows, large scale irrigation still takes the lion share of water resources in the (current) Limpopo North Water Management Area. The demand projection planning diagram (which reflects a demand of 35 Mm³/year for the EMSEZ, not the current 80 Mm³/year) illustrates that the only change that is foreseen up to 2040 is a growth in water demand for mining and industry – everything else stays the same.

¹⁸ <https://www.maremani.com/the-foundations/>

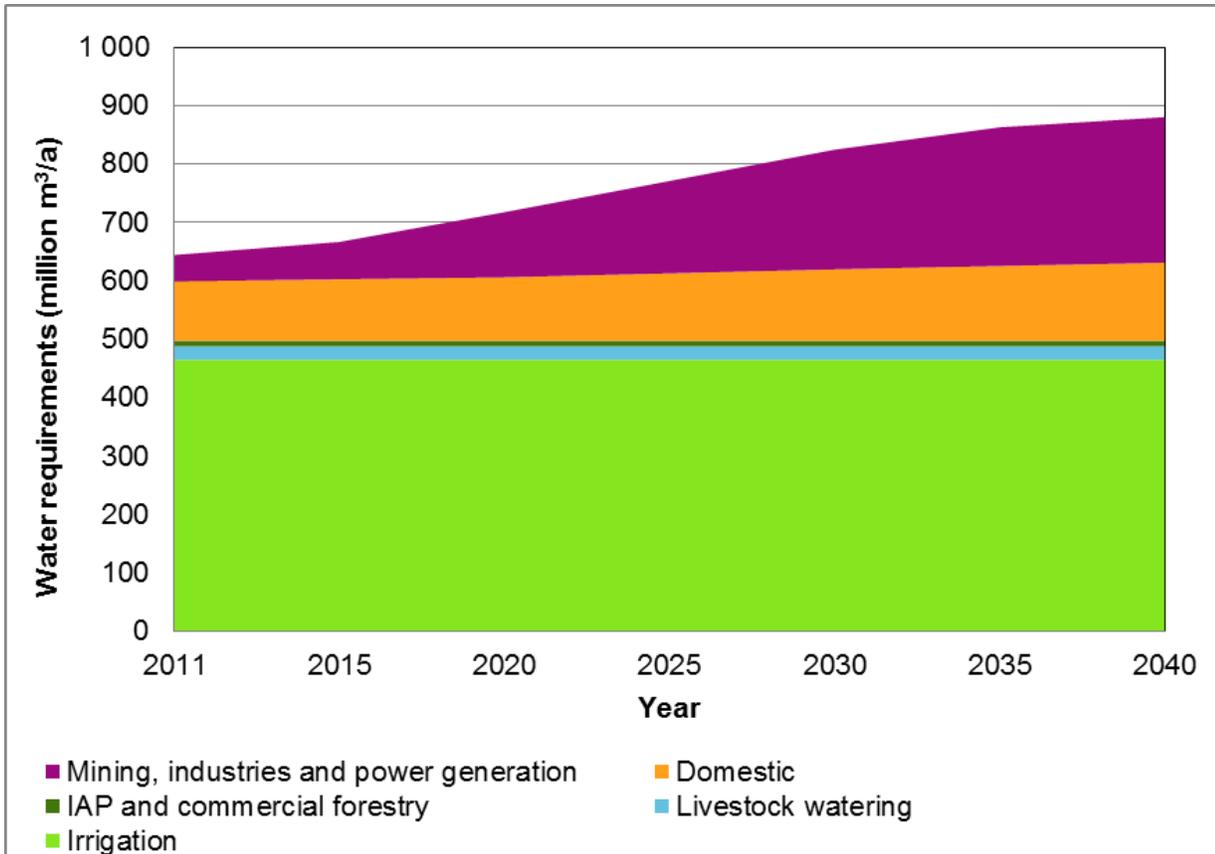


Figure 5: Graphic illustration of water demand in Limpopo North WMA, 2011 – 2040 (NLRs 2016). This DWS document reflects a demand of 35 Mm³/year for the EMSEZ, not the current 80 Mm³/year.

It could be argued that the alliance in its resistance of the EMSEZ, based on the question of water availability and water quality implications of the EMSEZ, is stepping into the empty space left by the 20 year delay in setting up CMAs. The intended roll-out of a bigger, merged Limpopo Water Management Area may provide opportunities to build a participatory, democratic water governance system in the area. There are many reasons to do so, including:

1. The long overdue transformation of the allocation and use of water resources, which currently have more in common with apartheid practices of riparian ownership than the vision of Integrated Water Resource Management in the National Water Act. In particular, the water access of vulnerable groups that form the majority of water users, but have access to minimal but crucial amounts of water, needs to be protected and extended.

2. Dealing with current water quality challenges from platinum mines and dysfunctional municipal waste water works, and preparing to deal with the pollution challenges that would accompany a coal fired power station plus a number of steel and other factories, including the northern MMSEZ development so close to an internationally shared river.
3. Rivers in the area need to be protected ecologically, for example through environmental flow regulations. It is these reserves that form the basis of life in the area.
4. Climate change is already changing conditions in the Limpopo water management area, and will continue to intensify.
5. The growth of participatory water governance in the South African section of the international Limpopo basin can also provide a powerful encouragement to similar developments in other Limpopo riparian countries and increase international co-operation, as the IUCMA has done with Mozambique.

Finally, the super Limpopo and Olifants CMA could also represent an opportunity for the DWS to reinvigorate its role as the custodian of the water resources of South Africa. Water governance supported by the state will also provide an opportunity – as we have seen in the IUCMA – to practically support the participation of voices that have so far been drowned out by stronger actors with many more resources at their disposal.

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About the Author

Dr Victor Munnik is a geographer and political ecologist. He started his career as a journalist, including for Vrye Weekblad. His PhD dealt with community struggles against pollution at the Iscor (currently Arcelor Mittal) steel factory in Vanderbijlpark. His work for the Water Research Commission focuses on civil society, catchment management and political aspects of water quality. He is a research associate at the Society Work and Politics (SWOP) Institute at the University of the Witwatersrand, at the Institute for Water Research (IWR) at Rhodes University, and at the Environmental Justice NGO groundWork.

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Postal Address: P.O. Box 412664 Craighall 2024 Johannesburg South Africa Physical Address: 34 Bompas Road. Dunkeld West Fax: +27 11 341 0271 Tel: +27 11 341 0270 Email: info@fes-southafrica.org Web: www.fes-southafrica.org

