



## **SAGE Scientific Advisory on the Environmental and Heritage Implications of South Africa's Makhado-Musina Special Economic Zone**

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### **Executive Summary**

- Different departments and entities of the Limpopo provincial government, South Africa, are serving as the developers, approval authority (including in relation to environmental authorisation), and adjudicatory appeals authority, of the proposed Musina-Makhado Special Economic Zone (MMSEZ). The MMSEZ comprises a northern light industrial site near Musina, Limpopo, and a southern heavy industrial site (primarily steel manufacturing) at a location north of the Soutpansberg mountains on the Musina-Makhado municipal boundary, in Limpopo.
  
- In the opinion of the Scientific Advisory Group on Emergencies (SAGE):
  - The development of the MMSEZ threatens the heritage integrity of the Mapungubwe Cultural Landscape (a UNESCO-inscribed *World Heritage* site), which lies within the Vhembe Biosphere Reserve (VBR).
  - The development of the MMSEZ will degrade critically biodiverse areas and irrevocably threaten the ecological integrity and conservation goals of the VBR (a designated a UNESCO *Biosphere Reserve*).
  - Given its potential detrimental impact on water resources in the area, the development of the MMSEZ could threaten sensitive wetlands within the VBR, including the Makuleke Wetlands (a designated UNESCO *Ramsar* site).
  - The development of the MMSEZ poses a threat to the region's water security and will likely prejudice existing water users in Limpopo and outside South Africa (in particular, water-scarce and drought-prone Zimbabwe, which has been proposed as a source of a dam to supply the envisaged water-intensive industries of the MMSEZ).
  - The development of the MMSEZ will lead to an increase in South Africa's national greenhouse gas (GHG) emissions, in contravention of South Africa's international commitments to reduce its GHG emissions.
  - The development of the MMSEZ will yield high levels of air, soil and water pollution, detrimentally impact on human health, and degrade the ecological functionality of the area.



These outcomes are incompatible with the domestically enshrined, and internationally recognised, human rights of affected stakeholders to a healthy environment.

- The development of the MMSEZ will detrimentally impact other sectors crucial to sustaining livelihoods in the region, including farming and tourism.
  - The Environmental Impact Assessment process pursuant to the environmental authorisation for the MMSEZ is flawed, and not in the interest of the public and the environment, on multiple levels.
  - The Limpopo government's vested interest in the MMSEZ represents a patent conflict of interest and renders its oversight of the approval and appeals process, flawed.
  - The impending development of the MMSEZ, as evidenced by the advertising and closing of tenders associated with the MMSEZ, therefore, represents an imminent threat to the region's ecological integrity, cultural heritage, palaeontological heritage, water security, tourism sector, and agricultural sector, and thus constitutes an emergency.
- Given the above factors, SAGE takes the following position:
- The South African national government's Executive and the Limpopo provincial government's Executive should urgently institute a moratorium on activities pursuant to the development of the proposed MMSEZ, including in relation to vegetation clearance for fencing and bulk services infrastructure.
  - Given the potential threat that the proposed MMSEZ poses to globally important sites (including locations designated as UNESCO *World Heritage*, *Ramsar*, and *Biosphere Reserves*), relevant UNESCO officials should urgently engage with appropriate South African national authorities to commission an independent assessment of the potential environmental and heritage implications of the proposed MMSEZ.
  - SAGE urges South Africa's national government and Limpopo's provincial government to respect South Africa's international commitments to green energy conversion and its embrace of a just energy transition, in line with the Paris Agreement, a legally binding international treaty on climate change to which South Africa is a signatory, as well as to biodiversity conservation, in line with the Convention on Biological Diversity, a legally binding international treaty to which South Africa is a signatory.



## Background

- The Mapungubwe National Park (previously Vhembe Dongola National Park) in the province of Limpopo, South Africa, was proclaimed on 9 April 1998.<sup>1</sup>
- The Vhembe Biosphere Reserve (VBR) includes Mapungubwe National Park, the northern part of Kruger National Park, several Provincial Nature Reserves, two recognized centres of biodiversity and endemism (Soutpansberg and Blouberg), and the Makgabeng Plateau, which contains more than 1,000 rock art sites.<sup>2</sup>
- The Mapungubwe Cultural Landscape (MCL), which falls within VBR, was declared a National Heritage Site in 2001.<sup>3</sup>
- In recognition of the MCL site possessing outstanding cultural and/or natural importance to the common heritage of humanity, the United Nations Educational, Scientific and Cultural Organisation (UNESCO) inscribed the MCL in its *World Heritage* List in 2003.<sup>4,5</sup> UNESCO determined that the MCL possessed outstanding importance to the common heritage of humanity as the site contains evidence of the rise and fall of the first indigenous kingdom in Southern Africa, which was established by the Iron Age ancestors of the Venda, North Sotho and Shona between 900-1,300 AD. The core area covers nearly 30,000 ha and is supported by a suggested buffer zone of around 100,000 ha.
- In recognition of containing representative, rare and/or unique wetland types, and for its importance in conserving biological diversity within a very sensitive eco-region, the Makuleke Wetlands, which is located in the VBR, was designated a UNESCO *Ramsar* site<sup>6</sup> in 2007.<sup>7</sup>
- In recognition of the region's unique cultural heritage and outstanding natural assets, UNESCO designated VBR a UNESCO *Biosphere Reserve* in 2009.<sup>8</sup>
- Subsequent to these globally significant recognitions, South Africa's national Department of Trade and Industry (DTI) – currently the Department of Trade, Industry and Competition –

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<sup>1</sup> Government Notice 490 in Government Gazette 18814 of 09 April 1998 declared various parcels of land to be part of the Vhembe / Dongola National Park in terms of the National Parks Act (Act No. 57 of 1976).

<sup>2</sup> UNESCO. Vhembe Biosphere Reserve, South Africa. <https://en.unesco.org/biosphere/africa/vhembe>.

<sup>3</sup> The Mapungubwe Cultural Landscape was gazetted as a National Heritage Site by the newly-established South African Heritage Resources Agency (SAHRA) in December 2001.

<sup>4</sup> United Nations Educational, Scientific and Cultural Organisation (UNESCO). Mapungubwe Cultural Landscape. <https://whc.unesco.org/en/list/1099/>.

<sup>5</sup> Government Notice No. 71 in Government Gazette No. 31832 of 30 January 2009 declared the Mapungubwe Cultural Landscape as a World Heritage Site in terms of the World Heritage Convention Act, and delegates certain management powers and duties to SANParks.

<sup>6</sup> Ramsar Sites are wetlands of international importance that have been designated under the criteria of the Ramsar Convention on Wetlands for containing representative, rare or unique wetland types or for their importance in conserving biological diversity. See: Convention on Wetlands of international importance especially of waterfowl habitat. 2 February 1971. <https://en.unesco.org/about-us/legal-affairs/convention-wetlands-international-importance-especially-waterfowl-habitat>.

<sup>7</sup> Ramsar Sites Information Services. Makuleke Wetlands, Limpopo, South Africa. Ramsar Site 1687. <https://rsis.ramsar.org/ris/1687>.

<sup>8</sup> UNESCO. Vhembe Biosphere Reserve, South Africa. <https://en.unesco.org/biosphere/africa/vhembe>.



invited the Limpopo provincial government to submit proposed strategic locations for the development of the Limpopo economy through industrialisation. The Limpopo government submitted four areas. DTI evaluated the submission and approved two of the areas for further feasibility investigation, including Musina-Makhado and Tubatse. By 2015, the Limpopo government's proposal had morphed into what is currently known as the Musina-Makhado Special Economic Zone (MMSEZ), which comprises a northern light industrial site near Musina and a southern heavy industrial site (primarily steel manufacturing) at a location north of the Soutpansberg mountains on the Musina-Makhado municipal boundary. In 2016, the latter was designated as an Energy-Metallurgical Special Economic Zone (EMSEZ). The Limpopo government has since established the Musina-Makhado Special Economic Zone State Owned Company Ltd (MMSEZ SOC) to drive the proposed development. South Africa's national Cabinet approved the designation of the Musina-Makhado SEZ in July 2017 and the DTI designated the Musina-Makhado SEZ, Southern Site on 01 December 2017. The Chinese co-developer / partner involved in the project has proposed the construction of the following plants in the EMSEZ: Coal Washery of 20 megatons per annum (Mtpa); Coal-Fired Power Plant of 3,300 MW (Note: China announced on 22 September 2021 that it would no longer finance foreign coal-powered plants<sup>9</sup> and the proposed coal plant in the MMSEZ has since been officially cancelled by the Chinese government<sup>10</sup>); Coking Plant of 3 Mtpa with Heat Recovery Power Generation Plant of 390 MW; High-Carbon Ferrochrome Plant of 3 Mtpa; Ferromanganese Plant of 1Mtpa; Silicomanganese Plant of 500 Ktpa; Stainless Steel Plant of 3 Mtpa; High - Vanadium Steel Plant of 1 Mtpa and High - Manganese Steel Plant of 1 Mtpa; Metallurgical Lime Plant of 5 Mtpa, Titanium Dioxide Plant of 1.2 Mtpa, and Vanadium Pentoxide (V<sub>2</sub>O<sub>5</sub>) Plant of 150 Ktpa.<sup>11</sup>

- South Africa's National Environmental Management Act (NEMA)<sup>12</sup> and its Regulations,<sup>13</sup> requires relevant proposed developments to be preceded by an Environmental Impact Assessment (EIA) study. In pursuance of meeting this requirement, an entity of the Limpopo government, the Limpopo Economic Development Agency (LEDA), on behalf of the MMSEZ (SOC) Ltd., commissioned an Environmental Assessment Practitioner (EAP), Delta Built Environment Consultants (Pty) Ltd. (hereinafter Delta BEC), to conduct the required EIA study for the proposed MMSEC. Delta BEC published its EIA report in 2021, noting: "...the potential negative impacts of the proposed development on the natural, cultural, palaeontological, and agricultural environment of the site may likely, outweigh the identified positive impacts

<sup>9</sup> Brand R. China pledges to stop building new coal energy plants abroad. 22 September 2021. <https://www.bbc.com/news/world-asia-china-58647481>.

<sup>10</sup> Centre for Research on Energy and Clean Air (CREA). 1-year later: China's ban on overseas coal projects and its global climate impacts. 22 September 2022. [https://energyandcleanair.org/wp/wp-content/uploads/2022/09/ChinaBan-Report-FINAL\\_27Sept22.pdf](https://energyandcleanair.org/wp/wp-content/uploads/2022/09/ChinaBan-Report-FINAL_27Sept22.pdf).

<sup>11</sup> South African Energy Metallurgical Economic Zone. Brief Introduction of South Africa Energy Metallurgical Economic Zone. <http://emsez.com/en/about.php?id=19>.

<sup>12</sup> Act No. 107 of 1998.

<sup>13</sup> 2014 (as amended), promulgated under Chapter 5 of the NEMA published in GN R327, R326, R325 and R324 in Government Gazette 40772, 7 April 2017.



associated with the Very-High social and economic development benefits after applying mitigation measures.”<sup>14</sup> The report further concluded: “...without significant mitigation sustainable development may in all likelihood not be achieved for both site clearance and during the operational phase of the SEZ.”<sup>15</sup>

- LEDA, which serves as the policy implementing arm of the Limpopo Department of Economic Development, Environment and Tourism (LEDET), subsequently appointed a new EAP, EnviroXcellence Services (EXS). In publishing its EIA report, EXS acknowledged its narrow focus, noting: “This report specifically relates to the EIA application for the authorisation to clear limited vegetation for the construction and installation of bulk services infrastructure and fencing of the Musina Makhado Special Economic Zone (MMSEZ) South Site.”<sup>16</sup> In line with its narrow commissioned scope, EXS concluded that “the limited clearance of vegetation for bulk service and fencing will not adversely affect the environment.”
- In its EIA report, EXS pointedly noted that although the scope of its EIA was limited to vegetation clearance and construction for the bulk services and fence, “the proposed development can, however, not be seen in complete isolation as it will prepare the site for future industrial developments.”<sup>17</sup> Accordingly, EXS noted that it was “pertinent to look at the possible longer term future industrial impacts to obtain a holistic view.”
- EXS noted that sustainable energy supply will be pertinent for the future industrial developments of the site. In this regard, EXS noted that the construction of a PV Solar farm to support industrial activities in the SEZ was not viable. Moreover, “there were no natural gas reserves, new explorations, pipelines or LNG import facilities in the MMSEZ South site or surrounding areas.” EXS accordingly noted that the best available energy sources for the MMSEZ would be a combination of “renewable energy (for future administration buildings) and a scaled-down independent coal fired power plant (for future industries for 24/7 power supply) that will enable power generating capacity outside the state-owned power utility, Eskom. Due to the perceived impact of the coal fired plant on GHG emissions, it is proposed that a separate EIA be undertaken for it due to the fact that establishment of power generating facilities exceeding 20MW is a listed activity that should be undergo [sic] the EIA process and authorised prior commencement.”
- In its final EIA report, EXS noted: “The proposed MMSEZ South site development is expected to generate approximately 1 billion tonnes of carbon dioxide equivalent of direct and energy indirect emissions over the lifetime of the project. The largest contributors to these emissions

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<sup>14</sup> Delta Built Environment Consultants. Musina-Makhado Special Economic Zone designated site. Environmental Impact Assessment Report. Final report. Revision 2. 1 February 2021. LIM/EIA/0000793/2019. [https://deltabec.com/wp-content/P17102/00\\_DRAFT/P17102\\_REPORTS\\_25\\_REV%2002-FINAL%20EIA.pdf](https://deltabec.com/wp-content/P17102/00_DRAFT/P17102_REPORTS_25_REV%2002-FINAL%20EIA.pdf).

<sup>15</sup> Musina-Makhado Special Economic Zone designated site. Environmental Impact Assessment Report. Final report. Revision 2. 01 FEBRUARY 2021. LIM/EIA/0000793/2019. [https://deltabec.com/wp-content/P17102/00\\_DRAFT/P17102\\_REPORTS\\_25\\_REV%2002-FINAL%20EIA.pdf](https://deltabec.com/wp-content/P17102/00_DRAFT/P17102_REPORTS_25_REV%2002-FINAL%20EIA.pdf).

<sup>16</sup> EnviroXcellence Services. Musina-Makhado Special Economic Zone (MMSEZ) Designated Site Environmental Impact Assessment Report. Final Report. Revision 03. 13 September 2021. [http://www.enviroxcellence.co.za/assets/document/FINAL%20EIAR%20EXS%201%20\(1\).pdf](http://www.enviroxcellence.co.za/assets/document/FINAL%20EIAR%20EXS%201%20(1).pdf).

<sup>17</sup> EnviroXcellence Services. Musina-Makhado Special Economic Zone (MMSEZ) Designated Site Environmental Impact Assessment Report. Final Report. Revision 03. 13 September 2021. [http://www.enviroxcellence.co.za/assets/document/FINAL%20EIAR%20EXS%201%20\(1\).pdf](http://www.enviroxcellence.co.za/assets/document/FINAL%20EIAR%20EXS%201%20(1).pdf).



are the ferrochrome, lime and carbon steel plants.... The impact of the MMSEZ South site project's GHG inventory is considered to be VERY HIGH due to the total emissions from the project being between 10% and 14% of South Africa's carbon budget, considering the 2°C target carbon budget. This impact assessment should also be considered in the context of the local policy environment. South Africa submitted their Nationally Determined Contribution (NDC) in response to the Paris Agreement in 2015 and outlines the national emissions trajectory up to 2050. South Africa's national emissions are expected to peak between 2020 and 2025, plateau for approximately a decade and decline thereafter in absolute terms. The MMSEZ South site project alone will contribute 6% - 10% of the emissions proposed in South Africa's PPD that was used to inform the NDC, thereby significantly altering the national GHG trajectory that has been published and committed to. The IRP Draft Update 201881 makes allowance for two additional coal power stations to be commissioned. These stations are already in the planning stages. The power plant planned as part of the MMSEZ South site development would therefore require a Ministerial Determination before construction can begin. The update to the IRP aims to reduce the emissions of South Africa's electricity generation sector by reducing the use of emission intensive technologies such as coal power stations. The addition of the power plant at MMSEZ South site would counter the objective of South Africa to reduce its emissions as a result of coal fired power generation."

- EXS further noted: "Each participant in the global economy has a responsibility to minimise their contributions to climate change. Therefore, there is a collective responsibility to address climate change despite the inability to attribute specific GHG emissions from the project to specific effects on climate change.
- EXS further concluded that climate change posed major risks to the SEZ because of anticipated heat stress, water stress, economic stress and ecosystem vulnerability. Given these findings, EXS stressed that any approval of the overall project should be conditional upon, amongst other factors, detailed climate change modelling being considered in the ground water and surface water studies done for the project, and an overall water risk analysis of the region (Limpopo Province) being conducted, with specific reference to the proposed MMSEZ South site project.
- Notwithstanding the numerous cautions outlined in the EXS EIA, public meetings persistently yielding objections to the proposed SEZ project, a wide range of stakeholders criticising the project's flawed EIA process, and despite the Limpopo government's inherent and patent conflict of interest in the matter (MMSEZ SOC, LEDA and LEDET are all entities of the Limpopo government), on 23<sup>rd</sup> February 2022, LEDET approved the environmental authorisation for site establishment of the Musina-Makhado SEZ.<sup>18</sup> Numerous civil society organisations appealed the decision. On 8<sup>th</sup> July 2022, LEDET dismissed all appeals brought against the

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<sup>18</sup> LEDET reference 12/1/9/2\_V79, Environmental Authorisation dated 23/02/2022, Available at [http://www.enviroxcellence.co.za/assets/document/MMSEZ\\_Record\\_of\\_Decision.pdf](http://www.enviroxcellence.co.za/assets/document/MMSEZ_Record_of_Decision.pdf)



environmental authorisation, thus paving the way for the EMSEZ project to proceed.<sup>19,20</sup> These developments effectively mean that the Limpopo government served as the applicant, competent authority that authorised the project, and appeal body in relation to objections regarding its own development – flouting all the basic principles of environmental governance. The Limpopo government’s patent conflicts of interest in this development raise questions regarding whether its disregard of concerns flagged by experts and stakeholders is self-serving.

- In October 2022, several tenders advertised by the Limpopo government, which are directly related to the development of the proposed SEZ, closed.<sup>21</sup>
- Amidst these developments, South Africa’s national government has publicly committed to a significant reduction of greenhouse gas emissions (398-510 MtCO<sub>2</sub>e by 2025), launched the Biodiversity Economy Operation Phakisa in 2018<sup>22</sup>, and announced an energy action plan both locally<sup>23</sup> and at the Convention of the Parties (COP27).<sup>24</sup> South Africa’s Just Energy Transition Plan<sup>25</sup> commits South Africa to rapidly reduce its reliance on non-renewable sources of energy and creating new employment opportunities in the green energy sector. The nature, scale and environmental implications of the MMSEZ are incompatible with South Africa’s international commitments to significantly reduce its GHG emissions and transition to cleaner energy sources.
- At the domestic level, South Africa’s Constitution enshrines the right to a healthy environment.<sup>26</sup> On 8 October 2021, the United Nations Human Rights Council (HRC) adopted Resolution 48/13, which recognised that a clean, healthy and sustainable environment is a

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<sup>19</sup> Buthelezi L. Limpopo dismisses activists' appeal against one of the biggest special economic zones in SA. 9 July 2022. <https://www.news24.com/fin24/economy/limpopo-dismisses-activists-appeal-against-one-of-the-biggest-special-economic-zones-in-sa-20220709>

<sup>20</sup> Sadike M. Environmental appeals dismissed paving the way for Musina-Makhado special economic zone to finally start. <https://www.iol.co.za/pretoria-news/news/environmental-appeals-dismissed-paving-the-way-for-musina-makhado-special-economic-zone-to-finally-start-4673decc-7501-41dc-b3aa-60751b31b648>.

<sup>21</sup> MMSEZ. Closed tenders. [https://mmsez.co.za/?page\\_id=2805](https://mmsez.co.za/?page_id=2805)

<sup>22</sup> South African government. Address by President Cyril Ramaphosa at the launch of the Biodiversity Economy Operation Phakisa, Kalahari Waterfront, Thohoyandou, Limpopo. 25 Aug 2018. <https://www.gov.za/node/782067>

<sup>23</sup> Government of the Republic of South Africa. President Cyril Ramaphosa: Address to the nation on energy crisis 25 July 2022. <https://www.gov.za/speeches/president-cyril-ramaphosa-address-nation-energy-crisis-25-jul-2022-0000>.

<sup>24</sup> COP27. Just Transition Away from Coal: A Conversation on Lessons from South Africa, Europe, and Asia. 11 November 2022. <https://live.worldbank.org/events/cop27-just-transition-away-coal-conversation-lessons-south-africa-europe-and-south-asia>.

<sup>25</sup> Presidency, Republic of South Africa. South Africa’s Just Energy Transition Investment Plan (Jet Ip) for the Initial Period 2023–2027. <https://www.thepresidency.gov.za/download/file/fid/2649>.

<sup>26</sup> Section 24 of the Constitution of the Republic of South Africa.



human right.<sup>27</sup> HRC Resolution 48/13 represents the first formal recognition at the global level of the right to a clean, healthy, and sustainable environment. South Africa last served on the HRC Council from 2017 to 2019 and in October 2022, the United Nations General Assembly elected South Africa to another 3-year term on the HRC for the period 1 January 2023 – 31 December 2025.<sup>28</sup> As an incoming member of the HRC, South Africa has a particular obligation to uphold HRC Resolution 48/13. On 28 July 2022, the United Nations General Assembly (UNGA) adopted Resolution A/76/L.75, which recognised that the right to a clean, healthy, and sustainable environment is “related to other rights and existing international law,” and affirms that its promotion “requires the full implementation” of the multilateral environmental agreements “under the principles of international environmental law.”<sup>29</sup> UNGA adopted the resolution by a vote of 161 in favour, zero against, and 8 abstentions. South Africa voted in favour of Resolution A/76/L.75 and has an obligation to realise its provisions at a domestic level. The nature, scale and environmental implications of the MMSEZ are incompatible with South Africa’s local and international commitments to realise the right to a healthy environment.

## Recommendations

1. The South African national government’s Executive and the Limpopo provincial government’s Executive should urgently place a moratorium on activities pursuant to the development of the proposed MMSEZ, including vegetation clearance for fencing and bulk services infrastructure related to the project.
2. Relevant UNESCO officials should urgently engage with relevant South African national authorities to commission an independent assessment of the potential environmental, heritage, and socio-economic implications of the proposed MMSEZ. Independent expert evaluation and impact assessment of the full scope of the plan for the MMSEZ development should include a rigorous assessment of cumulative climate change and environmental impacts over the lifespan of the full project. Furthermore, independent experts should conduct a cost-benefit analysis based on accepted full-cost accounting methodologies. Such an assessment needs to consider the feasibility and viability of the project, particularly in the context of climate change, water scarcity, South Africa’s power generation capacity constraints, South Africa’s commitment to reducing its GHG emissions, and the country’s fiscal constraints.

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<sup>27</sup> Human Rights Council. Forty-eighth session. 13 September–11 October 2021. 48/13. The human right to a clean, healthy and sustainable environment. Resolution adopted by the Human Rights Council on 8 October 2021. <https://documents-dds-ny.un.org/doc/UNDOC/GEN/G21/289/50/PDF/G2128950.pdf?OpenElement>.

<sup>28</sup> United Nations General Assembly. Election of the Human Rights Council (11 October 2022). <https://www.un.org/en/ga/77/meetings/elections/hrc.shtml>.

<sup>29</sup> United Nations General Assembly. Seventy-sixth session, 97<sup>th</sup> meeting. GA/12437. With 161 Votes in Favour, 8 Abstentions, General Assembly Adopts Landmark Resolution Recognizing Clean, Healthy, Sustainable Environment as Human Right. 28 July 2022. <https://press.un.org/en/2022/ga12437.doc.htm>.



3. SAGE urges South Africa's national government and Limpopo's provincial government to respect South Africa's international commitments to green energy conversion and the country's embrace of a just energy transition,<sup>30</sup> in line with the Paris Agreement,<sup>31</sup> a legally binding international treaty on climate change, to which South Africa is a signatory,<sup>32</sup> as well as to biodiversity conservation, in line with the Convention on Biological Diversity,<sup>33</sup> a legally binding international treaty to which South Africa is a signatory,<sup>34</sup> as well as South African policy.<sup>35</sup> The Vhembe District has been identified in South Africa's Environmental and Social Management Framework as part of a Biodiversity Economy Node.<sup>36</sup> As such, SAGE recommends that the conservation and eco-tourism potential of the Vhembe District should be explored as an alternative to the development of the MMSEZ.

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**About SAGE:** The Scientific Advisory Group on Emergencies (SAGE) is housed within the Academy of Science of South Africa (ASSAf) and is steered by members of ASSAf and the South African Young Academy of Science (SAYAS). SAGE sub-committees are constituted on an ad-hoc basis and comprise independent experts drawn from academia, scientific institutes, and non-governmental organisations. SAGE aims to provide rapid, independent, multi-disciplinary science advice to relevant stakeholders on emergency issues that require strategic attention. SAGE also aims to undertake engagement with relevant stakeholders to create awareness and facilitate resilience in relation to emergencies. In the context of SAGE activities, an "emergency" denotes a serious, unexpected, and potentially dangerous situation that has either already caused loss of life, health detriments, property damage, or environmental damage, or has a high probability of escalating to cause immediate danger to life, health, property, or the environment.

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<sup>30</sup> 2022 State of the National Address, relevant section available at <https://www.stateofthenation.gov.za/sona-2022/growing-the-economy-and-jobs/just-transition-to-a-low-carbon-economy> and the Just Energy Transition Investment Plan available at <https://www.thepresidency.gov.za/content/south-africa%27s-just-energy-transition-investment-plan-jet-ip-2023-2027>

<sup>31</sup> Paris Agreement to the United Nations Framework Convention on Climate Change, Dec. 12, 2015, T.I.A.S. No. 16-1104. [https://unfccc.int/sites/default/files/english\\_paris\\_agreement.pdf](https://unfccc.int/sites/default/files/english_paris_agreement.pdf).

<sup>32</sup> [https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg\\_no=XXVII-7-d&chapter=27&clang=en](https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27&clang=en).

<sup>33</sup> The Convention on Biological Diversity of 5 June 1992 (1760 U.N.T.S. 69).

[https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg\\_no=XXVII-8&chapter=27](https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-8&chapter=27).

<sup>34</sup> [https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg\\_no=XXVII-7-d&chapter=27&clang=en](https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27&clang=en).

<sup>35</sup> DFFE Draft White Paper on Conservation and Sustainable Use of South Africa's Biodiversity.

<https://www.gov.za/documents/south-africa%E2%80%99s-biodiversity-2022-consultation-draft-white-paper-conservation-and>

<sup>36</sup> South Africa's Environmental and Social Management Framework, funded through the Global Environmental Facility, administered by the World Bank, available at

[https://www.dffe.gov.za/sites/default/files/docs/p170213esmf\\_capitalisingcapacityfinancing\\_biodiversityeconomy.pdf](https://www.dffe.gov.za/sites/default/files/docs/p170213esmf_capitalisingcapacityfinancing_biodiversityeconomy.pdf)



Development (DFID), UK Research and Innovation (UKRI) through the Newton Fund, South Africa's Department of Science and Innovation (DSI), and Fonds de Recherche du Québec (FRQ).

SAGE Webpage on ASSAf website:

<https://www.assaf.org.za/index.php/2-uncategorised/847-scientific-advisory-group-foremergencies-sage>. Contact: [SAGE@assaf.org.za](mailto:SAGE@assaf.org.za)

**About ASSAf:** ASSAf is the official national Academy of Science of South Africa. ASSAf's mandate encompasses all fields of scientific enquiry, and it includes the full diversity of South Africa's distinguished scientists. The Parliament of South Africa passed the Academy of Science of South Africa Act (Act 67 of 2001), as amended, which came into operation in May 2002. Website: <https://www.assaf.org.za/>

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