

Musina-Makhado: Economic Integration and Mineral Beneficiation for SADC

by P.D. Lawton

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Oct. 18—The Musina-Makhado Special Economic Zone (MMSEZ)—a proposed industrial park in South Africa with some tax incentives—is designed to promote industrialization through agricultural processing, mineral beneficiation, and manufacturing. It is an initiative of the government of Limpopo Province and is the flagship project of the Southern African Development Community's (SADC) Industrialization Strategy in conjunction with the African Union's Agenda 2063 master plan.¹

The manufacturing sector will produce processed metals such as steel, and petrochemicals and plastics

1. [Limpopo Province](#), where the Musina-Makhado SEZ will be built, is one of the most beautiful of South Africa's nine provinces. It is the northern-most province, which borders on Zimbabwe, Mozambique, and Botswana, and is named after the Limpopo River. Its capital is Polokwane. Sepedi, Venda, and Tsonga are the most widely spoken languages among the population of 6 million. The province has a wealth of historical and cultural treasures including the Mapungubwe National Park, site of the citadel of Mapungubwe (12th–15th centuries).

Limpopo Province extends over 125,755 square kilometers, roughly the size of Greece.

Agenda 2063, a plan for the development of the African continent, was adopted in 2015 at the African Union's Assembly of Heads of State and Government, meeting in Addis Ababa. An overview of Agenda 2063 is provided [here](#).

SADC, the Southern African Development Community, is southern Africa's regional economic bloc. It comprises 16 member states, including some of the world's largest exporters of raw minerals. Around 70% of the world's cobalt is mined in DRC. The DRC and Zambia are the third- and fourth-largest exporters of raw copper ore, the profits for which end up in [Switzerland](#).



Artist's conception of a portion of the Musina-Makhado Special Economic Zone (MMSEZ) in South Africa, near the border with Zimbabwe.

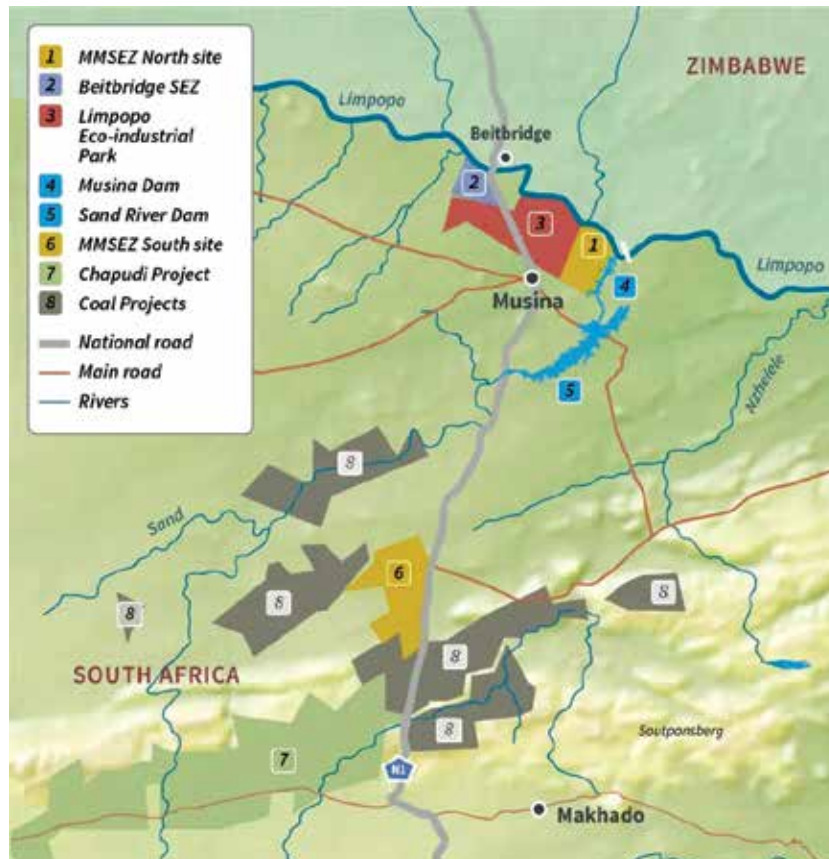
(by processing oil). It will make component parts for original equipment manufacturers (OEMs) in other industrial sectors. Petro-chemicals are needed, for example, to produce fertilizers. The security of the [food supply](#) depends on synthetic fertilizers. (In 2022, South Africa alone imported \$1.51 billion worth of fertilizers.)

Limpopo Province is rich in minerals, including platinum, iron, chromium, manganese, diamonds, antimony, copper, phosphate, black granite, feldspar, and coking coal. Its agriculture features fruits and nuts grown on a large scale, including macadamia nuts, bananas, papaya, and mangoes. The agricultural produce from the area is of a particularly high standard.

This economic hub is vital for a number of critically important reasons. It will serve as a catalyst for economic growth for the entire SADC region. The UN Sustainable Development Goals for poverty reduction cannot be achieved without African economies manufacturing on an industrial scale, including the processing of agricultural products and processing of raw mineral resources, known as mineral beneficiation.

The [African Free Trade Agreement](#) inaugurated in

The MMSEZ Sites



MMSEZ

The two sites of the MMSEZ—North (Musina) and South (Makhado)—and the coal fields, and other neighboring features. The project is located at the intersection of the north-south N1 international highway (gray) and the Limpopo River (blue).

January 2021 remains theoretical without operational SEZs in every region, connected by modern high-tech integrated infrastructure as epitomized by the [African Integrated High-Speed Railway Network \(AIHSRN\)](#), which has been designed to connect economic corridors across the continent by high-speed, electrified railways.

Underpinning all of this will be abundant, cheap electricity, the backbone of any economy. Electricity is needed to mine the ore, to produce the steel to construct the rail lines, to power the trains, to can the agricultural products, to produce the glass, to bottle the fruit juice, to provide productive employment, to raise standards of living to give opportunity for human creativity within a prosperous and peaceful environment.

Modern, high-speed rail infrastructure is the game changer for trade. The qualitative changes it will bring are obvious. For example, Isaka is a dry inland port in

Tanzania, where freight passes through on its way to Dar es Salaam from Lake Victoria, Rwanda, Burundi, and the Democratic Republic of the Congo (DRC). It is a customs point and has a cargo holding area. At present it takes trucks six to seven days to get from Kigali to Dar es Salaam. The cost of transportation (before the outbreak of COVID-19) was \$3,200 per truck. Transport by modern rail will dramatically reduce transport time and cost by 40%. Each freight train will be able to transport 10,000 metric tons, equivalent to 500 truck-loads.

This approach to Africa's future is responsive to Africa's greatest visionary leader, Kwame Nkrumah, Ghana's first President, who said:

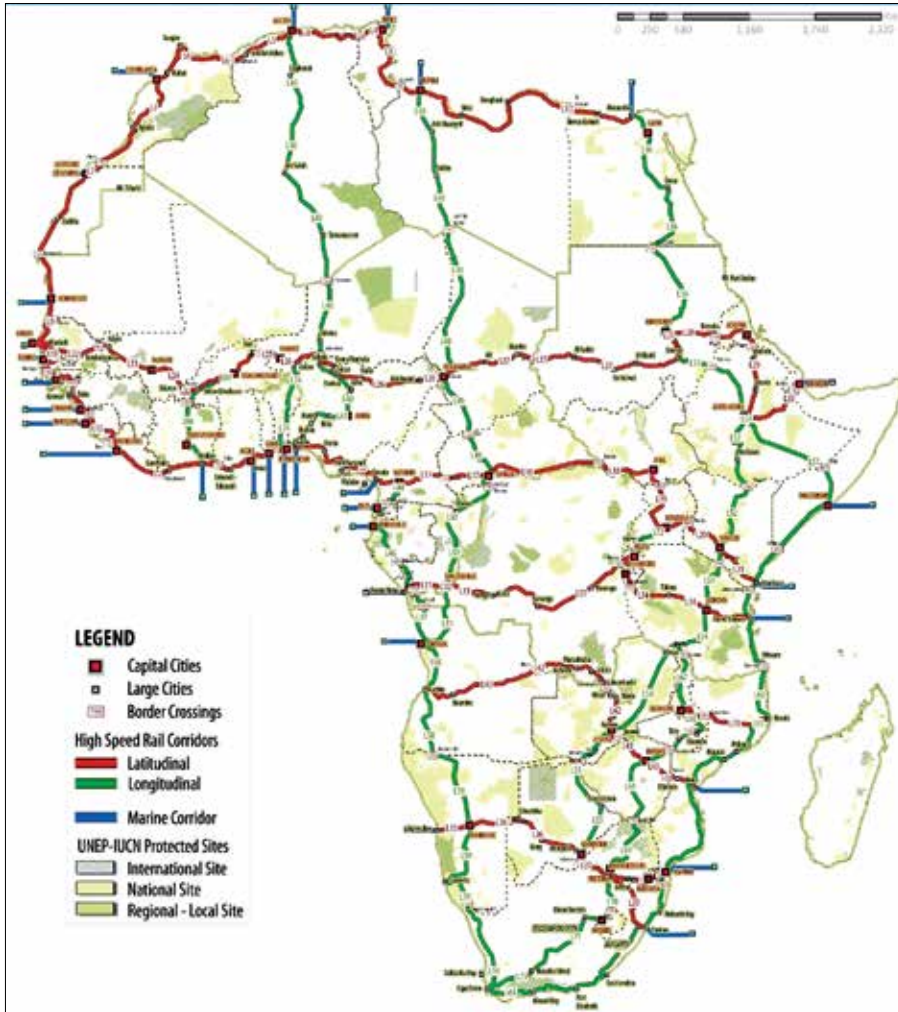
It is clear that we must find an African solution to our problems, and that this can only be found in African unity. Divided we are weak; united, Africa could become one of the greatest forces for good in the world.

Nkrumah explained,

Africa is one continent, one people, and one nation. The notion that in order to have a nation it is necessary for there to be a common language, a common territory and common culture has failed to stand the test of time or the scrutiny of scientific definition of objective reality.... The community of economic life is the major feature within a nation, and it is the economy which holds together the people living in a territory. It is on this basis that the new Africans recognize themselves as potentially one nation, whose dominion is the entire African continent.

As manufacturing is the basis of the Musina-Makhado SEZ, it will be able to provide not just productive employment but opportunities for high-level skills in engineering. It will provide very substantial opportunities for SMMEs (small, micro, and medium-sized enterprises) within an entire chain of processing,

The African Integrated High-Speed Rail Network



The planned African Integrated High Speed Rail Network (AIHSRN), part of AU's Agenda 2063, will require large amounts of steel. The L69 route shown here passes through the MMSEZ neighborhood. Red: latitudinal routes, green: longitudinal routes. Marine corridors are indicated with blue stubs extending into the ocean.

production, logistics, and sales. Value addition has a multiplier effect on the economy, because more jobs will be created along the value chain for those who will be offering services to the core operations within the sector.

The Opposition

Plans to build the industrial zone are going ahead despite opposition from environmental lobby groups. This opposition is based on concerns about pollution and production of CO₂, as well as water use. Discourse on “green energy” and “climate change mitigation” is largely being driven in South Africa through NGOs

funded by the German institute, the [Friedrich Ebert Stiftung](#). (See the author's article, “[Now They Blame the Energy Minister.](#)”)

The environmental lobby has attacked the Musina-Makhado project from the start. The African Centre for Citizenship and Democracy (ACCEDE) is a research group at the University of the Western Cape sponsored by the Friedrich Ebert Stiftung, and it, in turn, sponsors NGOs such as EarthLife.

Such organizations oppose industry.

Energy generation from any source other than solar or wind has been the target of the green lobby, which lies when they won't admit that wind and solar cannot supply sufficient energy for industrial use, or for that matter, for a national grid baseload, which is needed to bump start wind turbines and to take up the shortfall when the Sun is not shining and the wind is not blowing. Not enough, in fact, for manufacturing turbines and solar panels. As electricity is the backbone of any economy, theirs is not an action to protect the environment or the planet, but an attack on the alleviation of poverty through the industrialization of African economies.

It is an attack on development.

Africans must not allow themselves to be drawn into European attempts at national suicide by de-industrialization.

Similarly, the George Soros/Open Society–funded NGO, International Rivers, is the primary campaigner against the construction of the Grand Inga Dam project, which has the potential to supply a large part of the African continent with electricity produced from hydro power. The mighty Congo is like China's great Yellow River. Grand Inga has the potential to generate twice as much electricity as the Three Gorges Dam. It could be the world's largest hydroelectric plant, with an output



SAnews.gov.za

The MMSEZ will develop skills and provide employment to use those skills. Here, learner welders at South Africa's Coega SEZ

of 42,000 MW per year where the Congo River drops 96 meters over a 15 km stretch.

The green lobby produces papers such as “The Musina-Makhado SEZ Environmental Impact Assessment Process,” written by ACCEDE with research funding from the Friedrich Ebert Stiftung.

The Friedrich Ebert Stiftung sponsored an article in the [Mail & Guardian](#) to report on its webinar convened to brand the MMSEZ as unsustainable, un-ecological, and unworkable.

Fossil-Free South Africa calls for disinvestment from all fossil fuel projects. They claim China’s [withdrawal of funding](#) for the MMSEZ coal plant as a victory.

There are many people in Limpopo Province who have legitimate concerns about contamination and reduction of the water supply, air pollution, and the destruction of the environment, but the majority of people have also concerns about putting food on the table and finding a job. [Nearly 50%](#) of adults in Limpopo are unemployed. The MMSEZ planners are fully committed to clean industry and are not attempting to get out in front of the prevailing consensus:

The MMSEZ SOC is committed to environmental and biodiversity protection. We fully appreciate and re-

spect the Paris Agreement and our country’s commitment to ecological sustainable development and are already taking all reasonable measures to mitigate environmental concerns such as global warming, pollution, biodiversity loss, water scarcity and possible threats to food security. Substantial research is being conducted to mitigate such risks which will include the deployment of the best carbon capture and storage (CCS) technology to mitigate the greenhouse gas emissions.

The Friedrich Ebert Stiftung wants South Africa to buy German renewable energy technology. But above all, it is part of the eco-imperialist, anti-industrial complex. Paul Driessen, in describing his book, *Eco-Imperialism: Green Power—Black Death*, puts it this way:

The book reveals a dark secret of the ideological environmental movement. The movement imposes the views of mostly wealthy, comfortable Americans and Europeans on mostly poor, desperate Africans, Asians, and Latin Americans. It violates these people’s most basic human rights, denying them economic opportunities, the chance for better lives, the right to rid their coun-



MMSEZ

Agricultural produce from the area is of a particularly high standard. Shown: tomatoes are culled for quality.

tries of diseases that were vanquished long ago in Europe and the United States.

Worst of all, in league with the European Union, United Nations and other bureaucracies, the movement stifles vigorous, responsible debate over energy, pesticides, and biotechnology. It prevents needy nations from using the very technologies that developed countries employed to become rich, comfortable, and free of disease. And it sends millions of infants, children, men, and women to early graves every year.

The ideological environmental movement is a powerful \$4 billion-a-year U.S. industry, an \$8 billion-a-year international gorilla. Many of its members are intensely eco-centric, and place much higher value on wildlife and ecological values than on human progress or even human life. They have a deep fear and loathing of big business, technology, chemicals, plastics, fossil fuels, and biotechnology—and they insist that the rest of the world should acknowledge and live according to their fears and ideologies. They are masters at using junk science, scare tactics, intimidation, and bogus economic and health claims to gain even greater power.

Electric Power for Musina-Makhado

Musina-Makhado was originally planned to be 100% self-powered. What made MMSEZ unique was the idea of using the abundant coal deposits in the locality to power the industrial park with a 4,600 MW coal-fired power station in Waterberg, the coal rich region of the province. China was to finance the power station, but pulled out in 2021 when it [decided](#) that it would no longer fund any coal-fired power plants beyond its own borders.

There has since been a [move](#) by the U.S. Agency for International Development (USAID) to muscle in where China pulled out. USAID wants MMSEZ to be

powered by renewable sources.

Solar power, although useful in certain applications, can never generate enough power to operate industrial production. An exorbitantly costly lithium-vanadium battery storage facility—to compensate for interruptible power sources—would need an area the size of multiple football pitches and would have an extremely high explosive risk due to highly flammable lithium.

It is unfortunate that MMSEZ is to be forced to abandon the powering of the industrial park's operations with local coal.



Rosatom

Fifteen Zambians received their B.S. degrees in nuclear power and thermophysics from the Moscow Engineering Physics Institute, July 6, 2021.

It is thanks to leadership such as South Africa's Mineral Resources and Energy Minister, Gwede Mantashe, that the continent's most advanced economy will continue to use coal until such time as an energy transition can be achieved.

Minister Mantashe makes the sound point that the causes of climate change and the energy transition are being "[weaponized](#)" against Africa being able to use its natural fossil-fuel endowments for development.

Sub-Saharan Africa consumes roughly the same amount of electricity as Spain. Africa is responsible for 3% of global CO₂ production. Those statistics alone should be enough to finish any debate on fossil fuel use

on the continent.

The irony is that African economies are now looking at climate change mitigation energy solutions that could soon make Europe look un-advanced. The South African invention of the [small modular reactor](#) is an energy solution that is gaining interest around the world but particularly in Africa, where governments are increasingly signing up for nuclear energy, the latest being Burkina Faso. According to the IAEA (International Atomic Energy Agency), 12 countries, about a quarter of the African states, have approached it to request feasibility studies, namely, Ghana, Egypt, Morocco, Kenya, Niger, Nigeria, Sudan, Algeria, Tunisia, Uganda, Zambia and Rwanda.

The World Nuclear Association reports that in addition to those 12 countries, Libya, Senegal, Tanzania, Namibia and Ethiopia have expressed interest in starting nuclear power programs.

MMSEZ is the perfect project to catalyze a brand new trend for the operating of all of Africa's special economic zones using the very latest in nuclear technology, the small modular reactor. If MMSEZ is to revolutionize the regional economy, then let it be the first SEZ to revolutionize how electricity for industrial parks is generated.

It is also now possible that countries in Africa that have large deposits of coal can consider using the latest, cleanest coal-burning technology, called the High Efficiency Low Emission (HELE) [process](#).

MMSEZ is positioned near the [Beitbridge](#) border crossing into Zimbabwe. Beitbridge is the second busiest port of entry into South Africa and is being expanded. This is a very critical facility that opens up South Africa to Zimbabwe and Sub-Saharan Africa, serving as part of a north-south corridor to intra-African trade. Modernization of infrastructure will contribute to quick access to international markets through connectivity with major seaports, and will help to maximize the operational efficiency of the corridor and enhance regional economic integration.

MMSEZ in the New Africa

Beneficiation of mineral resources is being mandated by increasing numbers of governments across Africa, which will no longer serve as the raw materials market for the Global North. The trend is the same for agriculture. Ghana and Côte d'Ivoire are looking to



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On June 29, 2022, Earth-moving equipment was preparing to roll, and the chant was, "Let the dust go up!" South African Deputy Minister of Trade, Industry and Competition, Fikile Majola, spoke to more than 500 people celebrating the commencement of construction at the Musina site of the MMSEZ.

export chocolate confectionary products instead of just the cocoa beans. Nigeria is expanding its value chain in the tomato industry to produce processed, storable goods.

Namibia recently [banned export](#) of unprocessed critical minerals.

The South African Minister of International Relations and Cooperation, Dr. Naledi Pandor, in early July visited Kinshasa, capital of the DRC, where she participated in the meeting of the South Africa-DRC Bi-National Commission, held talks with her DRC counterpart, and met representatives of South African businesses operating in the DRC. She gave a talk in which she said: "I believe the AfCFTA (African Continental Free Trade Area/Agreement) will be a catalyst towards the pursuit of beneficial economic integration within the continent." She insisted that "Africa must manufacture within Africa and sell within Africa."

She continued,

Everybody is running after the rare mineral resources of the DRC but they [foreign mining companies] are not establishing factories in the DRC. Don't sign any agreement if production is not to happen here. We must refuse! We must ensure that value addition, mineral beneficiation, happens within Africa!

Minister Pandor highlighted the importance of state-owned entities being represented at such events,

“because these are important vehicles for the development of our countries.... DRC must become a trusted partner of South Africa and South Africa must become a trusted partner of the DRC.... We spend too much time trusting others outside the continent and not enough time trusting ourselves.”

She added:

Our main vision is to see real changes in our peoples’ livelihoods.... allowing our people to remain poor is to keep them in a prison of a lack of advancement. So, we must change the condition of our people so that they are free to realize their full abilities.

Wamkele Keabetswe Mene, Secretary General of the AfCFTA, at its opening ceremony, January 1, 2021, said:

We have to take active steps to dismantle the colonial economic model that we inherited and that we sustained over the last 50 years. We have to stop being exporters of primary products to countries of the North. We have

got to make sure we establish industrial development capacity on the African continent so that we create jobs on the African continent, and so that we completely rely on Africa, self-sufficiency in Africa; and if anything, COVID-19 has demonstrated, [it] is that Africa is over-reliant on the export of primary commodities, overly reliant on global supply chains. And we know when the global supply chains are disrupted, we know that Africa suffers. We know that when the global commodities markets are subdued, we know that Africa suffers. So we have got to take active steps to make sure that Africa’s industrial development is accelerated and this African continental free trade area and the trading that starts today, are the first steps that we have to take in that direction.

These declarations by Minister Pandor and Secretary General Mene show the new direction that Africa has begun to take just within the past decade. They show dramatically that the Musina-Makhado SEZ is not just possible. It is necessary for the new Africa.

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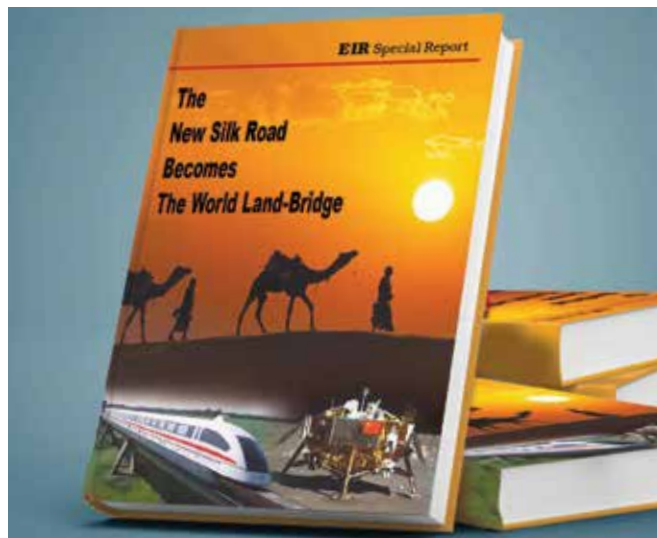
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