Climate Change and Just Transition in Mpumalanga Province in South Africa

Circular Economy Symposium
National Research Foundation
Legal Framework

• Constitution SA, 1996
• National Development Plan Vision 2030
• Mpumalanga Vision 2030
• Mpumalanga Economic Growth and Development Path
• Mpumalanga Green Economic Development Plan
• Mpumalanga Climate Change Adaptation Strategy
• Mpumalanga Climate Change Mitigation Strategy (in progress)
• Mpumalanga Air Quality Management Plan
• Mpumalanga Integrated Waste Management Plan
• Mpumalanga Environment Outlook
• Mpumalanga Biodiversity Sector Plan
Background

- Mpumalanga Province key sectors are more vulnerable to climate change,
- Economic activities: mining, mineral processing, pulp and paper; light – commercial and manufacturing processes, power generation, forestry, agriculture, tourism and etc.
- Mpumalanga has extensive coal reserves and accounts for 83% of South Africa’s coal production, contributing to an active mining sector.
- It produces close to 90% of South Africa's coal and is home to twelve of South Africa’s coal fired power stations
- The impact of coal-power generation on air quality, and the consequences for the environment and public health, are experienced locally within the province
- Mpumalanga is a province well known globally for its richness in biodiversity which contributes significantly to the provincial economy, particularly through the tourism sector
- At the same time, the province has rich potential in terms of renewable energy from solar, wind and biomass
- Social Dialogues on Pathways for a Just Transition - consist of government, civil society, experts, business and labour (use bottom-up approach engaging communities,
- Focusing on three primary sectors: (challenges and opportunities)
  - energy,
  - land-use and,
  - water.
Figure: Sector Contributions of emissions
## Mpumalanga Climate Change Mitigation Strategy and Implementation Plan

<table>
<thead>
<tr>
<th>Goals</th>
<th>Objectives</th>
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</thead>
</table>
| I. **Green the provincial energy mix** | • Implement renewable energy in small scale embedded generation and “own use” applications  
• Support the uptake of natural gas and biogas as a cooking fuel and alternative to coal  
• Promote cleaner energy in transport  
• Increase uptake of renewable energy technologies across all economic sectors |
| I. **Improve energy efficiency** | • Implement energy efficiency measures in public buildings and municipal infrastructure  
• Support energy efficiency in the residential, commercial and industrial sectors |
| I. **Reduce GHG emissions from fugitive emissions and waste** | • Divert waste from landfill  
• Capture and flare fugitive methane emissions |
| I. **Protect and enhance carbon sequestration potential** | • Protect and enhance carbon sequestration while improving food security and rural livelihoods |
| I. **Build capacity for transitioning to a low carbon economy** | • Build capacity in local government  
• Raise awareness programme around climate change mitigation |
## Mpumalanga Green Economy Development Plan
### (Green economy provincial priorities)

<table>
<thead>
<tr>
<th>Economic priorities according to MEGDP</th>
<th>Environmental priorities (based on researched activity)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce unemployment</td>
<td>Biodiversity management</td>
</tr>
<tr>
<td>Reduce poverty</td>
<td>Waste management</td>
</tr>
<tr>
<td>Reduce inequality</td>
<td>Water resources</td>
</tr>
<tr>
<td></td>
<td>Land rehabilitation</td>
</tr>
</tbody>
</table>
# MPUMALANGA GREEN ECONOMY DEVELOPMENT PLAN (Green economy provincial priorities)

### Biomass
- Generating electricity from bio-mass
- Feasibility study on developing a bio-products industry

### Farming for food security
- Support for sustainable small-scale and community farming
- Training in sustainable agricultural practices
- Development of agriculture industry outside of established farming based on Agri-hubs
- Agro-forestry

### Towns and urban centres
- Waste management
- Generating electricity from landfill waste
- Rollout of solar PV and energy efficiency
- Clean cooking stoves

### Sustainable Tourism
- Expansion of eco-tourism and develop PPPs with large, private landowners for tourism initiatives
- Development of small, sustainable enterprise development on protected land
Nkangala District Municipality
Nkangala Economic Baseline Assessment
Why assess the Nkangala Economic Baseline?

The Nkangala District region is home the bulk of power stations and coal mines in South Africa. This poses a great threat to the regional economy if these stations were to close due to decommissioning.

<table>
<thead>
<tr>
<th>Power station</th>
<th>Technology</th>
<th>Status</th>
<th>Installed capacity MW</th>
<th>Commissioning date</th>
<th>Decommissioning date</th>
<th>Oldest age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arnot</td>
<td>Coal</td>
<td>existing</td>
<td>2220</td>
<td>1971-1975</td>
<td>2021-2029</td>
<td>48 years</td>
</tr>
<tr>
<td>Duvha</td>
<td>Coal</td>
<td>existing</td>
<td>3480</td>
<td>1980-1984</td>
<td>2030-2034</td>
<td>39 years</td>
</tr>
<tr>
<td>Hendrina</td>
<td>Coal</td>
<td>existing</td>
<td>1900</td>
<td>1970-1976</td>
<td>2020-2026</td>
<td>49 years</td>
</tr>
<tr>
<td>Kendal</td>
<td>Coal</td>
<td>existing</td>
<td>3840</td>
<td>1988-1992</td>
<td>2038-2043</td>
<td>31 years</td>
</tr>
<tr>
<td>Komati</td>
<td>Coal</td>
<td>existing</td>
<td>900</td>
<td>1961-1966</td>
<td>2019-2020</td>
<td>58 years</td>
</tr>
<tr>
<td>Kriel</td>
<td>Coal</td>
<td>existing</td>
<td>2880</td>
<td>1976-1979</td>
<td>2026-2029</td>
<td>43 years</td>
</tr>
<tr>
<td>Matla</td>
<td>Coal</td>
<td>existing</td>
<td>3480</td>
<td>1979-1983</td>
<td>2029-2033</td>
<td>40 years</td>
</tr>
</tbody>
</table>
Baseline profile for Nkangala District Municipality
Over 1.5 million people live in the Nkangala District Municipality as of 2017.
The district and local municipalities have shown a compound annual growth rate of 2.5% over the period 2007-2017.
Baseline profile for Nkangala District Municipality

**Demographics**

The bulk of the population are of working age in both LM's, indicating that the region is a labour hub.
Baseline profile for Nkangala District Municipality

**Employment**

✓ Over 1 million people are of working age and living in the district municipality.
✓ About 40% of these individuals are employed in the DM
✓ The unemployment rate of the DM stands at 32%
✓ The remaining 28% are not economically active
✓ The same trend can be seen within the Emalahleni and Steve Tshwete LM’s

<table>
<thead>
<tr>
<th></th>
<th>Emalahleni</th>
<th>Steve Tshwete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population: Working age</td>
<td>319 437</td>
<td>174 974</td>
</tr>
<tr>
<td>Employed %</td>
<td>49 %</td>
<td>54 %</td>
</tr>
<tr>
<td>Not economically active</td>
<td>22 %</td>
<td>25 %</td>
</tr>
<tr>
<td>Unemployment rate</td>
<td>29 %</td>
<td>21 %</td>
</tr>
</tbody>
</table>
Baseline profile for Nkangala District Municipality

Sectoral employment breakdown by region

- Agriculture, forestry and fishing
- Manufacturing
- Construction
- Transport, storage and communication
- General government

- Mining and quarrying
- Electricity, gas and water
- Wholesale and retail trade, catering and accommodation
- Finance, insurance, real estate and business services
- Community, social and personal services
The district and local municipalities have higher levels of secondary and diploma graduates when compared to provincial and national averages.
Net job losses in coal overall of ≈100k, direct jobs in coal shifting from ≈80k in 2016 to ≈50k by 2030

Jobs (net) (construction + operations) ['000]

Sources: Draft IRP 2018; CSIR Energy Centre analysis
Note: Job potential includes direct, indirect and induced jobs
STUDY TOUR TO EUROPE

Lessons learnt -applicable to the province for Coal Regions in Just Transition
Purpose of the Study Tour

• Initiative by the EU Commission's SPIPA (Strategic Partnerships for the Implementation of the Paris Agreement) Programme and GIZ South Africa

• To exchange experiences and best practices/technologies in the “Just Transition” of Coal Regions (energy, water, land use) in relations to Climate Change

• Develop understanding on how nations in the European Union are addressing the just energy transition of coal regions over the last 25 years.

• The end results is a knowledge exchange that could benefits South African and European regional economies and create partnerships between all entities involved

• A learning exercise and a platform of exchange ideas with other like minded stakeholders from different parts of the globe and attending Climate Opportunity Conference 2019 and Working Group on Just Transition for Coal Regions.
Germany, Lusatian Coal Fields (Visit to F60 Conveyor Bridge)

• The F60 conveyor bridge in Lichierfeld is a colossal, 350m long and 80m high structure and a vivid testimony to the German industrial heritage

• It has been transformed into a multi-sector area that aims to celebrate Germany industrial heritage by turning the structure itself into a tourist attraction and deploying future technologies in the immediate area to offset losses

• Stimulated sectors include:
   – RE deployment
   – Tourism (Lake, Camping, Concerts)
   – Conservation

• Employment levels are still very low in comparison but due to specific reason
Germany, Lusatian Coal Fields (Visit to F60 Conveyor Bridge)
Kempen & Maasland Regional Landschap

• After closer of seven coal mines 60000 job losses,
• The local NGO’s design reconversion plan with communities (by converting the area into National Parks with six entrance gate with different themes called Climate Change and Ecosystem Reconnection Model in investing on Natural Assets
• 150000 visitors annually costing 3Euro per person).
• Linked with University Ecotron Hasselt created 5000 jobs in Tour Guide, Research Facility, Cycling, Horse Riding, Trailing, Bird Watching, Canoeing, Resturanrts, Camping, Shopping, Rain Water Harvesting, Renewable Energy, Cable Skii and etc
Poland, Bogatynia (Visit to Kluster)

- Klaster is a regional incubator that aims to deploy and develop integrated regional systems that reduce regional economies dependence on the states utility whilst offsetting regional economic and socio-economic losses due to coal decommissioning.
The Europeans countries were in the same status quo as MP to be affected by decommissioning of Coal Mining that lead to huge number of Job losses but they:

- Capitalized on Historical Assets to rebuild their economy
- Converted Historical areas to tourism facilities and shopping centres
- Converted Closed Mines into Tourist and Recreation Facilities e.g. creating National Parks with different indigenous species
- Incentivize mine workers into business entrepreneurs
- Promote renewable energy and energy efficiency to reduce the amount of GHG emissions to the atmosphere
- Mobilizing communities to set economic agendas on economy diversification (ownership - bottom-up approach)
- Establishing Commissions to deal with Coal Just Transition by developing and aligning policies with creative-mentality
- Create Just Transition Fund to assist struggling Coal Regions
- Strengthen partnerships and cooperation with other stakeholders (adopting best technology and innovation practices)
Challenges on Energy Transition

- Losses on Region Economic activities
- Losses in jobs and opportunities in mining and power sectors
- Labour migration
- Negative socio-economic impacts
- Losses of existing skills and lack skills required for new industry
- Lack of change of policies to include Renewables
- Limited Economic Diversification
THANK YOU
DANKIE
REA LEOHA

HI NKHENSILE
SIYATHOKOZA
SIYABONGA

NDOLIVHUAA
ENKOSI

Sources:
CSIR Analysis
Mpumalanga Analysis