Short-term, private sector-led employment opportunities in Mpumalanga

Webinar

29 August 2024

PRESIDENTIAL CLIMATE COMMISSION

G:ENESIS UNLOCKING VALUE

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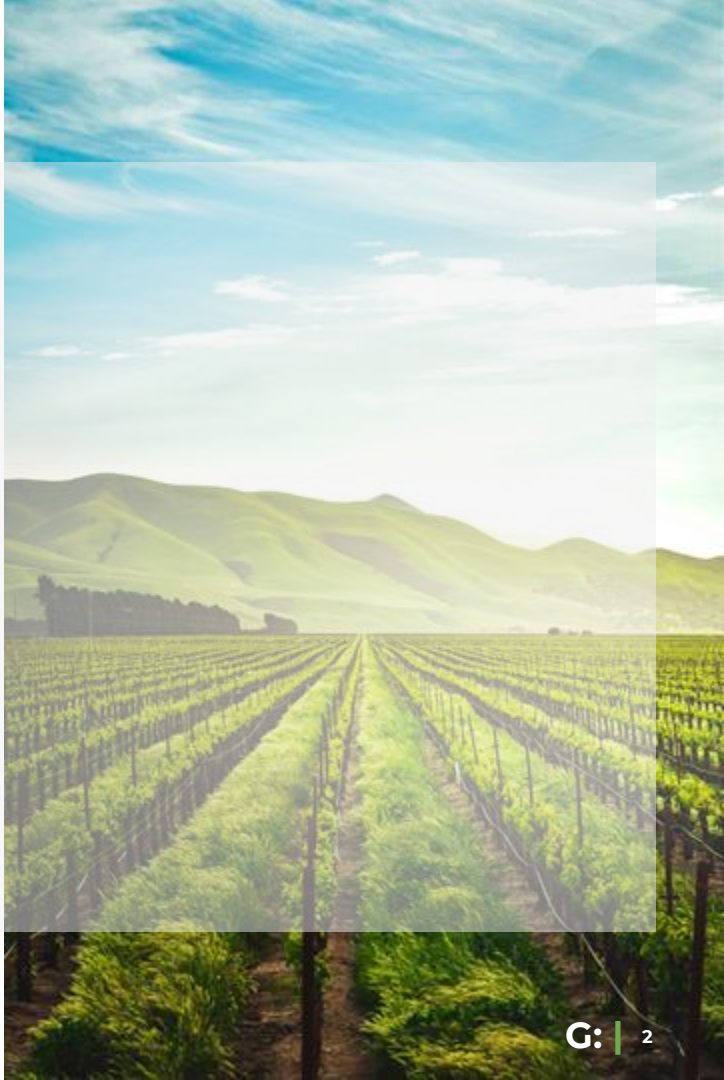
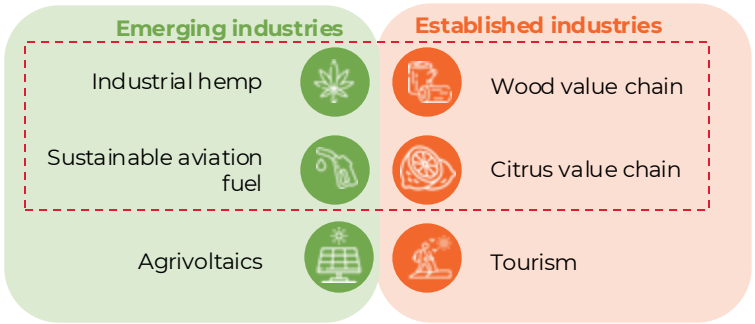


The purpose of this report is to highlight opportunities for the PCC and Mpumalanga Provincial Government to support private sector growth in Mpumalanga

This work is intended for the Mpumalanga Provincial Government as an input into a broader piece of work around diversifying the provincial economy. The intention of this work is to give the PCC and Mpumalanga Government guidance on opportunities for supporting private sector growth and to provide a foundation for further engagements with the private sector.

In the previous phase of this project, the working committee agreed **six potential opportunities for possible demand-led employment creation in the short-term:**



Available methodology:

This assessment has relied on the following methodology:

1. Information and insights from the previous phase of the project, which included a desktop analysis, analysis of available data and preliminary engagement with stakeholders;
2. Further supplementary desktop research;
3. Consultations with subject matter experts; and
4. Workshops with subject matter experts for feedback and validation.

This work has been through various stages of validation and has benefitted from the input of subject matter experts, as well as input from the Mpumalanga Provincial Government.

This output is based on research that did not include the collection of primary data/information. This output is not intended to be a master plan or feasibility study.

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Hemp is a multi-purpose crop with several advantages

Hemp is a strain of Cannabis Sativa plant with low levels of delta-9-tetrahydrocannabinol (THC). To qualify as industrial hemp in South Africa it must have <0.2%THC content. All parts of the plant – stalks, seeds, flowers and leaves – can be harvested and processed. It is a cellulose-based plant and among the bast fibre family (e.g. flax, kenaf) of fibrous crops

Industrial hemp is grown as a field crop:

- Hemp is a **summer crop** (sowed usually between September and December) and takes between 90 and 120 days to harvest (farmers can grow 2 crops in single season).
- Total biomass yield ranges from **8-15 tons per hectare**, cultivar dependent. Roughly 70-80% of this is the "straw", while the "grain" and flowers make up 10-15% respectively.
- **Commercial viability is dependent on scale**, with recommended farming sizes beginning at 5 ha per farmer.

Hemp has several advantages:

1. Hemp is a versatile plant with **more than 20,000 uses**
2. Hemp has comparatively **low input requirements** (e.g., no pesticides, limited fertiliser, and 75% less water than cotton)
3. Hemp, like other bast fibre, is **highly resilient** and can grow under exceptionally stressful and contaminated environments (e.g., degraded mine land)
4. Hemp is **beneficial for soil** remediation (e.g., removal of heavy metals from the ground), soil improvement and nitrogen fixing (as a rotational crop)
5. Hemp bast has among the **highest cellulose content** of all plants (+70% compared to ~40% for wood). Hemp seeds are the second highest source of plant protein, after soybeans.
6. Hemp has **strong carbon capture capabilities** - 9 to 13 tonnes of CO_2 absorption per hectare harvested.

Sources: 1. Congressional Research Service (2018), *Hemp as an Agricultural Commodity*. | 2. Lowitt (2020), *Initial considerations for the creation of an interregional industrial hemp value chain between Malawi and South Africa*. | 3. Ministry of Agriculture and Food (1999), *Industrial Hemp Factsheet*. | 4. Alberta Agriculture and Rural Development (n.d.), *Industrial Hemp Harvest and Storage Best Management Practices*. | 5. Ziner (2021), *Industrial hemp fibre is better than wood in every way*. | 6. European Industrial Hemp Association website. | 7. Key informant interviews, 2024. | 8. Hemp Today (2021), *Industrial hemp fibre is better than wood in every way*.

The hemp plant produces a range of products across five categories

Farming

Carbon, seeds for sowing, soil enhancement/remediation (from growing of the plant itself or the multiplication of seed by breeders)

- Carbon sequestered
- Seeds for sowing

Foods

Foods and beverages (using largely the seeds, which are either whole, milled into flours, or pressed into oils – but also the flowers, for CBD-fortified edible beverages and solids)

- Alternative protein
- Hempseed oil

Feeds

Animal feed protein (using primarily the seeds, and particularly the seedcake - a by-product of the seed pressing - as well as the leaves)

- Animal protein

Fibres

Furniture, clothing/apparel, construction materials, composites (including for construction, automotive components, aerospace interiors, sport and leisure, furniture and design), bio-plastics, bio-char, technical textiles (broadest range), animal bedding, mulch etc. This is all derived from the straw/stalks

- Animal bedding
- Plastics
- Furniture
- Clothing and apparel

Fractions

Pharmaceuticals, traditional medicines, nutraceuticals, solvents, lubricants, cosmetics agents, bio-energy feedstock (mostly from the flowers, where the cannabinoids sit, but also from the seeds).

- Cosmetics
- Medicines, pharmaceuticals
- Nutraceuticals
- Bio-ethanol

Source: Bam, A. 2024.

Hemp is a promising opportunity for Mpumalanga for five reasons

Relevance of hemp to Mpumalanga

- Hemp has contributed to the livelihoods of tens of thousands of people across South Africa (primarily in the Eastern Cape and KwaZulu-Natal).
- The SA government, in partnership with the Eastern Cape Province, Agriculture Research Council (ARC), and CSIR have invested in hemp trials since 1999. These were found to adapt well to local conditions and could be transformed into various cellulosic-based materials.
- 37 hemp farming permits have recently been issued in MP, with farmers expected to receive support from the Province.
- South Africa is currently a net importer of primary and downstream hemp products, indicating an opportunity for cultivation and processing, which could be located in Mpumalanga.

Land availability

- Hemp can play a leading role in the phytoremediation of degraded in soil in MP (~240,000 ha of mine land in Mpumalanga requires rehabilitation).
- There is 820,000 ha of arable land in Mpumalanga used for crop production, which could use hemp in crop rotation.
- 490,000 ha of wood plantations in Mpumalanga could possibly benefit from hemp intercropping.

Suitable agricultural conditions (theoretically)

- Sufficient rainfall and adequate temperatures.
- For certain cultivars, sufficient day-length period for viability of the plant.

Proximity to local markets

- Potential forward linkages to established industries in Mpumalanga and Gauteng, such as food; building materials; pulp, paper and cellulose; textiles and fabrics; and automotives
- Close to Gauteng for end-consumption, value addition, or exports to international markets.

Financing opportunities

- Just Energy Transition Partnership (JET-P) funding available to transition communities from coal to new economic activity that is carbon sequestrating.
- Large availability of JET-P grants can be used for feasibility studies and de-risking investments.

Supporting industrial hemp in Mpumalanga could create 2,400 to 24,000 direct jobs

2,400 to 24,000

direct jobs

Majority low-skilled permanent and seasonal jobs, mainly in cultivation, across Nkangala, Ehlanzeni & Gert Sibande District Municipalities

R46,940

average annual compensation

for direct jobs created

Sub-sector employment multipliers:[a]

8 Agriculture

5.9 Textiles

6.7 Food manufacturing

Job creation assumptions

- **There is limited job creation data for the hemp value chain.** The number of jobs created will depend on the purpose for which the hemp is cultivated and the corresponding processing activities (e.g., textiles, food manufacturing) - which will be a function of the private sector's response to market conditions and the support provided by the public sector.
- Jobs in cultivation for the purpose of phytoremediation of soil could create at least 2,400 cultivation jobs, **assuming a 10% conversion of mine land that requires rehabilitation** (total area of 240,000 ha), with a conservative 0.1 FTE jobs created per hectare. **Job creation estimates are low for soil remediation** since much of the hemp plant will initially be unsuitable for a variety of end markets (arguably, the harvest could be used for fibre and biofuel markets, which could increase the job creation to ~1 FTE/ha). Assuming the soil phytoremediation is successful after several years of cultivation, greater labour intensity is expected in response to the increased market suitability of the crop.
- Jobs in crop cultivation for fibre, seeds and flowers could create an estimated 1 FTE job per hectare. **Assuming a cultivation extent similar to that of soil phytoremediation activities** (24,000 ha), an estimated 24,000 direct jobs could be created.
- **Jobs in a decortication[b] facility provide an indication of primary processing jobs.** A decortication facility that processes 5,400 tons of hemp per year can support 11 direct jobs per plant. This would create an estimated 297 direct FT jobs to process 144,000 tons of hemp per year (24,000 ha of production, at 6 tons per ha, requiring 27 processing plants at 11 jobs per plant).

Sources: 1. Key Informant Interviews, 2023. | 2. Mpumalanga Green Cluster Agency (2022), *Sustainable Agriculture Market Intelligence Opportunity Brief*. | 2. Engineering News (2021), *South African company to manufacture hemp product machinery in the Eastern Cape*. | 3. Institute for Economic Justice (2020), *Fiscal Policy in South Africa: closed input-output income and employment multipliers.*

Notes: a. Employment multipliers provide an indication of the jobs transmission effect of investments in these sub-sectors. The referenced employment multipliers relate to the number of jobs created by an expenditure-weighted increase in fiscal spending of R1million. | b. Decortication is the process of separating the outer fibrous layer of the hemp plant's stalk from its inner woody core.

Recommendations for Mpumalanga Provincial Government

Creating a viable industrial hemp market in Mpumalanga will require significant, sustained government support over a long period that is tackled as an industrial policy challenge.

Catalyse specific investments in the industrial hemp value chain within Mpumalanga

Large-scale hemp seed breeding, adapted to Mpumalanga's conditions and product end-markets

"Proof of concepts" in successfully using hemp for mine land rehabilitation, intercropping with wood plantations, and alternative crop rotation in different Mpumalanga regions

Research and Development ("R&D") for new product development or product substitution in existing Mpumalanga industries, e.g., animal feed, textiles/fabrics, pulp and paper, cellulose

Processing capacity, to create baseload demand for cultivation activity, e.g., flower processing, seed processing, fibre decortication, whole plant pyrolysis

Foster an enabling environment for private sector investment in the industrial hemp value chain

Systematically collect and share information with the private sector to enable greater understanding of hemp market opportunities and dynamics, local regulations and their pathway, international regulations, farming/ processing/ product/ handling standards, agronomy practice, hemp cultivation advantages and benefits.

Support the amendment or finalisation of key local regulations to unlock investment e.g. the use of hemp in products for human and animal consumption, bank financing, cannabidiol (CBD) processing under a hemp license, increasing the regulated THC content threshold.

Fill knowledge gaps that may exist in hemp carbon-offset standards and carbon sequestration to support the development of hemp carbon offset projects.

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Sustainable Aviation Fuel (SAF) is chemically equivalent to kerosene, enabling its use without modification to aircraft engines. It can be produced from a variety of renewable or waste feedstocks, and through several production pathways.

	Oilseed	Sugarcane	Industrial off-gas	Lignocellulosic waste	Hydrogen + carbon[c]
					
Feedstock	*Seeds from oilseed plants, such as Solaris[a] and Jatropha.*	*A-molasses as a co-product from sugar production at sugar mills.*	*Industrial waste gases rich in carbon monoxide, produced from heavy industry processes.*	*Garden waste destined for municipal landfills, forestry/wood processing residues and cleared Invasive Alien Plants (IAPs).*	*Water and CO2 from the air, biogenic or industrial sources.*
Processing	**HEFA**: intermediate mechanical- or solvent-based oil extraction, followed by final processing.	**AtJ**: intermediate fermentation of A-molasses into bio-ethanol, followed by final processing.	**AtJ**: intermediate fermentation of off-gases into ethanol, followed by final processing.	**F-T**: intermediate gasification of biomass into syngas and syncrude, followed by final processing.	**PtL**: Combination of hydrogen from electrolysis and CO2 from captured carbon, converted to syncrude and final processing.
Yields	**SAF** (l/tonne): 229 **Gasoline** (l/tonne): 151 **Diesel** (l/tonne): 4 **Overall fuel yield** (GJ/tonne): 14	**SAF** (l/tonne): 141 **Gasoline** (l/tonne): 108 **Diesel** (l/tonne): 18 **Overall fuel yield** (GJ/tonne): 10	**SAF** (l/tonne): 51 **Gasoline** (l/tonne): 39 **Diesel** (l/tonne): 7 **Overall fuel yield** (GJ/tonne): 4	**SAF** (l/tonne): 245 to 293 **Gasoline** (l/tonne): 18 to 69 **Diesel** (l/tonne): 0 **Overall fuel yield** (GJ/tonne): 13	**Product split per litre output:** **e-Kerosene:** 40% **Propane and Naptha:** 20% **Diesel:** 40%
Cost/ litre[b]	**~ZAR 35 per litre**	**~ZAR 30 per litre**	**~ZAR 50 per litre**	**~ZAR 35 per litre**	**>ZAR 60 per litre** (estimated average e-kerosene production cost in the EU in 2020)

Sources: 1. Worldwide Fund for Nature (2022). Blueprint for Sustainable Aviation Fuel (SAF) Production Potential in South Africa. Available: https://wwfafrica.awsassets.panda.org/downloads/saf_technical_report.pdf | 2. Topsoe (2023). Voice from the Sky: expert perspectives on Sustainable Aviation Fuel. Available: https://engage.topsoe.com/l/997541/2023-04-25/czfk/997541/1682425431nZyiGiaA/Voices_from_the_Sky___SAF_report_by_Topsoe_FV_Apr_23___web.pdf | 3. International Council on Clean Transportation (2022). Current and future costs of e-kerosene in the United States and Europe. Available: https://theicct.org/wp-content/uploads/2022/02/fuels-us-europe-current-future-cost-ekerosene-us-europe-mar22.pdf

Notes: a. Solaris is a nicotine-free tobacco variety specifically developed to maximise oilseed production. | b. Cost per litre estimates based on WWF scenarios. | c. PtL not part of the analysis for Mpumalanga.

SAF is a promising opportunity for Mpumalanga for five reasons

Energy industry relevance

- Mpumalanga is the centre of energy production in South Africa. It is home to 12 Eskom power stations and multiple coal mines, coal transport infrastructure.
- Sasol, a world leader in Fischer-Tropsch processes, has a large-scale industrial complex in Secunda. Sasol produces petrol and diesel in Secunda and Sasolburg via F-T processing, and jet fuel in Sasolburg via crude oil refining.

Suitable agricultural conditions

- Proven suitability for wood and sugarcane cultivation in the Lowveld.
- Theoretically suitable growing conditions for the Solaris plant, based on Marble Hall trials.

Land and feedstock availability

- ~240,000 ha of “marginal” mine land in Mpumalanga requires rehabilitation – on which non-food oilseed crops could be grown.
- ~24,000 ha of planted sugarcane in Nkomazi Local Municipality, and two sugar mills.
- Forestry residues could be derived from the 490,000 ha of wood plantations in Mpumalanga, as well as wood chips from various saw mills.
- ~22 million oven-dry tonnes of accessible Invasive Alien Plant (AIP) biomass in MP.
- ~607,000 tonnes of off-gas per year from heavy industry in MP e.g. Samancor (Witbank and Middelburg) and Glencore (Lydenburg).

Proximity and accessibility to markets

- OR Tambo International Airport (ORTIA) in Gauteng represents the largest single source of jet fuel demand in SA.
- There is an existing refined fuel products pipeline from Secunda to Gauteng (albeit not for jet fuel).
- Proximity of MP Lowveld to Maputo sea port provides access to far east SAF markets such as Singapore and Japan.

Financing opportunities

- Just Energy Transition Partnership (JET-P) funding available to transition communities from coal to new economic activity that has lower GHG emissions.
- Large availability of JET-P grants can be used for feasibility studies and de-risking investments.

Supporting SAF in Mpumalanga could create an estimated 25,000 direct jobs

25,000 direct jobs[1]

- 40% in construction, 35% in oilseed production and IAP clearing and harvesting; 25% in processing plants and other.
- Many existing jobs in sugar production and coal trucking (~1,750 jobs) would be retained.
- Jobs would be spread across Nkangala, Ehlanzeni & Gert Sibande District Municipalities.

Average annual compensation[2]

R46,940 Agriculture

R62,206 Construction

R840,274 Coke, petroleum products and nuclear fuel

R162,905 Manufacturing: other chemicals

Sub-sector employment multipliers[a]

8 Agriculture

6.32 Construction

3.04 Coke, petroleum products and nuclear fuel

4.16 Other manufacturing

Job creation assumptions

- An estimated 25,000 direct jobs could be created along the SAF value chain in Mpumalanga. This represents 25% of the WWF report authors' total estimate of 100,000 jobs across South Africa. It is based on an approximation of where the jobs created would be located, using the WWF report authors' scenario of three final production facilities in Mpumalanga, with proximity to final production facilities in Gauteng; the pre-existence of sugar mills in Mpumalanga; and a lower than provincial average of IAPs.
- The estimated breakdown of the ~25,000 direct jobs are as follows:
    - Construction of intermediate and final processing facilities: 10,000 jobs
    - Oilseed (Solaris seed) production: 6,250 jobs
    - Invasive Alien Plant (IAP) clearing and harvesting: 2,500 jobs
    - Intermediate and final processing plant operations and other: 6,250
- The number and location of jobs created would depend on the selected technological pathway/s for SAF production. For example, AtJ from sugar A-molasses would sustain existing and create new jobs in Ehlanzeni, whereas the HEFA and F-T pathways would likely support new jobs in Nkangala and Gert Sibande District Municipalities.
- If water availability for cultivation is directly tackled as an enabling initiative for oilseed production, jobs would be created in the operation and construction of water treatment facilities. Estimated demand for treating mine-affected water is ~350 million litres per day. This would potentially require the establishment of four regional treatment plants, which could generate, per plant, 50 FT jobs for operations and 400 FTE jobs for construction - a total of 200 FT operations jobs and 1,600 FTE construction jobs.[3]

Sources: 1. Worldwide Fund for Nature (2022). Blueprint for Sustainable Aviation Fuel (SAF) Production Potential in South Africa. Available: https://wwfafrica.awsassets.panda.org/downloads/saf_technical_report.pdf | 2. Calculation based on Quantec data (2023). | 3. Institute for Economic Justice (2020), *Fiscal Policy in South Africa: closed input-output income and employment multipliers*. | 3. Key Informant Interview (2023).
Notes: a. Employment multipliers provide an indication of the jobs transmission effect of investments in these sub-sectors. The referenced employment multipliers relate to the number of jobs created by an expenditure-weighted increase in fiscal spending of R1 million..

Recommended next steps for Mpumalanga Provincial Government

Information sharing and further research

Gather and publish relevant contemporary information, such as: findings of the IDC/Sugar Industry AtJ study; JET funding opportunities for SAF value chain development; demystifying the SAF certificate 'book and claim' system.

Support further investigation into:

- The cost-benefit of setting a local SAF blending mandate; and retrofitting local crude oil refineries for HEFA refining.
- Implications of supporting patent-protected products/ processes such as Solaris.
- The viability of using hemp and Solaris biomass in F-T gasifiers.
- Catalysts for overcoming barriers to the issuance of mine closure certificates, to accelerate productive re-use of land.

Financial support for R&D and pioneering projects

Devise and provide financial incentives to:

- **Prove that Solaris seed can be successfully grown** in MP at scale, ideally on marginal land and with no/limited irrigation.[1]
- **Explore alternative oilseeds for HEFA production**, such as industrial hemp.
- **Stimulate investment** in AtJ production from A-molasses and industrial off-gas and in HEFA-based production (intermediate or final processing facilities or both).
- **Facilitate up-take of renewable energy** for sugarcane irrigation.[1]

The range of financial incentives could include R&D grants, project development grants to reach final investment decision, concessionary loans and Contracts for Difference.[1]

Enabling SAF regulations and practice

Provide concerted support to Sasol in its lobbying efforts to the EC to allow flexible allocation, to dramatically enable F-T production of SAF at Secunda and a biomass value chain.

Help develop a viable biomass aggregation network, likely centred on Sasol Secunda, and capitalising on existing coal trucking logistics.

Support securing off-take with jet fuel suppliers in other jurisdictions, either for intermediate feedstock (ethanol/ vegetable oil) or SAF produced in MP.

Water availability

Enforce NEMA to secure water quality in MP, focusing on the treatment of water in closed mine shafts.

Support deregulating private water treatment to allow sales to multiple customers from mine water treatment plants.

Actively coordinate investment in water treatment plants for mine-affected water.

Support the quantification and reallocation of water use allocations in the Province.

Note: 1. Contracts for Difference: where a producer is paid the difference between a strike price (price which the producer needs to cover the cost of production and an allowed return on investment) and the higher of two reference prices – the market price for SAF or the actual achieved sales price.

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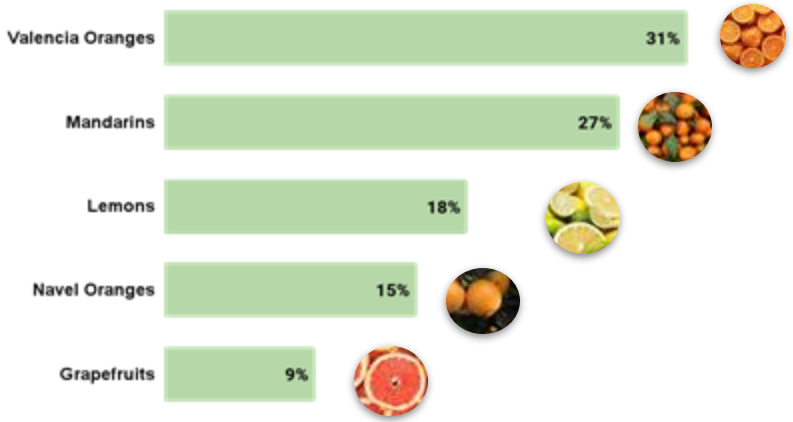
The citrus sector is composed of four broad citrus types, where Mpumalanga has a climatic advantage in growing grapefruit and Valencia oranges

Total citrus-growing acreage in South Africa by citrus types (2023)[1]



The top provinces in terms of the share of citrus-growing acreage are: Limpopo (40%), Eastern Cape (25%), Western Cape (19%) and Mpumalanga (8%).[1]

South Africa is the second-largest exporter of citrus fruits in terms of monetary value, making up 11.7% of the worldwide value of exported citrus fruits in year 2022.[2]

Different types of citrus can be processed into different products

Oranges

- Orange juice
- Orange marmalade
- Citrus honey
- Animal feed
- Fragrance and aroma products
- Cleaning detergent

Lemons /Limes

- Lemon juice
- Lemonade
- Lemon oil
- Pectin
- Citric acid
- Cleaning detergent

Mandarins

- Marmalade
- Canned mandarins
- Dried mandarin peel

Grapefruit

- Grapefruit juice
- Grapefruit marmalade
- Grapefruit seed oil
- Pectin
- Citric acid
- Naringin

Sources: 1. Citrus Growers' Association (2023), *2023 Industry Statistics* | 2. Trend Economy (n.d.), *Citrus fruit - Imports and Exports - 2022.*

On the face of it, citrus could be a promising opportunity for Mpumalanga for six reasons (1/2)

1. The citrus industry is well-established in South Africa and in the Mpumalanga province. South Africa is the second-largest exporter of fresh citrus, and **Mpumalanga is the fourth largest province for citrus production**.[1] South Africa's fresh citrus market is expected to expand at an **annual compound growth rate of 7.73% from 2024 to 2028**.[2] Furthermore, there is opportunity for government to help boost domestic and global demand for citrus through market studies and supporting industry-level marketing activities.

2. The citrus value chain in South Africa is comprehensive, encompassing elements from **cultivar development through to agro-processing**. The citrus value chain also has a strong and **competent industry association, the Citrus Growers' Association (CGA)**, which works closely with all players in the value chain and relevant bodies of government. The established citrus value chain with a competent point of contact with the government lays a solid foundation for further progress and development within the industry, and means that growing citrus production will have a multiplier effect on both upstream and downstream activities.

3. Employment opportunities created by the citrus industry are substantial given the **labour-intensive nature of cultivation and harvest-related activities. For every R1 million generated in citrus industry in Mpumalanga, 5.22 jobs are supported**.[3] Although some elements of production are being increasingly mechanised (such as, weeding, irrigation and packing), it remains popular and cost-effective to prune and harvest citrus orchards using labour.[4]

Sources: 1. Citrus Growers' Association (2023), *2023 Industry Statistics* | 2. Statista (n.d.), *Citrus Fruits - South Africa* | 3. Based on our own estimation using the percentage of citrus production in Mpumalanga, the total employment in citrus sector based on data from Fruit SA 2021/2022 statistics, and the total value of citrus production in South Africa based on Fruit SA 2021/2022 statistics. The labour intensity number is the result of dividing the Mpumalanga citrus market size by its citrus employment. | 4. Genis (2018), *Oranges and labourers: The potential for job creation in the citrus sub-sector of South Africa.*

On the face of it, citrus could be a promising opportunity for Mpumalanga for six reasons (2/2)

4. The South African citrus industry enjoys a relatively favourable export environment. The **African Growth and Opportunity Act (AGOA**) allows for tariff-free export of citrus to the United States.[1] South Africa benefits from preferential tariff agreements with the **European Union**. Expanding bilateral agreements with **Asian nations,** including China and Vietnam, are facilitating easier market access via relaxed phytosanitary requirements.[2,3] The **African Continental Free Trade Area (AfCFTA)** will reduce tariffs on citrus products exported to other African nations.[4] However, these trade agreements are often undermined by **phytosanitary requirements** (e.g., phytosanitary restrictions imposed by the EU for preventing false codling moth in 2022 and citrus black spot in 2024) as well as **trade and political disputes** (e.g., the US threat to remove South Africa from AGOA).[5,6]

5. South Africa enjoys a competitive harvesting season when compared to other major citrus exporters. The country **harvests citrus from March to September**. This complements the harvesting window period for other major citrus producers in the Northern Hemisphere (Spain, USA, Turkey, and China), which starts from September onwards.

6. Existing socioeconomic investment in the citrus industry by bodies like the Jobs Fund and Citrus Growers' Association Economic Development Fund could attract private investors for blended finance opportunities. For instance, the R307-million Economic Transformation of Black Citrus Growers (ETBCG) programme was funded by Jobs Fund and the Land Bank, with blended financial support from non-profit organisations and the private banking sector, including CGA, AgriSETA, and FNB.[7]

Sources: 1. United States Department of Agriculture Foreign Agricultural Service (2023), *Republic of South Africa Citrus Annual* | 2. Fresh Fruit Portal (2021), *South Africa to begin exporting lemons to China after protocol revision* | 3. Farmer's Weekly (2024), *SA citrus to make its way to Vietnam markets.* | 4. Based on data from *AfCFTA e-Tariff Book* (n.d.) | 5. World Trade Organisation (2024), *South Africa initiates second dispute complaint regarding EU citrus fruit measures.* | 6. The Africa Report (2023), *US threatens South Africa with loss of trade privileges over Russia ties.* | 7. Engineering News (2023), *R78.9m disbursed to citrus growers under the economic transformation programme.*

Supporting Mpumalanga's well-established industry by tackling market constraints has potential to create 8,000 additional jobs by 2030

DEMAND:

Global demand for South African citrus remains strong, with South Africa being the second-largest citrus exporter in the world. The growth in citrus exports in recent years has been driven by mandarin/tangerine and lemon/lime exports - the two citrus types grown less commonly in Mpumalanga.

Domestic demand for citrus (human and animal feed, and processed citrus) favours mandarins/tangerines and oranges, and has remained fairly flat over time.

SUPPLY:

Citrus production has grown steadily over time, but is constrained by high input costs, erratic electricity supply and greater water pressures from climate change.

Citrus distribution is facing a logistics crisis, especially in road transport and ports.

Compared to fresh exports, **citrus processing** (predominantly juicing) is unattractive to most producers given market saturation and relatively low market prices for processed citrus.

ENABLING ENVIRONMENT:

South African citrus exports are subject to **phytosanitary standards** in export markets. For instance, the US will only import citrus from areas deemed to be free of citrus black spot (CBS), a fungal disease, and the EU has blocked exports in the past due to CBS.

South African citrus exports are also subject to other domestic food export rules contained in the **Agricultural Pests Act 36 of 1983**. **Minimum wage laws** for farm workers affect the input/labour costs for producers.

Citrus value chain recommendations for the Mpumalanga Provincial Government (MPG)

This study focuses on short-term opportunities for job creation, but also mentions a number of longer term initiatives that could also help to grow the citrus sector in Mpumalanga:

	Short term (1-2 years)	Longer term (3+years)
Demand	Fund and commission detailed **market studies** to identify potential new markets for Mpumalanga's citrus products. Thereafter, disseminate market intelligence with local exporters. Offer **training programmes** on export logistics, international trade regulations, and quality control to ensure local exporters are well-prepared to enter new markets. Create a **strong brand identity** for Mpumalanga citrus to differentiate it in the international market. This could include quality assurance labels and promotional campaigns. Run **promotional campaigns** highlighting the nutritional benefits of citrus (e.g., high vitamin C content), with a focus on grapefruits and oranges which are best suited for Mpumalanga's climate and which have lost popularity relative to soft citrus.	Facilitate **trade missions** where citrus exporters can meet potential buyers, distributors, and partners in target markets, and subsidise participation in international agricultural and food trade fairs where local exporters can showcase their products.
Supply	Support the adoption of **shade netting** to increase the quality of citrus fruits, thereby increasing the volume of citrus suitable for exporting. The MPG could support adoption of shade netting by increasing farmers' access to finance (for example, by leveraging loans offered by the Mpumalanga Economic Growth Agency for agricultural SMMEs) and reducing the cost of netting (for example, by supporting local producers of netting through funding and investment). Support the adoption of **climate-smart water-saving irrigation technology/systems** to improve water resilience of citrus farming in Mpumalanga by supporting increasing farmers' access to finance, providing support and funding to a detailed feasibility and cost-benefit analysis study on irrigation technologies, and helping to reduce the cost of climate-smart irrigation system (e.g., commission research and development, or develop carbon credit project based on adopting climate-smart irrigation system). **Prioritise maintenance of provincial and municipal roads** to enable efficient transportation and logistics. **Sponsor efforts to improve fresh produce markets and local events**, particularly through collaboration with **Project Rebirth,** and leverage **new fresh produce markets that are planned** by the Mpumalanga municipality.	Support a greater usage and reliability of the **Maputo Port** for citrus distribution as a way to reduce and mitigate the supply chain disruption risk currently faced by the sector. Explore new supply chain solutions to resolve the ongoing logistics crisis by leveraging **provincial initiatives and strategies** such as the creation of Nkomazi SEZ, the planned construction of Agriparks, and the recently built Kruger International Airport. Support and facilitate AgriSETA in carrying out the **sub-sector pest control skills plan.** Help to **restore port and rail capacity** by collaborating with Business for South Africa's (B4SA) Transport and Logistics working group and the government-led National Logistics Crisis Committee (the NLCC).
Enabling environment	**Support farmers with pest and disease control in compliance with phytosanitary standards in overseas markets**, most notably the EU. In some cases, the MPG may be able to support national efforts in meeting and/or negotiating phytosanitary standards in export markets, such as through funding studies related to combatting CBS and FCM and making parts of Mpumalanga CBS and FCM-free areas. **Improve collaboration between industry and government in identifying and prioritising specific initiatives for financing,** particularly for emerging farmers, such as with the CGA Grower Development Company, IDC and the dtic.	

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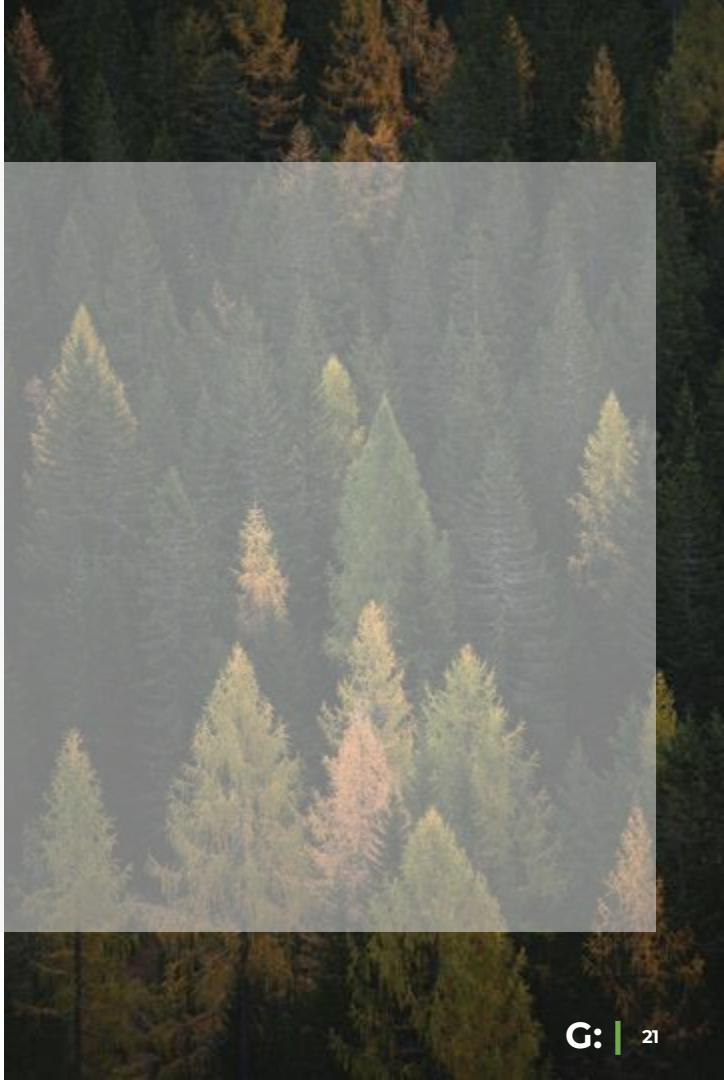

The expansion of wood is a promising opportunity for Mpumalanga for four reasons

Forestry industry relevance

- Mpumalanga hosts ~42% of South Africa's planted forests making the province highly significant to the country's national landscape.[7]
- The forestry sector in Mpumalanga contributes significantly to South Africa's agricultural GDP (accounts for 12.3%) and offers income generating opportunities for small scale growers, contractors and sawmillers. An expansion in the Forestry sector can lead to an expansion in related industries (i.e Furniture Manufacturing, Agroforestry, Biomass energy production, Ecotourism, Carbon trading, Bee-keeping, Textiles, etc.) creating a diverse economic ecosystem for Mpumalanga.[8]
- The presence of large forestry processing plants in Mpumalanga, including one of the largest pulp processing plants in the southern hemisphere (Sappi's Ngodwana Mill) showcases the forestry industry's capacity for growth and development in the province. [9]

Suitable climate and topography

- Ample rainfall, adequate temperatures and fertile soils in Mpumalanga provide favourable conditions for the growth of various tree species

Access to global and regional markets

- Mpumalanga is the national leader in export earnings from wood. Mpumalanga's primary export destinations for wood products include China, India, Europe and neighboring African countries

Financing opportunities

- Just Energy Transition Partnership (JET-P) funding available to transition communities from coal to new economic activities that involve carbon sequestering.
- Large availability of JET-P grants can be used for feasibility studies and de-risking investments.

Sources: 7. Wessels, Van Den Berg and Pretorius. *Spatial Natural Resource Monitoring in Mpumalanga Province of South Africa* | 8. Mpumalanga Economic Growth Agency (2022). *Forestry* | 9. Key Informant Interviews, 2023.

Previous research estimates that Wood in Mpumalanga could create 6 600 direct jobs

6 600

direct jobs

Majority low-skilled permanent and seasonal jobs, mainly in cultivation and harvesting, across the Ehlanzeni District Municipalities

R6,030

average annual compensation

for direct jobs created

Sub-sector employment multipliers[12]

10.16* Forestry

5.76 Products of wood

Job creation assumptions

- **An estimated 2,960 direct jobs could be created in new wood fibre plantations in Mpumalanga (based on 8,000 ha of new plantations).** The total potential FTE jobs across all provinces is 60,256 jobs in new wood fibre plantation projects and 22,610 FTE jobs through the recapitalisation of state-owned plantations
- Based on the job creation estimates in the Master Plan, it is assumed that wood fibre plantations create 0.37 FTE jobs per hectare
- 2,220 jobs could also be created in downstream processing industries. (0.12 direct jobs per ha, with a total of 0.4 jobs per ha for direct and downstream processing jobs). Forestry has a high labour intensity, at 7.44 jobs per ZAR1 million of economic output.
- Supporting category B and C plantations could unlock an additional 1,480 jobs.
- **Supporting the production of more wood in underutilized land is expected to support the poorest and most vulnerable,** given the rural location of wood fibre plantations. It would also serve to reduce greenhouse gas emissions.

Sources: 12. Institute for Economic Justice (2020), Fiscal Policy in South Africa: closed input-output income and employment multipliers.

***Note**: Employment multipliers provide an indication of the jobs transmission effect of investments in these sub-sectors. The referenced employment multipliers relate to the number of jobs created by an expenditure-weighted increase in fiscal spending of R1 million

There are constraints that need to be addressed to facilitate the creation of the estimated jobs

		Constraints that need to be addressed
Demand	**International**	• Supply chain challenges • Price volatility • Quality, pricing and certification protocols of the buyer countries
	Local	• Supply is not keeping up with the growth in local demand
Supply	**Production**	• 6,000 hectares of land may be available or suitable for new plantations, some of which may be subject to land claims. • The long harvest cycle (at least seven years), could make the projects less attractive to communities and/or investors seeking quicker returns • The local sawmilling industry has faced headwinds for the last few years. • It is difficult for landowners/ small tree farmers to invest in EIAs, applying for WULs and planting, if they are uncertain about the demand. • The Forestry Master Plan has proclaimed several key actions to address many of these these challenges, however, there are delays with the implementation.
	Climate, Land and Water	• Complex land ownership and community arrangements. • Water allocation challenges and complex licence and EIA processes.
Enabling environment	**Laws and Regulations**	• A clear distinction is made between hazardous and general waste which includes waste paper as it is a significant resource to the paper industry in South Africa. • The wording of the NRCS legislation does not encompass what was implied in the original regulations contained in the National Forestry Act on preservative treated timber. • The NRCS has capacity constraints (human resources as well as relevant equipment).
	Standards and Schemes	• There are no standards to regulate the importation of wood standards.
	Skills and Technology	• There is insufficient supply of courses for landowners, SMME contractors and small sawmillers.
	Infrastructure	• Issues around efficiency and reliability of the rail network compromise the competitiveness of South African exporters. • Deteriorated road infrastructure has cost implication to vehicles operating on such roads.
	Information	• Availability of relevant information for market players

Specific activities for the Mpumalanga Provincial Government in relation to next steps are as follows

Replicate outgrower schemes and Community-Private Partnerships

Replicate successful and tested models for outgrower schemes and Community-Private Partnerships would include support such as grants and soft loan funding facilitation and extension services **to make category B&C plantations more productive and expand the supply of wood** .

Support the dissemination of information and actively assist small growers

Disseminating information or guidelines relating to agroforestry and the different configurations and potentially **actively assisting smaller plantations on how to establish and manage forests that qualify for carbon credits** and how that can help mitigate a long growing cycle with no income information.

Enhance water access and resolve land claims

Resolve all issues related to land and water availability that fall within the jurisdiction of the provincial government. Explore mining land in Mpumalanga that could be rehabilitated with a cover crop to make the land suitable to grow timber through outgrower schemes.

Advocate for the fast-tracking of the implementation of the Forestry Masterplan

The Mpumalanga **should advocate for the resolutions and action steps of the masterplan to be fast-tracked** so that national barriers that hinder the growth and job creation potential of the wood value chain at the national level can be addressed.

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