



media release

World Micro-, Small, and Medium-sized Enterprises Day, 27 June 2024:

Mr Tshepo Mangoele and his science-based business for renewable energy

World Micro-, Small, and Medium-sized Enterprises Day, 27 June 2024: In 2017, the United Nations General Assembly (UNGA) declared 27 June as the Micro-, Small, and Medium-sized Enterprises (MSME) Day to raise awareness of the tremendous contributions of smaller businesses to the achievement of the UN Sustainable Development Goals (SDGs). MSMEs are also known as SMMEs in South Africa (SA). SMME = Small, Medium and Micro Enterprises. They contribute to local and national economies, account for 90% of the world's businesses, 60 to 70% of employment, and 50% of the global economy. The importance of such organisations is also acknowledged by SA's National Development Plan (NDP). They reduce unemployment, drive growth and innovation, and foster new markets and industries but, they are particularly vulnerable to rising inflation and supply chain disruptions. Enterprises owned by young people and women are some of the most at risk. World MSME Day is an important opportunity to look at this topical issue in a very practical, policy-driven and human-centred way in the global context and call for support to help MSMEs get through the constant ups and downs of the supply chain and build up their ability to handle future shocks. Supply chains are a critical component of global trade and commerce. Conflicts, disasters and pandemics can quickly impact their functioning, increasing costs and making transactions more difficult. It is imperative that countries and their development partners continue to support and empower MSMEs to unlock their full potential.

Mr Tshepo Mangoele, Chief Executive Officer and founder of LignOrganic is the 2023 NSTF-South32 Innovation Award: SMME winner. He is a chemical engineer and a University of Witwatersrand (Wits) graduate from Rustenburg in the North West province. Mr Mangoele started a non-governmental organisation (NGO), then a construction company, until he later developed his science-based business, LignOrganic. He works with biomass using plant materials to create renewable energy, with the aim of developing a complete biorefinery, through the help of a research grant he received from the Department of Science and Innovation (DSI).

Mr Mangoele was one of the 2023 winners involved in the [motivational talks for youth](#) online, hosted by the NSTF on 11 September 2023, to engage with the students of the 2023 [NSTF Brilliants Programme](#). The virtual gathering was aimed at informing and motivating students in their STEM (science, technology engineering and mathematics) studies and for their future careers.

He advised the students to identify a societal problem and work to create a feasible solution and then try to market that, to turn a science idea into a business.

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"If you are not doing any marketing and sales, the business will eventually die because what you are doing is creating a great thing without selling it," said Mr Mangoele. He said jokingly that one should look for capital from the "three Fs: family, friends and fools" when trying to establish any business venture, in other words, search widely for the support you need. Grants and partnerships can be found from various institutions. Mr Mangoele remarked that it can be very helpful to leverage Artificial Intelligence (AI) tools such as Udemu, ChatGPT and opportunity desk among others for building a good business model. Mentorship programmes are also pivotal for young South Africans.

The first quarter 2024 statistics released by [Statistics South Africa](#) (Stats SA) revealed that the youth unemployment rate has risen to 45,5%. At the same time, with the rapid advancement of fourth industrial revolution (4IR) technology, low and middle-skill employment opportunities are predicted to gradually decline in the coming years, becoming replaced by jobs requiring highly technical skills. Jobs will be heavily centred around new digital technologies such as AI, big data and machine learning. The concerning fact is that the number of students studying in STEM fields at tertiary level is too low. This clearly threatens our country's progression in the digital future since a skills mismatch means that a vast majority of young job seekers would essentially be unemployable.

This makes fostering a culture of entrepreneurship even more crucial, together with prioritising digital skills development. Policymakers, developers, private businesses and science councils can play their part to support small businesses through capacity building, as well as providing funding and partnership networks. MSMEs also need to be connected to regional supply chains.

Innovation Award: SMME Award Winner: LignOrganic won the 2023 [Innovation Award: SMME](#) sponsored by the National Intellectual Property Management Office (NIPMO) since 2019, at the prestigious 2023 NSTF-South32 Awards, also known as the 'Science Oscars of SA'. The organisation was recognised for their revolutionary biomass conversion technology, that is helping to replace chemicals derived from fossil fuels with biochemicals such as lignin, which they produce, and has successfully formulated and commercialised as a skincare brand.



Mr Mangoele has been passionate about environmental protection since he was a student, which is the main driver of his invention. He uses invasive plant waste from the Johannesburg City Parks and Zoo, and then creates useful materials after a series of biomass research investigations. He explains: "I found a way of doing this dual lignin extraction — there's lignin and it precipitates out with the carboxylic acid. I know it's very maverick — like how I started doing this science".

The lignin he produces can be used in UV-resistant cosmetics, construction, agriculture and fuel. LignOrganic is the first sulphur free producer of the biochemical in Africa. He explains that unlike other power plants that work with biomass, his company uses 100% of its biomass input, and it is fully applied in all the products they produce, which include skincare products and lignin-free cigars.

"Our work is important as we are helping the world move from using fossil fuels to using more plant-based products," said Mr Mangoele. He expressed his gratitude to the DSI for giving him a capital push to start his business. He has also established partnerships with Wits and the Council for Scientific Industrial Research (CSIR), for prototype trials of his other projects. He concludes: "The next step now is building a bigger facility. We're also increasing the team size and getting more investors on board. But the biggest challenge now that we are working on day and night is to get distribution for our products".

About the NSTF: NSTF is an independent non-profit [stakeholder body and network](#) – a civil-society forum of over [130 organisations involved in science, engineering, technology \(SET\) and innovation in SA](#).

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References/Sources:

- [Micro-, Small and Medium-sized Enterprises Day, 27 June](#) (un.org)
- <https://www.internationaldays.org/june/microsmall-and-medium-sized-enterprises-day>
- <https://unctad.org/meeting/united-nations-international-msme-day>
- <https://www.naspers.com/news-insights/group-updates/2024/stem-focus-will-drive-success-for-sa-youth>

About the NSTF

The National Science and Technology Forum (NSTF), established in 1995:

- is a broadly-representative stakeholder body for all science, engineering and technology (SET) and innovation organisations in South Africa
- gathers stakeholders around burning issues of national and global interest, across the public and private sectors, including matters of public policy
- includes a network of professional societies in SET and STEM education (STEM = science, technology, engineering and mathematics) - the NSTF proSET membership sector
- recognises, awards and profiles the outstanding contributions of individuals and groups to SET and innovation through the prestigious NSTF Awards
- runs and supports collaborative projects and youth outreach, including recognition of top performance in mathematics and science, role modelling, bursary and STEM career information
- runs and supports the STEMulator.org which attracts youth and educators to Explore>Discover>Learn the world of STEM including careers. (Established by NSTF proSET)

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