# Vuyo Mbam

T: +27 (0)71 284 9918 | E: VuyoMbam69@gmail.com | LinkedIn: Vuyo Mbam

## PROFESSIONAL SUMMARY

I am a highly driven, detail-oriented professional with an analytical mindset, eager to tackle complex challenges and create value for my organisation and our clients. With a Master of Science in Renewable Energy and a Bachelor of Engineering in Mechatronics, both awarded with first-class honours.
My academic and professional career as a researcher, have honed my skills in value chains analysis, data analysis, macroeconomic impact modelling, techno-economic analysis and solving complex problems. I am proficient in industry-standard software and possess effective communication, presentation and writing abilities.
I am enthusiastic about joining a consulting firm that will challenge me and afford me the opportunity to work with multidisciplinary and dynamic teams while addressing some of the most critical issues of our time.

## EDUCATION

**Master of Science in Renewable Energy**
Cranfield University, UK
2021 - 2022

- **Grade:** First Class
- **Key Achievements:** Commonwealth Masters Scholarship.
- **Extra-curricular:** Commonwealth Masters Scholar mentorship program, Cranfield University Makers Club.

**Bachelor of Engineering in Mechatronics**
Nelson Mandela University, RSA
2017 - 2021

- **Grade:** First Class
- **Key Achievements:** Nelson Mandela University Vice Chancellor's Scholarship (2017-2020), Department of Mechatronics Academic Merit Award (2018, 2019), Xanadu Residence Academic Merit Award (2018, 2019)
- **Leadership:** Tutor for numerical methods for second year students (2019), Academic mentor for first year students at Claude Qavane residence (2020-2021), Academics Officer in the Claude Qavane Residence sub-committee (2017).

## PROFESSIONAL EXPERIENCE

**Researcher**

Council for Scientific and Industrial Research (CSIR), Pretoria, South Africa

October 2022 - present

**Project contributions:**

- Led the development of a framework and tool to conduct cost-benefit analyses (CBA) for coal-fired power station decommissioning, repurposing and/or repowering that will contribute to ensuring that SA's move away from coal-fired power generation is sustainable and just.

- Led the demand-side analysis and universal clean cooking pathway/scenario modelling on a clean cooking and heating roadmap developed for South Africa to support the country's attainment of SDG7 with an initial focus on Mpumalanga province – South Africa just energy transition hotspot.
- Led the value chain analysis of the global and domestic battery energy storage technology value chain focusing on lithium-ion and vanadium-redox flow batteries to identify opportunities for localisation in South Africa. Contributed to the overall project report and two conference papers to disseminate the findings.
- Led research on behalf of the Department of Higher Education and Training (DHET) assessing the quality of South African TVET college programmes, Occupational Qualifications and workplace-based learning vis-à-vis the knowledge and skills required for South Africa's future green hydrogen economy. I made recommendations on how to augment current qualification programmes and also recommended new ones that could be added to TVET and Occupational Qualification system. The report was successfully presented to the Minister of the DHET and other stakeholders in 2024.
- Led the Just Transition chapter of an offshore wind roadmap developed for South Africa, detailing how an offshore wind industry should be developed to contribute to South Africa's just energy transition targets with a focus on including offshore wind in the country's long-term energy planning; development of fit-for-purpose offshore wind deployment policies; design of local content requirements; education and training; and strengthening capabilities of local firms to participate in the offshore wind energy value chain.
- Provided capacity building to 10 South African SMMEs as part of the CSIR-EWSETA Energy Industry Support Programme, providing insights on opportunities in the lithium-ion battery storage and solar photovoltaic value chains.
- Contributed multiple reports and conference papers.

## TECHNICAL SKILLS

- **Techno-economic analysis:** Experienced in conducting techno-economic analyses of energy projects especially solar PV and wind, modelling energy yields and assessing project performance based on economic metrics such as the NPV, IRR, and payback period.
- **Cost-benefit analysis:** Experienced in conducting CBAs and their sensitivity analyses for power/energy sector projects.
- **Macroeconomic impact modelling (MEIM):** Experience in conducting MEIM using economic multipliers; and have training in the use of Social Accounting Matrices (SAM) to conduct MEIMs.
- **Software Tools:** Possess expertise in industry standard modelling and data analysis software such as MATLAB and Simulink, System Advisor Model, and Microsoft Excel (including macros).
- **Programming Languages:** Highly proficient in using Python and VBA for advanced data analytics.
- **Data visualization and reporting:** Experience using data visualisation frameworks in Python such as Streamlit and Plotly.
- **Report writing and presentation:** Possess excellent report writing skills and ability to communicate technical concepts and data insights in a simple and comprehensive manner.
- **Microsoft Office Suite:** Proficient in MS Excel, Word, PowerPoint and Visio.

## TRANSFERABLE SKILLS

**Leadership:** Demonstrated ability to lead workstreams and diverse teams on projects.
**Social intelligence:** Ability to socialise and interact effectively with different stakeholders/clients.
**Teamwork:** Collaborated with dynamic teams in both academic and professional settings.
**Communication:** Excellent report writing and ability to convey technical concepts clearly.
**Adaptability:** Applied my knowledge and skills in varied roles, demonstrating flexibility.
**Analytical and critical thinking:** Ability to breakdown complex problems and produce innovative solutions.

## PERSONALITY TRAITS

Inquisitive, Analytical, Hardworking, Empathetic, Resilient, Adaptable, Dependable, Self-assured.

## PROFESSIONAL AFFILIATIONS

**Candidate Engineer**: Engineering Council of South Africa (ECSA)
**Associate Member**: Energy Institute (EI)
**Youth Member**: South African National Energy Association (SANEA)

## PUBLICATIONS

*CSIR (2024). Identification of Skills Needed for the Hydrogen Economy. Report published by the Department of Higher Education and Training.*

*Pandarum, A., et. al. (2023). Improving energy security in South Africa through a more circular energy sector. Report published by CSIR.*

*Pandarum, A., Rakaibe, T.K. & Mbam, V. 2023. Battery energy storage systems value chain analysis for the identification of opportunities for enterprise development. Conference paper presented at the 11th CIGRE Southern Africa Regional Conference in Pretoria, South Africa.*

*Pandarum, A. & Mbam V. 2023. Creating a JUST energy transition for embedded generation via customer empowerment in South Africa. Conference paper presented at the CIGRE International Symposium in Cairns, Australia.*

## REFERENCES

Tshwanelo Rakaibe | E: TRakaibe@csir.co.za
Aradhna Pandarum | E: Aradz1106@gmail.com
Dr. Pegah Mirzania | E: P.Mirzania@cranfield.ac.uk