



Sustainability Handbook

EDITION 06
March 2023





20 more years of Industrial Efficiency

National Cleaner Production Centre
South Africa

A **national industrial support programme** that partners with industry to drive the transition towards a **green economy** and **save money**.

Services include:

- Green skills development
- Industry and sector knowledge-sharing
- Company technical support

Contact us for a free assessment

www.ncpc.co.za | ncpc@csir.co.za



Funded by the dtic, hosted by the CSIR



INDUSTRIAL EFFICIENCY IN SOUTH AFRICA

Sustainability Handbook Volume 06 - March 2023

EDITOR

Peta de Jager

Production Editor

Shannon Manuel

EDITORIAL ENQUIRIES

mmatlakala1@csir.co.za
beverley@alive2green.com

CONTRIBUTORS

Benoit Le Roy, Catherine Wijnberg, Bridget Wijnberg, Dionne Kerr, Wandile Sihlobo, David Nicholls, Chris Campbell, Mao Amis, Shannon Manuel, Hiten Parmar, Catherine Larkin, Liesl De Wet, Keith Anderson, Thabang Mashigo, Vishaal Lutchman, Juliana Romero, Camille Rebelo, Bernd Oellermann

LAYOUT & DESIGN

Monique Petersen

PROJECT LEADER

Beverley Stone

SALES TEAM

Charmaine Meyer
Colleen La Gorce
Gordon Campbell
Luthando Maqungo
Wendy Bresler
Zukisani Silwana

DIRECTORS

Robert Arendse
Andrew Brading

PUBLISHER



www.alive2green.com

The Sustainability Series Of Handbooks



PHYSICAL ADDRESS:

Alive2green
Cape Media House
28 Main Road, Rondebosch
Cape Town, South Africa, 7700

TEL: 021 447 4733
FAX: 086 6947443

Company Registration Number:
2006/206388/23
Vat Number: 4130252432

ISBN No: 978 0 620 45240 3. First published 2012. All rights reserved. No part of this publication may be reproduced or transmitted in any way or in any form without the prior written consent of the publisher. The opinions expressed herein are not necessarily those of the Publisher or the editor. All editorial contributions are accepted on the understanding that the contributor either owns or has obtained all necessary copyrights and permissions.

IMAGES AND DIAGRAMS:

Space limitations and source format have affected the size of certain published images and/or diagrams in this publication. For larger PDF versions of these images please contact the publisher.

ENQUIRIES

beverley@alive2green.com

PRINTER

FA Print

CONTENTS

- 06 [Contributors](#)
- 14 [Monitoring and managing building sustainability](#)
- 16 [Collaboration, complexity and the challenge of progress](#)
- 18 [Call for Papers](#)
- 20 [Accelerating sustainable development around the world](#)
- 22 [Socio-economic growth – inhibited in an era of cognitive dissonance](#)
- 28 [South Africa's children join global community in the energy transition](#)
- 30 [Belgium-South Africa collaboration Paves way for the JUST energy transition](#)
- 34 ["Phantom Solutions" in the Energy Debate](#)
- 42 [The transition of traditional industrial parks to an Eco-Industrial Park \(EIP\) approach](#)
- 48 [Sustainability and technology skills are priorities for SA cement and concrete industry](#)
- 54 [Collaboration is key to unlocking procurement value to drive infrastructure development in South Africa](#)
- 58 [Implementing EPR Regulations in an African Context](#)
- 64 [A Restoration Economy for the Eastern Cape](#)
- 68 [Innovative solutions to help companies tackle food waste challenge](#)
- 72 [Without recyclers, South Africa's EPR regulations will simply facilitate greenwashing](#)
- 76 [Water status in South Africa-an opinion from the SA Water Chamber CEO](#)
- 80 [Access to quality food and fresh clean drinking water is a universal human right](#)
- 86 [Water shedding likely to be far more disruptive than load shedding](#)
- 92 [Sustainability and gastronomy, what is the chef's responsibility?](#)

SMART SOCIETY



SMART PLACES INCLUSIVE, SMART SETTLEMENTS AND REGIONS



GREENBOOK
adapting settlements for the future

GREEN BOOK: TECHNOLOGY TO HELP LOCAL GOVERNMENT DEVELOP CLIMATE-RESILIENT CITIES AND TOWNS

Interactive, online planning tool



science & innovation

Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA



CSIR

Touching lives through innovation

SMART SOCIETY

- [96 Insights guiding our thinking about SA agricultural growth prospects in 2023](#)
- [98 Investing in agricultural education is key to ensuring food security in the future](#)
- [102 Connecting the E to the S to drive the G](#)
- [106 Maximising gender equality at grassroots level](#)
- [110 South Africa's first EV eXpedition to Formula E 2023 Cape Town E-Prix](#)
- [114 Sustainable transport, logistics and supply chains – Resources for transport, logistics and supply chain professionals](#)
- [120 Electric Vehicles and the Grid](#)
- [122 The future of transitioning to hydrogen fuel](#)
- [124 Sustainability and AI Technology](#)
- [130 Walk like a local with Vilakazi Street Tourism](#)
- [136 Recognising the strengths and weaknesses of sustainable development in the tourism industry to ensure its long-term viability](#)
- [144 Go For Gold takes gold again](#)
- [146 Harnessing the Power of Circular Business for an Abundant and Sustainable Africa](#)
- [152 Examining the barriers facing youth participation in sustainable development](#)
- [158 GIBB partners with YES initiative to drive employability amongst SA's youth](#)
- [160 Where are the green entrepreneurs in the just transition discourse?](#)
- [164 To be a Woman in Leadership is to be Unscripted in approach](#)
- [168 Sub-Saharan Africa has made steady progress in addressing gender imbalance in project management](#)



SMART PLACES SMART WATER USE APP



TECHNOLOGY TO FORECAST WATER REQUIREMENT FOR APPLE ORCHARDS

Smart water use app predicts apple orchard water requirement



science & innovation

Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA



CSIR

Touching lives through innovation

**BENOÎT LE ROY**

Benoît Le Roy is an environmental alchemist with forty years of water engineering experience and is the CEO and co-founder of the South African Water Chamber established to represent the private water infrastructure sector to collaborate with and assist government to implement the national water and sanitation master plans; he is also a founding director of Nexus Water Alchemy and Water Ledger South Africa, both incorporated South African companies at the leading edge of the nexus of water digitisation. This will not only be key in reindustrialising the water sector, but it will also provide a myriad of skilled jobs and the opportunity to again export water related products and expertise globally.

**CATHERINE WIJNBERG**

Catherine Wijnberg is the Director and Founder of Fetola, a leading provider of scalable, world-class entrepreneurial support programmes for African entrepreneurs which helps people build businesses that last through scalable solutions that deliver social, environmental and economic impact. Fetola means “change” in Sesotho - and they aim to empower people through supporting the growth and development of sustainable, empowered and thriving small and medium enterprises (SMEs) at scale. She is a thought leader on small business development, sustainability and circularity, with a particular passion for effecting scalable impact at the ecosystem level for leadership development.

**BRIDGET WIJNBERG**

Bridget Wijnberg is the Digital Content Manager at Fetola, a leading provider of world-class entrepreneurial support programmes for African entrepreneurs, building businesses that last through scalable solutions that deliver social, environmental and economic impact. The natural world has been the guiding constant throughout Bridget’s career as an environmental scientist, in tourism management, communication and conservation. She co-founded Wild Wonders of Europe, a groundbreaking communication initiative to reframe attitudes to European nature, and similarly Rewilding Europe, which subsequently sparked the global rewilding movement. Bridget writes regularly on the topics of small business development with a particular interest in sustainability, the circular economy and the environment.

**DIONNE KERR**

Founder and Chief Executive Officer of Siyakha Consulting, Dionne has actively advised both public and private sector clients in Transformation, Development and Strategy since leaving the banking industry in 1998. Working in BEE and Transformation since 1999, she has spoken at a multitude of conferences internationally on issues relating to South Africa. A regular contributor and thought leader on key elements of people, sustainability and aligning strategies to be locally relevant. With a strong portfolio of local and multinational clients, has served on several Executive committees and is an activist on issues of change and development.

**WANDILE SIHLOBO**

Wandile Sihlobo, an agricultural economist by training, is Chief Economist of the Agricultural Business Chamber of South Africa (Agbiz). Sihlobo was appointed as a member of President Cyril Ramaphosa’s Presidential Economic Advisory Council in 2019 after serving on the Presidential Expert Advisory Panel on Land Reform and Agriculture between 2018 and 2019. Sihlobo is also a member of the Council of Statistics of South Africa (Stats SA). He is a Commissioner at the International Trade Commission of South Africa (ITAC). Sihlobo is a columnist for Business Day and Farmers Weekly magazine. He is a member of the Agricultural Economics Association of South Africa (AEASA). Sihlobo is an author of “Finding Common Ground: Land, Equity and Agriculture” published by Pan Macmillan in March 2020. He is also a contributor to the book “Recession, Recovery and Reform” published by Jacana in August 2020. Sihlobo holds a Master of Science degree in Agricultural Economics from Stellenbosch University.

**DAVID NICHOLLS**

Mr David Nicholls is highly respected in the nuclear industry and regarded as a non-compromising leader who gets things done. He holds a BSc (Hons) in Mechanical Engineering (2-1) from the Royal Naval Engineering College, Manadon. He was responsible for the nuclear new build programme and overseeing the Koeberg power station until his retirement in December 2018. While at the utility he revitalised the Pebble Bed Modular Reactor (PBMR), an area in which South Africa was a world leader. He had worked his way up through the ranks at Eskom, working in its nuclear engineering department in the early 1980s before being appointed as Technical Support Manager at Koeberg in the early 1990s. He headed up the PBMR project. He was later appointed Chief Nuclear Officer at Eskom, and has experience managing Koeberg, which is the lowest cost provider of electricity to the grid. With 33 years of experience at Eskom, Dave Nicholls is no stranger to the Nuclear industry. Previously Chief Nuclear Officer at Eskom, accountable for all Eskom’s nuclear activities, including the operation of the Koeberg Nuclear Power Station. He was also the General Manager for Nuclear Engineering, accountable for Nuclear Engineering at Koeberg and new build nuclear programme.

**CHRIS CAMPBELL, CEO CONSULTING ENGINEERS SOUTH AFRICA**

Over his 40-year career in engineering, Chris Campbell has worked in various capacities in a number of successful consulting engineering companies, spent several years at Transnet Freight Rail and has held executive positions at Aveng Infraset, both locally and internationally. His institutional involvement includes past Gauteng Branch Chair (SABTACO); past Vice President of the South African Institution of Civil Engineering (SAICE); past President of the Engineering Council of South Africa (ECSA); past Vice President of The World Federation of Engineering Organisations (WFEO). Currently he is a Board Member of Business Unity South Africa (BUSA). Chris, a registered Professional Engineer, holds a National Higher Diploma (T4) in Civil Engineering; a BSc. Civil Engineering degree (Summa Cum Laude).

**DR. MAO AMIS**

Dr. Amis is the Co-founder and Executive Director of the African Centre for a Green Economy, a leading non-profit think tank based in South Africa. The Centre's mission is to champion an inclusive and just transition in Africa, through undertaking research and providing thought leadership.

Dr. Amis has more than 15 years' experience in the green economy sector in Africa and globally, as a researcher and thought leader. He advises on a range of issues including climate finance, low carbon development, inclusive business models, corporate sustainability strategies, water stewardship etc.

He began his career as a conservation biologist, working for WWF-South Africa as a freshwater programme manager, where he worked with leading companies to help them understand their water related business risks and develop mitigation strategies. Between 2016- 2017, Dr. Amis was an Adjunct Professor at the Graduate School of Business, University of Cape Town and he currently serves as an external examiner for the MBA programme at the Said Business School, University of Oxford. He also serves on various Boards including the South African Renewable Energy Business Incubator (SAREBI), the Freshwater Research Centre, and the Table Mountain Fund (TMF) as a non-Executive Director. Dr. Amis holds an MSc and PhD in Conservation Biology from the University of Cape Town.

**SHANNON MANUEL**

Shannon Manuel is the senior content producer and features writer for GQ Magazine South Africa. On a personal note, she is an individual with a slightly alarming sugar addiction and a love of everything dark, macabre, weird and creative. Earphones in, music blasting is her default setting. Professionally, she has a penchant for creating engaging content for both print and digital platforms, and is an adaptable writer skilled in strategic communication, artistic vision, and project coordination. One could say she is a supreme multitasker, with a BA Degree in Media & Writing and Film & Television Studies from UCT. Has written for Glamour SA, House & Garden SA, Leadership and Black Business Quarterly magazine - previously an editor for the latter.

**MR HITEN PARMAR
DIRECTOR: UYILO EMOBILITY PROGRAMME (SOUTH AFRICA)**

Hiten stands as a lead executive, thought leader and industry expert extending over 18 years in profession. As Director of South Africa's national electric mobility programme, he delivers to the mandate of enabling the uptake of electric mobility across both the public and private sectors. Hiten also serves as liaison for multiple sector related forums within South Africa, as well as internationally on advancing the electric mobility ecosystem.

**CATHERINE LARKIN APR CMILT**

Catherine is a communication and marketing professional, specialising in Logistics, Transport and Supply Chain. She does a lot of work for membership-based associations in logistics, transport and supply chain. She is the only consultant in the country who currently does work for the 5 leading transport associations in South Africa. She also served as judge in the Women in Transport Awards hosted by the Transport Evolution Africa Forum & Expo in 2018, as well as the Africa Rail Awards, hosted by Terrapin in 2019. An accredited public relations professional (APR) and a Chartered Member of the CILT (CMILT), Catherine believes that lifelong education and learning is the key to success, as is mobility – hence her passion for transport and logistics!

Catherine has developed a high-level and extensive network in this sector and loves connecting people and sharing opportunities. Her company, CVLC Communication, is a corporate public relations, communication, marketing and events consultancy. Established 19 years ago, Catherine has succeeded in positioning the company as a professional organisation, developing an extensive network and strong reputation in logistics, transport, supply chain and warehousing. The company's services range from full secretariat support, project management and administration, strategy development, stakeholder engagement, through to event organisation, media, social media and publicity, as well as a range of writing and creative services. She recently completed her Global Supply Chain and Logistics Practitioner Certification (GSCLP). She holds a BA degree, Diplomas in Marketing Management and HTML Programming, a Higher Certificate in Project Management and a Certificate in Public Relations. She has also completed various courses in social media, digital marketing and content marketing.

**LIESL DE WET**

Liesl de Wet is an experienced climate reality leader and sustainability thinker with particular experience in the logistics sector in South Africa. She holds two degrees from the University of Johannesburg: a BCom Communications and BA Hons in Marketing Communications and various qualifications in the field of environment-friendly and sustainable business practice. She is also a trained climate reality leader through the AL Gore climate reality leadership programme and is the chairperson of the Road Freight Association's green transport working group. Liesl is also a champion of the Africa Supply Chain Excellence Awards. Liesl is a qualified professional business coach is currently the head of Accelerated Organisational Sustainability at Unitrans Supply Chain Solutions (Pty) Limited.

**KEITH ANDERSON**

Keith matriculated at Damelin College in 1969 and has been educated at Damelin College, Stellenbosch Graduate School of Business, UCT Graduate School of Business, Heriot-Watt University, La Salle University and Century University in the USA. Currently, Keith sits on the Board of numerous Companies. He is past President of the Information Technology Association of South Africa (ITA) and is currently CEO of the E-Waste Association of South Africa (EWASA), which he founded in 2006. He has also chaired various REMCO and Finance and Investment Committees. Keith has also served on the Board of the ISETT SETA for four years. He was also a member of the BUSA Transformation Committee Keith was one of the ICT Personalities of the year finalists in 2012 and was awarded the ICT Social Responsibility Award in 2012. Keith drafted the first Industry Waste Management Plan (IWMP) in 2010 and submitted it to the DEA. Keith is a sought-after public speaker and presents papers frequently, both locally as well as internationally on E-waste Management and the Circular Economy. He has just launched the Africa WEEE Forum, www.weee-africa.com with the objective of establishing a uniform E-waste standard throughout Africa, like the WEEE Forum in Europe.

**THABANG MASHIGO**

BA (POLS & IR) (Wits), BA HONOURS (IR) & MA PUBLIC POLICY & ENERGY LEADERSHIP (RK Switzerland). Thabang is a highly sought after Facilitator, Think Tank and Business Strategist with almost 10 years of service to the industry. She has served as an advisor to the Zambian Energy Council and High Commissioner as well as the Malawian Consulate. Furthermore, Mashigo is a former speech writer to the South African Presidency and selected Ministers in Parliament, Thabang has represented Africa on global platforms such as, The Wall Street Project with Rev. Jesse Jackson in New York, BRICS, the United Nations (UNCOPUS), ACP (African Caribbean Pacific Group) and the AU, in discussion of Africa's business and trade policies, She was instrumental in the formation of the African Free Trade Continental Agreement with the Department of Trade and Industry, She remains ardent about business development and strategy, having accrued expertise and developed content for sectors in mining, agriculture, solar energy, leadership, mental health and corporate governance, Thabang is the current Executive Director of Altitude Connection, a consultancy firm. She also sits on the board of LED Africa and the African Chamber of Commerce.

**CAMILLE REBELO**

Camille Rebelo is the Chief Operating Officer of EcoPlanet Bamboo, which she co-founded as a mechanism to restore and protect forested landscapes, while providing some of the world's biggest industries with a deforestation free alternative fiber. She has been responsible for the origination and management of EcoPlanet's global operations, spanning Central America, Africa and Asia. Through EcoPlanet Bamboo, Camille has developed global and local frameworks within which bamboo and other key species can be a positive tool for the transition to a low carbon bioeconomy. Camille is an expert in forest certification and natural climate solutions. She holds a Masters from Yale University School of Forestry & Environmental Studies.

**VISHAAL LUTCHMAN**

Vishaal Lutchman is currently the Managing Director: Transport at Zutari. He leads a highly skilled team of engineering and advisory professionals providing solutions for clients in South Africa, selected African geographies and the Middle East. Previously, he was the Chief Executive Officer of the South African Institution of Civil Engineering (SAICE). He led the advancement of engineering practitioners in addition to advocacy and oversight of the engineering profession capacity. Prior to joining SAICE he was Director in Transportation and Infrastructure at WSP | Parsons Brinckerhoff in the management, design and implementation of the firm's freight logistics projects in the maritime, aviation and rail sectors. He was also the Deputy Chief Engineer at Transnet overseeing the parastatal's capital projects and port infrastructure development. Vishaal has been focussing on integrating organisational strategy, operations and technical capacity with future-fit leadership for the development of African solutions by Africans.

**JULIANA ROMERO**

Juliana Romero, pastry chef and specialized in plant-based and sustainable gastronomy. She is Colombian and currently lives in Buenos-Aires Argentina. Romero has had almost 18 years of culinary experience. After much research and study, she considers herself an ambassador for the world of sustainable gastronomy. From all the locations where she has had the chance to live (France, Peru, Venezuela, Ecuador, Colombia, the United States and now Argentina), she has taken her flag and the message of how to contribute to this important mission of FAO and learn to face this important moment of transition to face the triple planetary crisis, climate change, extinction of biodiversity and pollution. Romero has participated in international magazines as an editor and as a contributor with recipes and articles. She is currently a gastronomic consultant for restaurants and hotels, for healthy pastries and also develops training for chefs in different gastronomy schools in best sustainable gastronomy practices and better uses of our resources.

**BERND OELLERMANN**

Extremely versatile, dynamic, energetic systems thinker. Visionary leader with well-established management abilities. Strong integrator and communicator, analytical problem solver and highly adaptive professional managing and working with multidisciplinary and multicultural teams. Change Catalyst focused on building teams and mentoring. Knowledge and experience in Circular Economy, Eco-Industrial Parks Renewable Energy, Sustainable international Development, Industrial development, policy and implementation, management consulting, entrepreneurial development, Health, Education, Mining, Agriculture, Occupational Hygiene, OHS, ICT, SME's, Banking, Engineering & Technology, R&D. Global exposure includes Spain, Italy, UK, Sweden, Netherlands, Germany, Ethiopia, Uganda, Zimbabwe, Nigeria, South Africa, Namibia, Mozambique, Senegal, Egypt, Ghana, USA, and China.

SUSTAINABLE DEVELOPMENT CREATING A FUTURE!

21 - 23
November 2023

CSIR International
Convention Centre

The 13th Annual Sustainability Summit
Is Going Live!

The 2023 edition of the Summit will be held as a hybrid event – combining both the in-person and virtual experiences. Thus offering both exponential global reach and accessibility by easily bringing the content directly to the audience. The world is collectively embracing the idea of a green recovery as a means to achieve sustainable, resilient, inclusive economic growth. Imagine a world of zero-carbon growth—where industry is water wise and energy efficient, where infrastructure is smart and inclusive, where waste is converted into lucrative revenue streams. Imagine an economy that takes care of business needs while securing the rights of future generations and offering women and youth the space they deserve. With the effects of climate change biting down like never before, wide spread environmental and human health challenges at the municipal scale, and the desperate need for employment and economic development—one key, cross-cutting policy strategy has never been more urgent.



Monitoring and managing building sustainability



Vhonani Sadiki

Vhonani Sadiki is a civil Engineering graduate from the Vaal University. She is a researcher at the CSIR Infrastructure Innovation research group, undertaking research focused on the Built Environment and working to improve the building's performance and seeking for Sustainable processes in all the projects' lifecycle as a way to respond to the issues of climate change and the need to adapt.

Climate change mitigation and adaptation is at the forefront of the reasons why cities need to refocus environmental sustainability to cater for the foreseeable impacts. With the need to move towards sustainable cities, the world is shifting towards the space of digitisation. The aim of this transition in the built environment is to collect sufficient data to measure, track and improve performance of the built environment, be it existing or new developments. Without the measurement and tracking of building performance, there is no basis for improvement in terms of the sustainability of the built environment.

Performance can be measured in terms of efficiency in energy usage, water consumption, materials and their embodied energy, waste minimization, transportation and it's marked carbon footprint, etc. The World Bank Group defines sustainable cities as cities that are resilient, with a level of adaptability, mitigation, and promotion of social, economic, and environmental change. These aspects define the health of a city and should be measured and monitored.

The agenda of sustainable development has been around since the seventies. South Africa adopted the National Framework for Sustainable Development in 2008, followed by the National Strategy for Sustainable Development (NSSD) in 2011. Many cities are working towards addressing the issues of climate change in accordance with 2030 and 2050 net-zero carbon commitments. Five South African cities have joined the global community of C40 Cities to work towards these targets. Amongst other initiatives, this is being achieved through the promotion of green buildings standards and adoption of best practices in the built environment.

In a world that is facing unprecedented change as a result of climate change, pandemics, socioeconomic

factors, and technological development, it is necessary to monitor building performance and respond rapidly. This transition requires real-time monitoring and evaluation of the components of the built environment, establishing an evidence base for improvement, not only in aspects of the built environment itself, but also in norms and standards. Best practices can then be built on new, improved data and trends that cater for high efficiency.

Collecting, collating and analyzing building performance data according to a set methodology, such as building information modelling (BIM) standards, is helpful to enable building owners as well as the larger built environment community to make appropriate use of the information. BIM is primarily about information, not buildings. This platform is used to create, store and manage information about buildings throughout the building life cycle (i.e. design, construction, operation, and decommissioning). The information in the model may include and it is not limited to physical geometry of the building, materials, systems, and equipment to be utilized by the building, project scheduling, cost estimation, and environmental performance. South Africa recently adopted ISO 16950 as a local standard to help the local industry transition to a uniform

and improved method of building information management.

BIM is most commonly used by professionals in the design and construction phase of a building, where it is particularly useful for co-ordination and simulation.

Simulated building performance is an important tool for ensuring our buildings are resource efficient and climate resilient. However, there is a growing need to monitor building performance once the buildings are operational. This will enable the industry to assess the impact of green building design, evaluate the accuracy of simulated performance, and use this information to inform future best practice design.

Despite the opportunities offered by digital monitoring, data collection and BIM, these are not the only tools available for assessing and improving the performance and sustainability of the built environment. Original research, case studies and industry opinions, as presented in this Sustainability Handbook, are also important mechanisms for driving change in the built environment. This handbook enriches the sustainability conversation in South Africa, with inputs from academia and industry coming together and supporting the common goal of improving the built environment for this generation and those to come.



Collaboration, complexity and the challenge of progress



Production Editor
Shannon Manuel

At its core, sustainability is about meeting the needs of the present without compromising the ability of future generations to meet their own needs. It is also important to recognise that sustainability is a complex and multi-faceted issue, and that there are trade-offs and competing interests involved. As such, finding effective solutions to sustainability challenges will require a willingness to make difficult choices, innovation and collaboration.

The European Investment Bank joined the United Nations 5th Conference at the beginning of March. EIB Global, the new development arm of the EIB Group, announced, alongside its partners, support for private sector development and for transformative projects in Least Developed Countries, including in Gambia and Guinea-Bissau, in the green energy, transport, and water sectors, that will contribute to the EU's Global Gateway strategy designed to mobilise around €300 billion for sustainable investment around the world.

In February SA hosted the country's first ever E race, taking place in Cape Town. This event showcased that despite South Africa's ongoing electricity supply challenges, the country's EV revolution is gaining momentum with various OEMs introducing all-electric model ranges to their South African product offering.

Energy expert David Nicholls explores the "Phantom Solutions" in the intense energy debate gripping the nation - renewable energy vs coal, and everything between. 'The electricity debate is full of possible solutions to the crisis. While many are credible there are a number which are almost inherently "Phantom Solutions." These Phantom Solutions sound excellent at solving the problem and having almost no negatives. Unfortunately they are usually fundamentally flawed and confuse the debate, with possibly catastrophic outcomes, he writes.

We are given insight into the transition of traditional industrial parks to an eco-industrial park approach by NCP. And the sustainability efforts being implemented within the concrete and cement industry. Consulting Engineers South Africa's (CESA) Annual Infrastructure Indaba, held in Durban,

KwaZulu-Natal, kicked off with a detailed discussion around procurement processes in South Africa's public sector.

We look at the landscape restoration in the Eastern Cape and the mutual benefit it can have for sustainability and economic development. Can a holistic approach to landscape restoration bring about long-term transformative change? CEO of eWASA, Keith Anderson examines extended producer responsibility and the current shortcomings of the legislation in place. Although sub-Saharan Africa is responsible for only 9% of the world's waste generation, the region is flooded with waste imports from developed nations, which may hinder its EPR efforts, he states. Patricia Schröder, spokesperson for the producer responsibility organisation (PRO) Circular Energy, adds on to the conversation with the dangers of greenwashing in EPR.

Food waste is a significant challenge facing South African companies, with serious economic, environmental and social implications. In South Africa, however, there are currently no EPR schemes specifically focused on food waste management.

Access to clean water is a universal right, yet remains one of the most pervasive inequalities in the country. SA water chamber CEO, Benoit Le Roy, says that we have to address our root causes of water insecurity and this philosophy would not only address our root causes, but it would also bring us to best global practices and ensure that all are serviced affordably and sustainably without fail. Additionally the worrying statement has been made that water shedding is likely to be more disruptive than load shedding.

Great strides have been made in sustainable development within the agriculture sectors, and within the mining sector, it has become a permanent central theme. In addition to solutions on minimising environmental damage and repurposing mining waste, discussions on gender practices within the industry have also been at the forefront of industry discussions.

Literally moving forward, sustainable development in the transport industry have been taken over by conversations on the future of transitioning to hydrogen fuel, electric vehicles and innovative

logistics and supply chain technologies and the future role of AI in accelerating sustainable development.

Youth are our future leaders. Taking a look at the barriers facing youth participation in sustainable development, it is revealed that there are a number of issues that need to be addressed. To be a Woman in Leadership is to be Unscripted in approach, writes Thabang Mashigo. And it is revealed that Sub-Saharan Africa has made steady progress in addressing gender imbalance in project management.

This edition of the Sustainability Handbook features a number of thought pieces from leaders in various sectors, detailing both the forward-thinking steps, constraints and challenges needing to be addressed.

While opinions may differ, the one point agreed on by experts, thought leaders, observers, citizens and industry leaders alike, is that sustainability is a complex and multifaceted issue, not just an ethical imperative, but also a practical necessity if we hope to create a thriving and resilient world for future generations. As individuals and as a society, we must work together to create a more sustainable future for ourselves and for the planet.



CALL FOR PAPERS

Dear Prospective Author

Thank you for considering contributing a chapter or article to the Sustainability Handbook.

The handbook is collected work, assembled from many scholars in the field of sustainability of the built environment and industry across Africa, featuring both refereed and non-refereed (popular interest) chapters and articles. The purpose of the handbook is to disseminate original research and new developments within the field and to advance scholarship. The most recent edition of the Sustainability Handbook series can be viewed by clicking on the link.

Refereed chapters are thematically arranged for water, waste, green building, energy or sustainable transport.

The featured themes for Volume 5 are circular economy, and sustainability for just regeneration, although any sustainability topics relevant to the built environment and industry will be considered. For a chapter or article to be published in the handbook it should be clearly written, be of interest to readers and be methodologically and technically sound. It must reference source material and not violate copyright. For a chapter or article to be considered as a refereed item, it should also make a new contribution to knowledge.

STEP 1: submit a title and 500 word abstract describing what your paper intends to cover by the abstract deadline. This will be received by the editor who will check that it is suitable. Refereed chapters are peer reviewed by subject

matter experts identified by the publisher/ editor. If the item seems suitable, authors will be invited to prepare a full chapter manuscript.

STEP 2: Authors submit a 5000 word full chapter to the editor by the deadline indicated and this will be redacted to remove identifying features and sent to between one and three experts in the field. Authors will be provided feedback from their anonymous reviewers (via the editor) a few days after the review deadline and will be provided a limited time to respond to reviewers' feedback. Authors may be required to arrange independent professional language or grammar edits, at their own cost.

STEP 3: The editor reviews amended chapters received and if they are of good quality will release them to the publishers for layout and digital publishing. Photos and brief biographies of authors are included in the front-matter of the handbook. The publisher and editor reserve the right to make minor adjustment and will provide a final proof before publishing.

Whilst every effort is made to comply with Department of Higher Education and Training, Research Outputs Policy of 2015, this is not guaranteed, and prospective authors are advised to seek confirmation from their institutional offices in this regard.

Don't hesitate to contact me for further information.

Peta de Jager Pr.Arch. MA
pdejager@csir.co.za



The National Energy Regulator of South Africa (NERSA) ensures the orderly development of the energy sector, mainly through licensing, setting and approving of prices and tariffs, compliance monitoring and enforcement, and dispute resolution in the electricity, piped-gas and petroleum pipelines industries.

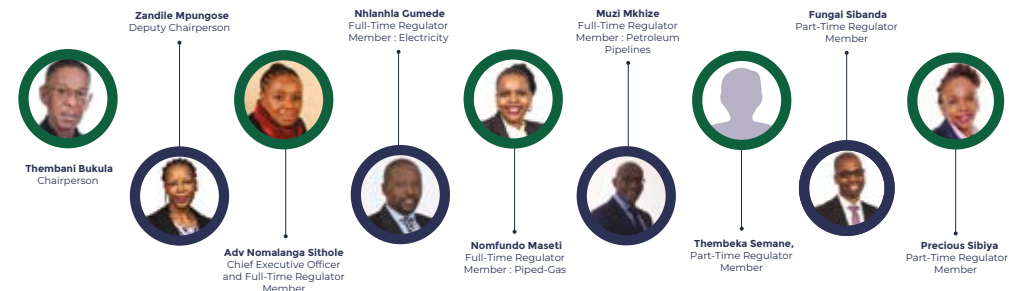
NERSA endeavours to be more innovative and agile in ensuring that we continue to make a valuable contribution to the socio-economic development and prosperity of the people of South Africa, by regulating the energy industry in accordance with government laws, policies, standards and international best practices in support of sustainable development.

NERSA is a regulatory authority established as a juristic person in terms of section 3 of the National Energy Regulator Act, 2004 (Act No. 40 of 2004).

NERSA's mandate is to regulate the electricity, piped-gas and petroleum pipelines industries in terms of the Electricity Regulation Act, 2006 (Act No. 4 of 2006), Gas Act, 2001 (Act No. 48 of 2001) and Petroleum Pipelines Act, 2003 (Act No. 60 of 2003).

NERSA's mandate is further derived from written government policies and regulations issued by the Minister of Mineral Resources and Energy. NERSA is expected to perform the necessary regulatory actions in anticipation of and/or in response to the changing circumstances in the energy industry.

The Minister of Mineral Resources and Energy appoints Members of the Energy Regulator, comprising Part-Time (Non-Executive) and Full-Time (Executive) Regulator Members, including the Chief Executive Officer (CEO). The Energy Regulator is supported by staff under the direction of the CEO.



Kulawula House, 526 Madiba Street, Arcadia, 0083
 PO Box 40343, Arcadia, 0007

Tel: +27 (0)12 401 4600 | Fax: +27 (0)12 401 4700 | Email: info@nersa.org.za | Website: www.nersa.org.za



Accelerating sustainable development around the world



The European Investment Bank will join the United Nations (UN) 5th Conference for Least Developed Countries (LDC5), which took place from the 5th to the 9th of March in Doha, Qatar.

The EIB was represented by its Vice-President Thomas Östros, who opened the Private Sector Forum and participated in the discussions on structural transformation. The Bank co-hosted the High-Level Roundtable on "Investing in People's Health through Global Gateway" together with the European Commission's Directorate-General for International Partnerships.

EIB Global, the new development arm of the EIB Group, also announced, alongside its partners, support for private sector development and for transformative projects in Least Developed Countries, including in Gambia and Guinea-Bissau, in the green energy, transport, and water sectors, that will contribute to the EU's Global Gateway strategy designed to mobilise around €300 billion for sustainable investment around the world.

Ahead of the conference, EIB Vice-President Thomas Östros said: "The current multiple crisis and conflicts happening in different parts of the world cannot deviate us from delivering the UN

Sustainable Development Goals and accompanying the prosperity and resilience of Least Developed Countries. Partnerships with the private sector are essential to boost sustainable growth and create jobs. Together with our Team Europe partners and in line with the EU Global Gateway strategy, we are committed to mobilise long-term investment that will unlock opportunities and improve people's lives across the world."

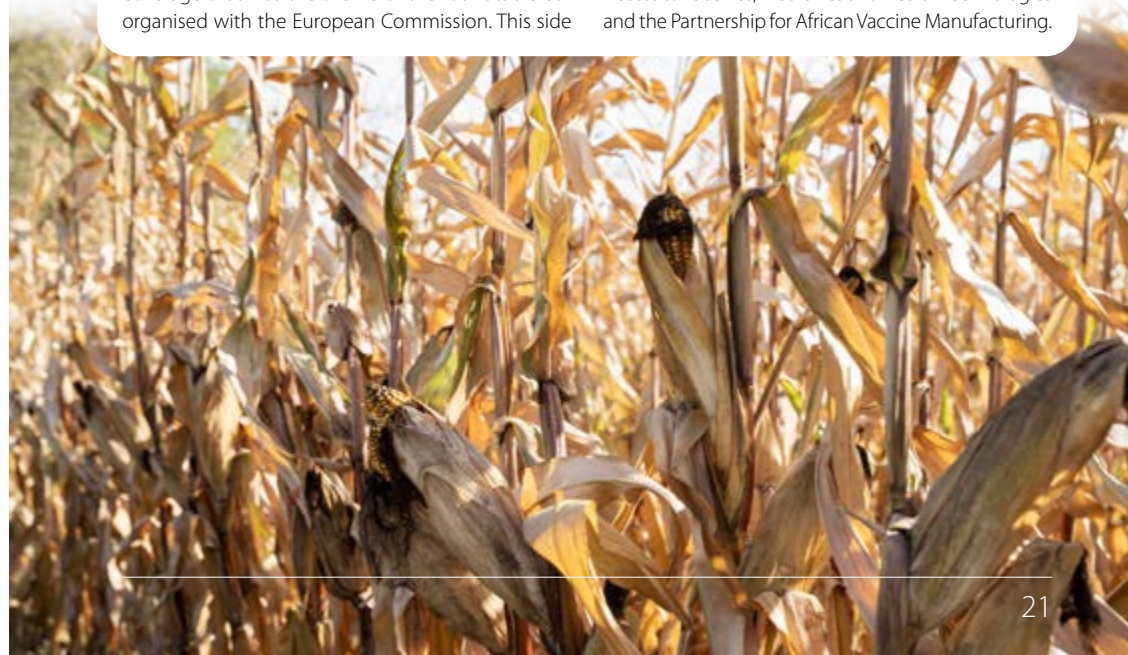
Maria Shaw Barragan, EIB Global's Head of Lending for Africa, Asia, Pacific and Latin America added: "We to this UN summit with a determination to make transformative projects in countries and communities that need them most, a reality. Poverty, hunger, and disease are putting at threat the prosperity of



communities. Many of them are also particularly vulnerable to climate change. But working together, in partnership, we can ensure through economic development and sustainable infrastructure that these challenges are overcome."

During the conference, EIB Global focused particularly on the importance of universal health coverage that was the theme of the roundtable co-organised with the European Commission. This side

event looked at ways to increase access to health-care services, essential medicines, diagnostics, vaccines, and other health technologies, notably through new international partnerships as part of the Global Gateway, including with the World Health Organisation. The session notably highlighted the bridges built between the Team Europe initiative on Manufacturing and Access to Vaccines, Medicines and Health Technologies and the Partnership for African Vaccine Manufacturing.



Socio-economic growth – inhibited in an era of cognitive dissonance

Vishaal Lutchman

This article explores the phenomenon of dissonance, with a specific focus on cognitive dissonance. The primary hypothesis is that such dissonance is a contributing factor preventing the alignment of ideologies towards progressing an initiative. Cognitive dissonance is a theoretical concept that has been widely researched in the discipline of politics, leadership, humanities, business science and economic strategy.

The rationale for bringing this to the fore is to create a sense of awareness in the construction and built environment sectors, to achieve a single objective. The objective is that professionals serving the industry should not seek to exacerbate the situation through cognitive dissonance; creating considerable noise and disrupting progress. How

this noise impacts socio-economic progress is the main purpose of this article.

Cognitive Dissonance is a disconnect or inconsistency between one's belief and one's behaviour. It is a multi-layered phenomenon that bears on an individual, a group or community, and even between nations. One could make a case that the war in Ukraine gives merit to the argument. In support, it is easily argued that all people, both Russians, Ukrainians and the world that is observing, believe that war and consequential damage to life and property are not acceptable.

The actions are showing that the war has been ongoing for over a year and seems to worsen with severe socio-economic consequences. South Africans could argue that we agree that our energy solutions had to be actioned some time ago, which we



also agree did not happen. One of the reasons is being unable to reach common ground on the energy mix, now woven with “Just Energy Transition”, a mode of procurement of energy and political grandstanding, all of which saw initiatives such as nuclear and nearshore portable power solutions thwarted with drastic actions such as high court interdicts preventing such solutions coming to the fore.

Such approaches only seek to delay the provision of much-needed energy. We remain conflicted on the viable baseload solution until today as a result of cognitive dissonance which also ensures that we will not have solutions in time to come. A possible solution lies in our ability to acknowledge

The phenomenon becomes relevant as we progress with our elusive growth strategy. The energy case study indicates that a community of South Africans is disconnected from many initiatives which leads to initiatives remaining in planning mode without implementation. It is hypothesised that this phenomenon of cognitive dissonance plays out in both the public and private sector agencies to varying levels of significance and impact.

Hence, the argument is that should we realise that all the effort put towards causing such misalignment could be put towards a positive constructive outcome, which includes learning will enable progress on any plan implementation. A retrospective look at the course of events will reveal that time passed, decisions were lacking and the implementation can be kicked down the road. The cognitive dissonance that occurred will fade in our memories leaving us perhaps confused about why we did not progress.

As this article seeks to create awareness of the phenomenon, in addition, it seeks to postulate possible actions to reduce the negative impacts of cognitive dissonance which may assist in freeing our time to focus constructively and progress any initiative small or big. The first contribution is knowledge. Any debate has to be informed by knowledge of the topic. We may agree that many decision-makers do not have content knowledge. It is argued that a leader does not need content knowledge and can be effectively surrounded by those that do.

Our last decade and a half of lackluster development may not support such an argument.

Perhaps we could resolve that a decision-maker should have knowledge allowing for an understanding of complexity which at a minimum allows for the asking of the right questions.

The second contribution explores the rationale of conscience resistance to concepts. Decisions are not supported for various reasons. An obvious one is that the solution is not fit for purpose and is clear to see as it has not taken the relevant constructs into account. Another is that the solution may not serve which may conflict with the concepts of fairness and ‘doing the right thing.’ If the decision maker has been given a mandate, he is not able to deviate at the bargaining council for example.

Often business structures are conflicted with teams set up to compete intentionally or not, which will remain with negative consequences. Culture, therefore, has dissonance woven into the behaviours. Teams work for a single benefit rather than that of a collective.

The long-term effects of a silo mentality can hurt the sustainability of the business. Political grandstanding may have severe consequences on service delivery and the provision of infrastructure which we agree is severely lacking for economic growth. If political ideologies are different, there is a tendency to disagree for the sake of disagreeing in keeping with prevailing posturing. The last contribution to cognitive dissonance is the attribute of ego and how it plays out in the forums.

The ego plays out in all, but the extent to which it does so can hurt decision-making. We have seen the turbulence caused by elections with new administrations discarding people and plans of the previous regime just because. Some of these behaviours can be attributed to the forceful ego suggesting that the previous administration may have been inadequate. It leads to projects being cancelled, and suppliers remaining unstable whilst society waits for the same promised services.

This article ignores additional factors of socio-economic hindrances such as corruption, incompetence, and historic circumstances, for example, to highlight the impact of cognitive dissonance. In this concluding paragraph, a possible set of solutions are presented for consideration to support minimising the impact of cognitive dissonance to go back to the point where we

find common ground. Spending time gaining an appreciation for the concept of promoting social-economic growth should be and remain the focus of why we need to work as a collective and converge on the initiatives that have an improved chance of success.

Realise that we need to stay true to such an intent in the discussion. Such a convergence does not mean businesses cannot make profits and so too with the SOC which has the mandate to do so. As a collective which is constituted of many stakeholder groups which have arisen due to dissonance will all need to decide how much “give” is required to converge on a decision.

The current trend is one of rigidity in beliefs, mixed with emotions, perhaps misinformation and a general

wish to show up the failure of another. It should not be the case simply because irrespective of leadership the mandate of government is clear and that of business well-understood. It is not the point of departure, but the point of convergence.

The realisation of many years of poor growth in which we all play a role, we need to converge without being dissonant to live the commitment to improve society, create the impact that makes for leadership role models, energise (no pun intended) communities, youth and workplaces to all contribute to building a nation in a positive story without controversy, struggle, hardships and most of all a sense of sincere hope that we will be better off tomorrow and it will be ok.





ENERGY



South Africa's children join global community in the energy transition

As the energy transition will transform the way we relate and produce power, our country not only needs to address and reskill the current workforce, but it also needs to involve and help educate children about renewable energy.

In support of this, ENERTRAG South Africa, a forerunner in the development of renewable energy projects in the Mpumalanga Province, has partnered with WindEurope to translate the well-loved 'Let the Wind Blow' children's book for children in this region.

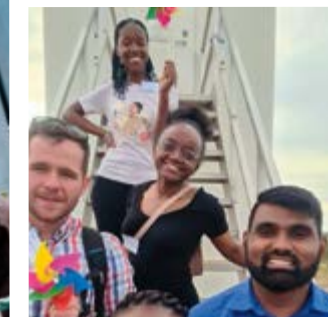
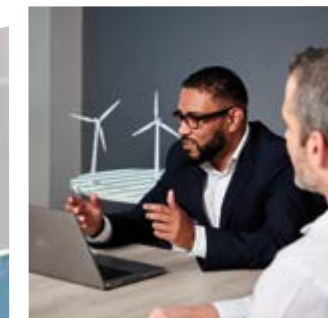
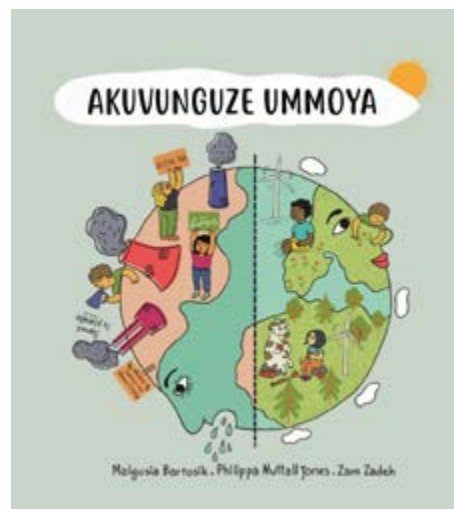
The book is now available in isiZulu and isiNdebele, two prominent languages in this area of the country, adding to the already available English, Afrikaans, Xhosa and Setswana editions, aimed at children across South Africa. The book has already been made available in over 30 languages, creating a global

community that are sharing in this insightful tale of the desire for a healthier planet.

"Research shows that education in the mother tongue is a key factor for inclusion and through reading and storytelling children can be part of our energy transition to a system that includes renewable power through this beautifully illustrated story book," said Mercia Grimbeek, Head of Development for ENERTRAG South Africa.

The company will also be donating hard copies of this illustrated book to schools in Mpumalanga and encourages member of the renewable energy sector, and any other interested parties to enjoy this uplifting resource.

To download a copy of 'Let the Wind Blow' visit <http://www.letthewindblow.org/>; or <https://sawea.org.za/let-the-wind-blow/>



As South Africa's Energy Action Plan takes centre stage to deliver new power generation and steer the country's accelerated energy transition, SAWEA highlights the role of the wind sector as an employer.

Beyond construction, labour and technical capabilities, skills required in the wind sector include a vast range of roles such as legal and financial services, social scientists, environmental and climate scientists.

Belgium-South Africa collaboration Paves way for the JUST energy transition

The newly established CSIR Indoor Energy Storage Testbed was recently graced by His Majesty the King of the Belgians at the Council for Scientific and Industrial Research (CSIR).

The new infrastructure and associated expertise are bent on strengthening South Africa's ability to support local players in the battery value chain and, in so doing, boosting the country's capabilities in renewable energy storage. The Battery Testbed is a direct result of a collaboration agreement between the CSIR and the Flemish research entity, Vlaamse Instelling voor Technologisch Onderzoek (VITO).

Novel Collaboration Platform for Localisation

The CSIR Indoor Energy Storage Testbed (Video link) has been established within the framework

of the World Bank Energy Storage Partnership. The partnership recognises that energy transitions – with increased wind and solar power use – are underway in many countries and that, to integrate renewable resources into grids, energy storage is key. The World Bank Group established a partnership to help foster international cooperation on technology research and development in this field.

This partnership established a path for the CSIR-VITO collaboration on the energy storage testbed to primarily focus on performance testing of lithium-ion batteries, as well as emerging energy storage technologies for a South African and sub-Saharan market.

The facility enables the CSIR to test the performance and reliability of batteries, as per the battery manufacturer's specifications, including, but not limited to, storage capacity, lifecycle and depth

of discharge. Capacity-building in the South African battery sector, access to clients that require lower capacity outputs and indoor testbed facilities are paramount to the facility's success pathway. VITO and the CSIR will focus on energy storage technology innovation and localisation. Overall, market knowledge will be an added advantage for testbeds forecasting. The CSIR Battery Testbed is equipped with a high-precision system for battery module and pack tests, with many channels tailored to test numerous batteries in parallel under dissimilar test cycles. A new-generation temperature chamber that provides

data on the operating characteristics and properties of batteries that are normally used in harsh climates will impact optimal performance. The harsh temperatures in the Northern Cape, for example, can affect batteries in mine machinery and vehicles. The collated data will enable the mine to extend machine battery life and provide a safe operating zone.

Touching Lives through Innovation

CSIR Chief Executive Officer Dr Thulani Dlamini expressed the organisation's appreciation for the level of collaboration and scientific support that it has

received from the Government of Flanders in Belgium and its research institutions.

"The visit by His Majesty the King of the Belgians to the CSIR demonstrates our mutual dedication to fostering interdisciplinary research for the benefit of society. The visit opens the door to expand the cooperation between the CSIR and Belgian businesses and research institutions."

Dr Dlamini reinforced the CSIR's payoff line "touching lives through innovation" when he said, "The facility brings hope for sustainable energy and a secure energy future. How we store energy is at the

heart of the successful use of renewable resources such as solar and wind. A developing country such as South Africa has to think of technologies that offer long-duration storage, have low operational and maintenance requirements and can withstand harsh climatic conditions."

CSIR Energy Storage Testbed Project Leader Renesh Thakoordeen says that the facility will play an important role in creating a more resilient energy system.

The facility will provide much-needed testing for the country. It will be used as a service for technology developers or importers who would like to characterise their technologies for market entry.

"The testbed is a steppingstone towards addressing the intermittency challenge of renewable energy. Many businesses and residential homeowners are turning to solar power and batteries to secure their energy supply. But ensuring the quality of such systems is key. The testbed will assist in creating the standards for lithium-ion batteries in South Africa," he said.

VITO Energy Technology Project Manager Carlo Mol emphasised that the energy storage testbed is the first step towards broader cooperation between CSIR and VITO.

"The CSIR and VITO started their intense cooperation at the end of 2020, thanks to the financial support of the Government of Flanders for the Indoor Energy Storage Testbed. The project funding enabled the parastatal to make investments in high-tech equipment for testing batteries in South Africa, including building local capacity to unprecedented levels. This collaboration enables the CSIR and VITO to share knowledge on sustainable energy storage solutions for the benefit of South African stakeholders. We are looking forward to future collaborations as the CSIR and VITO signed a memorandum of understanding in April 2022 to extend their research and innovation cooperation towards a broad range of sustainable technologies."

VITO is an independent Flemish research organisation in the area of cleantech and sustainable development.

For information on how to access the CSIR Energy Storage Testbed, email Renesh Thakoordeen at RThakoordeen@csir.co.za



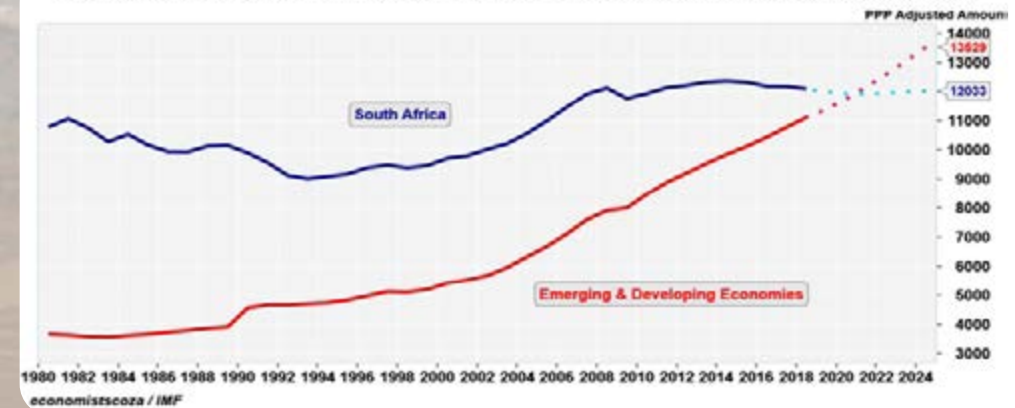
The CSIR interim board chairperson, Prof Van Zyl welcomes the Belgian King as The DSI Director-General Dr Phil Mjwara, and CSIR CEO, Dr Thulani Dlamini look on.

“Phantom Solutions” in the Energy Debate

David Nicholls



SA falling behind in per capita term: In 2021 we will be poorer than the average developing country.



The electricity issue in South Africa is the basis of a very intense debate. There are those who believe the entire solution is the creation of renewable based “mini-grids” with no national grid and those who believe the only solution is to return to the single, monopolistic, system powered by mega-coal stations, and every option in between. All these proposed scenarios are based on a technology or combination of technologies

which the proponents claim are the best answer to our national problems. Unfortunately, while many technical solutions are well based, there are a number which can only be called “Phantom Solutions”.

So what is a “Phantom Solution”? It is useful to first define what is a credible option. There are four key issues for a credible solution.

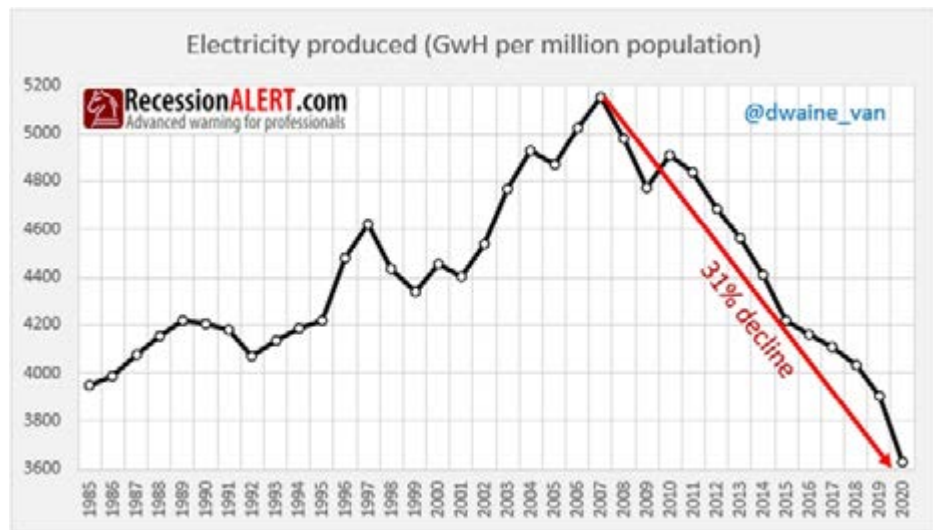
A solution must be aimed to solve a problem, so there must be a statement of the problem we are trying to solve, without this you just have an interesting technology. A problem statement for the South African electricity crisis could be to “meet the national need for the provision of a reliable, cheap and abundant supply of electricity at an acceptable environmental impact?” This would encompass a 24/7 supply to support a growing industry and society.

Given that a problem statement has been defined the second issue is that the technology solution proposed must be able to technically meet the requirement. As an example if the solution proposed was only based on Photo Voltaic (PV) systems with no dispatchable back-up or storage it could not meet the reliable requirement (the sun does go down at night!).

The third issue is that the solution must be economically viable. While this viability may only be after an initial series has been constructed to get the relevant development or learning effect it must not be based on a belief in some yet to be discovered invention.

The fourth issue for the technology to be a credible option must be that it is “politically acceptable”. This may not be at a purely national political level but could be at a different level, such as investor acceptance.

An issue for this is if the option does not provide the opportunity for local economic involvement. An example of this may be the KarPowerShip bids for the RMIPPP tender. While they appear to have succeeded at the technical and commercial level against an open, performance-based specification they do not appear to allow adequate commercial involvement of local companies and this seems to be one of the factors that have led to a significant push back against them.



So if these are the factors for a credible technology solution what are some examples of Phantom Solutions proposed for the South African electricity crisis? Probably one of the most serious is the belief that South Africa, due to the massive changes of the Fourth Industrial Revolution, has a lower electricity demand than has been projected in previous years and the need for “baseload power” has diminished. While this is not a technology solution exactly it does redefine the problem South Africa faces and therefore allow one to explain away the limitations of proposed solutions. The reality is that since 2007 Eskom’s constrained electricity supply due to a failure to start building new plants in the late 1990s has led to a sharp decline in investment in new industrial plant (such as mining and smelters) on which South Africa’s growth is dependent. This can be seen in these two graphs, showing that South Africa’s GDP per capita has not kept up with our emerging market competitors as our electrical consumption per capita has declined. As soon as the electrical supply is constrained (load shedding being an extreme symptom) the consumption figures are a function of supply, not demand.

If one is talking of specific technologies, however, there are two which are currently seen to be very high

profile as the major part of the solution, but fail the fundamental economics criteria.

The first is the belief that battery technology will provide the storage solution to unlock the intermittency challenge of PV and wind power in a net zero carbon constrained world. The issue with batteries is that while the cost of Lithium Ion batteries have fallen dramatically over the last two decades they have now reached the point where the material costs (lithium, cobalt, nickel etc) make up some 75% of the manufacturing costs, so further significant reductions seem unlikely. The best national reference for installed, grid scale, costs is the current Eskom Battery Storage System. This is quoted as having 1449MWh storage capacity and to cost R11bn. At an exchange rate of R18:\$1 this leads to a storage cost of over \$400/kWh. It is accepted that battery storage system costs have to get below \$100/kWh, and probably to around \$50/kWh, to make the PV/battery solution the lowest cost option for large scale grid applications. (If there is a belief that battery prices are falling to levels not seen before it is worth noting that the Lead-Acid battery, invented in 1859, is still the lowest cost option for batteries in cars with internal combustion

engines – Li-Ion batteries are used in electric cars because of power density.)

One of the other “solutions” for which the fundamental economics do not appear to make much sense is “green hydrogen” as an energy carrier. While the technical ability for hydrogen to act as a storage and transport system is clearly there the economics have some major challenges. There is talk of replacing natural gas (methane) in current systems with “green hydrogen”. It is important to note that on a volume basis, for similar gas pressures, methane has three times the energy content of hydrogen. If one goes for liquefaction (as in Liquefied Natural Gas – LNG) for transport the one third volume to energy is still applicable and the temperature to liquify hydrogen is 253oC below zero (only 20C above absolute zero) and it consumes 30% of the energy content of the hydrogen to do. In comparison methane liquifies at 162oC below zero. Therefore the option of replacing natural gas with hydrogen raises major economic challenges and also requires an increase in the infrastructure by three times (as well significant upgrades to manage the increased leakage of hydrogen because the molecules are smaller).

An example of this challenge is the use of hydrogen to power transport vehicles vs. using batteries. The efficiency losses of using batteries consist of the transmission and storage before delivering electricity to the wheels. That equates to about 76% of the electricity generated by the PV cell (?) getting to the road wheel. In the case of the hydrogen option the steps are generation -> electrolysis -> compression/liquefaction -> transport and filling -> fuel cell -> motor/wheel. This has a typical overall efficiency of about 32%.

The promoters of these kind of Phantom Solutions point to countries where they are said to have been applied successfully. In this approach the “success” of the application can be viewed very selectively.

An example of a recent quoted example of a “successful roll out of renewables” has been that seen in Vietnam. Since 2020 Vietnam has installed close to 20GW of roof top and IPP solar. What is not mentioned is how they did it and what they plan in the next ten years (their PDP VIII to 2030). To get this amazing

success there was a standard feed-in-tariff of \$0.0935/kWh with a twenty year PPA, or 18% higher than their domestic tariff (and four times the PV bids in the most recent South African REIPPP bid window).

In their next plan (issued October 2022) Vietnam plans by 2030 to install some 25,000MW of new LNG plant, 12,000MW of new coal plant and 7,000MW of hydro electric plant. The plan includes only 708MW of new PV plant and some 6000MW of wind! Like the German experience this does not really support the belief that the renewables are the effective solution for a grid of similar size to ours.

Another example is that of Denmark, which is quoted to have its major energy source being wind power. This is admirable but proves very little. Denmark is very strongly linked to the neighbouring grids, being the Nordic grid (mainly nuclear and hydro) and the German grid, with its links to Poland and France. In fact it imports over 50% of the electricity that it consumes while exporting a similar amount it generates. This is a function of the regular oversupply and undersupply from its wind fleet not aligned to its demand. This example is of little use to South Africa which is not the small country inside a large, external, grid system. (Maybe it could work for Lesotho?). Of course the ultimate measure of economic success is price and the household tariff for Denmark in 2022 was virtually the highest in the world, at \$0.53/kWh, or some R10/kWh at the current R/\$ exchange rate.

In conclusion the electricity debate is full of possible solutions to the crisis. While many are credible there are a number which are almost inherently “Phantom Solutions”. These Phantom Solutions sound excellent at solving the problem and having almost no negatives. Unfortunately they are usually fundamentally flawed and confuse the debate, with possibly catastrophic outcomes.

It is vital that the debate really interrogates all options proposed against the actual requirements and actual potential of the option. South Africa’s electricity debate must be based on the presumption that the country cannot afford to gamble on an optimistic view again of hope that a new model will save us!



INFRASTRUCTURE



The transition of traditional industrial parks to an Eco-Industrial Park (EIP) approach

Bernd Oellermann, NCPC-SA



Industrial Parks in South Africa

Currently South Africa has many industrial spaces, which take various forms. This can range from areas that are zoned industrially in a municipal boundary with no access control, support services or other management or ownership structure, to parks with various forms of ownership and services and on the other end, Special Economic Zones (SEZs) that are governed by a defined regulatory framework.

The size, number of tenants and employment in industrial spaces therefore varies greatly and many are not well integrated into Local Economic Development (LED) plans, Integrated Development Plans (IDPs) and other plans and mechanisms to coordinate local socio-economic development. Many industrial spaces suffer from insufficient maintenance and associated deterioration of infrastructure, which is clearly visible.

Industrial parks often supply no additional services and existing services may also be of poor

standard. Many parks are only operated purely from a property management perspective with no additional services on offer, no attention given to clustering or leveraging benefits from shared facilities, value/supply chains and logistics for example.

In addition, most parks (especially state-owned parks) do not have sufficient management capacity or access to relevant expertise, have no clear vision, value proposition and associated plans, limited or no support from government (or otherwise) and also have no current legislation in place, apart from that already applicable to companies, labour, trade and so on.

On top of that, industry is faced with a rapid depletion of resources on the planet and climate change that translates into extreme weather events, damage to assets and increased unpredictability of supply chains (upstream and downstream).

This is further worsened by the loss of biodiversity and natural habitats, increasing waste management

problems, unsustainable consumer-driven approaches and by increasing complexities of international relations and trade, constantly changing markets and social dynamics, more conflict and safety/ security concerns and an ever-growing human population.

The need for a new approach

Within the context sketched above, industrial parks cannot continue to function as they always have. Together with all spheres of society, industry is also required to participate in responses that address climate change and resource loss by way of the Just Transition (JT) and a transition to a Circular Economy (CE) or green economy. This is addressed through the Sustainable Development Goals (SDG's), Nationally Determined Contributions (NDC's) to the Paris Agreement (2015), Resource Efficient and Cleaner Production (RECP), Industrial Symbiosis (IS), Life Cycle Analysis and Management (LCA/LCM) and Environmental, Social and Governance (ESG) reporting for example.

While it is understood that industrial parks can contribute to socioeconomic development, this is not evident in South Africa. There is therefore significant opportunity for such spaces to play a more constructive role especially at a local level.

Because of the constitution of such spaces, they are well positioned to support a coordinated approach to addressing the challenges outlined here.

While the dtic and National Treasury have programmes aimed at industrial parks, there is the realization that a new approach is needed, which is confirmed by park management entities and learning in this space over the last decade or so. This new approach is currently the focus of efforts by a task team that includes the NCPC-SA, the dtic and the National Treasury to support industrial spaces.

Eco-Industrial Parks

One of the approaches that have proven extremely useful in easing the transition of industrial parks to

Shared resources

- Material
- Energy
- Waste
- Water

Resource Efficient and Cleaner Production Reduction of energy, water and material use.

...to eco-industrial park

an inclusive and sustainable industrial development concept

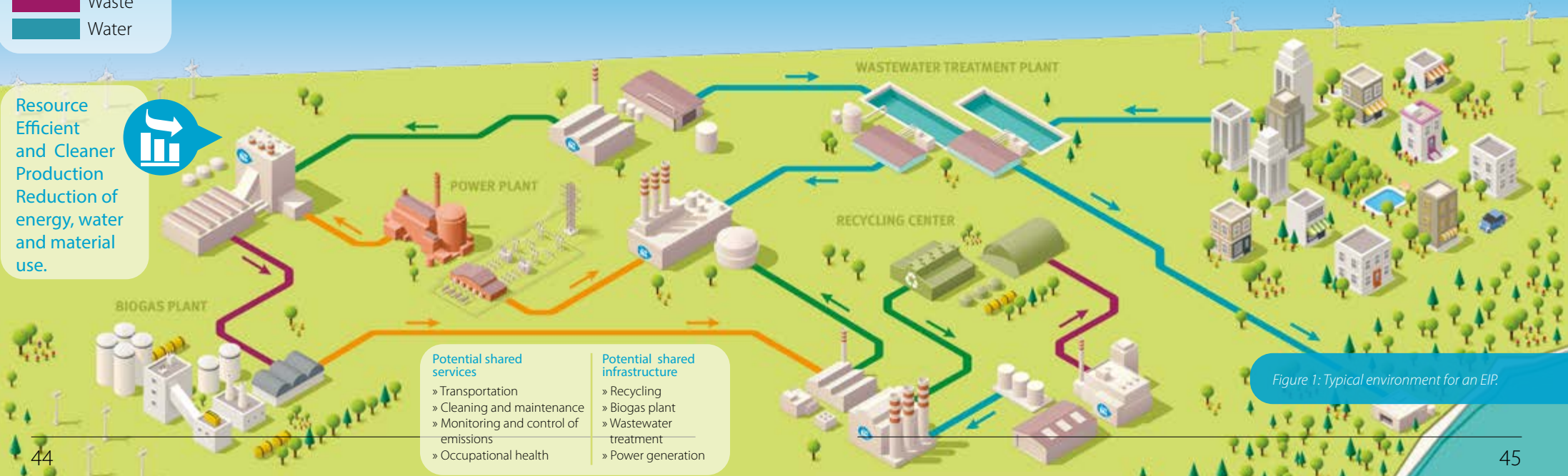


Figure 1: Typical environment for an EIP.

a new approach, is the Eco-Industrial Park (EIP) approach (as also applied by the NCPC-SA), based on the international EIP Framework developed by World Bank, UNIDO and GIZ. This framework is based on the following definition by Lowe (1997):

“A community of manufacturing and service businesses located together on a common property. Member businesses seek enhanced environmental, economic, and social performance through collaboration in managing environmental and resource issues. By working together, the community of businesses seeks a collective benefit that is greater than the sum of individual benefits each company would realize by only optimizing its individual performance.”

This definition however, is the same as that used by the dtic for industrial parks and there is therefore already good alignment, which can ease the transition to a new approach for industrial parks. An EIP within the South African context exists to support, manage and administer industrial activities within a specified area in order to facilitate socioeconomic benefits for the surrounding area, its tenants and the country as a whole. More specifically, it is an area zoned and planned for the purpose of industrial development and should be located in such a manner that it is able to concentrate dedicated infrastructure and services in a delimited area to reduce the per-business expense thereof.

A new way, through sustainability

EIPs form a central part of the new reimagined approach needed for industrial parks in South

Africa and are required to contribute to LED, should be economically, environmentally and socially sustainable and also address national priorities such as industrialization, poverty, unemployment and inequality. Sustainability is not only a key consideration for EIPs, but also for South Africa, in the light of the challenges described above. The NCPC-SA has a particular focus on EIPs as part of its broader offering to industry and currently plays a leading role in this space for South Africa together with the dtic, National Treasury and others.

While there are numerous tools, methodologies and interventions in place to support this new way, founded in a sustainability approach, a lot more needs to be done and South Africa is still at the beginning of its journey. Central to this journey will be how progress or value is measured and the reporting mechanisms, such as ESG, EIP indicators or through more comprehensive mechanisms like the GRI standards.

Such measurement is necessary to support planning and implementation along the lifecycle of an EIP through the work of the NCPC-SA for example, as well as positioning of services and value offerings in EIPs, while also contributing to investment promotion and attraction. Sustainability-based reporting assists in guiding thinking and integration of industrial spaces into meeting needs of industry, the local community and the country as a whole, but it is not a shoe-fits-all solution, nor is it the ultimate solution to some utopian ideal. It is however an approach to guide a pragmatic and targeted response to address current challenges and as such should form part of a new approach for industrial parks.

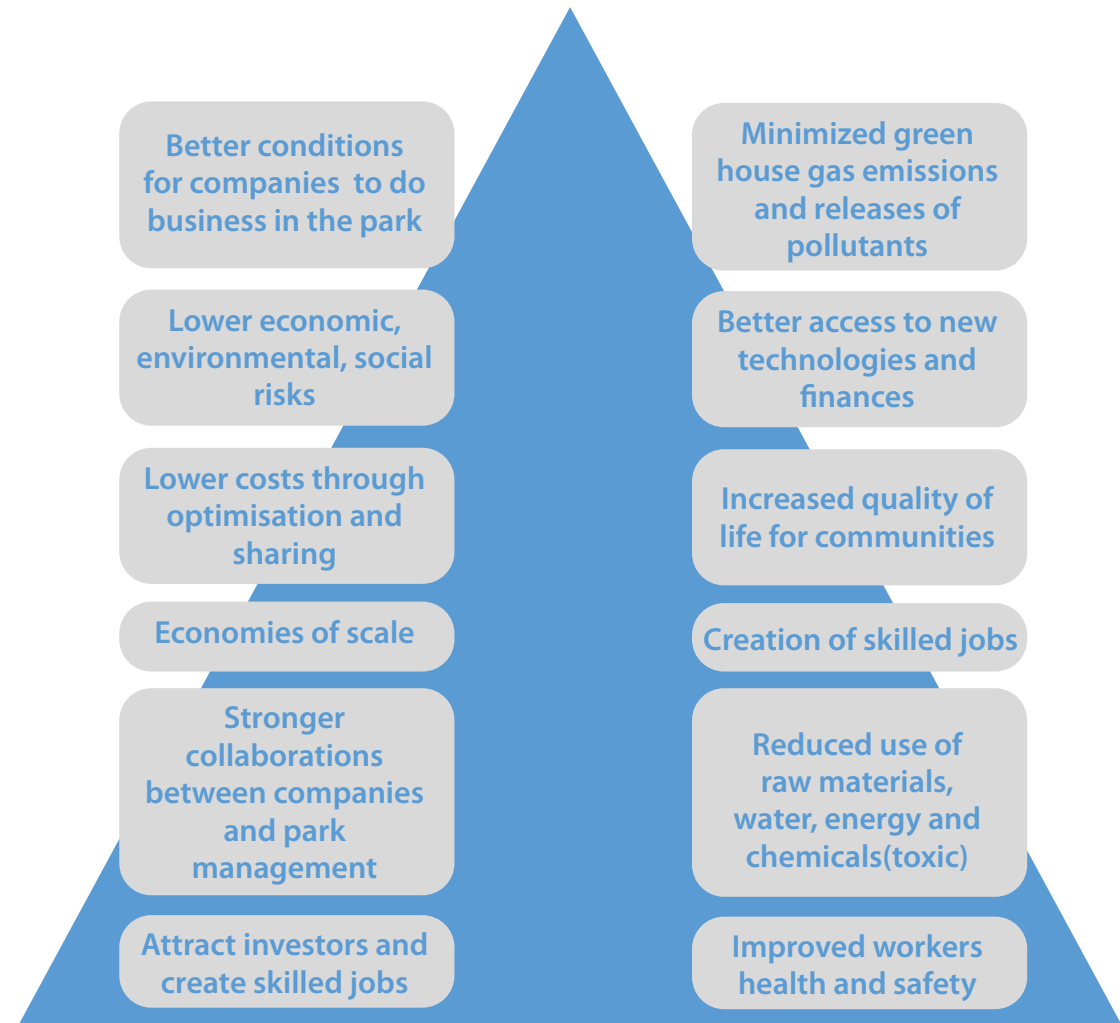


Figure 2: Some benefits of an Eco-Industrial Park.

Sustainability and technology skills are priorities for SA cement and concrete industry

Concrete has for centuries been a crucial material for sustainable infrastructure and advancements in concrete technology are continually improving its performance and reducing its environmental impact. Among the vital qualities of the world's most popular and perennial building material are:

- **Strength and durability:** Concrete is a strong and durable material that can withstand high compressive forces and resist weathering, erosion, and many other adverse environmental factors. This makes it ideal for use in infrastructure that needs to last for many decades;
- **Versatility:** Concrete can be cast into different shapes and sizes, making it ideal for various applications in infrastructure. It can be used to construct buildings, bridges, tunnels, roads, and dams, and a wide variety of structures;
- **Cost-Efficiency:** Concrete is a cost-effective material when compared to other construction materials and it can also be produced using locally available materials, reducing transportation costs;
- **Fire resistance:** Concrete is highly resistant to fire, making it ideal for use in structures where fire safety is a concern;

- **Energy Efficiency:** Concrete structures have good thermal mass properties, which means they can retain and release heat slowly, leading to substantial energy savings in buildings; and
- **Sustainability:** Concrete is a sustainable material that can be produced with lower carbon emissions than other construction materials. Additionally, concrete structures can be designed to reduce energy consumption lowering carbon footprint.

To further the cause of sustainability locally, Cement & Concrete South Africa (CCSA) members are adhering to six stringent policies to champion sustainability and environmental preservation for the South African cement industry.

The industry believes the social and natural resources of South Africa should not be compromised for the sake of economic development and have therefore implemented best practices to reduce industry environmental impacts and greenhouse gas emissions long before being legally compelled to do so.

CCSA producer members are committed to comply with six key CCSA policies to ensure maximum sustainability:

- The increasing use of alternative fuels and resources (secondary materials). Traditionally, fossil fuels and natural raw materials have been used to make clinker, the main ingredient in cement. CCSA members are now increasingly using 'Secondary Materials' or 'Alternative Fuels and Resources' (AFR) that are non-traditional for clinker and cement production yet are environmentally safer.
- In terms of CCSA's Biodiversity Policy, CCSA recognises that cement production involves the extraction of limestone from the earth through mining and that this impacts on the environment through clearing of land and natural water bodies in the vicinity. CCSA members are now, as far as reasonably practical, rehabilitating the environment affected by their prospecting or mining operations to its natural or predetermined state, or to a land use that conforms to sustainable development.



- CCSA's Climate Change Policy follows the realisation that climate change poses a real global threat to sustainable development and requires a global response. As a result, all CCSA members are proactively adopting and developing mitigation and adaptation strategies to manage greenhouse gas emissions.
- In terms of CCSA's Energy Policy, members recognise both the national energy constraints as well as the relationship between its own energy consumption and carbon footprint and have committed themselves to implementing management systems to measure and optimise energy performance, as well as the use of alternative energy sources as key to thermal and electrical energy supply strategies. CCSA became a voluntary signatory to the Energy Efficiency Accord in 2005 and CCSA addresses energy efficiency issues through projects managed by its Environmental Committee.
- In adherence to the CCSA Environmental Policy, members are committed to environmental best practice, pollution prevention; effective waste and energy management principles, and the utilisation of all resources in an optimal and responsible manner.
- Finally, the CCSA Water Policy recognises that South Africa is a water scarce country and therefore members are implementing effective programmes for the responsible use of water, and the protection of South Africa's water resources.

Hanlie Turner, Business Development Manager of CCSA, says CCSA clinker producer members use various forums to report on the different aspects of their performance. These forums include, the Carbon Disclosure Project, the JSE Socially Responsible Investment (SRI) index as well as government departments while supporting the Mining Charter.

"CCSA is also represented on relevant committees of local bodies such as Business Unity SA (BUSA), Minerals Council of SA, National Business Initiative, Mines Qualification Authority, Department of Environmental Affairs, and the Department of Water and Sanitation," Turner added.

With a very wet summer being experienced in many parts of South Africa, increased use of pervious concrete and concrete block paving in urban roads and parking areas could play a major role in reducing

toxicity in the country's water resources, says Bryan Perrie, CEO of CCSA.

"Pervious concrete ground surfaces allow rain, municipal and domestic gardening water, and other water to percolate through to replenish natural aquifers. Run-off from impervious surfaces, such as asphalt, sends grease and other harmful chemical products into surrounding rivers, streams and dams while pervious concrete paving naturally filters out pollutants," Perrie explains.

He says the dangers of toxic elements forming part of flooding run-off have been shown on more than one occasion with several SA beaches this summer

closed because of dangerous discharge and spillage from inland waters into the ocean. Although not new - it was first used in the 19th Century - pervious concrete is now globally receiving renewed interest because of intensified clean water legislation in many countries.

"It has attracted a descriptive advertising slogan: 'when it rains, it drains'. That is, in fact, what happens. As water soaks through the sub-base of pervious concrete surfaces, natural filtration takes place which removes pollutants and impurities from the water. Permeable paving can also, to a certain extent, prevent flash flooding by absorbing water rather than moving

it into drainage or allowing it to build up on top of the surface."

Perrie says, with municipal budgets now extremely limited, pervious concrete or permeable block paving can be used for storm water attenuation to replace retention ponds. This can reduce the number and size of drainage infrastructure elements, saving both materials and energy, as well reducing future maintenance.

As South Africa urgently needs concrete proficiency, the need for top quality skills in concrete technology and practice is essential. Consequently, sustainability based on the best practice to ensure





Bryan Perrie and Hanlie Turner

that the finished concrete product utilises resources as efficiently as possible has been made the common theme of CCSA's School of Concrete Technology (SCT) courses for 2023.

In his foreword to the School's Training Programme for next year, John Roxburgh, senior lecturer, says the SCT realises how critical it is to produce quality concrete that meets all strength and durability requirements. "Our variety of courses cater for different needs required by a broad spectrum of students," Roxburgh states. "Our slogan for the year is 'Not without concrete!'. It is a theme that has run through our lecture courses for many years and so for 2023 we have made it our official slogan."

The SCT curriculum for 2023 as usual covers 10 standard courses ranging from basic topics such as an "Introduction to Concrete" to more specialised training on various topics including "Concrete for Industrial

Floors" and "Concrete Road Design and Construction". All the courses are presented "live" in Midrand with some also scheduled for Durban and Cape Town. Furthermore, on an advanced level, the UK Institute of Concrete Technology's two highly-respected courses, "Concrete Technology and Construction general principals and practical application", and the pinnacle of concrete training, "Advanced Concrete Technology" (ACT), will continue in 2023. Roxburgh says the ACT modularised self-study programme was successfully launched in 2022 and several delegates have already joined the programme.

Continuing Professional Development (CPD) points are awarded for selected courses.

The SCT 2023 Training Programme can be downloaded from www.cemcon-sa.org.za or for more information about the SCT courses, phone 011 315 0300.



Clear vision is essential for environmentally responsible practices.

Become a member – be part of the future.



www.cemcon-sa.org.za

Collaboration is key to unlocking procurement value to drive infrastructure development in South Africa

Chris Campbell, CEO, CESA

The second day of Consulting Engineers South Africa's (CESA) Annual Infrastructure Indaba, held in Durban, KwaZulu-Natal, kicked off with a detailed discussion around procurement processes in South Africa's public sector.

David Leukes, vice-president of CESA, welcomed delegates to the second day of the Indaba, and Amanda Masondo-Mkhize, a technician at MPAMOT, facilitated the 'The procurement and performance management practices for public infrastructure in South Africa' session.

The keynote address was delivered by Thami Zikode CA (SA), Head of Portfolio, Regularity Audit: Auditor-General of South Africa (AGSA). He called on

consulting engineers to assist in ensuring that projects are properly planned and there is adherence to the budgets, timelines and efficient processes. "You have a responsibility in delivering services economically, efficiently and effectively given the state of our country's economy," said Zikode.

In terms of the country's procurement, he believed the systems and processes were in place.

"The issue of accountability and consequence management are key to unlocking procurement in this country. The difficulty is that once you get to the point where you have implemented consequence management, it means something wrong has happened. So, I think the issue of making sure that we professionalize the public sector, especially the

procurement selection, will go a long way in making sure that things get done the right way, right from the beginning."

Alain Jacquet, Director of SABEeX, concurred: "We have the systems, but they are not being used effectively. And this needs to change. We must focus our energy on the content of the procurement processes rather than running the procurement processes."

George Kanyika, from the KwaZulu-Natal (KZN) Provincial Treasury, added: "There is a willingness to do the right thing. And people know that there are rules that need to be followed. But we call on everyone to be transparent and practice fairness and equity- if we can achieve this, there will be a real willingness to implement these processes."

Leadership and Technology Driving Advancement

This session was facilitated by Rudi von Fintel, the chairperson of CESA's KZN Branch and Associate Director of Smart Mobility at Royal HaskoningDHV.

The session was opened by Renee Petersen, CESA's Young Professional Forum chairperson and HHO Consulting Engineers' Civil Engineering Technologist, who called for young professionals to have a "seat at the table" to ensure transformation of the engineering fraternity with young professionals not just making a difference at junior levels but moving into senior levels. "Young professionals bring a new perspective to shaping the built environment in collaboration and with guidance from seasoned professionals."

Sibusiso Mjwara, PrTechEng and GEDP, President of the Institute of Municipal Engineering of Southern Africa (IMESA), advocated that together with other engineering professional bodies, everyone has a responsibility for designing and constructing the infrastructure for the future generations in all aspects of municipal engineering.

Meanwhile, Sikhulile Nhasengo, a CESA Transformation Committee member, and Director at Maninga Engineering, explained that the construction



Thami Zikode from the Auditor General's Office at the CESA Infrastructure Indaba 2023

industry in Africa is slow in its adoption of BIM processes despite its numerous advantages. "Is the construction industry ready for BIM? Is government ready for BIM? We must start using augmented technology today if we want to change the way in which we build the future of South Africa and Africa."

He was joined in this session by Richard Ahlschlager, Technical Director – Energy, Resources and Manufacturing at ZUTARI who spoke about innovation, and William Moraka, a Manager at the South African Local Government Association (SALGA).

The event concluded with a session on the 'Development of Transport Resources'.

The session's facilitator was Naomi Naidoo, a CESA Board and a Director at Pink Africa Consulting Engineers and included speakers Dumisani Nkabinde, Regional Manager at SANRAL, and Portia Derby, Group Chief Executive at Transnet.

Derby highlighted the State-owned utility's growth and re-invention strategy. "It has been interesting getting relevant stakeholders, including our unions and staff, to understand that our partnership strategy is actually a growth strategy. It is not as if we are exiting the areas in which we are operating in. We have to take the money that we have and invest it in maintenance and build the rolling stock and infrastructure needed to ensure that we can continue with the business that we have; but to also increasingly look at how we can use our partners to undertake build programmes and expansion."



Transnet CEO Portia Derby at the CESA Infrastructure Indaba 2023



WASTE



Implementing EPR Regulations in an African Context

Keith Anderson

Extended producer responsibility (EPR) is a strategy for reducing the amount of waste that goes to landfills by leveraging the “polluter-pays” principle. EPR policies hold producers and importers of specific products accountable for financing and organising their environmentally-sound plans for the recycling/disposal of their products at the post-consumer stage. EPR policies typically require collaboration from stakeholders throughout a product’s value chain.

The first EPR regulations appeared in the 1990s in several European countries, including Sweden, Germany, and France. Today, EPR is a widespread mechanism for developing sustainable solid waste

management systems and has been implemented in various countries in Africa, South America, and the Asia-Pacific region.

The EPR Landscape in Africa

The success of EPR in Europe has driven many developing nations to adopt a similar legal framework for local waste management. Policymakers in South Africa, Kenya, Ghana, Nigeria, Cameroon, Tunisia, Namibia, Zambia, Rwanda, and Côte d’Ivoire have implemented EPR systems to mitigate environmental pollution.

South Africa

South Africa implemented the national EPR regulations for the lighting, Electrical and Electronic Equipment (EEE), paper and packaging industries in 2021. These regulations require manufacturers, importers, brand owners, retailers and refurbishers of the identified products to develop and fund EPR schemes that facilitate responsible recycling/disposal and cleaner production methods. The legislation allows producers to either join a producer responsibility organisation (PRO) that implements, manages, and reports on an EPR scheme on its members’ behalf or implement their own Producer EPR scheme that includes the entire value chain.

Kenya

Although voluntary EPR systems exist in Kenya, the country recently proposed mandatory EPR legislation under the Sustainable Waste Management Act of 2022. Similar to the South African model, Kenyan producers may fulfil their EPR obligations individually or collectively in a compliance scheme. The Act requires the Kenyan cabinet secretary to publish more detailed EPR regulations within two years of its establishment.

The country also introduced the Kenya Plastics Pact (KPP) in 2021 - joining the Ellen MacArthur Foundation’s global Plastics Pact Network. The Pact outlines recycling and recycle content targets for Kenyan producers and includes the entire plastics value chain.



Nigeria

Nigeria is the leading importer of used EEE on the African continent,¹ with a host of informal recyclers who salvage rare metals from imported scrap electronics. Since 2009, the Nigerian government has released various industry-specific National Environmental Regulations through the National Environmental Standards and Regulations Enforcement Agency (NESREA).

Policymakers gazetted the latest amendment to the regulations for the EEE sector in 2022, which include a detailed roadmap for EPR policy enforcement in the industry. This legislation supports the country's current voluntary EPR systems and requires all producers to register with the E-waste Producer Responsibility Organisation Nigeria (EPRON).

The Role of Stakeholders in Successful EPR Implementation in Africa

Building a circular economy through EPR requires active participation and engagement from the government, producers, PROs, recyclers, and communities on a municipal and national scale. EPR systems only work if stakeholders collaborate to maintain accountability and transparency throughout the process.

Governments

Policymakers should publish legislation with clear definitions for the types of waste subject to EPR, its producers, and their obligations to avoid confusion and creating legal loopholes. Furthermore, collaboration across government departments will allow African countries to enforce EPR laws more effectively. An example of such cooperation exists in Zambia, where strict import laws for technology equipment support the country's EPR system by prohibiting counterfeit EEE to reduce e-waste.

Although sub-Saharan Africa is responsible for only 9% of the world's waste generation,² the region is flooded with waste imports from developed nations, which may hinder its EPR efforts. The Bamako convention bans the import of hazardous waste into Africa and controls its movement across the continent. Stricter management of international trade could help African governments reduce

imported waste to alleviate pressure on waste management infrastructure and create space for new collection and recycling systems.

Producers and PROs

EPR schemes can be self-funded if producers incorporate the price of running the scheme into the cost of their goods. Where this is not possible, private companies can finance EPR programmes through their corporate social responsibility budgets. Successful EPR projects engage the entire value chain, and producers and PROs should invest in product design, waste management facilities, and developing end markets for recycled goods.

There is an opportunity for public-private partnerships where there is a lack of infrastructure to support EPR programmes, such as the Rwandan government's partnership with Enviroserve.

Recyclers and Communities

Consumer participation is paramount to EPR's success in Africa. Various South African studies^{[3],[4]} highlight a general confusion amongst the population over which materials are recyclable and where to recycle them. Civil society may boost public awareness and interest in recycling with workshops and educational programmes that support national EPR efforts.

Although informal recyclers are invaluable resources in Africa's waste management systems, unregulated recycling and "urban mining" often cause further environmental pollution when reclaimers discard unsalable materials. Integrating informal recyclers into the formal waste sector could prevent litter, protect human health and safety, and strengthen EPR networks. Morocco is currently the only African country with legislation in place to recognize and protect informal waste workers.

Using EPR as a Tool for Building African Economies

International organisations such as the OECD, United Nations, and WWF advocate for EPR as a tool for developing circular economies that support the environment, human health, and economic growth.

National EPR programmes have the potential to uplift informal waste pickers and recyclers by

integrating them into the formal waste sector, alleviating poverty and preventing exploitation. Furthermore, the additional infrastructure and human networks required to implement EPR present opportunities for job creation and enterprise development. A circular economy creates end markets for recycled materials, driving innovation and entrepreneurship.

Keith Anderson, CEO of the EPR Waste Association of South Africa (eWASA), says, "If an EPR (extended producer responsibility) scheme is working well, it is able to bring together all the actors responsible for sustainable waste management, such as producers, importers, distributors, recyclers, and waste pickers. This is what eWASA, with 17 years of experience, has been striving to achieve."

Contact eWASA for assistance with your producer responsibility in South Africa or visit the website for more information.

SOURCES

- Adepetun, A. Nigeria's e-waste regulation covers producer responsibility. (2020)
- Bowman's: Kenya: Sustainable Practices Towards a Circular Economy: Introduction of the Sustainable Waste Management Act, 2022 (2022)
- Gründling, I. African Decisions: Trash Talk.
- Kenya Law: Sustainable Waste Management Act, 2022.
- Kunlere, I. Implementation of the Extended Producer Responsibility (EPR) Policy in Nigeria: Towards Sustainable Business Practice. (2019)
- Langhill, R. EPR in Africa - what to expect in the next few years. (2021)
- Maes, T., Preston-Whyte, F. E-waste it wisely: lessons from Africa. SN Appl. Sci. 4, 72 (2022)
- OECD. The State of Play on Extended Producer Responsibility (EPR): Opportunities and Challenges. (2014)
- UNEP. Africa Waste Management Outlook. (2018)
- UNEP. Nigeria acts to fight growing e-waste epidemic. (2023)
- United Nations. Integrate Extended Producer Responsibility within the International Plastics Treaty - common positions paper. (2022)
- UN Race to Zero. How Africa is leading the way

- in dealing with e-waste. (2022)
- Wambua, C., Werner, M., Ackerman, A. Towards an international legally binding instrument: Africa and the global commitment to end plastic waste. (2022)
- World Bank Group. What a waste 2.0. (2018)
- ³<https://petco.co.za/new-survey-shows-majority-south-africans-apatetic-recycling/>
- ⁴<https://www.mdpi.com/2313-4321/3/3/41>



Keith Anderson



LANDSCAPE RESTORATION

Driving A Bio-Economy for the Eastern Cape



Jobs Created
1,500



Women Employed
35%



Total Land Restored
14,500 ha



Thicket Restoration
7,600 Ha



Bamboo Reforestation
5,000 Ha



Tons of CO₂
6 Million

A Restoration Economy for the Eastern Cape

Camille Rebelo

A Restoration Economy for the Eastern Cape

Degraded lands, increasing levels of widespread poverty, drought, climate change, and a shortage of key utilities such as water and power. These aspects all converge in the Eastern Cape, a region that historically thrived as a center of agricultural development and once played a key role in South Africa's GDP driven in particular by the production of milk, wool and citrus.

Yet these products and the intensive manner in which they have been produced over the past century, combined with the extended and severe seven year drought that has finally drawn to an end, has left a state that is now characterized by large tracts of extremely degraded lands and the highest levels of poverty in the country with few opportunities for economic development.

But with a long term outlook, and utilizing the opportunity that carbon financing provides to kick start a new paradigm, nature based and natural climate solutions that can contribute to the holistic and positive development of a green economy for the region, are possible.

In 2022, Kenyan headquartered EcoPlanet Bamboo kick started an ambitious landscape restoration project, combining the company's decade of experience in bamboo with a unique landscape approach to restoring the native and biodiverse albania thicket ecosystems that the Eastern Cape was once home to.

Building on a Decade of Eastern Cape Learning

EcoPlanet Bamboo has been active in the Eastern Cape since 2012, through the company's piloting of the Kowie Bamboo Farm, just outside of Bathurst.

This pilot farm, operating on one of the oldest and once most productive pineapple farms in the region, has undertaken a massive transformation of these degraded lands, from a barren and deserted wasteland to one in which beautiful groves of bamboo are reversing soil erosion, controlling a healthy micro-climate, and creating a long term source of employment for surrounding communities. Today, the Kowie Bamboo Farm represents the only source of FSC certified bamboo on the African continent, and has set the stage for a longer term focus on a net zero production of bamboo pulp, as a climate positive, deforestation free alternative for South Africa's pulp and paper industry.

Bamboo's Contribution to Water Management *Bambusa balcooa*, the species that EcoPlanet grows in South Africa, was introduced to the Eastern Cape in the 1600s, and has been reclassified in South Africa as "naturalized" with no known negative impacts.

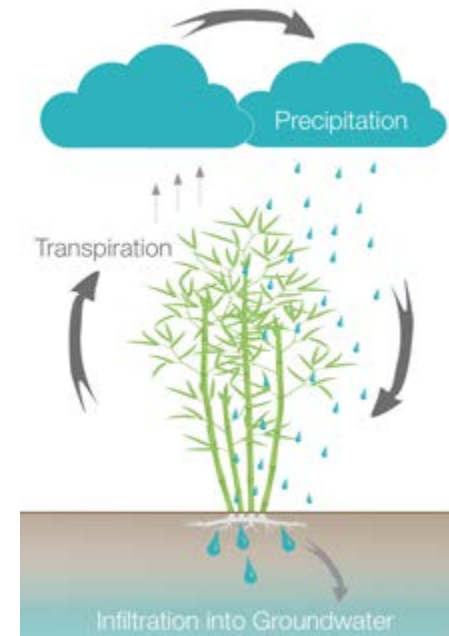
Bamboo is widely touted as having benefits towards the restoration of water resources, but little scientifically rigorous data previously existed. Given the water scarcity context of the Eastern Cape and South Africa in general, understanding the species water usage was a critical component in determining the attractiveness of driving bamboo as a solution for the region.

Between 2019-2021 a long term water study was carried out by the University of KZN at Pietermaritzberg.

The Kowie Bamboo Farm represented one of two sites on which scientists placed equipment to track the hourly evapotranspiration rates associated with

bamboo over a 24 month period. The data showed that bamboo is an extremely water conservative plant.

Its shallow root system has no ability to tap into ground water or other water sources, and therefore it utilizes only water available in the top soil. In periods of low water availability the bamboo leaves rapidly dry and fall off, reducing any water uptake during such periods to insignificant levels. And when water is available the dense canopy serves to filter rainfall slowly through the ecosystem and filter it through the soil and back into water tables, while evapotranspiration returns water back into the atmosphere.



Natural Climate Solutions – A Platform for Scale

South Africa represents the highest carbon emitting country in Africa, with 2021 seeing record emission levels of 436 million tons of carbon dioxide from production and manufacturing based greenhouse gas emissions alone. At the same time, a number of production and manufacturing companies with

footprints in South Africa have made voluntary commitments towards the transition to a low carbon economy, through Science Based Targets Initiative. Where residual emissions are unavoidable, opportunities exist for these emissions to be addressed through projects developed under the Voluntary Carbon Market. This framework of offsetting should never replace the focus on reduction of emissions and a transition to a low carbon economy, but does offer the potential for companies and land owners to transition towards landscape restoration and allow for financing to flow to project activities that otherwise would not be economically viable.

A Holistic Approach to Landscape Restoration

In 2022 EcoPlanet initiated the Eastern Cape Restoration Project, aimed at having a transformative and long term effect on the most degraded areas within the Eastern Cape, and at a scale that could bring about long term transformative change. In an ideal world, all nature based solutions projects would have high biodiversity and high social impact.

But the reality is that there is no one size fits all, and projects need to be designed with climatic, ecosystem and cultural contexts taken into consideration in order to maximize as wide an array of benefits as possible. In order to have such widespread benefits, EcoPlanet operates a unique combination of projects that are implemented hand in hand:

- Bamboo Restoration – the Kowie Bamboo Farm is undergoing expansion through the restoration of a network of smaller farms within the region where agricultural productivity is low, and such farms have gone out of production. The bamboo has a myriad of environmental benefits, but more importantly, for this region where unemployment teeters upwards of 60%, the manually intensive nature of the project creates significant numbers of long term permanent jobs.
- Albany Thicket Ecosystem Restoration – this aspect of the combined project targets larger scale farms that were typically under goat or sheep production, a land use that can no longer be supported due to low vegetative cover. *Portulacaria afra*, known

as spekboom, is planted in combination with protection and enrichment planting techniques. The restoration of this native ecosystem has an immense biodiversity benefit, with the Eastern Cape representing a global biodiversity hotspot and one of the highest levels of plant endemism in the world.

Combined, these projects allow for a holistic and long term approach to conservation while producing an alternative source of wood and fiber with the potential to support manufacturing and the building of a localized green economy.



Restoration Science & Silviculture Based Management

Despite the boom in tree planting in recent years, successful reforestation and restoration depends on a science based approach, and a long term approach. The operational success of these projects depends upon a wide range of inputs and factors being correctly measured and timed to deliver

on the exact prescription needed to ensure that seedlings of the exact right age and strength are ready with precision timing to go into ground that is adequately prepared and provided with the right nutrition to ensure successful transition into often harsh field conditions.

The science goes hand in hand with an immense amount of logistics and administration in order to ensure that teams of hundreds of semi-skilled individuals are trained, transported, and that the right activities occur at the right time. Dig a hole a week too early and it will no longer be there come the planting team, who aren't equipped with the right equipment to re-dig it, because they're carrying a 20kg tray of seedlings. At the same time, co-ordination of human resource requirements is necessary to ensure items such as drinking water and sanitation facilities are available at the right place at the right time.

EcoPlanet's ambitious Eastern Cape Restoration Project requires a multitude of individuals from varying backgrounds, qualifications and skills, working together towards a common and long term goal.

Scalability

The Eastern Cape Restoration Project is underway on three unique land areas with an immediate target of 14,500 hectares to be restored over the immediate 36 month period. At this scale the project is creating 1,500 jobs, with a strong focus on the empowerment of women. But the landscape approach means that the projects have been designed to be modular, with potential to scale. And as such scaling occurs, so too does the immense array of direct and indirect benefits.

ecoplanet™
bamboo

LANDSCAPE RESTORATION

Driving A Bio-Economy for the Eastern Cape

Innovative solutions to help companies tackle food waste challenge

Food waste is a significant challenge facing South African companies, with serious economic, environmental and social implications.

Not only does food waste result in the loss of scarce and valuable resources, but it also exacerbates the issue of food insecurity, which is a major concern in the country.

According to a report by the WWF South Africa, an estimated 10 million tons of food is wasted in South Africa each year. This is equivalent to 30% of the country's total food production.

Moreover, the emissions associated with wasted food are estimated to be equivalent to the emissions from 2.5 million cars on the road.

Another report by the Department of Environment, Forestry and Fisheries estimates that around 60% of the waste generated in South Africa is organic waste, with food waste contributing about one-third of this.

In order to remain competitive and sustainable, it's essential for South African companies to manage food waste effectively.

Failing to do this can have a significant impact on their bottom line. This is particularly the case for those companies operating in the food and beverage sector, which is characterised by high input costs and thin profit margins.

Legislative framework

For South African companies, the National Waste Management Strategy (NWMS) provides a framework for managing food waste and aligning with the government's waste management strategy.

The strategy outlines a number of key actions that companies can take to reduce food waste, including implementing waste reduction programs, conducting waste audits, and engaging with stakeholders to promote waste reduction and recycling.

By supporting the NWMS, companies can demonstrate their commitment to sustainable practices and contribute to the achievement of national waste reduction targets.

But they can't do this alone. They need to outsource their non-core activities to private waste management companies such as Oricol Environmental Services to help them manage their environmental footprint.

By aligning with the government's overall waste management strategy, Oricol works with its customers to implement waste reduction programs, provide waste audits, and promote waste reduction and recycling.

In 2022, Oricol diverted 78% of all waste from landfill. The company diverted 116 999 tons of waste from landfills last year. That's equivalent to the weight of 9 749 double-decker buses.

By planning for future changes in legislation in accordance with the principles of the waste hierarchy and the food waste hierarchy, Oricol ensures its services are designed to meet and exceed these national waste reduction targets.

Alignment and innovation

With its strong focus on innovation, Oricol continues to play a crucial role in developing advanced solutions for companies to manage their food waste better.

These advancements help the company contribute to the development of a circular economy, where





waste is seen as a resource and not a burden. It is for this reason that Oricol's slogan is Turning Waste Into A Resource®.

One way Oricol helps companies manage their food waste is by converting wet and dry food waste products into raw products used in animal feed that are milled to a coarse crumb-like state and sold to commercial livestock agribusinesses as a cost-effective, environmentally feed supplement.

In addition, Oricol's services such as food waste collection and composting for commercial and industrial clients help businesses reduce their food waste and comply with waste management regulations while providing a sustainable alternative to landfill disposal.

Oricol's business activities are underpinned by the principles of the waste hierarchy and the food waste hierarchy.

The waste hierarchy is an important tool for promoting sustainable waste management practices. It encourages a focus on waste prevention and reduction and promotes the recovery and reuse of resources whenever possible.

The food waste hierarchy is also important for the circular economy. It promotes a more sustainable and resource-efficient approach to food production and consumption.

By prioritising prevention and minimisation, the food waste hierarchy encourages businesses and consumers to use resources more efficiently, reduce waste generation, and create value from waste streams. One of the key pillars of the NWMS is the establishment of Extended Producer Responsibility (EPR) schemes.

By shifting the responsibility for waste management onto producers, EPR schemes can encourage sustainable production practices, improve the efficiency of waste management systems, create new economic opportunities, and reduce the environmental and social impacts of waste disposal.

In South Africa, however, there are currently no EPR schemes specifically focused on food waste management.

But there are initiatives that aim to address food waste through other means. For example, the government's National Food Waste Reduction Strategy, which was launched in 2019, aims to reduce food waste throughout the food supply chain.

This strategy focuses on education, awareness-raising, and measures to improve food storage, processing, and distribution.

Focused customer solutions

One of the major contributors to food waste generation in South Africa is the hospitality industry.

And as such, it has a significant role to play in reducing food waste and building a more sustainable food system.

By implementing a range of measures to prevent, minimise, and manage food waste, hospitality businesses can reduce their environmental impact, save money, and contribute to food security in their communities.

One of the most effective ways to manage food waste is to partner with a private company such as Oricol. This will ensure their food waste is collected or managed on-site to ensure it is diverted from landfill.

Oricol also assists with implementing source separation systems to separate food waste from other types of waste, making it easier to divert food waste for composting or other forms of treatment.

Oricol will also train hospitality industry staff on food waste prevention and management and implement measures to monitor and track food waste.

As a leading waste management company in South Africa, Oricol offers a range of services to help customers reduce their environmental impact, including food waste.

Here are some ways Oricol can assist customers with their food waste management:

1. Waste audits and assessments: Oricol can conduct waste audits and assessments to help customers identify sources of food waste and develop strategies to reduce it. These assessments can include a review of the customer's waste streams, as well as an analysis of their waste management practices.
2. Food waste collection and transport: Oricol offers collection and transport services for food waste, using specialised vehicles and equipment to ensure safe and hygienic handling.
3. Composting and organic waste management: Oricol partners with composting sites and biogas plants that can process food waste and other organic waste streams. The company can assist customers in diverting their food waste to these facilities for composting.
4. Training and education: Oricol can provide training and education programs to help customers understand the importance of food waste reduction and develop strategies to minimise waste. These programs can include

employee training, as well as educational materials such as posters and signage.

5. Reporting and analytics: Oricol offers reporting and analytics tools to help customers track their waste management performance, including food waste. These tools can provide insights into waste generation, diversion rates, and other key metrics, allowing customers to identify areas for improvement and track progress over time.

By aligning with the government's NWMS and constantly developing new and innovative ways of turning waste into a resource, Oricol can help customers develop a comprehensive approach to food waste management that promotes sustainability and resource efficiency.

As founder Richard Sanders says: "We are driven by a desire to recycle and turn waste into a resource. It's part of our culture."



Without recyclers, South Africa's EPR regulations will simply facilitate greenwashing

Regulations are not enough to help South Africa move to a circular economy. Without the support of an innovative and well-developed recycling and waste management sector, the country's Extended Producer Responsibility (EPR) Regulations can inadvertently enable greenwashing and inhibit real environmental impact.

South Africa joined international efforts to reduce pollution and environmental degradation through the introduction of The Extended Producer Responsibility (EPR) Regulations in May 2021. These regulations hold producers – which include manufacturers, importers, and brand owners – responsible for the complete lifecycle of the products they sell. This obligates producers to take responsibility for where their products and packaging ultimately end up at end of life by requiring them to join a producer responsibility organisation (PRO) that facilitates this process.

The dangers of greenwashing in EPR

But Patricia Schröder, spokesperson for the producer responsibility organisation (PRO) Circular Energy, says ensuring that producers are compliant with regulations is not enough to establish an effective EPR system in the country. "The circular economy needs both producers who are committed to meeting regulations and a system of service providers with the necessary skills and resources to carry out the work on the ground. If all aspects of the system are not in place, EPR can end up facilitating greenwashing by enabling companies to meet regulatory requirements on paper only."

Greenwashing involves a company enhancing – or fabricating – the environmental impact of its services and products or creating the false impression that it is taking effective steps to curb the environmental impact of its business activities. Schröder says service providers are critical to ensuring that the commitments made by producers can be fulfilled in practice.

"Service providers are needed to ensure that waste is collected and then recycled as it should be and that we develop and expand the country's recycling and waste management capacity. For example, the intention to recycle is void if consumers return used products only for most of the material they contain to ultimately end up in a landfill because the technology or capacity to recycle it is not available," she says.

The importance of collaboration for growth

In the recently gazetted Household Hazardous Waste Management Strategy, the Department of Forestry, Fisheries and the Environment (DFFE) again highlighted the opportunities for and the importance of collaboration between stakeholders throughout the product and waste management value chain, including public entities and private service providers.

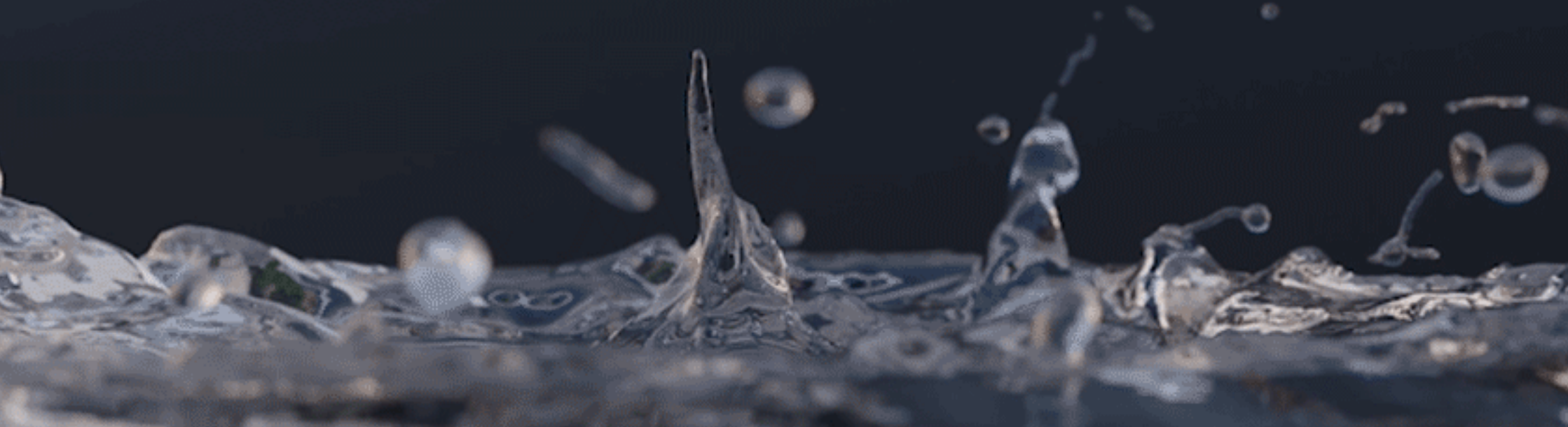
The draft strategy recognises that public-private partnerships can help to improve efficiency in waste

collection systems, attract technical expertise and increase capital investment in waste management systems. It also recognises the important role that the informal waste sector continues to play in the country's existing waste management systems. Schröder says EPR regulations can impact and benefit many waste management and recycling service providers – including those in the informal sector like waste pickers.

She says service providers should also play an active part in developing the EPR system as it has the potential to become a great catalyst for growth in their sector. "This contributes to the best possible outcome for the environment, while also creating valuable economic opportunities and social impact. It will not only help to stimulate an increase in the overall recycling capacity of the country but can also help to inspire innovation in manufacturing and recycling."



WATER





Water status in South Africa-an opinion from the SA Water Chamber CEO

Benoît Le Roy

The very concerning reality is that not much positively has happened on the reality front since my last update a quarter ago. Why do I state this:

- NMBM is hanging on a thread and facing Day Zero despite national government's intervention
- No visible program of the reduction of NRW, Non-Revenue Water, has been made and neither has the No Drop Report been published for nearly a decade.
- No major desalination projects have been announced and visible implementation witnessed publicly despite the master plan stated 1 600 MGLD urgently required to install some water security in SA's coastal metros and towns.
- The independent water regulator is not created.
- The Water Partnership Office is established but not yet staffed and functional.
- The National Water Implementation Agency is not established.
- Despite the national dams, except for the EC and WC, being full we have serious service delivery lapses and now supposedly entering the next El Nino phase that will additionally test our water reserves as it always does. No visibly and impactful mitigation programs have been embarked upon since the last episode unfortunately.

Most of the action required to instil a modicum of water security in South Africa is at local government level, so municipalities, that are at best the worst capacitated to implement what is required, the minister of DWS is on record confirming this alarming matter. Is it not time for our entire water architecture to be redesigned where we have source to tap service providers or utilities in the global sense of the word?

There are compelling reasons to redesign our water architecture and I cover some of them here in this short article that will hopefully stimulate debate and some action into urgently reviving our water sector whilst inculcating the required water security in a very complex environment. This opinion is expressed as I distinctly wish to fix our ailing water services that simply do not deliver in a new era of complex issues, we can do this I have no doubt.

In South Africa, we have a very complex and laborious water management system in that:

- National government is the custodian of water, regulator and owner-operator of the large dams designed to store water for general use across all sectors. Hence, national government formulates policy and issues water use licences.
- National government also owns the water boards that process and convey potable water for many of our towns.
- National government also owns the old irrigation board assets that are reportedly in a poor state, now termed Water User Associations, that provide water to agriculture that is the greatest user of water after natural evaporative losses.
- Local government, such as District Municipalities and Metros are designated Water Service Authorities who have the constitutional mandate to deliver water to the municipality population and either buy their bulk water from water boards and/or produce their own.
- This is all very complex and needs to be redesigned simplistically to unlock the return of affordable water security in a very complex period.

In modern water scarce times principally due to rapid urbanisation with a blend of climate change, the simplest the water value chain, the easier it is to achieve water security. A source to tap approach results in full ownership, so single source responsibility and accountability, of the full water services value chain, this is how modern cities generally manage their water with utilities these days, be they public or private entities.

This results in national government overseeing the management of the value chain and regulating according to policy and legislation as opposed to being an active operator in the most parts of the value chain with little if any resource in what de facto independent municipalities are where our GDP is largely generated.

Would this work in South Africa? I certainly see no reason why not. So, how could it work?

- Catchment Management Agencies, CMA's, should be implemented as the regional oversight and

regulatory agencies that report to the National Department of Water & Sanitation. The CMA's would also manage the national dams with water user licences a central focus in their catchment and no more.

- Water Boards and WSA's, Water Service Authorities, should be merged into one public utility, can be concessions of SPV's, Special Purpose Vehicle, at a later stage, responsible for managing its water use licence allocations, conveyance to its purification systems, delivery to the end users and billing thereof. This way the conundrum of municipalities not paying for water is removed totally and the utility can manage it systems from source to tap completely. It can also be held accountable for the entire water value chain.
- Wastewater systems should also be managed by the same utility so that it would ensure that all its sewage systems complied as they generally discharge their end product into the same receiving environment, so it's called a natural insurance policy in reality.

We have to address our root causes of water insecurity and this philosophy would not only address our root causes, but it would also bring us to best global practices and ensure that all are serviced affordably and sustainably without fail. The utilities would, by definition, be large and fewer resulting in better use of scarce technical resources with no blame shifting from the municipality to the WSA to Water Board etc.

The scale of such utilities would also make them far more bankable and hence better equipped to attract private sector participation as espoused by the NIP 2050, National Infrastructure Plan 2050, with a whopping R900 billion quoted in the 2018 Water & Sanitation Master Plan with a then 33% funding shortfall. Given the inflationary pressure since and the general lack of funding in the water space, the price tag is much higher as is surely the funding gap. Such a philosophy would in my opinion enable a more expeditious implementation of the master plan with a greater non fiscal funding demand satisfied by the private sector.

One issue that is sure to raise its head is the "free water" for indigent sectors of our society, this would

not change in my opinion and various mechanism exist such as equitable share, infrastructure grants and municipal royalties can be leveraged to satisfy this part of the value chain.

A significant feature in this is the far simpler and well proven approach is that it should be cheaper to top it all and would largely resolve our 41% and growing NRW, Non-Revenue Water, national priority issue very rapidly as the entire value chain would need to be improved. No private manufacturing entity in any commodity can afford to waste 41% of its resources, never, why should a critical resource such as water be allowed to be wasted to this extent?



Benoît Le Roy

Access to quality food and fresh clean drinking water is a universal human right

We live in an era where, sadly, the ideologies of our world leaders often exclude food security for the very people who put them in power. One would be forgiven to believe that having food on the table is one of the most basic human rights known to mankind, but this is unfortunately not the case. According to the “Right to Food Fact Sheet” issued by the SAHRC (South African Human Rights Commission), there is still an obligation on all citizens to feed themselves and their families. Given the rate at which the population on the African continent is growing and agricultural land being developed for housing, we would be naïve to assume that “there will always be enough food for everyone”.

As with all things in life, we have a choice to make – either accept the status quo or make a difference.

Turn back the clock 7 years when the founders of AGRICOLLEGES international refused to accept that there isn't an educational model for the agricultural sector that offers blended online learning for the masses. It is therefore safe to say that this Agri-college was born out of a void that existed. Although it was a monumental undertaking, it has already improved the lives of close to 2000 alumni in 41 different countries with an ever-growing number of agricultural-related courses.

Start growing your own food this human rights month

There's an adage that tells us that if you want to ensure that something is done and done right, you have to do it yourself. Food supply and security need not be any different. Yes, not everyone has a farm, smallholding or large erf, but that should not deter you from making a

difference, even if it's only for your own household, neighbourhood or community. There has been a huge increase in available products aimed at “micro gardening” which is specifically designed for the city dweller staying in an apartment building. You will be amazed to learn how many herbs, fruit and veggies you can successfully grow in your own casa. Judging from the post-course feedback at AGRICOLLEGES we often get from alumni, the sense of accomplishment when harvesting your own produce, always makes the initial effort and expenses worth the while.

At AGRICOLLEGES we offer an Introduction to Plant Production course over a 7-week period. Students will receive a comprehensive overview of plant biology, ecological concepts, soils and pests. After completion of this course students will be better equipped to work in a plant production environment.

We need clean drinking water

Water scarcity is becoming more of a reality all over the world and many industries are heavily dependent on water, such as the textiles and agriculture Industry. Scarce water means greater risk of increased costs, which threatens salaries and jobs. These increased costs may then be passed on to consumers.

Internationally World Water Day is held on 22 March as a means of focusing attention on the importance of freshwater and advocating for the sustainable management of freshwater resources. It is about taking action to tackle the global water crisis, in support of Sustainable Development Goal (SDG) 6: water and sanitation for all by 2030.

“As the planet adapts to a changing climate and rising population, groundwater will play an essential role in meeting the growing demand for food and drinking water. Yet this essential resource faces serious risks – including inadequate protection and sometimes irreversible pollution” says Audrey Azoulay, Director-General of UNESCO.

The human right to water and sanitation (HRWS) is a principle stating that clean drinking water and sanitation are a universal human right because of their high importance in sustaining every person's life. It was recognized as a human right by the United Nations General Assembly on 28 July 2010.

Learn more about Agricolleges at:

www.agricolleges.com



Village Water Filters SA

The goal of Village Water Filters SA is to provide a low cost water filter that will reduce pain, suffering and death caused by consuming unclean water. The company was founded by Ninky Shuenyane, an individual with a passion for improving the lives of rural communities.

"I have always been a social entrepreneur, interested in products and technologies which enhance the standards of living for people; particularly rural based women and girl children. Our first product was the solar cooker device which cooked and baked food using the sun's energy. Those reduced the burden of women and girls of collecting wood to make fire for cooking and purifying drinking water," says Shuenyane.

Village Water Filters SA was born following the opportunity of providing clean and safe water for families in communities who are forced to use unprocessed water from rivers, ponds, springs, rain, boreholes, and the like.

"Our company and its products exist to enhance standards of living; improve family health, reduce infant mortality, improve productivity and school attendance, and ultimately be part of reducing inequality," says Shuenyane.

"The Bucket Water Filters clean water by removing all the dirt particles and 99.999% of all harmful germs and pathogens, including Cholera, Botulism, Typhoid, Amoebic Dysentery, E coli, Coliform Bacteria, Streptococcus, and Salmonella," she explains.

"The water filters are ideal for use by households in communities who use unclean water from rivers, wells, boreholes or harvested rain water in Jojo tanks. The water filters ensure that families, schools, creches or clinics have clean and safe water to wash hands with, providing many benefits. It helps those recovering from COVID 19 and other chronic illnesses to have clean and safe water for cooking, drinking and taking medications.



"The filters help in baby care and hygiene, allowing parents and caregivers to prepare baby feeds, and wash baby clothes and utensils in clean and safe water. It has also been proven that the nutritional benefit of food is improved by 40% when cooked with clean water," says Shuenyane.

She explains that anyone who receives a bucket filter will be able to filter water anywhere, anytime. The filters are ideal for family daily use, community development programmes, natural disasters or refugee situations. If a family becomes displaced for any reason, they can carry their filter with them.

The Bucket Water Filters are SABC and WHO tested, they do not use any chemicals, are easy to use, affordable, portable, long lasting up to 5 years and maintained by back-washing them with the syringe provided in the kit.

Current statistics state that only 64% of South Africans have access to clean running water for daily use. Speaking on why clean and safe water for all remains one of the biggest issues in the country she says that most infrastructure in the country (including water infrastructure) was initially built to benefit a few during apartheid times. And that when all are now supposed to have equal access, the systems in place are strained and not coping with the increased demand.

"For rural communities, some are located far and sparse, thus municipalities will never be able to provide them with piped water services. Some are provided with communal boreholes, some have piped water, but taps often run dry," says Shuenyane.

"Population growth, rapid urbanisation, cross-border immigrations, informal settlements, non-futuristic infrastructure planning, non-maintenance of infrastructure, non-payment for services, corruption, and natural disasters, are some of the challenges leading to degradation of clean and safe water services for the people."

She says that to remedy these challenges and increase water access in rural and urban communities, there needs to be a focused approach on researching the challenges and consulting stakeholders to jointly find and establish practical and sustainable solutions. "There needs to be sufficient implementation of

solutions, and most importantly, there has to be consistent monitoring and evaluation of solutions, to ensure that we are always improving on what we have set in place."

Last year Shuenyane and Village Water Filters SA won first place in the Access Bank Womenpreneur Pitch-a-Ton, an online competition designed to support women enterprises with grant funding and fees for studies.

"I applied online and presented a video pitch of the business. We were then in the top 30, then top 10 and at a gala dinner for the awards, we were awarded first prize, which was a great blessing. Our products are new to the SA market and we require a huge marketing budget and resources to increase product awareness and benefits to the public. Thus, lack of financial support for marketing and increasing our brand footprint is a challenge. Also, access to formal retail spaces. The prize money was much needed and used to ensure sufficient Village Bucket Water Filters stock availability, as well continue to bolster our brand awareness campaign.



Ninky Shuenyane






village water filters



Village Bucket Water Filter

Clean and safe water solutions

-  Village Bucket Water Filters for families in communities using unprocessed water from rivers, wells, boreholes, water tanks, etc. It enables families to have clean & safe water daily. It removes all dirt particles in water plus 99,999% of pathogens including Cholera; Typhoid, eColi, Botulism, etc. Connects to any plastic bucket, garden tap, borehole tap or Jojo tank tap.
-  No chemicals used, no parts to replace, lasts up to 5 years. Maintained by keeping it clean. Tested and Certified by WHO and SABS.
-  Also ideal for camping, CSI, community development and disaster management programmes.



Contact us 076 484 8162
hello@villagewaterfilters.co.za
www.villagewaterfilters.co.za

Water shedding likely to be far more disruptive than load shedding



Access to water is a basic human right, as emphasised by World Water Day on 22 March, which focuses on solving the global water and sanitation crisis. "If you touch on the community aspect, load shedding is an inconvenience, but as soon as you do not have access to clean water, it becomes a human rights issue," comments Elisabeth Nortje, Associate Director – Environment, Africa at globally trusted infrastructure firm AECOM.

"Water is a basic service and critical human need and hence it is key to make it available to all people on the continent," says Jan-Willem Van Huyssteen, Associate Director – Water Systems, Africa, AECOM. There is a great urgency to effect change in the industry to provide sustainable water supply and responsible sanitation management. Incidents such as the severe droughts in Cape Town and Gqeberha, the widespread failure of the sanitation systems in KwaZulu-Natal and other areas is an indication of a concerning trend in the industry that sustainable water supply and sanitation management requires intervention.

World Water Day is about accelerating change because water affects everyone and requires collective action. "I start to think about the children, the elderly and the sick who do not have that basic human right of clean water, and I realise how privileged I am to have running water in my house and to have relatively clean water all the time," says Nortje.

Another issue is permitting compliance, with South Africa's major water users like industry and mining being compelled to conserve this precious natural resource for future generations. Associate Engineer Jonathan Schroder says AECOM's expertise lies in reconciliation strategies for water supply

systems or catchment areas. Such strategies attempt to ensure water security for the time it takes major water projects to get off the ground, which can be up to 30 years.

"We have been doing these studies for the past decade, and what we are seeing is a slippage in terms of the implementation of such strategies," points out Schroder, adding it is partly due to administrative challenges associated with finance approvals. In many places, the cheapest resources have already been developed and exploited. Any incremental additional volume of water therefore has a tariff implication, with these marginal costs having to be shouldered by already cash-strapped municipalities. Ironically this is resulting in a delay in agreements and implementation on some of the bigger schemes that have lower increases in the unit cost of water due to the scale of the commitment.

Schroder concurs with Nortje that so-called 'water shedding' must be avoided at all costs. "Electricity can be switched on and off. Load shedding has an impact on the electrical infrastructure, but not nearly the same impact as water shedding would have on water infrastructure and water leakages and losses." The problem is exacerbated when municipalities have to limit water resources to the detriment of their own income stream, which is needed to tackle the problem of insufficient water resources.

End user awareness and education is critical, which is where global platforms like World Water Day play a vital role. "It poses a massive challenge because ordinary citizens are often not aware of the extent of our hydrology's variability, and how much water we are actually using. Our dams are full right now due to the very wet years we have had. But we are actually over-extracting from them; it is only that we have been lucky enough to have had this wet period that we have the luxury of some limited time to address the problem," warns Schroder.


However, infrastructure capacity constraints are already looming as a constraint to water supply, even if we have temporary 'extra' water resources.

"We cannot increase the capacity of treatment (for potable supply) infrastructure until we have a reliable additional resource. While there may seem like there is sufficient water in our dams and river systems, to build additional treatment, plant capacity or pump stations and pipes would be premature. If we go into a dry cycle, which is likely to happen in the near future, building that additional infrastructure before the resource is secured is not only premature, but it will also accelerate the speed of depletion of the limited water resource, and incur costs the utilises that cannot be recouped," warns Schroder.

"The fact that the pressure is building is going to force a need for change in end user behaviour," he argues. For example, following Cape Town's Day Zero, the city's per capita use is now significantly lower. "Right now, the pinch has not really been felt, so there is a bit of lethargy in our response to the looming challenges. For me, the concern with water is that if the situation is not corrected and users do not change their behaviour and we move into a water shedding scenario, the problem is the people who are most vulnerable will likely be impacted the most."

Schroder says: "Unfortunately, many end users are unaware of the risks of their current behaviour." This includes not paying for or conserving water, which reduces the revenue available to municipalities to maintain existing infrastructure build for the future. In this regard, AECOM is looking to partner with the private sector on a range of initiatives to mitigate this risk. "We still have time to act, and preserve largely functioning water supply systems, but the time to act is now."

AECOM is well positioned as a local large business with global reach to support clients in solving these very challenging problems. Utilising wastewater as an alternative water source for either industrial reuse or potable supply is an example of such an initiative. AECOM has a strong local process engineering team capable of providing the necessary support to local clients.



LET US HELP YOU
DELIVER SAFE
WATER IN THE EXACT
QUANTITY
AT THE RIGHT TIME

Water quality, quantity and availability.

We're on hand with technology and expertise to help you deliver safe water, in the right quantity at the right time. Xylem is your partner to help you solve your challenges across the water cycle, from water treatment and distribution, to water analytics, water leakage management and overall process control.



Xylem.com

0861 XylemSA (9953 672)



Xylem Africa

xylem
Let's Solve Water



AGRICULTURE & FOOD SECURITY



Sustainability and gastronomy, what is the chef's responsibility?

Chef Juliana Romero

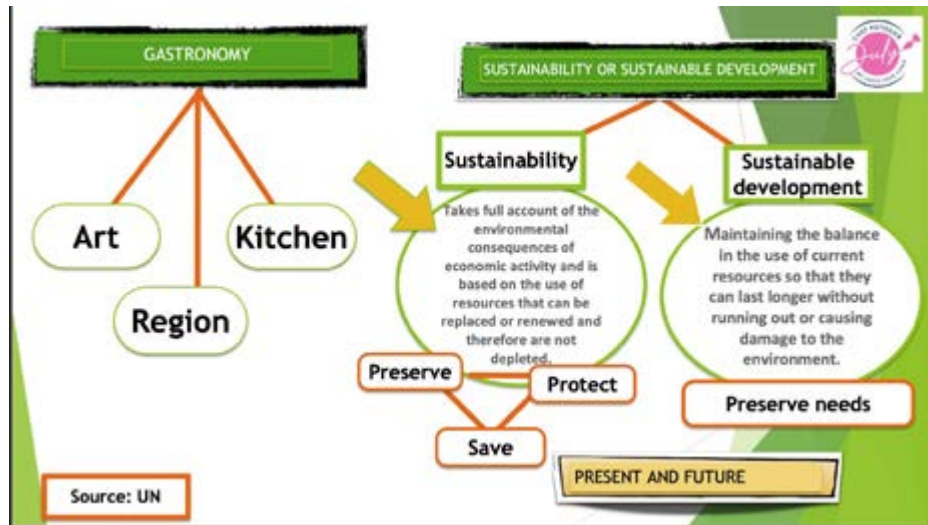
When talking about sustainability in gastronomy, it is common to hear the term sustainable development as well. We do not know or realize that these are two different but related concepts.

It is necessary to establish the differences between the concepts to understand that they do not mean the same thing, though they are closely tied to gastronomy. To understand these concepts, let's check the definition of each per the United Nations (UN).

According to the UN, sustainability: "takes full account of the environmental consequences of

economic activity and is based on the use of resources that can be replaced or renewed and therefore are not depleted." I always suggest identifying official definitions and then interpreting them according to the specific context. In the kitchen, it is possible to say that sustainability "is the correct use of our resources today in order to have resources tomorrow."

What would be of our preparations if we ran out of fruits to do gelée? Or if we are left without water needed for cooking? Are we prepared to go back to cooking without basic supplies? Without energy? Are we ready to understand that soon there will



come a time in which world growth will come to a standstill due to a lack of resources? Now it is time to review what is SUSTAINABLE DEVELOPMENT.

According to the UN, sustainable development is "maintaining the balance in the use of current resources so that they can last longer without running out or causing damage to the environment." It is not necessary to stop consuming, nor stop purchasing, nor to stop producing. It is more important to be conscious of the balance between our consumption and our production to ensure a healthy life and productive today and tomorrow.

Throughout my gastronomical experience, I have realized that the influence we have on others is much more than simply cooking or baking. We are in the 21st century and of the many things that are popular now; being an "influencer" is one of them.

A term that has just come to light but has always existed. Do chefs fully understand that we are "influencers"? That this profession causes emotional states and physical reactions that are essential for social development?

Let's dive into this topic a little more and understand the reason why sustainability and gastronomy are so closely linked to each other.

Because when everyone works together, it causes an unprecedented social, environmental and economic response. As a starting point, it is of paramount importance to know the origin of the ingredients and the right season of each one of them. To achieve this, it is a must to understand about "Supply Chain": the impact of the logistics, the caring of the merchandise during transit, the fact of having food stocking in the market, the packing of

each one and finally the process and transportation until it gets to the kitchen.

This leads us to a new concept of supply chain.

Circular economy

"The circular economy is a model of production and consumption, which involves sharing, leasing, reusing, repairing, refurbishing and recycling existing materials and products as long as possible. In this way, the life cycle of products is extended. In practice, it implies reducing waste to a minimum.

When a product reaches the end of its life, its materials are kept within the economy wherever possible. These can be productively used again and again, thereby creating further value. This is a departure from the traditional, linear economic model, which is based on a take-make-consume-throw away pattern. This model relies on large quantities of cheap, easily accessible materials and energy." (Source: European Parliament).

This new approach in the supply chain that would finally guide us to use materials and resources properly and efficiently in sustainable gastronomy.

If we understand the origin of the ingredients, and the supply chain of the products, we will be able to understand the social, environmental (climate change) and economic impact of the food we cook. By doing so, we avoid generating waste and will appreciate our food. Also, we will learn to expand our repertoire of dishes and create magic culinary dishes.

Evolution in the kitchen means to move forward and thrive, so we should demonstrate it even more in our gastronomical practice. Generally, chefs look for a perfect, minimalist presentation with a flawless decoration. Frequently (not to say most times) by doing so, it makes us create waste from certain portions or from our creations.

This is the part where we should value our ingredients, expand our knowledge, and learn to use



remaining food, those ones we thought did not look good. In other words, innovate in our presentations to take them to the next level where waste does not exist. In this way, we created a "zero waste" conscience, therefore our socioeconomic impact will be positive. We will then be ambassadors of a conscious consumption and above all sustainable.

What is food waste?

According to FAO (Food and Agriculture Organization of the United Nations), it describes to the lost food waste like "Food waste refers to the discard of edible foods at the retail and consumer levels, mostly in developed countries." (Source: BBC)

One of the main aspects to consider for a sustainable gastronomic business is to use whole ingredients, avoiding waste and giving them a real value to be able to integrate them in dishes and transform them so they look breathtaking.

Food waste has a negative impact on the climate (gas emissions and odors), the water, the soil and the biodiversity: these are the reasons why it is important to carry out certain actions to ensure natural resources. This guides us towards a sustainable gastronomy that helps diminish the negative effect in our environment.

We, chefs, should spread this knowledge to create sustainable consciousness. We should teach how to use each ingredient, the way to make a good use of it, and understand its supply chain. We are responsible for considering agriculture producers, food season.

We also need to consider going back to some past culinary practices that have been left out for years; revive certain tendencies of utilizing nature, for instance, like the consumption of some plants, seeds and insects, which have great nutritional contribution and a positive environmental impact and cut down on consuming certain meats. Not only do we need to teach the kitchen staff, but also teach dinner guests, who will have in their hands a menu based on seasonal vegetables, so that they have a more dynamic and renewed menu.

The chef's sustainable gastronomical management creates an impact on the dinner guests, which has an unstoppable and positive social outcome. These



actions taken by chefs in restaurants promotes individual awareness. In other words, dinner guests will not doubt in following the steps for positive a social effect.

They will arrive at their house thinking on creating better results, ways to reduce wastes, making well-meant choices of products in the market, supporting the local consumption, and thinking twice when it comes to packaging.

This is just the beginning of the first part of what we, cooks, can do to build a sustainable awareness. In my opinion, this is where we shall start by creating conscience, assimilating concepts, understanding the impact and the influence we can exert on others.

All this is to be able to continue with the following steps and finally manage all together to promote sustainable gastronomy, which helps diminish ecological footprint and environmental consequences.

Sustainability is a reality, and it is up to us to achieve a universal impact today, tomorrow and always.

Insights guiding our thinking about SA agricultural growth prospects in 2023

Wandile Sihlobo

Over the coming months, we will receive various data releases to help guide our thinking about South Africa's agricultural growth prospects in 2023. The available soft insights suggest that near-term growth prospects of South Africa's agricultural economy look weak after subdued growth of 0,3% y/y in 2022. For example, the livestock and poultry industries, which account for roughly half of the agricultural sector's value, are under pressure amid relatively muted cattle and beef prices while farmers also continue to face higher input costs for maize and soybeans.

The ongoing load-shedding is particularly challenging for the poultry industry, with the unreliable electricity supply causing significant production interruptions. As various energy solutions are explored in some farms, the financial costs will persist over the coming months.

Similarly, the red meat industry faces an environment where the consumer is under pressure, and thus there is minimal room for upward price

adjustments. Moreover, the tail-end effects of foot-and-mouth disease, which interrupted exports, persist, further weighing down demand as the country still can not access some export markets. This is likely to be the reality for some farmers for much of the first half of this year.

Solutions to load-shedding are also crucial for fruit and vegetable farmers who depend on irrigation for their produce. Importantly, this also means the Department of Agriculture, Land Reform and Rural Development (DALRRD) needs to launch its blended finance solution for energy, which should help ease the financial burden of renewable solutions. This was an intervention mentioned in the national energy task team of the DALRRD but has yet to be communicated to the sector formally.

The fruit industry dominates the export activity of the agricultural sector, which means that any negative impact on production would

lower the export revenue, which has seen solid growth in the past few years. For example, South African agricultural exports were up for the third consecutive year in 2022, reflecting favourable production conditions and higher commodity prices. In 2022, South Africa's agricultural exports reached US\$12.8 billion, up 4% from the previous year. That said, the harvest activity in the wine grape and some deciduous fruits will likely infuse positive growth momentum in this subsector in the first half of the year. Still, energy interventions are essential for the overall performance of the subsector this year and in the future.

Field crops are the subsector that is on a much stronger footing. For example, South Africa's sugar cane crop is projected to recover by 7% y/y to 18,4 million metric tonnes in 2022/23, according to data from the Pretoria office of the United States Department of Agriculture (USDA). These expectations are supported by favourable weather conditions, which improved yields, and industry efforts to increase production, especially for small-scale farmers. Still, the Tongaat Hulett troubles linger in this industry and remain a significant risk. Moreover, the load-shedding interventions mentioned above also apply within the sugar industry, as 34% of the crop is under irrigation. Fortunately, the frequent rains this year have helped to improve soil moisture and lessen the severity of crop damage from frequent power interruptions.

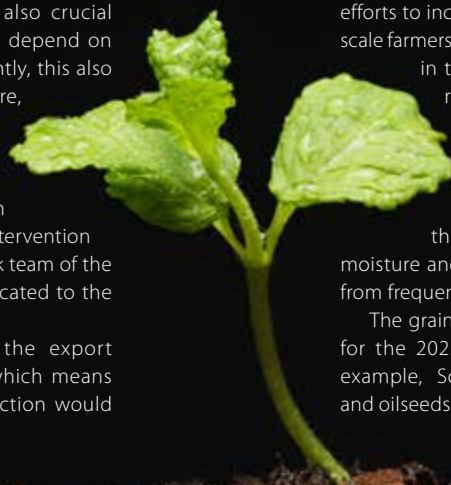
The grains and oilseeds production conditions for the 2022/23 season also look positive. For example, South Africa's 2022/23 summer grains and oilseeds production is expected at 19,3 million

tonnes, up 3% from the previous season, according to recent data from the Crop Estimates Committee. If we consider the large crops like maize, soybeans and sunflower seed, production is forecast at 15,6 million tonnes (up 1% y/y), 2,7 million tonnes (up 19% y/y), and 775 260 tonnes (down 8% y/y), respectively.

The expected improvement in the maize harvest is on the back of expected better yields as the area plantings are down marginally from the 2021/22 season. Meanwhile, the robust projected increase in soybeans results from both expected large yields and an expansion in the planted area. The fall in the sunflower seed production forecast mirrors the reduced planted area and yields in some areas. Other small crops, such as sorghum and groundnuts, have a reasonably large expected harvest.

Overall, these mixed fortunes amongst various subsectors of South Africa's agriculture mean that growth, at least in the first quarter of half of the year, could be subdued with a potential recovery later in the year. The positive momentum will mainly be from field crops and some fruits. Still, this assumes that there are no significant downward revisions on the current crop forecasts and that energy interventions to stabilise the power supply in the sector are quick.

Such an environment would also mean that primary agricultural employment remains reasonably stable above the long-term agricultural job of 780 000. In the last quarter of 2022, there were about 860 000 people employed in primary agriculture. The one aspect whose impact on the jobs outlook we will also monitor is the recent increase in minimum wages which is a concern, specifically for the fruit industry.



Investing in agricultural education is key to ensuring food security in the future

As we celebrate Human rights month in South Africa, we need to reflect on our current food systems, and our efforts to ensure food security for all and how the sector can drive sustainable production growth. We chatted to Howard Blight, founder of AGRICOLLEGES International (ACI), our collaboration partner and preferred educational service provider, about Human rights month, and the role of education in addressing issues of food security and our human right to good food.

While the agriculture sector has continued to register positive growth over the years, there is still much that needs to be done. What is your message regarding investing in food security and agricultural development in Human Rights month of 2023?

As chairperson of ACI, my message would be a message of hope. In a world where we're seeing that we need to increase food production by 70% by 2050 - when the world's population will be nine billion people - and where we're told that Africa's productivity level is the lowest in the world of any continent - sitting at 32% starting from quite a low

platform - we have a responsibility to significantly increase the prospect of food security in agricultural development through education.

Why is it important that all sectors come together to address issues around hunger, malnutrition and poverty?

It's going to be a test going forward to establish what can be regarded as good governance. Essentially, the government facilitates the opportunity for private sector institutions to go about the business of building the economy and at the moment there are serious questions about that process and the efficiency with which it's addressed in this country. At the end of the day the private enterprise, the profit-driven motives, will be the organisations that create business, create employment and, in the agri-sector, will be responsible ultimately for the reduction of hunger, malnutrition and poverty.

It's interesting to know that in the world today, 50% of old people now live in urban areas so with AGRICOLLEGES international we've realised the importance that urban agriculture plays in the whole gambit of food security, malnutrition and poverty. Which is why we are designing short agricultural courses and therefore, in terms of the

sectors coming together, we need internet service providers to put up the towers, to put up the hotspots where students will be able to study and learn and use the knowledge gained to help reduce, if not eradicate these issues.

The various sectors, local governments, non-governmental organisations, the private sector, researchers and institutions of learning all have a duty in helping farmers ensure sustainable food production. How can they all come together and help farmers achieve this?

The demand for food will greatly increase due to rising incomes and an additional two or three billion people to feed. Agriculture needs to change to meet that demand. One way that sectors can come together and help farmers ensure sustainable food production, is to come up with even more advanced innovative technology. As we've seen in the past, advances in agricultural science and technology have contributed to remarkable increases in food production since the mid-twentieth century.

Research shows that in Africa, the farming industry - which by some accounts provides income for up to 60% of African citizens - is seeing how IoT (Internet of Things) and analytics can improve livelihoods by making small but important improvements to farming processes. Farming in Africa mostly involves small-scale farmers, where in developed countries farming is done on a grand scale by large corporations.

How does an institution like ACI aim to transform agriculture into a competitive, profitable and sustainable sector?

ACI aims to transform agriculture into a competitive, profitable and sustainable sector through offering a

knowledge base to a much wider community, who in the past have not been able to afford to attend traditional educational institutions. Not only because they are far and expensive, but because they simply don't have sufficient space.

Through access to education and a vast forum of students being able to come on board and learn the fundamentals of the agri-sciences with ACI, will give them a platform to go into the huge sectors of the agri-world with better knowledge and more efficient understanding of the agri-world.

What is your message for Human Rights month?

A request for a little more patience but an acknowledgement that there is hope out there because we are busy changing the way that people are educated in agri-sciences. There's an intrinsic, growing interest in the agri-sciences. In all its affiliate industries we are going to make agriculture attractive again. The use of technology gives us hope that we are able to change the world and the message is a request for the authorities to facilitate these opportunities for the private sector because institutions like ACI in their ability now to transform the way that agri-sciences are taught through e-learning, on the cloud and on your mobile devices from anywhere at any time is a real message of hope, of transformation.

For more information on Educate to Grow (NPC) visit: www.educatetogrow.com

To learn more about AGRICOLLEGES visit: www.agricolleges.com





MINING



Connecting the E to the S to drive the G

Dionne Kerr

In recent years, Environmental, Social and Governance (ESG) has quickly become an integral part of decision-making for many investors, businesses, and governments around the world. ESG applies to a variety of industries, but in South Africa, the mining industry has been central to this dialogue. ESG initiatives include an individual and/or organizations' efforts to incorporate environmental, social, and corporate governance factors into their analysis, decision-making and investment practices.

As one of the major global suppliers of precious metals, such as gold and platinum, South Africa's mining industry has a substantial impact on the nation's economy, employment, and environment.

This, in turn, has a significant impact on downstream economies, communities and environmental factors with communities facing ecosystem degradation, soil erosion, extreme climate events, lack of water or quality water and therefore, ultimately the ability to live, work and earn.

Therefore, it is essential to ensure sustainable and transparent practices within the sector.

Mining needs to balance economic, social, and environmental factors for sustainable and responsible operations that respond to resource insecurity, market volatility, labour unrest, and exchange fluctuations. Key challenges to achieving market transformation in South Africa include unemployment, economic inequality, skills shortages, growing population, infrastructure shortages, limited industrial capacity, lack of sustainable market growth, and economic underperformance.

Some of the most important factors for successfully addressing ESG on a commercial level would include:

1. Aligning your information, management, reporting and impact measurement so that there is one coherent strategy for transformation. This includes all the local legislation, that focuses on compliance, your unique market positioning to drive best practice which aligns to the expectations of ESG reporting (or any other suitable measurement framework that one uses). This means that one strategy defines the roles and responsibilities of your environmental team, mine rehabilitation team, mine closure steering committees (where applicable), sustainability specialists, community engagement specialists, human resources team, finance and risk team and your operational leadership. These are not Adhoc events that are reported on annually, but a coherent strategy to drive an ethos that supports a world-class approach to leveraging the natural circular economy that a mine creates.
2. Gathering accurate ESG data. An important part of ESG compliance is understanding and measuring a company's performance against established ESG criteria set by regulatory bodies, investors, and stakeholders. This requires businesses to gather a significant amount of ESG data from different sources and then to organize it and aggregate it. Sourcing your social data must be done authentically, as community members are also stakeholders and should be sincerely engaged to support deeper understanding and therefore collaborative solution-seeking.
3. Keeping up with increasing regulation and investor demand. The regulations and investor

demand for ESG compliance is constantly changing, organizations need to stay on top of updates to ensure their operations meet all current standards and expectations.

4. Adopting new technologies. The complexity and dynamism of ESG compliance means that new technologies must be adopted to stay current and compliant. Businesses may need to invest in new software, tracking technology and analytic capabilities to keep up with changing regulations. While the cost of adoption may be high, the cost of non-compliance is higher.
5. Monitoring ESG performance and key indicators. Maintaining compliance means businesses must constantly monitor their ESG performance and key indicators, evaluating where they stand at any given time and taking corrective action when necessary. This ongoing process can be daunting but, if linked to strategy, should be an absolute imperative of the CEO.

A sustainable corporation maintains human, natural, and social capital while creating value for itself and society through those engagements. It is the job of corporate governance to ensure that corporations operate sustainably by adhering to these principles of value creation and capital maintenance.

By approaching development strategically, the mining industry can fully integrate and maximise the use of its unique set of assets, operating models, and localities to continuously drive cost efficiency, quality improvements, proactive environmental innovation, and social cohesion. While this demonstrates an intention to develop a more sustainable model for mining to support operating certainty, it further enables competitiveness, growth, and development of the South African economy.

In moving beyond compliance, investment in the development of a sound ESG or greater Sustainability strategy, should link all the local and international objectives to drive meaningful and sustainable transformation within the local economy. This can be achieved by translating these investments into the measurement of commercial returns through tracking and quantifying value. However, developing the right strategy is a mammoth task that requires unpacking each operating activity in every element of the organization to pull through into an overarching,

comprehensively aligned focus on being an “organization for the future”.

An example would be Supplier Development, where programmes target local capacity and capability improvements that will ultimately enable mining firms to pick up this value in procurement once capacity has been built into the beneficiary groups where activities are focused.

Furthermore, economies of scale suggest that an increased number of suppliers in a competitive market should level out pricing volatility.

This is realised through the measurement of the following key commercial metrics:

- Availability of local commodities and services at total costs lower than the currently imported alternative
- Impact of exchange fluctuation avoidance
- Improved lead-time to accessing commodities, services and disciplines, reducing risk through a more adaptive and agile supply chain process.
- Cost efficiency created by driving local market innovation, and the establishment of technically intelligent industries.
- Reduced total procurement costs of local-to-site commodities and disciplines.

Using mining waste as a means to develop enterprises may include pyrolysis of the rubber produced through conveyer belts, tyres etc., as a source of electricity and for the production of activated carbon to address pH in soil and water.

Greenhouses that are structured to capture their own water allows areas with poor soil quality to still be productively used.

Partnering with large suppliers to achieve key deliverables. We work with Tsebo Solutions Group, who provide security, catering, cleaning, site management and energy solutions.

On a mining site, some of the projects we have supported them to implement and show that a circular economy model can be

created through thoughtful application of every single activity. The food used in the kitchens is sourced from local farmers. The “wet waste” from kitchens becomes biodiesel to go back into the farming ecosystem.

Recycling of key items for more sustainable community-produced packaging and cutlery packs for the inclusion and job creation for Gogo’s and people with Disabilities. Drone manufacture, robotics training and participation by Youth in support of the advanced excellence in security solutions. Coupled with an integrated model that allows farmers to use drone technology to determine water and nutrient needs in the farming activities.

Biodegradable cleaning liquids from locally sourced materials, brooms made by local communities and spray bottles from recycled plastics. Recycled water and renewable energy, waste used for building materials, the list of opportunities to align the social and the environmental to achieve good governance, are limitless.

Alien invasive vegetation can be proactively used to provide a livelihood for communities well beyond the life of mine. Active participation in forestry projects, water cleaning and manufacture of soil to replace soil degradation. Ownership of the ISP that services a community to provide for home-schooling through technology and a long-term view on how the ecosystem could ultimately become self-sustainable are powerful objectives that reduce the risk of the current structure of highly dependent mining communities who have increasing demands.

An effective strategy promotes a participatory and inclusive process based on an informed understanding of who our communities and stakeholders are, where the demand for compliance with environmental and social factors converge, and the key market gaps, market competencies and opportunities that site behind these developmental opportunities.

If we act the same way we always have, we can expect the same challenges into the future.





Maximising gender equality at grassroots level

Ricardo Ribeiro

While the mining industry is making great strides in achieving greater gender equality in terms of women at the middle and senior management level, the real impact of achieving gender inclusivity lies at grassroots level. At Board level, women representation may reach as high as 50%, but at the lower employment levels in the mining industry there is still a lot of work to be done. At Rosond, we have been very passionate about making a difference at this level and our efforts are starting to reap real rewards.

The issue is what constitutes gender equality at a grassroots level in the mining industry? What are the specific hurdles that have to be overcome at such a basic level? And how do we achieve this within the

framework of the existing Mine Health and Safety Act legislation and regulations? How do you transfer knowledge and skills to allow women to become integral members of the mining workforce? Answering these key questions is what will drive the achievement of real as opposed to token gender equality.

Achieving gender equality in the industry is challenging. Our experience on the ground has shown us that the focus should not only be on increasing the number of women in skilled positions, but also on how to support these women through the intelligent design of programmes that enable them to grow and achieve greater success at work.

At Rosond we are proud of the work we do in upskilling women and creating opportunities for them to be successful in roles traditionally performed

by men. Apart from creating greater access to these positions and making significant progress in increasing the number of women working at operational level, we believe that progress will be optimised through driving Mine Health and Safety Act policy change by taking aspects such as technology and automation into consideration.

In our view, this requires even greater upskilling and a sensitivity to the particular socioeconomic and family issues women face on a daily basis. Through adopting a sensitive and appreciative view of the reality women are confronted with, Rosond has been able to create a more inclusive work environment. A lot of these women were sitting at home with no job prospects. Developing them further, in conjunction with family planning and financial planning, is key to their career success as well.

As part of Rosond's commitment to addressing these gaps, we are establishing an inaugural women's forum at one of our drill sites in the Northern Cape to provide a platform to address ancillary issues such as family planning and financial literacy. There is a lot of responsibility involved in promoting gender equality in the mining industry, especially as we afford women the opportunity to be financially independent and to have viable careers.

The women's forum will consolidate all of our learnings on-site in terms of gender diversity and inclusivity, allowing us to continue to offer a sustainable and empowering career path for women in mining. We invest a lot of time and resources in training women to become proficient in the drilling industry. In this regard, we have embarked on a gender inclusivity programme that includes workshops on gender sensitivity.

Apart from the female drill rig crews themselves, another way for us to promote gender diversity and inclusivity in the mining value chain is to support small and medium enterprises (SMEs) that are established and driven by women. Of course, we have to balance this requirement against our own impetus to maintain market share.

One means to achieve this is to empower such SMEs by providing them with the equipment and services they require so that they essentially become our accredited partners. Rosond is making significant progress in this area as part of our partnership with WiMBIZ, SA.

This is an organisation established to create a platform for women entrepreneurs, businesswomen and professional women to speak in one voice and access procurement opportunities and equity transactions in the mining sector.

We are adding great value to WiMBIZ, SA through our knowledge of the industry, networks and valuable strategic input. In addition, we recently concluded a Memorandum of Understanding (MOU) with two WiMBIZ, SA members as part of its enterprise development initiatives in exploration drilling.

Not only does it allow these smaller, women-led players to tender for bigger projects, but it also gives the mining houses themselves the confidence that there is a major player such as us in the background driving the process.

Transformation does not happen overnight. Therefore, we will continue to be creative and find ways to support our women employees in ways that make a real difference to their lives



Ricardo Ribeiro



TRANSPORT



South Africa's first EV eXpedition to Formula E 2023 Cape Town E-Prix

Sustainable Transport

On Saturday the 25th of February 2023 Cape Town hosted South Africa's first ever Formula E race, which took place on the streets of the Green Point precinct. Formula E is an international motorsports championship event featuring single-seater electric vehicles. "South Africa hosting Formula E was truly momentous for us as a country and it provided a fantastic opportunity to showcase the latest in electric vehicle technology to our citizens." says Winstone Jordaan, MD of GridCars. "We responded to our EV customers, when they indicated they would like to drive down to Formula E, by developing the first customer EV road-trip to the Formula E. With a large group from our community of our EV enthusiasts participating in the road-trip, making it the perfect platform to demonstrate to our country that the EV lifestyle is possible and practical in South Africa, and we at GridCars were proud to have worked with the EV community to make that happen!"

The GridCars EV eXpedition to Formula E 2023 Cape Town E-Prix

South Africa's leading EV charging authority, GridCars, who operate the country's most extensive Electric Vehicle (EV) charging network, were excited to have the opportunity to manage the EV eXpedition to Formula E 2023 Cape Town E-Prix – a national road

trip where 88 EV enthusiasts from across the country travelled in 42 EVs using the GridCars charging network to attend the Formula E in Cape Town.

"Our EV eXpedition to Formula E 2023 Cape Town E-Prix was such an exciting event and it is the first time that an EV road trip of this magnitude has been held in South Africa. This event showcased that long distance travel in an EV is not only already possible in South Africa, but that the GridCars national EV charging network is robust and reliable. We have successfully connected major cities along some of South Africa's busiest highways," says Jordaan. "We had almost every type of EV available in South Africa join us on the EV eXpedition – electric BMWs, MINIs, Audis, Volvos, Mercedes-Benz, Jaguars, a Porsche, even Electronica motorcycles – and everyone successfully made the trip there from locations across the country and then back home again, it was truly a resounding success!"

GridCars is a South African developer of electric vehicle charge-point software management systems and supplier of charge points. In September 2017, Solareff (part of Alviva Holdings) expanded into green mobility through the acquisition of a 75,0% stake in GridCars, who have since grown from a start-up business to becoming the South African industry leader in EV charging. At the end of 2018

GridCars, in partnership with Jaguar, established the foundation for the future of electric and plug-in hybrid



Photo credit- GridCars

vehicles in South Africa through the deployment of 82 public charging stations nationwide.

Since then, through their partnerships with various players in the industry, including OEMs, GridCars has effectively grown the national charge point network. Their most recent partnership with Audi includes four 150kW DC super-charging stations as part of a national roll-out of 70 new EV charge connectors across 33 sites. GridCars have installed public charging stations at various points of convenience in Johannesburg, Pretoria, Durban, Cape Town, Port Elizabeth, East London, and Bloemfontein, and have connected

South Africa's city centres through their national charging network – a series of charging stations along the N3 between Gauteng and Durban and the N1 between Gauteng and Cape Town. Cape Town is also connected to the Garden Route with a series of charging stations along the N2, all the way to East London. This extensive national network of EV fast-chargers has been a game changer for EV drivers as it makes long-distance travel

possible within South Africa, as evidenced by the success of the eXpedition to Formula E 2023 Cape Town E-Prix, all participants combined covered almost 60'000km of EV driving!

"One of the highlights from the GridCars EV-eXpedition to Formula E 2023 Cape Town E-Prix took place early in the morning on race day, when our EV drivers gathered at the Cape Town International Convention Centre and took some photos before we headed off to the race – this was the largest gathering of EV owners in South Africa to date!" says Jordaan.



Photo credit- Lee Clarke



Photo credit- Lee Clarke

The impact of Loadshedding

Despite South Africa's ongoing electricity supply challenges, the country's EV revolution is gaining momentum with various OEMs introducing all-electric model ranges to their South African product offering. The country was in the grips of stage 4 and stage 6 loadshedding while the EV drivers were participating in the GridCars EV eXpedition to Formula E 2023 Cape Town E-Prix, however, the impact was fairly minimal with all drivers successfully making the journey – testament to the robustness of the EV charging network and the diligent work of the dedicated GridCars support team who were available 24/7 to provide assistance to drivers along the route if they experience any issues while charging. Customer service is a key factor in GridCars' success and if a driver encounters a problem at any of their charge points, they can call the support team on +27 10 109 3344 or WhatsApp GridCars eMobility on +27 60 070 2372 for assistance.

"We have a passionate community of EV drivers in South Africa, many of whom have been driving EVs for several years and have become ambassadors of the EV lifestyle. The public are very interested in EVs, when stopping at a charging station we are frequently asked questions about the technology and inevitably the loadshedding question comes up" says Jordaan,

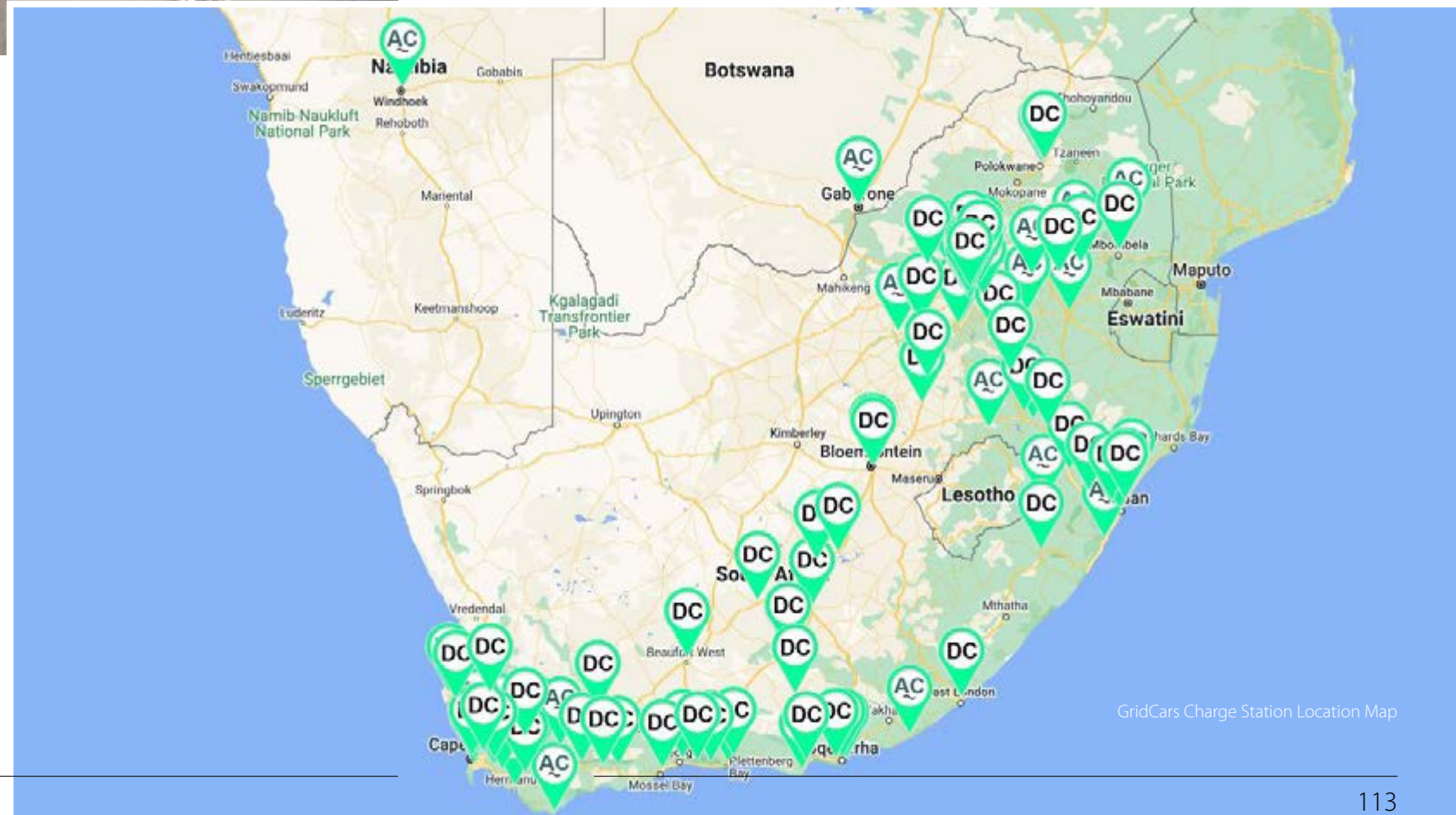
"but the reality is that our EV drivers aren't impacted very much at all! The majority of EV charging takes places overnight where the EV driver has plugged in at home, even with a 2 – 4 hour loadshedding block the EV will still be fully charged in the morning. Many of the EV charge stations on our GridCars national charging network have back-up generators or solar PV and batteries, allowing them to continue to function during loadshedding. For the charge stations that don't have back-up power, the EV driver can choose to either wait for that loadshedding block to end, or they can simply to drive to a charge station that is located in a nearby area which is not experiencing loadshedding at that time."

How to find EV Charge Stations

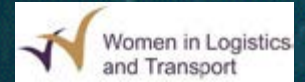
GridCars ChargePocket members utilise the ChargePocket webapp to locate their nearest charging station and to managing their accounts.

As GridCars are the first EV charging stations in Africa to be included on the Google Maps platform, members of the public can utilise Google maps to locate over 350 charge points on the GridCars national network.

A quick Google search for "GridCars charging stations" will display the location of our nearest charging stations with detailed directions and navigation available directly within Google Maps. For more information visit www.gridcars.co.za



GridCars Charge Station Location Map



Sustainable transport, logistics and supply chains – Resources for transport, logistics and supply chain professionals

Catherine Larkin APR CMILT – Executive Director: Chartered Institute of Logistics and Transport: South Africa (CIL TSA)

We have to talk about our future. Climate change is a clear and present danger to our planet, and in response, we as transport, logistics and supply chain professionals must change the way we operate. Sustainability and the green agenda come with many challenges, but also many opportunities. As the global professional body for individuals working in logistics, transport and supply chain, the Chartered Institute of Logistics and Transport (CILT), must work hard to keep our members informed, and make sure we are best placed to meet those challenges and ensure a sustainable future for all.

The facts are sobering: Emissions from the transport sector account for 10.8% of South Africa's total greenhouse gas emissions, with road transport being responsible for 91.2% of these GHG emissions (Department of Environmental Affairs, 2010).

In a global context, transport is at the centre of many economic and social development challenges,

accounting for about 64% of global oil consumption, 27% of all energy use, and 23% of the world's energy-related carbon dioxide emissions (International Institute for Sustainable Development). Global roadway emissions are 70% higher now than they were in 2005.

Looking beyond transport, supply chains are responsible for 90% of Industry's Environmental Impact. Most people would think this is manufacturing, but the real answer is the supply chain. Your supply chain is responsible for 90% of your ecological footprint.

That's because your supply chain encompasses most components of your business: from the procurement of supplies to pack and shipping, to last-mile delivery. The bulk of your operations is likely tied up in logistics. So, if you intend to reduce your company's environmental impact, you need to address your entire supply chain. With this in mind, the CILT implemented a Sustainability Campaign in 2021, which was been supported by a programme of interviews with thought leaders, webinars on key topics, and 'In Conversation' pieces on specific

areas of interest. You can access these recordings on CILT International's YouTube Channel (<https://www.youtube.com/c/CILTInternationalMedia>), or via the Publications Section of the international website (<https://ciltinternational.org/education-development/publications-articles/>).

Extensive Knowledge Resources

The CILT resources cover a diverse range of industry topics: from the greening of bus fleets in Australia, to green supply chain management of the sugar industries in Sri Lanka; from empowering green healthcare supply chain practices in Malaysia, to nurturing sustainable practices in logistics and transport organisations in Zimbabwe. I urge you to read some of the pieces, and then follow the advice in the article on Sustainability: A Global Challenge for Us All, to 'stop, pause, and reflect on your environmental impact'.

We also published our Green Technology and Sustainability Bulletin sharing more than 40 articles, papers and recordings, with contributions from

members in 20 different CILT countries, examining green technology and sustainability issues in relation to the transport and logistics sector.

Through our social media channels, we have raised awareness of the green agenda, by posting statements from members around world describing why green technology and sustainability issues are important to them and the action they are taking in their countries.

Increasing knowledge and expertise

At the heart of CILT lies our commitment to life-long learning, through our suite of CILT courses and continuous professional development (CILT) programmes, all of which are recognised internationally.

The CILT (UK) Level 3 Certificate in Green Logistics provides information to help develop better understanding of green or sustainable logistics. It provides the necessary skills and knowledge to enable learners to understand better many of the issues surrounding the subject of green or sustainable logistics. It will also help learners to develop the ability



I'm applying my knowledge.
I'm safeguarding our planet.

I AM CILT

Over 100 years devoted to excellence
in transport and logistics



My training helps me make a difference.
I'm part of a sustainable future.

I AM CILT

Over 100 years devoted to excellence
in transport and logistics



I'm a responsible professional.
I'm protecting our shared future.

I AM CILT

Over 100 years devoted to excellence
in transport and logistics



to appreciate the environmental impact of the various modes of transport, logistics and supply chain operations, reverse logistics activities and how to improve energy efficiency within the logistics and transport sectors. The qualification also seeks to provide learners with a complete set of management skills.

More information on this programme is available at (<https://ciltinternational.org/education-development/global-training-directory/cilt-uk-level-3-certificate-green-logistics/>)

The CILT Certificate in Managing Sustainability in Transport and Logistics aims to increase the awareness of sustainability in transport and logistics industries, as well as building skillsets required for professionals in the transport sector. Course participants study:

- Global perspective on the concept of sustainability
- Climate change megatrend and decarbonisation in the transport sector
- Introduction to sustainability concepts in transport sector
- Sustainable transport: government policies and industry best practice
- New mobilities and emerging technologies in the transport sector
- Corporate social responsibility and sustainability reporting
- More details are available at <https://www.cilt.ie/Education-Exams/Our-Courses/Short-Courses/Certificate-in-Managing-Sustainability-in-Transport-and-Logistics>

WiLAT Launch Sustainability Leadership Programme: International

Women in Logistics and Transport (WiLAT), which is an interest group of the CILT, recently launched the WiLAT Sustainability Leadership Programme. In response to growing concerns around the world regarding sustainability, WiLAT designed The Sustainability Leadership Programme, providing a unique opportunity for managers in the industry to develop an overall picture on sustainability and the latest industry trends, learn from the experience of senior executives in the trade, and build their social network with other highflyers in the industry.

The Programme aims to prepare managers to undertake a leadership role in their organisation's initiatives towards sustainability. It is focused on managers in the supply chain, logistics and transport industry, practitioners leading sustainability projects, and those

who would like to formalise their sustainability effort into an Environmental, Social and Governance (ESG) report.

The programme features:

- A 10-week programme comprising a series of empirical lectures and moderated discussion.
- A comprehensive set of current topics chosen by a panel of trade and academic experts.
- Distinguished leaders from the industry invited as speakers.
- A unique arrangement for in-depth discussion with senior executives.
- Interactive online workshops with participants around the globe to enhance the learning experience.
- Assessment routeways covering both CPD and an opportunity to achieve a Level 3 Unit Award as part of the CILT International qualifications.

For more information on the Chartered Institute of Logistics and Transport: South Africa, visit www.ciltsa.org.za or visit our LinkedIn and/or Facebook page.

Contact details: 087 822 2858 | info@ciltsa.org.za



Catherine Larkin

Electric Vehicles and the Grid

Hiten Parmar



The world is embracing electric vehicles towards the race to a net zero world. The number of countries, regional governments and cities that have set dates to ban internal combustion engine vehicles is rapidly growing. Underlying this momentum is the recognition that electrification of transport is a critical lever to improve air quality and reduce greenhouse gas emissions with independency from fossil fuels.

Battery packs within electric vehicles support the energy requirements for mobility, but they also need to be re-charged to restore the energy used. This is dependent on the utility grid supply, or local embedded generation supply which is the favoured approach towards energy sustainability and resilience. Additional embedded generation on the grid network provides a good balance of peak loads imposed onto the electricity network during high numbers of electric vehicles charging at the same time.

With increased driving range being offered from vehicle manufacturers, battery technology has improved exponentially on energy density, but also that the battery packs have become larger in capacity. The general reference is that vehicles are only utilised between 5

to 7% of the time, where the rest of the time they are just parked - possibly a wasteful asset. In the case of electric vehicles, and their large battery packs, when these vehicles are fully charged and parked lying idle, there is the opportunity to utilise these battery packs for services to the grid. In this instance, electric vehicles can provide savings, or additional revenue for vehicle owners through the battery packs. The image below provides an overview of services that can be provided by battery energy storage which would also be applicable with electric vehicle batteries.

Grid services			Behind the meter			Off grid
Enhanced Frequency Response	Frequency Containment Reserve	Frequency Restoration Reserve	Energy Shifting / Load Levelling	Self-consumption (small residential)	Community Storage	Increased Power Quality
						Peak Shaving
						Time-of-use
						Island Grid

The range of services that can be provided by battery energy storage

Between the intense heat waves that pushed California's electrical grid to the brink, and winter storms that knocked out power to hundreds of thousands of people, it has become increasingly clear for the need for backup sources of power to keep the lights on. Since 2007, South Africa has experienced multiple periods of load-shedding as the country's demand for electricity exceeded the utility's ability to supply it.

California now has an incentive program that could be retrofitted to outfit electric vehicle batteries as backup power stations. The technology landscape with electric vehicle applications is referred to as Vehicle-to-Everything (V2X) which includes Vehicle-to-Grid (V2G), Vehicle-to-Home (V2H), and Vehicle-to-Load (V2L).

Vehicle-to-Grid (V2G) is where a small portion of the stored electric vehicle battery energy is exported to the electricity grid when needed,

depending on the service arrangement. There are some financial incentives to do this, and electric vehicle owners are given credits or reduced electricity costs. Electric vehicles can also enable the owner to participate in a virtual power plant (VPP) program to improve grid stability and supply power during peak demand periods.

Vehicle-to-Home (V2H) is where the electric vehicle battery energy is used locally to power a home. This enables the electric vehicle to function like a regular household battery system to help increase self-sufficiency, especially when combined with rooftop solar. However, the most obvious benefit of V2H is the ability to provide backup power during a power outage. The application of V2H will also be a use case for Vehicle-to-Buildings (V2B).

Vehicle-to-Load (V2L) technology is where the electric vehicle can be used to power essential loads, including lighting, computers, fridges, and even cooking appliances. This becomes wide applicable for emergency power and remote area uses for power.

The V2L application can also be used to for Vehicle-to-Vehicle (V2V) charging.



The landscape of applications of Vehicle-to-Everything

The future of transitioning to hydrogen fuel

Liesl de Wet

On the 19th of September 2022, a hydrogen research study group, made up of industry representatives, Gauteng Transport Authority, The MEC for Gauteng roads and infrastructure and academics, departed to Germany and Norway to engage with industry experts and governments in understanding the role and future of Hydrogen as an alternative fuel source for the transport industry.

Transport is a priority sector for emission reductions. One of the key focus areas of the Road Freight Association (RFA) is the future development and implementation of green technologies (alternative clean energy power sources) for the road freight logistics sector. As part of our drive and commitment to "Green Trucking" and the calls for a carbon net zero future by 2050, understanding what options the industry has to achieve this, the availability, timeframe and feasibility of the new technologies as an enabler in the Just transition of net zero trajectory by 2050.

The study group were exposed to multiple meetings with the various German ministries, research institutions and hydrogen manufacturers in order to gain a holistic view of the hydrogen transport possibilities. Below are just a few key insights from the visit, there is so much more to unpack and explain and this will be done over a series of communication engagements with members.

The future is 'green' but will require a considerable amount of renewable energy to achieve this. Everywhere we went in Germany, solar panels and wind turbines are the norm. Every slither of sun is

harvested for energy. South Africa has the highest solar radiation levels in the world, yet as a country we don't leverage this as much as we possibly could. Electric vehicles and trucks as well as non-motorised transport are common place with Charging stations easily accessible as well as dedicated bicycle lanes all over the cities.

We spent a day At the IAA transportation show, there were so many new makes and models of Electric Heavy duty (as well as LDVs) powered trucks, from most if not all OEM's. With various range capabilities and designs. We also observed the new H2Gen concept truck from Daimler, powered by liquid Hydrogen. This also brought to the forefront the conversation around liquid hydrogen vs compressed hydrogen. Both have their advantages and disadvantages, and these will have to be researched and unpacked as they have different storage and production processes and associated costs.



Members of the delegation in front of the Daimler H2Gen truck prototype

The study group met with a few research institutions thought out Germany and Norway, the Centre for Solar Energy and Hydrogen Research Baden-Württemberg (ZSW) was particularly engaging where Dr. Ludwig Jörissen (head of the Fuel Cell Fundamentals research group) and Team shared the latest research on Hydrogen and Fuel Cells. Below is a picture of a Hydrogen refuelling station at the centre and a vehicle that is currently being used.



Liesl de Wet, RFA, inspecting a hydrogen refuelling station



Dries Swanepoel (SASOL) Liesl De Wet (RFA) and Gideon Neethling (SABOA) with a hydrogen powered passenger vehicle

Research and development is essential, and this needs to play an important role in understanding the applicability and impact a transition to hydrogen fuel will have for our industry. A tremendous amount of this research has already taken place which is closing the gap in terms of application and it becoming a realistic future. It goes without saying, that the role of Infrastructure is key critical to the mass deployment of EV's and in future Hydrogen powered vehicles. The study group toured a refuelling station that consisted of EV charging points, bio gas and Hydrogen, a promising glimpse into what the future holds.



One thing is clear, no one technology provides a silver bullet in the zero-emission journey. It will take a great amount of renewable energy (green hydrogen is a must), project financing and multi stake holder and country collaborations to realise the alternative fuel, green hydrogen reality. South Africa is well placed to be a significant producer of green hydrogen as an energy source. The green transport working group will go through the learnings and information shared during the study tour, and we will be sharing these with our members over the coming months. Our next green transport working group session will be held on the 17th of November virtually. I encourage you to be part of the conversation.



Sustainability and AI Technology

Safety, Efficiency, Compliance, and Security have always been the four pillars upon which MiX Telematics has built its fleet management systems. These pillars have formed an integral part of the MiX value proposition. Businesses across various industries adopt telematics in varying complexities; helping boost productivity, improve safety, enhance customer service, as well as sharpen driver and vehicle security. It has also assisted in bolstering the bottom line and allows businesses to gain a competitive advantage in an ever-evolving world.

As Environmental, Social and Governance (ESG) continues to be a hot topic, it has given rise to the fifth and most recent pillar, Sustainability.

According to the Global Energy Review 2021, global CO2 emissions are projected to grow as the demand for coal, oil, and gas rebounds post-Covid. As it stands, CO2 has reached its highest-ever average annual concentration in the atmosphere – around 50%

higher than when the industrial revolution began. These statistics make clear that for us to tackle climate change effectively, we need to massively reduce the carbon emissions caused by vehicles on the road, particularly those utilised by fleets.

Sustainable fleet management is the practice of operating a fleet with the specific focus on long-term viability of profit, the planet, and people – otherwise known as the triple bottom line (TBL). The TBL seeks to gauge a corporation's level of commitment to corporate social responsibility and its impact on the environment. Keeping tabs on your company's financial, environmental, and social performance over time allows you to account for the full cost of doing business. It also allows for the balancing of business challenges for the best possible monetary and ethical outcome. After all, the goal is to meet current consumer needs, while ensuring that future generations will be able to meet theirs as well.

Over the years MiX has established a strong reputation for providing innovative fleet management

technology and services for the passenger and commercial vehicle markets across the various industries, including transport and distribution, FMCG, oil and gas, mining, construction, emergency services, government, public transport, rental and leasing, security, and utilities. Some of these industries can be classified as some of the largest contributors to CO2 emissions globally. In recent times, several key sectors have shown that telematics technology can help reduce harmful CO2 emissions.

"Fleet telematics technology can be harnessed to increase the efficiency, productivity, and sustainability of fleets. MiX Telematics' solutions have proven to be effective in assisting businesses to reduce their carbon emissions. Our customers can significantly reduce their carbon footprint due to more efficient driving practices and optimising fuel utilisation," says Henry Smith, Fleets Sales Director at MiX Telematics Africa.

But how does telematics and AI fit into sustainability and decarbonisation? Sustainability is not an uncharted topic and fleets are under immense pressure to be more

environmentally sustainable. Decarbonisation refers to the measures a business takes to reduce its carbon footprint. By optimizing fleet operations, fleet managers can achieve the goal of reducing CO2 emissions. AI plays a key role in reducing emissions of fleet vehicles. This is because AI technology helps to optimise route planning, reduce idling times, and can lead to a reduction in fuel consumption which ultimately reduces carbon emissions. This is not only good for the environment, but it can also lead to decreased operating costs.

Companies that develop and invest in sustainable business practices can improve trust and engagement with their customers and stakeholders, attract and retain employees, build credibility, enhance brand awareness, reinforce community relations and partnerships, and encourage advances and innovation in different types of technology. Developing a sustainable fleet management strategy can help reduce operational costs and create greener fleets. The less fuel and resources your fleet uses to complete routes, the less it costs your business in fuel spend, vehicle downtime, wear and tear, and repairs. Reducing fuel consumption is the most effective way of safeguarding your valuable resources and of protecting the environment. Reducing CO2 and NOx emissions decreases your company's carbon footprint and helps it achieve its green goals.

Fleet sustainability can only be achieved once you have gained a thorough understanding of current fleet operations and costs, and of existing business policies and processes. By identifying where manageable inefficiencies are slowing operations down and costing your business money, you are empowered to take control of areas where critical improvements need to be made. Using that data to work through a checklist can help identify those actions that already being taken and potential opportunities for further investment and improvement. Ongoing monitoring and regular reviews will ensure that your company is consistently meeting sustainability targets. Fleet managers can use telematics technology to keep abreast of productivity, utilization, fuel use and expenditure.

MiX offers multiple AI-integrated telematics solutions, which help our customers achieve a greener fleet management. Our integrated approach of machine learning and Artificial Intelligence to gather and interpret customer insights based on data, have proven invaluable in achieving fleet sustainability outcomes that also support business objectives. Solutions like MiX



to improve planning, cut back on inefficiency and gain a better understanding of your vehicle's maintenance needs, keeping your assets running efficiently and sustainably," Smith continues.

AI integration takes away all the guesswork as machine learning can interpret the driver's behaviour in real-time, allowing for immediate alerts and correction. Utilising video telematics technology allows for real-time alerts on any unsafe driving behaviours, making driver coaching and accident prevention simpler. AI and machine learning also have a pre-emptive role to play in diagnosing and alerting drivers of any technical errors or when their vehicle needs maintenance. This is done via sophisticated neural networks that collect data on the vehicle's state in real-time, giving fleet operators easy access to the performance of all the vehicles in their fleet.

their fleet.

Constantly having this information at your fingertips assists fleet managers in spotting problems before they escalate into major liabilities that could lead to vehicles being out of action for prolonged periods. Taking this proactive stance improves fleet reliability and decreases downtime, resulting in a more productive fleet.

"Managing greener and more sustainable operations can't be achieved overnight, but by implementing AI-powered telematics solutions, sustainability can be a priority for your fleet without sacrificing efficiency," concludes Smith.



Fleet Manager Premium, collect and transmit valuable vehicle and driver data. Driving events such as harsh braking, speeding, excessive idling, over-revving, and harsh cornering, are captured by the onboard hardware – giving insight into driver behaviour negatively impacting the fleet's energy consumption and carbon emissions.

Paired with the power of video telematics, businesses can further curb inefficient driver behaviour with a solution like MiX Vision AI, an AI powered dashcam enabled with Advanced Driving Assistance Systems (ADAS) that gives drivers real-time coaching feedback during trips, and the ability to review driving performance after the trip. The MiX Vision AI in-cab and road-facing cameras help prevent collisions, alert drivers to risky driving behaviour and save on insurance costs from wrongful claims against drivers with the video footage available of incidents. AI-powered dashcams are becoming essential for fleets looking to streamline operations. Moreover, as these dashcams are continuously recording, this footage can be used to exonerate drivers in the event of not-at-fault crashes.

"We are seeing a shift in how fleet owners manage their vehicles and assets, choosing preventative maintenance to increase the longevity of their assets instead of sticking to (or even sometimes neglecting) regular maintenance checks. Utilising a solution that returns reliable diagnostic data about fleet performance in real-time is incredibly beneficial to your operations. This is because these insights help you

GET A RETURN ON YOUR INVESTMENT

See an increased 10:1 return on investment when you use the combination of AI dashcams with vehicle telematics benefits



+15%

Fuel savings: Typical rands per litre improvement



-20%

Maintenance cost: Typical maintenance reduction



-96%

Accident reduction: Typical collision reduction



-25%

Insurance reduction: Typical insurance cost reduction



+25%

Productivity Improvement: Utilisation productivity cost improvement

Visit mixtelematics.com/dashcams/ for more info



TOURISM



Walk like a local with Vilakazi Street Tourism

Soweto has a rich history, it is a cultural melting pot and has a vibrant social scene. These factors make Soweto, one of South Africa's biggest and oldest townships, a tourist hot spot. When one considers the diverse activities, tours and culinary delights available in the area, a day out in Soweto is bound to provide a thrilling experience, even for the well travelled visitor.

A lot of organisations have been doing outstanding work in promoting Soweto as a prime tourism destination. One such organisation is Vilakazi Street Tourism. It is the brainchild of Tshepo Kenneth Marumo, a University of Johannesburg graduate with a BA in tourism development. Tshepo knows Vilakazi street like the back of his hand. He started working in the street in 2009 as an intern. He also worked as a waiter and barman and now leads tours in and around Soweto. Tshepo's passion for vilakazi street is so evident and has not gone un-noticed. He has been featured in various online publications such as Jurni, SA Tourism Update and Africa Travel Week.

Vilakazi Street Tourism offers different tour packages such as, Walk like a local tour, Vilakazi Street Neighbourhood Experience, A day in Soweto (the ultimate township tourism experience) and



Tshepo Marumo, tourism expert of Vilakazi Street Tourism



educational tours. Tailor made packages can also be put together for individuals, groups and corporates. Connect with Vilakazi Street Tourism on Facebook and spread the love using these hashtags #WeDoTourism #TakeMe2VilakaziStreet.

VST also facilitates bicycle and Tuk Tuk tours, soccer games and team building activities. Tours and travel packages can be arranged for clients interested in visiting city of Johannesburg spots like New town, main Street, Braamfontein, Little Africa, Maboneng precinct and the Jewel City precinct.

Or imagine this: you are standing in the heart of Soweto. You turn slowly to absorb your surroundings, inhale deeply, considering the interesting smells. You listen carefully to the sounds that surround you, fully immersed in the heart of South Africa's largest and most famous township.

A lively tavern, craft shops and a busy B&B fuel the life and vibrancy of Vilakazi Street, once home to Nelson Mandela and Desmond Tutu. This is a street of Nobel Peace Prize Winners.

Here's what to expect when you start your "Walk like a Local" tour with Vilakazi Street Tourism, founded by Tshepo Kenneth Marumo, whose heart and soul has gone into building up tourism in the area. Tshepo's ambition is to own his own tourism office and boost the attractiveness of this Jo'burg attraction further.

You'll 'walk' alongside the locals of Soweto, being exposed to local arts and craft markets, the residents' culture and daily life, and visit all the points of interest in the area.

Lunch will tickle your taste buds with local flavours, snacks and refreshments throughout the day. This unique walking tour also offers some incredible photo opportunities and a true insight into what Soweto is all about – the day-to-day that Tshepo wants to share with all visitors.

Vilakazi Street Tourism Trust, also founded by Tshepo, focuses heavily on sustainable development of tourism and its benefits in the community. The Trust supports local education, sports and games for childhood initiatives. During this authentic engagement with Soweto, you'll get to know all those special experiences that are close to Tshepo's heart, as well as his dreams of developing and sustaining the local community.





KAGGA KAMMA

— NATURE RESERVE —

★★★★

{An oasis on the edge of time...}

Experience spectacular scenery, absolute tranquillity and fascinating tours and activities that delve into the rich history of South Africa and this unique place. A Kagga Kamma Nature Reserve adventure means stepping into another world and discovering a whole new perspective.

reservations@kaggakamma.co.za | +27 (0) 21 872 4343

www.kaggakamma.co.za



Kagga Kamma Nature Reserve's Evolution: A Solar Event



Kagga Kamma Nature Reserve, a four-star lodge based in the Cederberg conservation area of the Western Cape has unveiled their new and improved solar power farm; a step they've taken to a greener, brighter future for all.

Since its inception, in 1988, Kagga Kamma Nature Reserve has always valued and upheld environmentally friendly practices. From preserving the natural landscape, protecting the indigenous and endemic wildlife, and offering an eco-centric hospitality experience to guests. Their core mission has always been centred on developing their green initiatives and sourcing improved methodologies for a sustainable future in this beautiful space. These methodologies, that improve on the long-term sustainability of the Lodge, along with the offering they provide to guests on the back of an environmentally sustainable project such as that of this new solar farm, further add to the security and opportunities of the local communities that staff the Lodge and that benefit from Kagga Kamma's corporate social responsibility.

Building the solar farm

Continuing in this mission, Kagga Kamma Nature Reserve unveiled a new Solar Power Farm on their property in November of 2022. The new solar farm provides sustainably sourced electricity to the entire Lodge, meaning that the property is officially off-grid and is no longer reliant on resources that negatively impact climate change.

Engineering on the project started a year prior to the unveiling, in November of 2021, though Kagga Kamma Nature Reserve teamed up with SolaSynergi and MLT Engineering a long time before then. Outlining the project scope and determining the best system for the Nature Reserve was no small undertaking, as the Lodge has always aimed to preserve the environment and leave as minimal an imprint as possible. This stands true not only for the solar farm project, but with all

operations, and is why the Lodge was built with largely natural materials and made to meld with the surroundings. The engineering aspect of the project lasted almost a year, longer than that of the actual construction of the farm, which spanned seven months, from March of 2022 to September of 2022. The construction itself further speaks to Kagga Kamma Nature Reserve's conservation programme, as the whole system can easily be disassembled and relocated or removed entirely, without affecting the land.

The solar farm itself is large and powerful enough to sustain all the Lodge's needs and is coupled with a fuel-powered back-up generator that can maintain the power supply during the rainy season, meaning that Kagga Kamma Nature Reserve will never need to be serviced by the local municipality. The set-up is that of a 356kWp (kilowatts peak) DC Solar Array with 300kW (kilowatt) Hybrid Inverters, 1200kWh (kilowatt-hours) Lithium Battery Storage and a 400kVA (kilovolt-amps) Generator. It is ground mounted and north-facing and all 648 of the panels were perfectly positioned through a series of carefully planned engineering tests to maximise the sun's surface contact with the panels throughout the day, while taking into consideration the changing seasons. The total DC generation capacity of the system is between 350 and 360 kWp that refers to its maximum generation potential during optimal (sunny) conditions. To put these figures into perspective, this same solar energy system could effectively supply power to 50 average-sized family homes. At present, the solar farm supplies sufficient energy to 13 Chalets, 15 Lodge Suites, 26 Staff Homes, as well as the Reception, Restaurant, Bar, Spa, Laundry and Communal Areas, though provision has been made for potential future expansion of the Lodge.

To ensure that Lodge operations can continue as normal, and that guests remain comfortable, during extended periods of rain or cloudy weather, Kagga Kamma Nature Reserve incorporated a back-up generator system into the new design. This integration was made possible using a PV design that

uses revolutionary digital technology to automate and optimise the process of converting to the back-up power supply. The system is equipped with a containerised 1200 kWh battery back-up system including the main distribution board that has sufficient ventilation to maintain temperature levels below 35°C. The reticulation, which is the delivery system of electricity, is done via a 3.3kV step-up/step-down configuration from the solar farm to the main distribution board. The battery storage system has a maximum depth of discharge of 80% and a minimum life cycle count of 5500, and is only brought online when the battery reaches 30% of the rated capacity. This means that the solar farm will be able to support the Lodge for a minimum of 15 years, before requiring a service.



Unveiling the solar farm

At the official unveiling of the solar power farm, Chairperson of the Kagga Kamma Nature Reserve board, Niel de Waal, said: *"As custodians of the reserve, we have a responsibility to minimise our environmental footprint. This new solar plant, which provides all of our energy requirements, is one of the last building blocks to make us truly green, sustainable and eco-friendly. We believe that sustainable tourism is incredibly important for the continued development of the tourism industry in South Africa and, as the stewards of this reserve, we have a duty to minimise the environmental impact of sharing this unique experience with our guests."*

Niel de Waal spoke at an intimate gathering that included guest speaker Monika Luel, Chief Marketing Officer of Wesgro, Simon Gear as Master of Ceremonies, Charity Mbeki from Tourvest, Duduzile Gumede from Springbok Atlas, as well as additional key industry partners and VIPs. The unveiling took place on the morning of the 03rd of November 2022 with a tour of the new solar farm facilities, followed by lunch and entertainment at the Main Lodge. The entertainment celebrated the Cederberg community with local band Die Groen Gras Trappers, and traditional Riel Dancers. "Rieldans" is a celebrated tradition amongst descendants of the San, Nama and Khoi people. It is known as one of the oldest dancing styles of indigenous South Africa and commands the audience's attention with fast-paced footwork. The event not only celebrated the launch of the new solar farm, but the heritage of the land and its promising future.

The solar farm project aligns perfectly with Kagga Kamma's mission towards being a true eco-lodge, and functions alongside their many other environmentally friendly practises, such as the use of green amenities in-room and as part of their housekeeping services, the replacement of plastic straws with biodegradable ones, and the introduction of glass bottles in-room for guests. Their efforts towards sustainability continue and this major project has only enhanced those methodologies for the Cederberg-based Lodge.



Recognising the strengths and weaknesses of sustainable development in the tourism industry to ensure its long-term viability

Shannon Manuel

Tourism plays a significant role in the development and growth of many countries worldwide. It is a crucial industry that drives economic growth, creates job opportunities, promotes cultural exchange, and enhances the overall well-being of a country's citizens.

In order to maintain successful levels of tourism, sustainable tourism is a growing trend worldwide, and many countries and tourism stakeholders are making efforts to promote sustainability in their tourism industry.

According to the World Tourism Organization (UNWTO), sustainable tourism is growing at a rate of 10-15% annually, and it is estimated that by 2030, sustainable tourism could represent 25% of the global tourism market.

In 2019, the Global Sustainable Tourism Council (GSTC) reported that there were 209 destinations certified as sustainable according to the GSTC Criteria, and 5,497 hotels and accommodations certified according to the GSTC Criteria.

The Global Reporting Initiative (GRI) reported that in 2019, 1,273 tourism companies from 94 countries

reported on their sustainability performance using the GRI Standards. The TripAdvisor GreenLeaders program has recognized over 8,000 properties worldwide for their environmentally friendly practices.

A survey conducted by Booking.com in 2021 found that 82% of travelers believe sustainable travel is vital, and 58% of travelers said they were more likely to choose accommodations that implement eco-friendly practices. The Sustainable Travel Index by Lonely Planet ranks 99 countries based on their sustainability practices and policies. The top 10 countries in the 2021 index were Finland, Sweden, Austria, Norway, Slovenia, Switzerland, Croatia, Germany, France, and Belgium.

While these statistics show that there is increasing awareness among travelers and tourism stakeholders about the importance of sustainability in tourism. However, there is still much work to be done to ensure that tourism is developed and managed in a way that is truly sustainable and that maximises its positive impacts while minimising its negative impacts.

Sustainable tourism aims to promote economic, social, and environmental sustainability in the tourism industry. While the concept of sustainable tourism has gained increasing recognition, there are still significant challenges to achieving its goals.

One of the major challenges of sustainable tourism is balancing economic growth with environmental and social sustainability. Many destinations rely on tourism as a major source of income, and there is often pressure to maximize tourism revenue, which can result in environmental degradation, cultural exploitation, and over-tourism. Finding a balance between economic growth and sustainability requires careful planning, regulation, and monitoring.

Another challenge of sustainable tourism is ensuring that the benefits of tourism are distributed fairly and equitably. Tourism can generate significant economic benefits, but these benefits do not always flow to local communities. There is often a risk of economic leakage, where tourism revenue is siphoned off to foreign companies or governments. To ensure that the benefits of tourism are distributed fairly, it is important to involve local communities in tourism planning and development, and to encourage the development of local businesses and services.

A further challenge of sustainable tourism is the need for effective resource management. Tourism can place significant demands on natural resources



such as water, energy, and land. Without effective management of these resources, there is a risk of resource depletion, pollution, and ecosystem degradation. Sustainable tourism requires the development of effective resource management strategies that ensure that resources are used in a sustainable manner.

Additionally, sustainable tourism faces challenges related to changing consumer behavior and preferences. As consumers become more aware of sustainability issues, they are increasingly looking for sustainable travel options. However, sustainable tourism can often be more expensive than traditional tourism, and consumers may not always be willing to pay the additional costs. Additionally, consumers may not always be aware of the sustainability credentials of tourism products and services, making it difficult for them to make informed choices.

Lastly, there is a challenge related to the complexity of the tourism industry itself. Tourism is a complex industry involving multiple stakeholders, including

governments, businesses, and communities. Coordinating these stakeholders to work towards sustainable tourism can be challenging, particularly in the absence of effective governance frameworks.

To address these issues, it is important to take a comprehensive approach that involves all stakeholders, including governments, businesses, local communities, and tourists themselves. This can include measures such as limiting tourist numbers in sensitive areas, promoting sustainable tourism practices, engaging local communities in decision-making processes, investing resources to support sustainable tourism, as well as much needed infrastructure.

Sustainable tourism requires careful planning and management of infrastructure to ensure that it is developed in a way that is both economically viable and environmentally sustainable.

Firstly, transportation infrastructure is a critical component of sustainable tourism. It is important

to develop transport systems that are environmentally sustainable, such as low-emission public transport and electric or hybrid vehicles. Efficient and sustainable transport systems can reduce carbon emissions and minimize the impact of tourism on the environment. Moreover, sustainable transport systems can also provide benefits for local communities, such as increased access to employment opportunities and improved connectivity between different regions.

Secondly, sustainable tourism infrastructure also includes accommodation facilities. Accommodation facilities should be designed and managed in a way

that minimizes their impact on the environment. This includes incorporating sustainable design features, such as energy-efficient lighting and heating systems, and using sustainable materials in construction. Additionally, accommodation providers should also implement sustainable practices such as recycling and waste management, and use of renewable energy sources.

Thirdly, sustainable tourism infrastructure also involves developing and managing natural and cultural attractions in a sustainable manner. These attractions need to be protected and preserved, while also providing economic benefits to local communities. This requires careful management of visitor numbers and ensuring that visitor activities do not damage the natural or cultural environment.

Fourthly, sustainable tourism infrastructure also includes supporting facilities and services, such as restaurants, shops, and tour operators. These facilities should be managed in a way that promotes sustainable practices, such as sourcing local produce and reducing waste.

Lastly, infrastructure for sustainable tourism also includes effective planning and management systems

that consider the needs of local communities, visitors, and the environment. This involves developing policies and regulations that promote sustainable tourism, as well as establishing monitoring and evaluation systems to ensure that sustainable tourism objectives are being achieved.

Ultimately, achieving tourism sustainability will require a collective effort and a long-term commitment to addressing these multi-layered issues. A comprehensive approach to sustainable tourism is essential to ensure that tourism is developed and managed in a way that minimizes its negative impacts and maximizes its positive contributions. Such an approach should take into account economic, social, and environmental factors, as well as the needs and perspectives of all stakeholders, including local communities, tourists, and businesses.

The tourism industry in South Africa is a critical contributor to the country's economy, generating jobs and revenue. However, there is increasing recognition of the need for sustainable development in the tourism industry to ensure its long-term viability.

One of the key drivers of sustainable tourism development in South Africa is the National Tourism



Sector Strategy (NTSS), which aims to promote sustainable tourism development in the country. The NTSS recognizes the importance of sustainability in the tourism industry and outlines a comprehensive strategy for achieving this goal. The strategy includes initiatives such as promoting responsible tourism practices, supporting community tourism projects, and improving tourism infrastructure in a sustainable manner.

One of the major initiatives in the NTSS is the development of community tourism projects. Community tourism is a form of sustainable tourism that involves local communities in tourism planning and development, thereby ensuring that the benefits of tourism flow to local communities. Community tourism projects are being developed in various parts of South Africa, such as the Wild Coast and the Karoo, providing opportunities for local communities to benefit from tourism in a sustainable manner.

Another key aspect of sustainable tourism development in South Africa is the promotion of responsible tourism practices. Responsible tourism involves promoting environmental and social sustainability in tourism operations. This includes initiatives such as reducing carbon emissions, reducing waste, and promoting cultural sensitivity. Many tourism operators in South Africa are adopting responsible tourism practices, such as eco-lodges and sustainable safari operators, to promote sustainable tourism in the country.

In addition to these initiatives, sustainable tourism development in South Africa also involves improving tourism infrastructure in a sustainable manner. This includes initiatives such as developing sustainable transport systems, using renewable energy sources, and incorporating sustainable design features in tourism facilities. For example, the Table Mountain Aerial Cableway in Cape Town recently underwent a major refurbishment, incorporating sustainable design features such as energy-efficient lighting and heating systems, and using recycled materials in construction.

Finally, sustainable tourism development in South Africa requires effective governance and stakeholder engagement. Effective governance frameworks are necessary to coordinate the various stakeholders involved in the tourism industry, such as government, businesses, and local communities,

to work towards sustainable tourism development. Stakeholder engagement is also critical to ensure that the needs and perspectives of local communities are incorporated into tourism planning and development. Capacity building,

Capacity building and monitoring are also two of the pillars of the NTSS. The NTSS recognizes the importance of building capacity among tourism stakeholders to promote sustainable tourism practices. This includes providing training and support for tourism businesses and promoting education and awareness among travelers. The NTSS includes a monitoring and evaluation framework to track progress towards sustainability goals and ensure that tourism development is aligned with sustainable development goals.

Overall, the NTSS provides a framework for promoting sustainable tourism practices in South Africa and ensuring that tourism development is aligned with sustainable development goals. While there are challenges to implementing sustainable tourism practices in practice, the NTSS provides a foundation for ongoing efforts to promote sustainable tourism in South Africa.

In addition to the development of the National Tourism Sector Strategy, South Africa has a number of eco-certification programs for tourism businesses, including the Green Tourism Certification Program and the Heritage Environmental Management Company.

The South African government has also established a number of protected areas and national parks, including Kruger National Park and Table Mountain National Park, which promote sustainable tourism practices and protect natural and cultural resources. According to the Tourism Industry Association of South Africa, sustainable tourism practices are becoming increasingly important to travelers. A survey conducted by the organization in 2021 found that 65% of travelers consider sustainability when choosing a destination, and 61% are willing to pay more for sustainable travel options.

As people are increasingly looking for sustainable tourism locations, and travelers more aware of the impact that their travel has on the environment, local communities, and cultural heritage, it is time to increase efforts to become a sustainable tourism destination.



YOUTH





Go For Gold takes gold again

South Africa is a country with a rich history and a diverse population, but it is also facing a number of challenges when it comes to education. One of the most pressing issues is the poor performance of students in Maths and Science, which has a significant impact on the country's ability to produce the technical graduates that are so essential for the growth and development of the built environment. To help address this problem, a non-profit organization, Go for Gold, has been established to give Maths and Science tuition and career-building opportunity to students who want to become technical graduates. Beneficiaries on the programme come from areas with limited resources and from schools challenged with poor Maths and Science outcomes.

Go for Gold is dedicated to helping students overcome the challenges they face in Maths and Science and to provide them with the tools and knowledge they need to succeed. The organization has recruited over 100 students in 2023 and provides students with access to experienced teachers and mentors who are

knowledgeable in these subjects in Grade 10, 11 and 12. The programme also offers a range of resources, materials, and catalysed connection with technical industries through Go for Gold partner companies, to help them learn more about the industry and inspire passion for varied technical professions used in industry.

Go for Gold's efforts continue to succeed as they have just celebrated another year of success helping some of South Africa's most deserving youth achieve Bachelor Passes. Once again, 93% of Grade 12 students at Go for Gold achieved Bachelor Passes at the end of 2022, celebrating this success for three consecutive years despite the adverse effects of COVID-19 on academic schedules.

Go for Gold epitomizes the efficacy of public-private partnerships where all stakeholders enjoy the win-win conclusions. The South African built environment, including the construction and manufacturing industries, stands to benefit greatly from non-profits like Go for Gold. These industries require a steady stream of skilled technical graduates to secure their future human capital and meet the

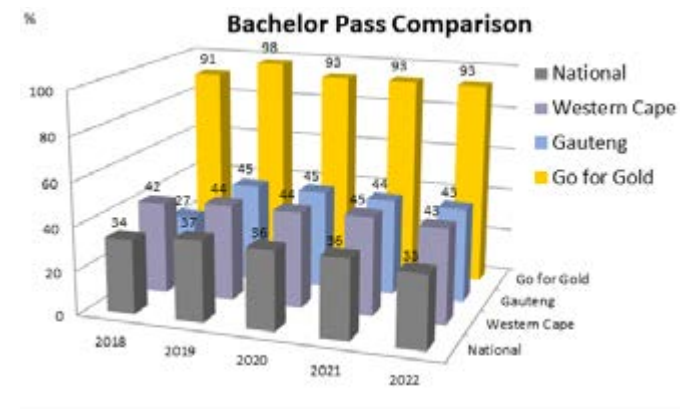
demands of an ever-growing market. By investing in Maths and Science education, companies can help ensure that there is a steady supply of well-educated and highly skilled individuals to meet their needs.

Companies who partner with Go for Gold benefit from being seen as socially responsible and committed to education transformation, which provides a competitive advantage.

Partnership opportunities include financial support, resources, and internships for students. These partnerships help invest in future human capital, support the built environment, and create a more equitable and inclusive society.

In conclusion, the non-profit organization, Go for Gold, is making a significant contribution to addressing one of the most pressing educational

challenges in South Africa. By providing Maths and Science tuition to students who want to become technical graduates, Go for Gold is helping to build a better future for the South African built environment and the country as a whole. The organization is inviting more companies to join the fold and become a part of this transformative effort.





Harnessing the Power of Circular Business for an Abundant and Sustainable Africa

The future of Africa is in its own hands. Unlocking its resource potential through the circular economy is the first step towards a bright and prosperous future.

Catherine Wijnberg and Bridget Wijnberg
Fetola

There is no escaping the reality that Africa is on a trajectory of explosive population growth with dangerous ramifications in terms of economic, environmental and social impact on both the continent and the world. The figures are stark, almost incomprehensible in their largess. The United Nations World Population Prospects 2022 report projects that sub-Saharan Africa will account for most of the growth of the world's population over the coming decades. It is expected to almost double, surpassing 2 billion inhabitants by the late 2040s, ballooning to 3.44 billion by the end of the century.¹ On the current trajectory, it will become the most populous of the eight geographic regions in the late 2060s, surpassing Eastern and South-Eastern Asia and Central and Southern Asia.

If the continent is to avoid becoming trapped in an increasingly desperate situation of ever-depleting resources which will further entrench poverty, significant change will require something exceptional. By 2050, 86 percent of the world's extreme poor will live in sub-Saharan Africa. One glimmer of hope is Africa's youth, the very sector that will fuel this population growth: by the same marker, 2050, the continent will also have the largest percentage of young people, in fact, it is the only region where this demographic is increasing.²

Alongside this is a current landscape in which only one in six of these African youth are in wage-paying employment juxtaposed against an annual deficit of 7.3 million jobs.³ Their situation is desperate right now. What is meaningful amongst these projections, however, is that these youth are being moulded in an environment of intense and rapid change. They are innovators and tech-savvy, and perhaps crucially, 1 in 5 see entrepreneurship as their only option.^{4,5}

The needs of both the people and the planet call for an urgent and significant shift to fuel a different more resilient and sustainable model. To lift people out of the poverty cycle we need locally-driven economies that promote economic growth, generate wealth and create that needed 7.3 million jobs per year. If this growth is driven with the current waste creating linear business model, this would generate a massive ecological footprint. The negative effects of which could wipe out the benefits of those gains. To solve unemployment and poverty at this scale will require a

different strategy. A circularity-based economy has the mechanisms to meet the economic and employment needs and reduce negative environmental impact.

Circular business models design out waste, keeping products in use for longer and re-using raw materials to eliminate waste water, energy, materials and pollutants at source, and reduce total waste to landfill.

Circular solutions create the competitive advantage of a more efficient business model, present opportunities for bottom-up innovation, stem the onslaught of biodiversity loss and address climate change. They can also be incorporated at a grassroots level with the baseline of nil access to resources, either financial or material, to make a viable living. Or at the higher level industry disruptors have the potential to create system-level change, by taking advantage of new technologies in the circular economy and

embracing Africa's IT transition such as blockchain⁶ to track resources, build trust, and create financial transparency. The adaptability and willingness of youth to embrace change has already set in motion the foundation for pivoting the business world and unlocking a bright and prosperous future.

Onboarding

For broadscale uptake, there first needs to be a basic understanding of the opportunities that circular business offers. Perhaps the most effective way is to shine a light on relatable role models within communities.

The survivalist sector of the population considers circularity a luxury item, yet it has the potential to be their path to a legitimate future. For example, Alfred Esiang stumbled into waste management through his garden service when he kept being asked to remove waste. His side hustle, which began from

that first request with two bicycles, is now a thriving entity with its own fleet of cars and property, and an accredited training development centre that specializes in artisan development.⁷ Artisanship in this space extends from the pavement sold curios to the breathtaking high-end designs of award-winning recycle artist Heath Nash.

As citizens embrace a mindset of zero waste it becomes clear that they are sitting on a treasure trove. The recycling entrepreneurs spotlighted in PETCO South Africa's Message in a Bottle series⁸ illustrate the classic example of resources that can be tapped from rubbish dumps. Whilst some still see the circular economy as an unnecessary distraction – industry is showing the way by embedding it into their model. Agripreneurs are creating efficiencies in the farm to market delivery chain by incorporating tech such as e-commerce platform Agrikool⁹, whilst Suame



Magazine Automotive Cluster in Ghana has spawned the largest repair and manufacturing cluster in Africa.¹⁰

As with any shift in mindset, repeated exposure to a positive narrative is necessary to gain any traction.

Making the transition

For entrepreneurs eager to transition, the mechanisms to achieve this may feel overwhelming. Addressing this basic knowledge gap, Youth Business International has launched their trial of a global circular business startup toolkit which embraces all industries and will form a free resource accessible for all. But designing it is often complex, and what might be considered sustainable in South Africa for example, might not align with German legislative framework.

However, for capacity building at the scale needed for country-level impact governments too should be onboarding new thinking and providing training and education of the public sector to ensure that policymakers and implementers have the right tools at hand. Bold futuristic governments such as Rwanda have already activated circularity as a key policy, providing the lead for other African governments to follow suit.

Resource rich

Access to raw materials is often limited by its traditional definition. Yet by identifying the value in somebody

else's discarded "waste value chain" and re-imagining it as a rich resource and a "materials value chain" can solve the issue of excess production, and instead create an endless cycle of re-use and regeneration. This is how Mo's Crib, a sister duo, established their model that now retails décor baskets in New York woven from old PVC waterpipes reclaimed from landfills and building sites around South Africa. Other businesses are similarly breaking the mould from the agriculture sector to manufacturing¹¹, the possibilities are endless.

Finance

Access to finance is critical for scalable business growth and there is much need to demystify understanding of the circular economy here too. The financial industry's perception that the circular economy is high-risk (only 3% of green funds are invested in Africa¹²) is a particular hindrance to small business wanting to invest in new closed-loop technology. Currently in the developmental stage, The Green Tech Exchange (GTex) is aimed at closing this gap between innovation and finance by matchmaking verified innovators with investors, whilst enabling new methodologies, providing entrepreneurs with knowledge resources and stimulating market growth opportunities. Investment Readiness also forms a key component of Fetola's Circular Economy Accelerator (a mentorship and training programme for

small businesses) giving entrepreneurs clarity on how to communicate their value proposition to investors.

Collaboration

A pivot on such a monumental scale cannot occur without global uptake and participation. There is no time to waste in reinventing the wheel – collectively we need to learn, share and leapfrog to avoid duplication, gain momentum and fuel rapid transition.

It is collaboration and knowledge sharing for the greater good. Responding to this The World Circular Economy Forum in Rwanda led to the establishment of two platforms to connect business, government, researchers and civil society, both the Circular South Africa (CSA) and the African Circular Economy Network (ACEN) Zambia Chapter.¹³

Regulatory frameworks

In turn at a governmental/international trade level policy framework needs to align with this modern circular epoch. Governments are still behind the curve in terms of acknowledging the potential for this new economy and in providing the political will and mechanisms for businesses to adopt it. International, regional and national policies need to be coherent, relate to one another and create favourable conditions, and in turn create the financial instruments that accelerate the transition to a just circular economy by de-risking investment into circular economy startups.¹⁴ With access to finance so challenging, governments should be providing tax breaks and subsidies to set the transition in motion.

The circular economy has the capabilities to make a real impact in Africa, but to drive the transformational change on such a massive scale will require a unified voice and the right enabling environment in place. There cannot be conservation and regeneration of the natural environment if the human dimension of economic prosperity and well-being is left out. To avoid the risk of an Africa mired in endless, hopeless poverty with its global ramifications – knowledge sharing, synergies and collaboration makes societal sense.

About Fetola

Fetola is a leading provider of scalable, world-class entrepreneurial support programmes that deliver lasting social, environmental and economic impact.

Their goal is to grow the economy, create inclusive wealth and generate jobs by helping people build businesses that last. This is achieved by providing proven business strategy, systems and support, while unlocking the personal leadership power of entrepreneurs who are inspired to leave a lasting legacy.

Fetola means "change" in Sesotho – and the Fetola team are inspired by UN Global goal 17 to generate change at a global scale and foster partnerships that are a force for good. For more information, visit <https://fetola.co.za/>.

References:

- 1 ¹UN World Population Prospects 2022 - https://www.un.org/development/desa/pd/sites/www.un.org.development.desa.pd/files/wpp2022_summary_of_results.pdf
- 2 ²<https://www.brookings.edu/blog/africa-in-focus/2018/09/20/figures-of-the-week-africas-growing-youth-population-and-human-capital-investments/>
- 3 ³<https://www.citiesalliance.org/newsroom/news/cities-alliance-news/%C2%A0burgeoning-africa-youth-population-potential-or-challenge%C2%A0>
- 4 ⁴<https://fetola.co.za/the-uncertain-future-of-young-african-entrepreneurs/>
- 5 ⁵<https://www.oliverwyman.com/content/dam/oliver-wyman/v2/publications/2020/jun/JAA-Survey%20.pdf>
- 6 ⁶<https://www.iol.co.za/business-report/companies-these-are-the-top-technology-trends-businesses-should-know-about-in-2023-da15e165-5175-4db3-9ccb-3b0aaa0ac1f7>
- 7 ⁷<https://bizly.club/entrepreneurs-are-making-money-from-waste/>
- 8 ⁸<https://www.youtube.com/user/1isPET>
- 9 ⁹<https://bizly.club/technological-innovations-in-the-farming-sector/>
- 10 ¹⁰<https://emf.thirdlight.com/link/1xpq6ci26lva-52isfm/@/preview/1>
- 11 ¹¹<https://fetola.co.za/beyond-recycling-a-climate-adapted-business-landscape/>
- 12 ¹²<https://climatechampions.unfccc.int/africa-green-finance-coalition-seizing-the-opportunity-that-green-investment-provides/>
- 13 ¹³<https://www.sitra.fi/en/publications/wcef2022-summary-report/#rethink-trade-and-development>
- 14 ¹⁴bid



Examining the barriers facing youth participation in sustainable development

Shannon Manuel

Youth participation in sustainable development is critical for creating a better world for future generations. However, there are still many challenges to increasing youth participation in sustainable development.

One of the most significant barriers to youth participation in sustainable development has proven to be a lack of awareness and understanding of the issues. Many young people do not know what sustainable development is or how it relates to their lives. Therefore, creating more awareness campaigns and education programs that target young people

can be effective in increasing their understanding of sustainable development.

One of the main reasons for the lack of youth education on sustainability is the inadequate integration of sustainability into educational curriculums. Many schools and universities do not have dedicated sustainability courses or initiatives, which can leave students without a basic understanding of the importance of sustainability. Additionally, many educators lack the training and knowledge to effectively teach sustainability topics. This can result in sustainability topics being overlooked or not taught at all.

Another reason for the lack of youth education on sustainability is the limited availability of educational resources. There is a shortage of high-quality educational materials and resources that are accessible to both educators and students. Without these resources, students may not have access to the information and tools they need to learn about sustainability.

The lack of youth education on sustainability can have severe consequences for the future of our planet. Without an understanding of sustainability, young people may not recognize the impact their actions have on the environment. This can result in harmful practices such as wasteful consumption, overuse of

natural resources, and pollution. Additionally, a lack of education on sustainability can lead to a lack of action on the part of individuals and communities to address environmental challenges.

There are several potential solutions to address the lack of youth education on sustainability. One solution is to increase the integration of sustainability into educational curriculums at all levels, from primary school to university. This can be achieved through the development of dedicated sustainability courses, initiatives, and educational materials.

Another solution is to provide more training and resources for educators to effectively teach

sustainability topics. This can include professional development programs, workshops, and access to educational resources.

Lastly, there is a need to increase public awareness of the importance of sustainability education. This can be achieved through public campaigns, media coverage, and partnerships between educational institutions and sustainability organizations.

The lack of youth education on sustainability is a significant issue that requires urgent attention. Without an understanding of sustainability, young people may not recognize the impact their actions have on the environment and may not take action to address environmental challenges. By increasing the integration of sustainability into educational curriculums, providing more training and resources for educators, and increasing public awareness, we can ensure that future generations are equipped with the knowledge and skills they need to create a more sustainable future.

Another way to increase youth participation in sustainable development is to involve them in decision-making processes. Youth should be given a voice in discussions on issues such as climate change, biodiversity, and social justice. Providing opportunities for young people to participate in decision-making processes can help them develop leadership skills and encourage them to become active members of their communities.

There are several compelling reasons why the youth should be involved in the decision-making process for sustainability.

The youth will be most affected by the decisions made today - actions taken today to address sustainability issues will have a significant impact on future generations. Therefore, the youth, who will be the ones living with the consequences of these decisions, should have a say in the process.

Young people bring fresh perspectives and innovative ideas - they are often more open-minded and willing to think outside the box, which can lead to new and creative solutions to sustainability challenges.

Youth involvement fosters a sense of ownership and responsibility - by involving young people in decision-making processes, they become more invested in the outcomes and take ownership of the solutions.



Youth involvement promotes education and awareness - participating in decision-making processes on sustainability issues provides an opportunity for young people to learn more about the issues and become more aware of the impact of their actions.

Youth involvement ensures a diverse and representative group of stakeholders - young people come from diverse backgrounds and have unique perspectives, which can ensure that decisions are made with a broad range of voices and perspectives represented.

Engaging young people in practical initiatives is another effective strategy to increase their participation in sustainable development because it provides them with a hands-on, experiential learning opportunity that connects them to the issues and solutions related to sustainability. By participating in

sustainable development initiatives, young people can gain a better understanding of the challenges facing their communities and the world, and can develop the skills and knowledge necessary to create positive change.

Practical initiatives can take many forms, such as community clean-up projects, tree planting programs, sustainable agriculture initiatives, and energy conservation campaigns. These initiatives not only benefit the environment and local communities, but also provide young people with a sense of purpose and empowerment. Through participation in these initiatives, young people can develop leadership skills, teamwork, and a sense of responsibility for the world around them.



Moreover, practical initiatives provide an opportunity for young people to connect with like-minded individuals and form networks of support for sustainable development. This can lead to increased engagement and participation in sustainable development efforts, and can also help to create a sense of community around sustainability issues.

Finally, it is crucial to create a supportive environment that encourages young people to participate in sustainable development. This can include offering mentorship and training programs, creating youth-led initiatives and networks, and recognizing the contributions of young people in sustainable development. When young people feel supported and valued, they are more likely to become involved in sustainable development and remain committed to it in the long run.

There are several reasons why more youth mentorship and training programs are needed in sustainable development:

Bridging the knowledge gap: Young people are the future of our planet, and they have a critical role to play in achieving sustainable development goals. However, many young people may not have the knowledge, skills, or experience necessary to contribute effectively to sustainable development efforts. Mentorship and training programs can help bridge this gap by providing young people with the knowledge and skills they need to become active participants in sustainable development.

Encouraging innovation: Young people are often more willing to experiment with new ideas and approaches, which can lead to innovative solutions to sustainability challenges. Mentorship and training programs can encourage young people to think creatively and explore new approaches to sustainability, helping to drive innovation in this field.

Building capacity: Sustainable development requires the participation of a wide range of stakeholders, including young people. Mentorship and training programs can help build the capacity of young people to engage in sustainability efforts and become effective agents of change.

Creating opportunities: Mentorship and training programs can create opportunities for young people to gain experience and build networks in the field of sustainability. This can help young people to find employment or start their own businesses in the sustainability sector, contributing to the growth of the green economy.

Inadequate youth involvement in sustainable development can have significant consequences, both for young people themselves and for the future of the planet. These consequences include:

Missed opportunities

Young people bring fresh perspectives and innovative ideas to the table, and their involvement can help identify opportunities for sustainable development that might otherwise go unnoticed.

Lack of ownership

When young people are not involved in decision-making processes related to sustainable development, they may not feel a sense of ownership or responsibility for the outcomes. This can lead to a lack of commitment and engagement, and ultimately, a failure to achieve sustainable development goals.

Limited representation

Youth are disproportionately affected by environmental degradation and other sustainability challenges, but they often lack representation in decision-making processes that affect their lives. This can result in policies and programs that fail to address their needs and concerns.

Intergenerational equity

Sustainable development is about ensuring a better future for all generations, but when youth are excluded from decision-making processes, their interests and perspectives may not be adequately represented. This can lead to intergenerational inequity, where the needs and aspirations of one generation are prioritized over others.

Increased risk:

Inadequate youth involvement in sustainable development can increase the risk of unsustainable practices and policies. Without the input of young people, decision-makers may fail to consider the long-term consequences of their actions, leading to environmental degradation, social unrest, and economic instability.

In conclusion, young people represent the future of our society. As we look ahead to the challenges and opportunities of the 21st century, it is clear that the

leadership, creativity, and energy of young people will be critical to shaping the world of tomorrow.

First and foremost, young people are the driving force behind social and environmental change. From climate activism to social justice movements, young people are taking the lead in driving positive change in their communities and around the world. They bring a fresh perspective to these issues, offering innovative solutions and creative approaches that challenge the status quo and inspire others to take action.

Moreover, young people are the innovators and entrepreneurs of the future. They are the ones who will develop the technologies and solutions that will shape our world for decades to come. By harnessing the power of technology, young people are creating new businesses, products, and services that support sustainability and social justice, while driving economic growth and job creation.

In addition, young people represent the future workforce. As industries and economies undergo rapid change, young people will be the ones to adapt and thrive in new and emerging fields. By investing in their education and training, we can ensure that young

people have the skills and knowledge they need to succeed in the 21st-century economy.

Finally, young people represent the future of democracy and civic engagement. They are the ones who will vote, serve in public office, and shape the policies and institutions that govern our society. By encouraging young people to participate in civic life and giving them a voice in decision-making, we can build a more inclusive and responsive democracy that reflects the diversity and complexity of our society.

In conclusion, young people are the future of our society in so many ways. Their leadership, innovation, and energy are critical to addressing the challenges and opportunities of the 21st century, and building a more just, equitable, and sustainable world for all. As we look ahead to the future, we must recognize the immense potential of young people and invest in their growth, development, and leadership. By increasing awareness, involving young people in decision-making processes, engaging them in practical initiatives, and creating a supportive environment, we can encourage more young people to become active participants in sustainable development.



GIBB partners with YES initiative to drive employability amongst SA's youth

GIBB, one of South Africa's leading multi-disciplinary engineering consulting companies with a substantial presence across the African continent, has partnered with Government's Youth Employment Service (YES) initiative to drive future employability amongst South Africa's youth.

Introduced in 2018, the YES initiative is a government and business-driven initiative which seeks to tackle South Africa's youth unemployment crisis.

While Stats SA's latest Quarterly Labour Force Survey for Quarter 3 of 2022 indicates a decrease in the official unemployment rate, down to 32.9% from 33.9% in quarter 2, the unemployment status of South Africa's youth remains critical, with seven million people, or 56.1% of those aged 15-34, unemployed.

According to Siphamandla Mahlaba, Senior Learning and Development Consultant at GIBB, the company is committed to providing opportunities for some of the country's youth and ensuring they have a more promising future in the world of work.

"Many of the learners who are part of the initiative at GIBB don't have prior work experience," adds Mahlaba. "The programme will provide the students with an opportunity to gain valuable work experience that will make them more employable in the future, be it within GIBB if an opportunity arises or at future employers once their 12-month period with GIBB ends."

As the first year in which the company has participated in the initiative, GIBB advertised posts externally and in line with the criteria set by the Government and the needs within the business. With over 1,800 applications, selecting the right candidates for the programme was essential.

To do so, GIBB selected students based on the three criteria, namely that they are South African citizens, between the ages of 18 and 28, and held a minimum qualification of matric. Added to this, candidates had to be ambitious and hungry to learn, with those from previously disadvantaged backgrounds taking preference.

"A total of 15 students were selected for the 12-month initiative and are deployed across several business units within GIBB, including Power, Water, Architecture, Transport and others," comments Mahlaba.

Maïke Zirzow, Human Resources Business Partner at GIBB, adds that while many of these students may not have industry experience, they will also be exposed to what the company defines as good work ethics - a skill which is crucial to ensure their future workplace success.

While GIBB has a structured programme that the students follow during their tenure with the company, the YES initiative too has a detailed programme in place. The initiative provides students with tablets that are pre-loaded with a variety of online training tools to assist them in upskilling themselves and garnering soft skills such as emotional intelligence, communication, and negotiation, amongst others.

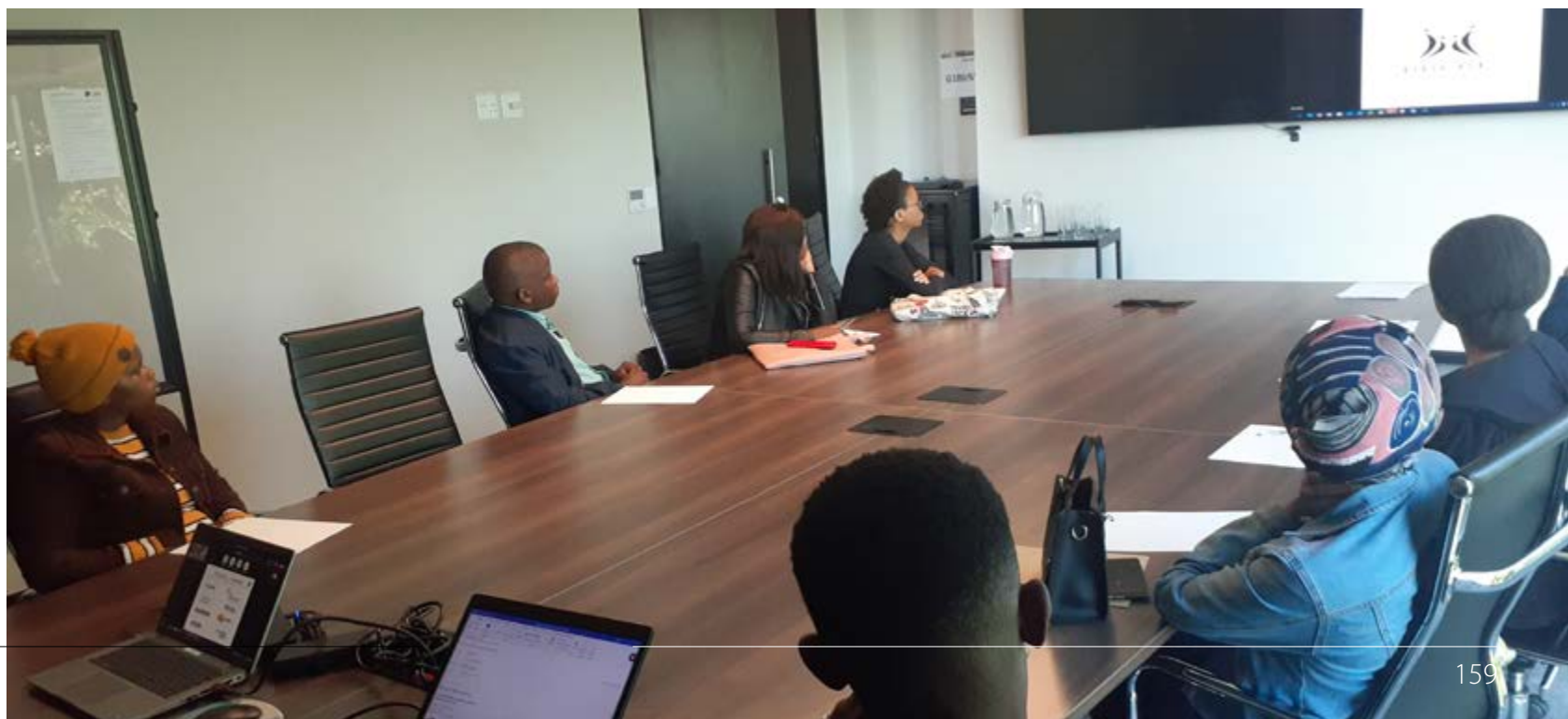
"From a GIBB perspective, our role focuses largely on how we can provide students with the necessary experience to make them as employable as possible after their time with the company," says Mahlaba. "This means that the work experience they are exposed to needs to be relevant to the courses they intend on taking in the future, allowing them to strengthen their CVs for future employment opportunities."

Mahlaba adds that the company treats the students as employees instead of merely as students, providing them with the same induction processes as they would any other employee and the necessary working tools such as a laptop and workstation.

Apart from the valuable work experience gained in their respective business units and niches over their 12-month internship with GIBB, students will also walk away with insights on how to look for job opportunities, create a CV, and how to conduct themselves in a business environment.

Speaking on the recent appointment within the marketing department at GIBB, YES student Sinqobile Chili is excited about the opportunities that lie ahead.

"Although I have only been with the company for a few weeks, the experience I am gaining at GIBB so far has already proven invaluable," says Chili. "From creating relationships amongst my peers to understanding the inner workings of the company and how the various roles lead to its success, I am excited for what lies ahead during my time with GIBB and how the teachings will allow me to thrive in the future."



Where are the green entrepreneurs in the just transition discourse?

Dr Mao Amis

There is no doubt that South Africa's economy is hanging by its tenterhooks, having been ravaged by the persistent electricity crisis, high interest rates, record unemployment, and low investor confidence. The need to create jobs and stab the potential social unrest has never been more urgent. How South Africa navigates this difficult situation will be a clear measure of the resilience of its people, having overcome worst situations in the past.

In addition to the socio-economic crisis, South Africa is also faced with the risk of climate change, which has resulted in extreme events such as floods and drought, further constraining the economy. A stark example are the floods in Kwa Zulu Natal Province in 2022, which led to the death of more than 400 people and loss of property valued at more than ZAR 17 billion. Other Provinces such as the Northern Cape and Eastern Cape have also been experiencing persistent droughts, which in some cases have lasted for several years. Towns such as Makana and the Nelson Mandela Bay Metro, have been devastated by water quality and quantity, due to the constraints in their water supply systems.

It's therefore imperative that South Africa must take pragmatic measures to build a resilient economy to withstand such climate shocks, to sustain its economic and social wellbeing. This requires that, the country must decarbonise its economy in the first instance and implement climate adaptation measures to build resilience among its vulnerable communities.

Thankfully South Africa has made significant strides in recognising the risks climate change poses to its economy, as exemplified by the signing of

the Paris Climate Agreement, and the development of policies and strategies to give effect to these global commitments. South Africa has also attracted significant investments in renewable energy, with more than R200 billion invested. However, the country requires R1.2 trillion by 2030 to effectively transition.

South Africa has also developed a just energy transition plan, has also been lauded globally as exemplary for other developing countries to follow. On the face of it, major strides have been achieved in driving South Africa's transition to a low carbon economy. However, the question that remains unanswered, is whether the just transition could enable the country to truly overcome its systemic challenges of unemployment, poverty and inequality?

It's for this reason that the 'just' element of the transition is extremely important, and needs to be guarded jealously, as there is a real risk that those who have been left behind with the current economic model, will still be the losers in a new and cleaner economic paradigm.

Most of the discourse on the just transition, does not tackle the issue of justice in any meaningful manner, as nobody seems to have the answer. This is also partly because in most cases, the voices of those who will bear the brunt of the transition are not in the room. As a result, the discourse is at a high level without concrete mechanisms of how the just transition will be implemented in practice, and how affected communities perceive the transition.

For example, if unemployment is to be truly tackled through the just transition, the role of entrepreneurs is extremely important. This is because entrepreneurs hold the highest potential to create jobs and in fact

most jobs are created by small and micro-enterprises. Big business simply doesn't have the capacity to absorb the kind of jobs losses which will result from the transition away from coal. Small business on the other hand, can absorb low skilled labour and hold the highest potential to experiment with new business models, required to build an inclusive and green economy.

So far, our experience has shown that there has been no meaningful engagement of green entrepreneurs in South Africa on the just transition. This is exemplified by the poor understanding of the concept of 'just transition' among entrepreneurs as our research at the African Centre for a Green Economy has shown. Most of the entrepreneurs linked to the coal sector, perceive the transition as a risk, partly because of lack of effective engagement on the new opportunities that may arise, through measures such as localisation through manufacturing, distribution, or new services.

The lack of engagement of entrepreneurs and small business in the discourse is also partly attributed to the highly fragmented green entrepreneurship ecosystem in South Africa. The sector is growing, but there is lack of coherence in how various actors in the innovation value chain coordinate their efforts. This disorganisation manifests itself at all levels ranging from the Research and Development (R&D), to when innovations move to the pre-seed and commercialisation stage. This forces innovators and entrepreneurs to fend for themselves, as the efforts of key enablers in the innovation ecosystem are not well coordinated.

Urgent efforts are required to coordinate the green entrepreneurship ecosystem, through enhanced capacity building of small and micro-enterprises, access to climate finance and networking. South African green entrepreneurs also need to improve their linkages to the rest of Africa, as it holds most potential to open new markets, establish collaboration and thus scale their business. To-date its mostly large corporations from South Africa that have penetrated the rest of the continent, yet Africa has become increasingly open, especially with the establishment of the Africa Continental Free Trade Area (ACFTA).

In an effort to be more solutions focused instead of being cynical, the African Centre for a Green

Economy (AfriCGE), recently launched the Pan-African Green Innovation Hub (GiH), with the aim of tackling some of the challenges outlined above. More specifically, the GiH aims to build the capacity of South African entrepreneurs and ecosystem enablers to meaningfully shape the just transition agenda, and to connect green entrepreneurs with their counterparts in the continent.

The bottom-line is that the transition to a just and inclusive economy holds significant opportunity for South Africa and rest of the continent, but the opportunities risk being squandered if all voices are not on the table. But more importantly, there is a need to focus on radical experimentation, so we can learn by doing, to avoid the risk of being caught up in a analysis-paralysis conundrum, which seems quite apparent right now.



GENDER



To be a Woman in Leadership is to be Unscripted in approach

+Thabang Mashigo



Women are a force that cannot be easily broken. In war they provide peace. In poverty they provide shelter. In anguish they provide hope. In sorrow they provide comfort. Give them knowledge and you will see the results of application. Put them on a boat without a compass and they will figure out the destination. That is the power of women defined outside the parameters of patriarchy and ideological structures.

Success for women, especially achieved against all odds, has never been the exception but rather the norm. A recent report from Afridigest, stated that 27 women from different African countries, raised over \$ 3 million each to build Africa's tech ecosystem. We have the likes of Professor Mamokgethi Phakeng, the first black woman to attain a Doctorate in mathematics and serves her advocacy without fear of prejudice. Dineo Lioma, a young scientist who founded three biotechnology companies supporting the use of artificial intelligence to optimize healthcare in Africa. South Africa's first black female winemaker, Ntsiki Biyela, produced a globally recognized wine called Aslina wines. Arlene Moulder, resigned as an investment banker to start a coding platform, to support innovative minds and make technology 'fashionable' for young women. We even underrate, women leading stokvels, those owning taxi's and taverns, domestic workers, those trading as 'hawkers'-selling atchaar, veggies and amagwinya (fat cakes); comfortably grouping them as the informal sector; yet these are the women who BIRTHED the very same doctors, nurses, academics, the presidents and all other captains of industry; whom we hail today. This is just the tip of the iceberg of who women are, who they have always been and who they can become.

Women, across many decades have exercised and defined effective leadership; through value- add. From the African Matriarchs and Queen mothers, who led their people; to those like Malala Yousafzai who fought oppressive rulers like the Taliban government; to women who are Chief Executive Officers, leading

multinational corporations listed on the JSE and are subjects of 'boardroom dancing', as famously titled by Nolitha Fakude in her book. This is it. We are it. We were made to give value and shape the inherent value of others.

Inferred from the above, I now fail to understand why some women are reportedly becoming corporate bullies and trojan's in business and in the workplace; albeit the additional challenges faced. Individuals in their competency are 'buffooned', suffering procedural injustice at the hands of their seniors; who beg for their ego's to be brushed. Mental health, strokes and other ailments are increasingly becoming a result of toxic work environments. If one is suppressed at home, then work becomes a boxing ring. Sihle Bolani, author of 'We are the ones we need', narrates this well in her account of corporate South Africa: "we are the ones that hold the key to real change, [and] meaningful transformation in the workplace. We need to stand up for ourselves, to speak up for ourselves, to speak up against unfairness and injustice, to be the voice for the voiceless.

Therefore, in the process of our achievements, who have we become? As we climb the ladder and look behind, we must take stock of the lives that we have impacted in the process. We need to advance and protect the interests of those we are fortunate to lead. But most importantly, we do not need to hurt others to win. Your success should not be build on the tears and cost of others. Tim McClure asserts that, "the biggest concern for any organization should be when their most passionate people become quiet".

Thus, we've got to pass on the baton without bitterness. Listen as we lead. Learn without intimidation. Guide without manipulation. Groom without agony. And let respect be without the conditions of titles and profiles.

It is a fallacy that our power cannot be exuded without grace, humility, and assertion. Without the fear of contradiction, I strongly believe that we are obliged to prove our individual prowess, not our femininity or masculinity. We are people before 'gender-d'. We have got to uproot the ideologies and normative ethical relativism that has governed our notion of self. Unlearning is the best method of learning.

March 2023 is the commemoration of International Women's month. It still comes with pride and prejudice, because of the economic injustices and social challenges that continue to plague the development of women in

the country, especially in the rural and townships areas. Those in high profiles, settled in business and industry; are only but a fraction of the status quo that we should be upholding. We need more because we are more. An environment that enables women to effectively engage in the labour market is essential to address these iniquities.

The African continent has demonstrated commitment to promoting gender equality and the empowerment of women. Almost all countries have ratified the Convention on the Elimination of All Forms of Discrimination against Women; and more than half have ratified the African Union's Protocol on the Rights of Women in Africa. If its easier for women to get raped daily than it is to get a job in this country, then frameworks like the above, mean absolutely nothing. Gender Based Violence, sexual harassment and the disrespect

of individual sexuality, continue to afflict even the best policies. Jeanett Modise asserts this well; "you can have the best processes, policies and plans, but without people at the centre, you have nothing".

In addition to the above, a formidable labour lawyer, Mr Bongani Ka Luthuli, once asked a precarious question to the mind and that was: "What is the measure of man(kind)? I have questioned history, I have asked the living and the dead through intellectual legacies, but no one has told me".

At the heart of nation-building and sustainability is women who are bold, deliberate, intentional and unapologetic, in their corrective approach to leadership. We need more assertion around fearless leadership. FEAR has two optional meanings, we can either Forget Everything And Run or Face Everything and Rise! The choice is yours and mine. Facing anything in life affords us

the opportunity to rise; forging a legacy and conquering the struggles, that do not need to be recurred by the next generation. Forgetting and sweeping even the most difficult experiences under the carpet, is an impediment to growth and effective transformation.

Be that as it may, also remember that you cannot heal in the same environment where you got sick. Extricate yourself from situations that suppress your value and offend your peace.

Lastly, "To be strong does not mean to sprout muscles and flex. It means meeting one's own numinosity without fleeing, actively living with the wild nature in one's own way. It means to be able to learn, to be able to stand what we know. It means to stand and live." Clarissa Pinkola Estés, Women Who Run With the Wolves.

In all that you do, never forget to LIVE.



Sub-Saharan Africa has made steady progress in addressing gender imbalance in project management

Women hold significantly fewer jobs than their male counterparts, despite global equality movements and diversity, equity, and inclusion (DE&I) programs taking hold in the workplace. According to the International Labour Organisation, the global labour force participation rate for women is just under 47%, compared with 72% for men. This gender gap in employment is even starker in project management, where male project managers outnumber female project managers by 3:1, according to recent research from Project Management Institute.

In a sector marked by a talent shortage, the statistics point to underutilisation of skills women bring to the Project Economy and the loss of diversity in a male-dominated environment. PMI's Talent Gap report predicts that the number of jobs requiring project management-oriented skills, from economic growth to retirement rates, will create a global need for 25 million new project professionals by 2030.

To better understand the current state of women in project management and where opportunities exist for female workers and organisations, PMI looked at data from over 1,900 female project professionals who responded to the PMI Annual Global Survey on Project Management in 2022.

The gender gap in project management is universal. Male project professionals outnumber females in every region worldwide, but the disparities are most significant in the Middle East and North Africa, Asia Pacific, and South Asia. Gender gaps are lowest in North America, sub-Saharan Africa, and China.

While women have advanced in the sector over the past few decades, George Asamani, MD, sub-Saharan Africa, PMI, encouraged more women to take advantage of the gains that stem from certifications. "While there is a glaring disparity which has immediate negative implications for project teams, 88% of project professionals say having diverse project teams increases value. Workplace gender equality is not just about inclusivity; it also has a compelling commercial imperative."



George Asamani,

In industries like telecom, information technology, construction, transportation/logistics, energy, aerospace, manufacturing, automotive, and consulting, male project managers outnumber females by more than 50%. Healthcare is the only industry where the gap is less than 20%.

"Women in project management must not be a numbers game. While it is important to have more female representation, we need to look at how we can build capacity and create opportunities for education and training and for women to take on leadership roles. We have a thriving volunteering community in our Chapters across 21 countries in the region that advocates for more women in project management and actively nurtures and supports the wealth of talent and enthusiasm through networking, events, town halls, and webinars," adds Asamani.

PMI's global snapshot shows that male project managers outnumber their female counterparts worldwide and in every sector, but the gaps differ significantly by region and industry. The report also found that women earn less than men and are slightly less likely to have a project management certification or degree. While there are fewer women in the project workforce, they are slightly less likely than men to have a leadership role.

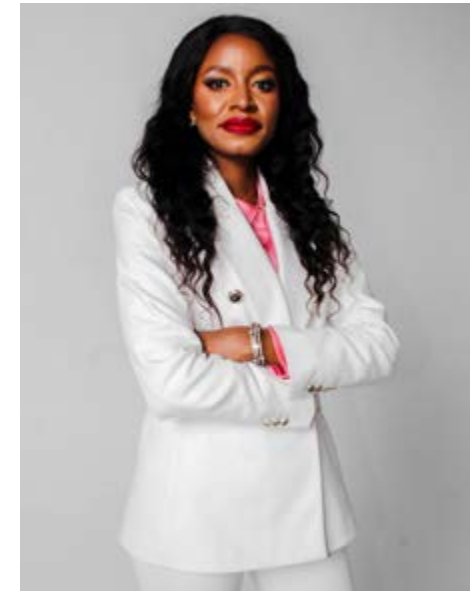
According to the United Nations, women earn about 20% less than men for work of equal value.

For female project managers, the pay gap in most countries is below the global average but significant. According to PMI's most recent salary survey, female project managers earn less than male project managers in every country surveyed.

In South Africa, the salary difference between the female and their male counterparts is 14%.

"Stimulating dialogue on female representation in the workplace, especially on occasions like International Women's Day, is crucial to driving awareness. Achieving gender balance in the sector won't happen by accident, and deliberate actions must be taken to change the status quo. The Women in Project Management report offers hard evidence of where the gaps are and should help organisations take deliberate and strategic actions to fill those," says Innocentia Mahlangu, Vice President Professional Development, PMI South Africa Chapter.

"Agenda 2063 is Africa's blueprint and master plan for transforming Africa into the global powerhouse



Innocentia Mahlangu

of the future. And achieving the goals therein rests on managing the flagship projects. Organisations need to be intentional about building inclusive workplaces. We can and must do better."

On a positive note, despite the gaps in earnings and certification, data shows the disparity in leadership roles is relatively tiny. 21% of women report some level of management role, compared to 23% of men. Leadership positions include PMO director, portfolio manager, product manager, functional manager, and development manager.

While the total number of female managers is still significantly lower than that of male managers due to the overall gender disparity in the profession, the data shows that women are being provided opportunities to advance their careers and contribute at more strategic levels within organisations. This opportunity to move into leadership is a selling point hiring managers should emphasise when seeking to recruit more women into project management roles.

"The lifeblood of decision-making is data. We hope organisations use the findings to move the needle on female representation in project management," concludes Asamani.

Peer Review

Alive2green has introduced and is committed to peer reviewing a minimum number of published chapters in all Sustainability Series handbooks. The concept of peer review is based on the objective of the publisher to provide professional, academic content. This process helps to maintain standards, improve performance, and provide credibility.

Alive2Green Peer Review Process

The review process is blind, and multiple reviews are generally sought. Authors are provided with a redacted copy of a review form (that is with the identity of the reviewer removed). Reviewers are provided anonymised submissions and complete a review report which is returned to the editor. Reviews are assigned to individuals not affiliated with the authors' organisation.

Review has both a quality assurance role and a developmental role, therefore constructive feedback and justification for outcomes is encouraged. For a chapter or article to be published in the handbook it should be clearly written, of interest to readers and be methodologically and technically sound. By submitting authors attest that they have referenced source material and have not violated copyright. For a chapter or article to be considered as a peer-reviewed item, it should also make a new contribution to knowledge. Authors and reviewers may be identified in the handbook front matter with a photo and short biography. Reviewers are required to excuse themselves from reviewing or participating in editorial decisions in any instance where conflicts of interest (including financial interests and relationships) arise or are likely to arise in the foreseeable future. Review reports are classified by the editor and stored in compliance with POPIA to protect the integrity of the review and publishing processes.

