



# IAIASa

## 2021 NATIONAL CONFERENCE

# RE-THINKING IEM IN PURSUIT OF THE SUSTAINABLE DEVELOPMENT GOALS

17 – 19 August 2021

## VIRTUAL CONFERENCE ABSTRACTS



**Jones & Wagener**  
Engineering & Environmental Consultants



**forestry, fisheries & the environment**

Department:  
Forestry, Fisheries and the Environment  
REPUBLIC OF SOUTH AFRICA



**Environmental Assessment Practitioners Association of South Africa**

*Advancing environmental assessment practice in South Africa*



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# IAIASa 2021 CONFERENCE

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17-19 AUGUST 2021

VIRTUAL, SOUTH AFRICA

The International Association for Impact Assessment South Africa  
Publication 2021



# The IAIAAsa

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The International Association for Impact Assessment (IAIA) was organized in 1980 to bring together researchers, practitioners, and users of various types of impact assessment from all parts of the world. One of the unique features of IAIA is the mix of professions represented, which provides members with outstanding opportunities for interchange: to advance the state of the art and science of impact assessment in applications ranging from local to global; to develop international and local capability to anticipate, plan and manage the consequences of development; to enhance the quality of life for all.

IAIA therefore involves people from many disciplines and professions, including corporate planners and managers, public interest advocates, government planners and administrators, private consultants and policy analysts, university and college teachers and their students. IAIA members now number more than 2,500 and represent more than 120 countries. Organizations are active in Brazil, Central and Eastern Europe, Germany, Italy, Spain, Portugal, Korea, Japan, New Zealand, Nigeria, Cameroon, Eastern Africa, Zambia, Mozambique, Ghana, Senegal, South Africa, Canada (Ontario & Quebec) and the United States with affiliate branches in 14 of these countries. The South African affiliate, IAIAAsa is an official affiliate of the international body.

The primary objective of IAIAAsa is to create a “home” for those people who wish to exchange information on, or learn more about, impact assessment. South Africa has received international acclaim for its Integrated Environmental Management procedure and for the high-quality Environmental Impact Assessments undertaken in this country.

The IAIA South African affiliate (or IAIAAsa) functions as a voluntary organisation representing the interests of environmental practitioners and allied professions. We have approximately 1000 members in South Africa and neighbouring SADC countries, organised around nine regional branches (Gauteng, Limpopo, North-West, Free State, KwaZulu-Natal, Western Cape & Eastern Cape, Mpumalanga & SADC-branch).

# Organising Committee

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The organising committee would like to thank all those who gave their time and effort in the various aspects of the conference organisation.



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Accredited Network Specialist,  
Enterprises University of Pretoria  
& Independent Research  
Scientist



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**Dr Patrick Sithole**  
EAPASA

# IAIAsa 2021/22 President's Welcome

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On behalf of the National Executive Committee (NEC) of the International Association for Impact Assessment- South Africa as President, it is my greatest pleasure and delight to welcome you all to the IAIAsa 2021 annual Conference! The conference is full of exciting and topical content. The conference theme is 'Re-thinking Integrated Environmental Management (IEM) in pursuit of Sustainable Development Goals (SDGs)'. How incredibly fitting and relevant is this theme? It encompasses the very essence of the challenges we are faced with as a country.

South Africa is blessed with many natural resources which we exploit for the economic benefit of our nation. However, at the same time, we are faced with very pressing social, environmental, and economic challenges. As aptly summarised by the United Nations, the SDGs are a 'universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity'.

Through our conference theme, we will explore how we can collectively incorporate SDGs and improve their application in Integrated Environmental Management tools and guiding policies. We will also cover other topics related to sustainable development.

All of this was put together by the incredible Conference Organising Committee that was led with passion and dedication by our Conference Chair, Jenny Mitchell. Supporting our Conference Chair was, Dr Vanessa D Weyer who was the Conference Technical Chair, who ensured we have an exciting programme of high technical excellence.

I would also like to recognise the incredible Conference Organising Committee, your dedication, consistency and team work, will make this conference a huge success.

In closing, please remember we as the NEC of IAIAsa are here to serve you.

See you all at Conference; we hope that we will collectively create magic.

In line with IAIAsa theme for 2021, SIYEZA! meaning 'We are coming' – to engage and benefit a diverse community.

All the best and enjoy conference.

**Rethabile Mbokodi**

IAIAsa President 2021/22



# Welcome from the Technical Sub-committee

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The 17 United Nations Development Programme's (UNDP) 2030 Agenda for Sustainable Development Goals (SDGs) and its 169 targets seek to stimulate action over the next 15 years in areas of critical importance for humans and the planet. The SDGs are aimed at promoting a world free of poverty, hunger, disease and want, where all life can thrive. Environmental Impact Assessment (EIA) Practitioners have a substantial role to play in ensuring that SDGs are applied via Integrated Environmental Management (IEM) in South Africa. There is however a need for EIA practitioners to evaluate how SDGs are being applied and to what extent, and to identify and remedy gaps, for example, are policy or legislative changes adequate and if not, how can improvements be made. Further, are existing SDG incorporation tools and techniques available and if not, can these be developed to aid EIA practitioners in their work

The conference has been structured around the three pillars of sustainability, which include the bio-physical, economic, and social pillars. Within these three pillars six sub-themes have been categorised, and the 17 SDGs have been grouped into their appropriate associated sub-themes.

We invite you to join us on a journey as we travel across the three-sustainability pillars and sub-themes and cover diverse topics, presented by talented professionals, focused on topics which include, climate change, carbon foot printing, biodiversity, ecosystems, offsets, restoration, hydrology, nexus approaches, renewable energy, circular-economies, The Just Transition and decarbonisation, sustainable cities, sustainable minerals, industry, tourism, wastewater, risk analysis, ecological engineering, food security, and social challenges and solutions. Also included are presentations and discussions on the inclusion and linkage of legislation and policy to SDGs in IEM, with new tools, techniques, systems, and frameworks further showcased.

The conference is unique in that it takes academic research elements and translates these into knowledge that can be applied in EIA practice to ensure that SDGs are incorporated into impact assessments and generally in future work. We have also focused on creating multi-disciplinary linkages, a move away from siloed knowledge, with the vision that problems we will face in the future can only be solved by the sharing and melding of inter-disciplinary knowledge.

**Dr Vanessa Weyer**

Technical Sub-committee Lead



# Sponsors

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## Thank you to our Sponsors

The organising committee would like to thank the following sponsors for their contributions to making the IAIA 21 Conference a great success:



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& the environment**

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**Environmental Assessment  
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# Conference Theme



Provision has been made for the United Nations Development Programme’s (UNDP) 2030 Agenda for Sustainable Development Goals (SDGs) to be applied to the South African Integrated Environmental Management (IEM) context.

The question is posed – to what extent do we need to re-think IEM in South Africa towards achieving the 17 SDGs? Are SDGs currently being included in the IEM process and to what extent? How can we continuously incorporate SDGs and improve on their application in IEM tools and guiding policies?

The conference has been structured around the three pillars of sustainability, which include the bio-physical, economic and social pillars. Within these three pillars six Sub-themes have been categorised, and the 17 SDGs have been grouped into their appropriate associated Sub-themes.

## SUB THEMES

### BIOPHYSICAL PILLAR

### ECONOMIC PILLAR

### SOCIAL PILLAR

TUESDAY – 17 AUGUST 2021

WEDNESDAY – 18 AUGUST 2021

THURSDAY – 19 AUGUST 2021

#### SUB-THEME 1

#### SUB-THEME 2

#### SUB-THEME 3

#### SUB-THEME 4

#### SUB-THEME 5

#### SUB-THEME 6

Sustainable ecosystems and resources; promotion, protection, and rehabilitation

Climate change; resilience, adaptation, and mitigation

Environmentally sustainable low carbon and circular economies

Sustainable economic development; industry, infrastructure, and cities

Sustainable social communities

Improved governance, social justice, and policies



Is life below water – rivers and ocean, and on land adequately preserved through IEM, and is clean water and sanitation assured?

Is IEM contributing to, ‘climate action’, and ‘affordable and clean energy’?

Is IEM contributing to responsible production and consumption of resources with minimal waste generation?

How will IEM promote, ‘decent work and economic growth’?

Is IEM promoting sustainable and resilient social communities?

Are existing IEM reporting, methods, tools, policies, and legislation enabling sustainable governance and promoting social justice? Does IEM take cognisance of all affected individuals?

Are we achieving the conservation of resources, the protection of biomes and endangered species and restoration/ rehabilitation of degraded land through IEM?

Does IEM facilitate resilience, adaptation, and mitigation interventions against the effects of climate change?

Is IEM promoting a just transition to renewable energy sources, considering a circular economy, resource efficiency, and impacts on the environment?

Is IEM promoting innovative sustainable ideas in industry, infrastructure and city and urban development projects?

How does IEM promote, ‘no poverty’, ‘zero hunger’, ‘good health and well-being’, and ‘quality education’?

Is capacity, implementation, compliance enforcement, monitoring and evaluation actions aiding the pursuit of SDGs?

Is IEM delivering the desired mitigation of impacts to restore the ecological integrity of natural resources and environmental assets?

Is IEM delivering a reduction in impact of climate change, risk mitigation, disaster responses and the deployment of innovative technologies to combat the effects of climate change?

How will IEM help with solving future demands for scarce minerals?

Are nature-based and ecological engineering solutions being considered?

Are environmental impacts, which ultimately impact communities significantly reduced or mitigated through IEM?

Is IEM actively promoting local and international partnerships and multi-disciplinary integration to achieve SDGs, not a silo approach?

# Opening Keynote Speaker

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## **Dr Ayodele Odusola**

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United Nations Development Programme, South Africa

Opening Keynote Speaker

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### **Title**

Sustainable Development Goals: Inequality.

### **Biography**

Dr Ayodele Odusola is the Resident Representative for the United Nations Development Programme (UNDP) in South Africa and Director of the UNDP Africa Finance Sector Hub. Prior to this, he was Chief Economist and Head of the Strategy and Analysis Team for the United Nations Development Programme's Regional Bureau for Africa (RBA), where he coordinated economic, social, and environmental dimensions of development in Africa. Dr Odusola provided intellectual leadership to SDG acceleration frameworks in sub-Saharan Africa, managing the network of Senior Economists in UNDP Africa Country Offices and providing strategic advice on policy matters to the RBA Director. Dr Odusola is a Nigerian national and holds a PhD in Economics from the University of Ibadan, Nigeria.

# Invited Sub-theme Lead Speakers

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## Mr Shonisani Munzhedzi

South African National Biodiversity Institute, CEO  
[s.munzhedzi@sanbi.org.za](mailto:s.munzhedzi@sanbi.org.za)

Biophysical Pillar, Sub-theme 1 Lead Speaker



### Title

The Environment, Biodiversity and Climate Challenges we face in 2021 as we attempt to rethink Integrated Environmental Management in Pursuit of the Sustainable Development Goals

### Biography

Mr Shonisani (Shoni) Munzhedzi is the Chief Executive Officer at the South African Biodiversity Institute (SANBI), having served as the Deputy Director General: Biodiversity and Conservation in the National Department of Forestry, Fisheries & the Environmental. Shoni also served in public service leadership positions on numerous environment and conservation portfolios in the three spheres of government (national, provincial & local). Shoni further served as a negotiator on numerous Multilateral Environmental Agreements, particularly UNCBD, UNCCD, UNFCCC and the IPBES.

### Abstract

The narrative underpinning the intention of the SDGs is to remind us that society and economies are directly dependent on a functional biophysical environment. This includes vital ecosystems and ecological support areas that provide important ecosystem services and ecological infrastructure. The 2019 report on the progress towards achieving the SDGs, indicates that weaknesses exist on environmental sustainability safeguards on areas of biodiversity, clean energy, and social inclusion. The progress towards some SDGs, like economic growth, industry and infrastructure development, sustainable cities, service delivery, can be drivers of poor environmental performance if we are not vigilant. For this reason, Integrated Environmental Management (IEM) has an important role to play in South Africa's pursuit of the SDGs, given IEM's ability to deal with the complexities of decision-making and trade-offs between social, economic, and environmental impacts and benefits. We need to be concerned about biodiversity loss as evidenced by various assessments, both locally and globally. In addition to this, crises like the Covid-19 pandemic highlight the importance of effective collaboration in complex problems in a changing environment. We need interventions that ensure sustainable ecosystems through protection mechanisms, promotion, and rehabilitation measures. Biodiversity and ecosystems have a critical role in enhancing resilience and reducing vulnerability to the impact of climate change. Consequently, we need to ask ourselves what can IEM do better and differently to have the desired social, ecological, and economic impact?

## Professor Coleen Vogel

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Global Change Institute, University of the Witwatersrand  
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Biophysical Pillar, Sub-theme 2 Lead Speaker

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### Title

Getting to the Heart of Climate Change – The Role of Science, Practice and Engagement

### Biography

Professor Coleen Vogel is a Climatologist, Adaptation and Sustainability Specialist based in the Global Change Institute at the University of the Witwatersrand. Her research interests include systemic risk reduction, climate services, drought and the 'human dimensions' specific to the urban landscape. She was one of the key contributors to the writing of the Green and White Papers on South African Disaster Management and was a major contributing author for the Disaster Management Act. She was one of the Chapter Lead Authors of the Africa Chapter for the Intergovernmental Panel on Climate Change, IPCC 4th Assessment Report and was also an author of the Synthesis Report for Policy Makers of the 4th IPCC Assessment Report. A Nobel Peace Prize was awarded to the author team, together with Al Gore, for the 4th Assessment Report. Professor Vogel has been Chair and Vice Chair of international committees such as the International Human Dimensions Programme, now known together with other international programmes as Future Earth. She has received the international Burtoni award for her work on climate change advocacy and science of climate change adaptation. Her current research interests include transformative education for global environment change and sustainability, climate change in its broader context and adaptation and disaster risk reduction focusing particularly on the interactions between physical and social dimensions shaping change.

### Abstract

The southern African region has been identified as a climate host spot. The region is not only challenged by climate change but is also faced with several complex stresses. Some of the science related to the complex challenges we face in the region will be discussed. Attention will also focus on the role that we can play in effectively responding to these challenges. In particular, the role of science, practice and citizens will be examined.

## Gaylor Montmasson-Clair

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Trade & Industrial Policy Strategies, Senior Economist

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Economic Pillar, Sub-theme 3 Lead Speaker

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### Title

Policies for a Just (Energy) Transition in South Africa

### Biography

Gaylor Montmasson-Clair is a Senior Economist at Trade & Industrial Policy Strategies (TIPS). He leads TIPS's work on Sustainable Growth. Gaylor is also a Research Associate at the University of Johannesburg's Centre for Competition, Regulation and Economic Development (CCRED). He holds two Master's degree, respectively in International Affairs from the Institut d'Etudes Politiques (Sciences Po) of Grenoble, France, and in Energy and Environment Economics from the Grenoble Faculty of Economics, France. Gaylor has been working on green economy issues for more than 12 years and has carried out extensive research on the transition to an inclusive green economy from a developing country perspective, with a focus on policy frameworks, industrial development, just transition and resource security. Prior to TIPS, Gaylor worked at the French Ministry of Economy and Finance as well as the United Nations Environment Programme (UNEP).

### Abstract

The need for a 'just transition' to an inclusive green economy, to ensure that vulnerable stakeholders are better off through the transition process, or at least not negatively impacted by it, will be introduced. The three key dimensions of a just transition (procedural, distributive, and restorative justice) will be unpacked. Highlighting that a wide range of understanding (and ambition) exists among stakeholders, the presentation will discuss the various conceptions of a just transition. Principles for an ambitious just transition will be defined in the process. Then, the policy toolbox available to foster each dimension of transitional justice will be discussed, while also unpacking key issues which must be addressed in the process of defining and implementing a just transition. Finally, this conceptual framework will be applied to the coal value chain in South Africa.

## Mandy Rambharos

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Eskom, General Manager, Just Energy Transition

Economic Pillar, Sub-theme 3 Lead Speaker

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### Title

Eskom's Just Energy Transition Strategy – Opportunities for Low Carbon, Socially Inclusive Growth & Local Industrialisation.

### Biography

Mandy is the General Manager in the Office of the Group Chief Executive of Eskom Holdings, managing the Just Energy Transition (JET) office. In this role she is overseeing the development and acceleration of the utility's JET vision and strategy. Eskom is the national electricity utility and one of the largest businesses in South Africa. Eskom currently supplies over 90% of the electricity used in the country. Mandy has over 20 years' experience in Eskom. She developed numerous climate change and sustainable development related strategies for Eskom and was instrumental in driving Eskom's efforts in this regard over the years. This together with her experience as a member of the South African delegation to the United Nations Framework Convention on Climate Change has allowed her to gain deep insights into various aspects of the sector, at the international, regional, and national levels. Mandy was also appointed to serve on the recently established Presidential Commission on Climate Change, who will drive South Africa's Just Transition plans. Mandy serves on the Boards of the NBI (South Africa's National Business Initiative) and the Global Change Institute (University of Witwatersrand, Johannesburg). Mandy represents Eskom on the World Bank's Carbon Pricing Leadership Coalition advisory committee and the Net Zero task force.

### Abstract

For many, *Change* may induce a myriad of conflicting feelings. Change can be seen as good and as bad, as progressive and regressive and even exhilarating or daunting. Another word for change that is finding itself in our daily vocabulary is *Transition*. These mixed feelings described here can be applied to the transition we face in the electricity sector as a country and as an organisation. To see the benefits of positive change we often need to be open to new information and novel experiences. It is clear that the transition to a new pathway for the country is inevitable. It is a change that will bring about sustainable electricity supply, decoupled from emissions; a healthier environment and society; opportunities for new and exciting career paths and a thriving economy. This is change, daunting at first but with the promise of an exhilarating future. Eskom has developed a comprehensive JET strategy to detail how this can be achieved, together with the requisite financing for implementation of such a plan. These plans will be shared with the conference.

## Hastings Chikoko

C40 Cities Climate Leadership Group, Managing Director of Regions & Mayoral Engagement & Regional Director for Africa

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Economic Pillar, Sub-theme 4 Lead Speaker

### Title

Sustainable Cities for People: The Case of C40 Inclusive Climate Action and Just Transition in African Cities

### Biography

Hastings Chikoko is the Managing Director of Regions and Mayoral Engagement & Regional Director for Africa at C40 Cities. He serves on the Advisory Board of the African Centre for Cities and also sits on the Advisory Group for the African Cities Research Consortium at the Global Development Institute of the University of Manchester. He is one of the Board of Directors at the World Green Building Council and sits on the Technical Advisory Group of the Global Environment Facility - GEF (Sustainable Cities and Urban Systems). He is a member of the Africa-Europe Strategic Task Force on Sustainable Energy, and the World Economic Forum's Global Future Council on Clean Air. He also serves on the Global Supervisory Council/Board of Wetlands International. With a postgraduate degree in Cities from the London School of Economics (LSE), his work with local governments started at the City of Blantyre and later at the Ministry of Local Government in Malawi. Prior to joining C40 Cities, Hastings had a long career with the International Union for Conservation of Nature (IUCN) in Zimbabwe, Kenya, South Africa and Switzerland; including being the Regional Director (a.i) for East and Southern Africa and Head of IUCN in South Africa. Besides an MSc in Cities from LSE, he also holds an MSc in Strategic Management (University of Derby, UK), a Postgraduate Diploma in Environmental Diplomacy - specializing in Green Economy (University of Geneva, Switzerland) and a BSc in Economics (University of Malawi).

### Abstract

In 2016, nations ratified a global agreement on climate change, the Paris Agreement, committing to ambitious efforts to keep global average temperature rise to well below 2 °C above pre-industrial levels, and to pursue efforts to limit temperature rise to 1.5 °C. The Paris Agreement also commits to increasing the resilience of countries to the impacts of climate change. C40's aim is that every city should have developed and begun implementing a climate action plan before the end of 2020, which will deliver action consistent with the objectives of the Paris Agreement – an integrated and inclusive plan that addresses the need to reduce greenhouse gas emissions, adapt to the impacts of climate change, and deliver wider social, environmental and economic benefits. This presentation highlights how C40 cities are ensuring that cities in Africa are developing solid climate action plans that do not leave anyone behind. The C40 Inclusive Climate Action recognises that climate change is inextricably linked to the challenge of creating a more equal world. Climate actions bring economic and environmental benefits, such as better air quality, low-cost renewable energy, and employment opportunities. It is critical that these benefits and opportunities are shared equitably, and that cities achieve a 'just' transition by, for example, ensuring that workers in the fossil fuel industry can access the new green jobs that will be created. This is even more important for a green and just recovery from the COVID 19 pandemic.

## Paul Scherzer

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E&D Consulting Services

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Social/ Economic Pillar, Sub-theme 5 Lead Speaker

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### Title

Invisible, Food In-Secure and Informal – how do we learn to ‘see’ these community I&APs and mitigate impacts in a way that contributes to the first four Sustainable Development Goals

### Biography

Paul Scherzer has worked for 23 years in the fields of rural development, agricultural food security, impact assessment, and monitoring and evaluation. He has a MA in Food, Society, and International Food Governance (specializing in Food Security, Food Systems Assessment, and Impact Assessment of Development Projects) and a BSc (Agriculture). He has worked on projects throughout South Africa and in seven other Southern and Central African countries. His experience ranges from the practical implementation of livelihood development projects, teaching nutrition and climate-smart agricultural principles out in a community plot, to monitoring and evaluating programme data and results, through to spatially assessing land-use changes, environmental and socio-economic project impacts. He was previously requested by the UN Conference on Trade and Development to peer review three papers, namely those on ‘Water Access’, ‘Enhancing Food Security and Nutrition’ and ‘Alternative Business Models’, being prepared to support and guide governments on responsible agricultural development. He operates as an independent consultant and is director of E&D Consulting Services.

### Abstract

To meaningfully contribute towards addressing the problems of ‘poverty’ and ‘zero hunger’ in our world, we may need to first focus on ourselves. As practitioners we must increase our ability to recognise and better understand how projects or our actions can affect those at the very bottom of the economic pyramid. These are not those who may receive the jobs promised during construction, nor the community representatives we engaged with at the community meeting. These are the easily overlooked food insecure households on the fringes of the community and even individuals within a single household. These are the affected parties who often have livelihood strategies which are precarious, easily disrupted and set back without anyone noticing or raising the alarm. How do our assumptions, the data we collect and present, and the mitigation measures we design, affect these livelihoods and what can we change to increase their resilience and economic well-being?

## Amanda van Reenen

---

Director: Legal Support NEMA, National Department of Forestry, Fisheries and the Environment, South Africa

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Social Pillar, Sub-theme 6 Lead Speaker

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### Title

Linking Environmental Policy and Legislation to SDGs: Progress and Challenges.

### Biography

Amanda is currently the Director: Legal Support NEMA in the National Department of Forestry, Fisheries and the Environment, South Africa. She was appointed to this position in 2011. She commenced her career in 1992 in the Department of Welfare, and then moved to the Department of Environmental Affairs and Tourism in 1997, now known as the Department of Forestry, Fisheries, and the Environment. She has worked in various positions in this Department since 1997 covering policy development, legal support, and advisory aspects. Amanda's work mostly relates to legal issues focusing on integrated environmental management, the bulk of which was EIA / IA related, but which has recently transitioned towards finding alternative responsible mechanisms to ensure environmental management, while relaxing strict command and control regimes. Her responsibilities include: (1) Drafting and legal vetting of legislation including subordinate legislation such as regulations, norms and standards and a variety of legal Notices; (2) Drafting of environmental management instruments supporting environmental management; (3) Providing legal advice and support to legal instruments both to internal and external stakeholders; and (4) Ensuring close liaison with provincial environmental departments and the Department of Mineral Resources and Energy who are implementers of national environmental legislation. Amanda has been involved in various national legal reform processes, including the development of new laws and amendments to facilitate alternative methods to impact assessment. She has been registered with EAPASA since 2021.

### Abstract

Once draft policy or legislation is published for public input it is often difficult for the average citizen to ascertain the legislature's perspective on the methods of achieving improved governance and social justice. Many of the 17 SDGs are linked to work done in the integrated environmental management field. Reducing inequality - in various forms – is part of that package deal and is identified as an important focus point in the SDGs. Lack of achieving social justice, especially in the South African context, can undo any progress made towards improved IEM governance. SDGs create an ideal opportunity to link the realities of the average citizen to the aim of proposed IEM policy and legislation. Sustainable development can only be realised if the regulated community understands how individual laws and regulations intend to achieve water security, address climate change impacts, sustainable and responsible energy development, mining, etc. The DFFE is tasked with ensuring the achievement of sustainable development against the backdrop of the Constitution, the National Development Plan and now the internationally adopted SDGs. This presentation will focus on recent policy and legislative developments to reflect how the DFFE aims to enable sustainability through improved governance measures.

# Invited Ted-Talks



**TED-Talks - By invitation:** Very engaging talks that focuses on the power of ideas to change attitudes, lives, and society.

## Dr Dee Fischer

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Department of Forestry, Fisheries & Environment  
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Biophysical Pillar, Ted-Talk

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### Title

“Hydraulic Fracturing: A Pilot for an Integrated Environmental Authorisation Process”.

### Biography

Dr Dee Fischer holds a PhD in Energy Studies from the University of Johannesburg. Dee is employed as the Chief Director Environmental Management Support at the Department of Environment, Forestry and Fisheries and is responsible for among others the coordination of legislation between the NEMA and the MPRDA. In this capacity, Dee is the chair of the Interdepartmental Committee preparing proposed NEMA “Regulations Pertaining to the Exploration and Production of Onshore oil and Gas Requiring Hydraulic Fracturing”.

### Abstract

The former Department of Mineral Resources published regulations under the Mineral and Petroleum Development Resources Act, 2002 entitled “Regulations for Petroleum Exploration and Production” in June 2015. These regulations were set aside in June 2018 by the Supreme court of Appeal on the basis that only the Minister responsible for environment was empowered to make regulations on environmental matter. As there are several Departments who must provide authorisations for hydraulic fracturing, the redrafting of these regulations under the National Environmental Management Act, 1998 (NEMA) provides a unique opportunity to pilot an integrated approach to environmental authorisation of such operations. Such an integrated process is to be achieved through the preparation of a “Minimum Information Requirements for the Submission of Applications for an Authorisation or License under NEMA or a SEMA for the Onshore Exploration and production of Shale Gas”. It is intended that this Minimum Information Requirement will contain the requirements of all government departments who are required to authorise a hydraulic fracturing activity, which will lead to one assessment report, will allow for an integrated public participation process and as far as is possible, an integrated authorisation process.

### **SUMMARY:**

This presentation discusses the possibility of an integrated environmental authorisation process for consideration of onshore oil and gas exploration and production applications requiring hydraulic fracturing, facilitated by the development of a “Minimum Information Requirements for the Submission of Applications for an Authorisation or License under NEMA or a SMEA for the Onshore Exploration and production of Shale Gas”.

## Dr Mlungele Nsikani

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South African National Biodiversity Institute

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Biophysical Pillar, Ted-Talk

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### Title

Decade on Ecosystem Restoration: What does it mean for South Africa?

### Biography

Mlungele is a Researcher at the South African National Biodiversity Institute, Research Associate at the Centre for Invasion Biology at Stellenbosch University, and is a Research Fellow at the Cape Peninsula University of Technology. Mlungele has broad interests in plant invasions and ecological restoration. His current work focusses on the detection of new invasive species, eradication of invasive species limited to small areas, risk analysis for alien and invasive species, and restoration of native ecosystems in previously invaded areas.

### Abstract

To support and scale-up global restoration efforts, the United Nations (UN) has proclaimed 2021–2030 the, “UN Decade on Ecosystem Restoration”. The Decade offers significant opportunities for and challenges to restoration. Being one of the most degraded continents in the world, Africa has a large need and potential for restoration. We thus argue that the Decade must be a success in and for Africa, and for this to happen, opportunities for and challenges to achieving its goals must be promptly identified and considered in the planning and implementation of restoration. Here, we outline six key areas that need to be given due regard by African countries during the Decade. These include: (1) leveraging the Decade to meet continental and international commitments; (2) augmenting the goals set for the Decade with specific, measurable, and time-bound objectives; (3) making restoration a priority; (4) fostering capacity building; (5) collaborating to improve restoration outcomes; and (6) promoting multiple evidence-based restoration. Although the specific actions to be taken under each key area are dependent on the restoration context, integrating these key areas in the planning and implementation of restoration efforts will likely lead to improved restoration outcomes during the Decade.

## Dr Gabi Teren

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Biophysical Pillar, Ted-Talk

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### Title

Biodiversity footprint accounting: the Biological Diversity Protocol Tool

### Biography

Dr Gabi Teren is the manager of the National Biodiversity and Business Network (NBBN) at the Endangered Wildlife Trust (EWT). The NBBN works with forward-thinking businesses to understand their dependencies and impacts on biodiversity. Through partnering with companies to mainstream biodiversity, the NBBN aims to discover opportunities that support both the bottom-line and the planet. Gabi is a terrestrial systems ecologist and holds a PhD in Biodiversity from the University of the Witwatersrand, Johannesburg. Her academic research focused on how wildlife, vegetation and people interact over long different scales.

### Abstract

There is growing recognition of the need for corporate biodiversity impact measurement and reporting aligned with the SDGs, but also much uncertainty on how to do this. There is generally low engagement with biodiversity across sectors in the Johannesburg Stock Exchange, though this is improving. We present the Biological Diversity Protocol (BD Protocol) tool which equips companies to measure their net biodiversity footprint. It is applicable to any sector and supply chain. This enables science-based reporting which can be scaled, is easy to understand and enables setting KPIs.

## Carla Hudson

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Social Pillar, Ted-Talk

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### Title

**Facilitating Sustainable Closure through a Circular Green Economy to ensure a Just Transition in the Mpumalanga Coal Fields.**

### Biography

Carla Hudson is the Programme Manager for the Mine Water Coordinating Body (MWCB) and Provincial Manager – Mpumalanga for the Impact Catalyst based in Pretoria, South Africa. She is responsible for facilitating regional sustainable mine closure for the MWCB members in the Upper Olifants Catchment in the Mpumalanga Coalfields as well as the development of socio-economic upliftment projects in support of the Just Transition. Carla has a MSc degree in Sustainable Development and Climate Change from SOAS, University of London and a BSc (Hons) degree in Geology from the University of Stellenbosch, South Africa. She is a mine closure and environmental specialist with extensive experience in Environmental Impact Assessments, Mine Closure Permitting, Water Management and Stakeholder Engagement. Before her current role she was the Regional Manager for the Northern Areas for the Wildlife & Environmental Society of South Africa (WESSA) and an Independent Consultant.

### Abstract

The Mine Water Coordinating Body (MWCB) platform was established in 2017 by five coal mining companies, Eskom, national government and various NPA's to ensure a Just Transition through the principles of a circular green economy during mine and power station closure in the Upper Olifants Basin, Mpumalanga Province. This economic system is aimed at eliminating waste and the continual use of resources that could be a risk for mining companies due the reduction in demand for raw materials but with appropriate planning it can be a positive social, economic, and environmental opportunity. Having a social license to operate is now crucial for any business to ensure smooth operation and sustainability. The MWCB joined the Impact Catalyst in January 2021 as there was a synergy in mandates. Together it has developed 12 projects that will pilot the green circular economy concept using renewable energy to power ICT systems for training and work opportunities through the treatment and fit-for-purpose use of process affected water, industrial and mine land and unused infrastructure.

## Sally-Anne Käsner

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Circular-Vision

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Economic Pillar, Ted-Talk

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### Title

Circular Economy from an African Perspective: Imagine the Opportunities

### Biography

Sally-Anne is a Director of Circular-Vision, a Circular Economy strategy and design consultancy. She is passionate about making a positive impact by identifying opportunities to shift circular economy principles into implementation. Her focus is on driving economic, social, and environmental prosperity through connecting across the value chain; collaborating on projects; creating new business models that respond to circular economy principles and leading to a thriving and inclusive economy. A background in waste minimisation and many years in the resource efficiency and cleaner production consulting environment, has provided a sound base from which to work. She was previously an Executive Associate at JG Afrika (an engineering and environmental consultancy), a founding member of EcoStandard (083-558-NPO – [www.ecostandard.co.za](http://www.ecostandard.co.za)), a founding member and Director of the African Circular Economy Network (Non-profit Company Registration number: K2020115399 – [www.acen.africa](http://www.acen.africa)), and a Non-Executive Director of Polyco ([www.polyco.co.za](http://www.polyco.co.za)).

### Abstract

Circular economy has become the latest term in the sustainability space and seems to be getting a similar amount of attention as to when the term Sustainable Development was coined. The circular economy is not a new concept though. It has been repackaged in a very clever way, a way that we can use to leverage real change, more so than terms previously used. Why is it so different? An integral part of circular economy is systems thinking. To understand something properly, the parts must be understood in relation to the whole. This is very rarely done in practice, especially as the current economy is built on a linear trajectory of extraction, manufacture, consume, dispose in simple terms. Very rarely is the whole system considered. We have come to accept the existence of waste as an inevitable consequence of our economy. The core principles of the circular economy as outlined by the Ellen Macarthur Foundation include designing out waste and pollution; keeping products and materials in use; and regenerating natural systems. What do these mean in an African context and how do we implement circularity? Can we use circularity to rebuild South Africa taking into account the diverse and many socio-economic challenges not to mention the devastating impact that Covid-19 has had on the economy and livelihoods? Understanding the intention of circularity and the principles will assist to outline the variety of opportunities and benefits of transitioning to a circular economy. It is necessary to demystify what circular economy is not.

## Kevin Tarr-Graham

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Economic Pillar, Ted-Talk

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### Title

Examining Carbon Reporting, Low Carbon Mechanisms, and the use of a Cost of Carbon in the Management Decision Processes.

### Biography

Kevin is the General Manager at NUS Consulting Group in Johannesburg, South Africa. He has worked within the global energy, carbon, and water consulting space with 21 plus years' experience in the UK, EU, US and SA/Africa. He has worked for leading consultancies in both the energy (Accenture UK) and sustainability (ERM SA) sectors. His experience spans the development and integrating of energy efficiency, water risk and carbon compliance strategies. He aligns GHG (greenhouse gas) corporate inventories including best practice approaches to offset and energy attribute certificates in achieving carbon zero/neutrality objectives. He also provides 3<sup>rd</sup> party data assurance of emissions reporting in the voluntary and mandatory carbon reporting schemes. He has worked with a number of Global 500, FTSE 350 and JSE 100 listed companies across many sectors (NGO's, ITC, Water & Waste Water Utilities, Retail, Cement, Industrial, Mining & Pharmaceutical sectors). He serves as the Chairperson of the SANAS Special Technical Committee (STC) on Energy Management (ISO50003) and Carbon Reporting (ISO14065) for SANAS (South African National Accreditation Services). He has developed training material as a technical committee member for the National Cleaner Production Centre (NCPC) for the Resource Efficiency and Cleaner Production Expert training course. He is a Lead Auditor for ISO 50001, UNIDO/NCPC Energy Expert & trainer, Lead Technical Assessor for SANAS for ISO50001, 14065, 14001; Canadian Standards Association certified ISO14064-2 & 3 trained, AEE Certified Carbon Manager.

### Abstract

Investigating the local South African regulatory and voluntary reporting programs and the influencing international reporting programs for Carbon and Renewable Energy Attributes and Procurement programs that filter down into the supply chain influencing operational activities, investments decisions and meeting the new supplier criteria in RFQ's like management and reporting of group and operations GHG emissions, a procurement strategy and target for renewable or low carbon energy (electricity, gas, steam...), a policy on the use of offsets, setting approved GHG reduction targets and a strategy for Net Zero by 2050. GHG management, can be overwhelming for small to medium-sized companies. Yet the urgency of today's climate situation and the business benefits of tracking and reporting greenhouse gas emissions are too great to ignore. This session will endeavour to navigate the attendee through the process and technicalities of GHG reporting. Competition is something you cannot avoid in business. If your competition is effectively communicating its progress toward reducing its carbon footprint, you cannot afford not to. The environment and the company's reputation will benefit from managing their carbon footprint. Sustainability is an opportunity to position a company as a leader in their specific business sector. This should also create valuable partnerships with other businesses that may become clients or vendors. Connecting with like-minded suppliers, vendors and partners can help reduce their carbon footprints because emissions from the supply chain equal +/- 5 ½ times the emissions from a company's direct operations. By creating and enacting a plan to measure and report emissions data helps you hold your business accountable. It prepares you for regulatory and mandatory carbon reporting, which may become relevant when you expand operations to a new country or if your current jurisdiction increases requirements. A variety of strategies, such as companies recycling more waste, reusing more materials, and reducing their energy consumption can be applied. In a carbon tax environment like South Africa's, these earth-friendly changes can reduce your overall tax burden. Nearly all businesses will be affected by the carbon tax, so it's important to understand your reporting requirements and prepare for that process.

## Noeleen Greyling

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Social Pillar, Ted-Talk

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### Title

What could the partnership between companies committed to socio-economic change and government mean for the communities of South Africa: A view from the Impact Catalyst

### Biography

Noeleen Greyling is a Manager in the Communication and Stakeholder Engagement team at Zutari, who is seconded to the Impact Catalyst, as the Community and Stakeholder Engagement Lead. She has extensive experience in social research, community development, stakeholder engagement, impact assessment and resettlement planning. She focusses on strategic thinking and planning, community and people, innovative thinking, complex facilitations, mentoring, effective problem solving, industry collaboration and effective communication. She has been involved in various programmes and projects across the African continent. She is passionate and committed to advancing rural and regional socio-economic development and drives collective impact by providing a platform through the Impact Catalyst where diverse partners, sharing a common interest, can collaborate and address complex social issues.

### Abstract

The Impact Catalyst has the vision to be a catalyst for socio-economic change across South Africa. Would leveraging networks and relationships build strategic partnerships and new relationships over time, in order to access strategic corporate and government stakeholders, funding and implementation capacity? The Impact Catalyst brings together people from multiple organisations that work together to implement its collaborative strategy and business plan. The Impact Catalyst business processes adopts transparency, effective communication, clear roles and responsibilities and strategic leadership. Through supporting the governmental planning process together with a collective approach, the partners can truly achieve impact. Further, by co-creating strategy between government and industry resources, knowledge, experience, and energy are aligned. The key to success is that initiatives identified will not make an impact if not strategically aligned with governmental strategy and resources. The Impact Catalyst focusses on the following areas for impact through its initiatives: (1) Economic development: Process whereby simple, low-income national economies are transformed into modern industrial economies; (2) Health: Process of enabling people to increase control over, and to improve, their health. It moves beyond a focus on individual behavior towards a wide range of social and environmental interventions; (3) Education: Process of formal, informal and non-formal education and attainments thereof has an impact on all aspects of life; (4) Social empowerment: Process of developing a sense of autonomy and self-confidence, and acting individually and collectively to change social relationships and the institutions and discourses that exclude poor people and keep them in poverty; (5) Environmental: Conserving natural resources and to develop alternate sources of power while reducing pollution and harm the environment. Building a robust biodiversity economy that contributes substantially to the financial and economic climate in SA; and (6) Service Delivery: Process whereby governance processes, skills and capacity is enhanced through support interventions to municipal and provincial governments to improve delivery performance of municipal and provincial services. It is acknowledged that there are complex linkages between these focus areas and that improvement in the lives of people will be realised through mutual support of multiple initiatives.

## Sunday Mabaso

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Social Pillar, Ted-Talk

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### Title

Legacy Mine Planning prior to EIAs and consequences thereof: Importance of SLPs

### Biography

Sunday has almost three decades experience working in the mining industry. Over twenty years were spent working in the DMRE of which for seven years Sunday served as a Regional Manager (3 years in the Northern Cape and 4 years in Gauteng). He acquired a Graduate Diploma in Engineering: Mining from the University of the Witwatersrand and has recently completed an MBA degree with Milpark Business School. Sunday is the founder and CEO of Vahlengwe Mining Advisory and Consultancy. He is a member of the Southern African Institute of Mining and Metallurgy (SAIMM) and is a registered Professional Natural Scientist with SACNASP.

### Abstract

For decades the mining industry has been the backbone of the South African economy through extraction of minerals for export and secondary industries. The mining industry has been providing inputs for other industrial sectors vital for sustaining the wellbeing of society and the economy. Notwithstanding the economic benefits, legacy mining has resulted in abandoned mine shafts and residues, that were primarily left unrehabilitated thus causing negative social and environmental impacts, through dust and pollution of water resources among others for host towns and their communities. The mining industry attracted labourers from rural areas within South Africa and neighbouring countries looking for economic opportunities, thus resulting in rapid population growth in mining cities and towns. This rapid population growth led to the creation of both formal and informal settlements near legacy mine sites that were not rehabilitated and prepared for sustainable development. Some informal settlements are living virtually on these legacy mine areas, exposing them to health and safety dangers. This phenomenon is prevalent in mining towns such as Johannesburg, Kimberly, Welkom, etc. Legacy mine areas continue to pose limitations on spatial planning and services provision by local municipalities in old mining towns. The mining sector has extracted huge profits from breaking virgin grounds while neglecting future development needs in these areas post mining. In excuse, mining companies cited the lack of environmental impact assessment requirements in past legislations. The need for environmental impact assessment were for the first time introduced into legislation in the Minerals Act, 1991 (Act No 50 of 1991) where mines were required to carry out mine environmental management for future development needs post mine closure. Subsequently, the Mineral and Petroleum Resources Development Act, 2002 (MPRDA) strengthened sustainable development as a requirement for all prospecting and mining projects to be planned and executed in a manner to ensure environmental, social, and economic benefit for both current and future generations. The MPRDA recognised the need to promote host communities and rural development through social upliftment of communities local to mining operations and reaffirmed equitable benefit to the country's mineral and petroleum resources. As a result, mining houses are required to develop Social and Labour Plans to empower host and affected communities for sustainable development resultant from the extraction of these mineral resources. Mining houses are required to conduct needs assessments in the host communities to establish local economic development projects to uplift such communities. This is done in line with global best practices and guidelines and should be incorporated in the local Municipalities' Integrated Development Plans (IDPs) in pursuit to align with sustainable development objectives.

## Dr Karen Nortje

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CSIR

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Social Pillar, Ted-Talk

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### Title

Drivers, pressures, states, and impacts - as the traffic of sustainability rhetoric grows, how do we make narrative count?

### Biography

Karen is a senior researcher at the Council for Scientific and Industrial Research (CSIR) in Pretoria, South Africa, where she works as an Environmental Anthropologist. She brings socio-economic and socio-cultural insights to the oftentimes technical challenges that her interdisciplinary team works on. She has twenty years' experience working as an Anthropologist. This has afforded her the opportunity to engage with stakeholder groups, in particular communities, relying on local knowledges to help understand and solve environmental, socio-cultural and development issues. She has conducted fieldwork throughout South Africa, as well as, amongst others, in Mozambique, India, Cost Rica, Vietnam and the USA. Karen also has experience in teaching and developing anthropology related course work. She has further published numerous peer reviewed articles, book chapters and edited books, both locally and internationally. She received her BA, BA Hons and MA with distinction in Anthropology from the University of the Witwatersrand (WITS), and her PhD in Anthropology from the University of Johannesburg (UJ). Her PhD examined the manner in which scarcity of natural resources is socially constructed to go beyond the conventional and current dominant framings of natural resource scarcity. It advocated the interrogation of the intuitive metaphors, frameworks of explanation, socio-political processes, worldviews and epistemologies within which narratives of scarcity are constructed and produced.

### Abstract

In 2015, the 2030 Agenda for Sustainable Development was adopted by member states of the United Nations (UN) at the Sustainable Development Summit. The essence of Agenda 2030 is a plan that will benefit all organisms on the planet towards a shared prosperity. The ultimate outcome of this shared prosperity is a total eradication of poverty in all its forms across the globe, in a sustainable manner. The breadth and scope of the Agenda is demonstrated by the 17 SDGs and 169 associated targets that are central to the endeavour. The SDGs are not the first of their kind. Rather, they are seen as a renewed commitment towards a sustainable development trajectory. International agendas such as the SDGs are impacting regional, national, and local visions and plans in a particular way, and they are dominating the manner in which issues related to human well-being, and the particular role of natural resources and their management in this are framed. These plans and visions have become pervasive, as the idea of an impending natural resource crisis is progressively dictating the trajectory of not only development and development projects, but also kinds of data that is collected, and the way it interpreted in realising the aims of Integrated Environmental Management. Many of the goals and priorities, require measurements and numbers for reporting. But numbers as we know only provide one side of a much deeper and more complex situation, and I believe this is exactly where social scientists have a strong role to play. We need different ways of understanding and communicating what it means to attain these targets and aims. Using two case studies in Limpopo I want to share how it is important to not get bogged down by numbers that packages narrative into neat SDG boxes to be ticked. I believe the challenge for social scientists is to not get caught up in these rationalist framings, but to rather stay true to the social scientific canon that seeks value in narrative and thick description.

# Lightning Talks



**Lightning talks:** To articulate a topic in a quick, clear, and insightful manner.

## Dr Chimwemwe Roberta Mhango

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Biophysical Pillar, Lightning Talk

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### Title

Are We Achieving the Conservation and Protection of Endangered Species and their Restoration through Integrated Environmental Management: The Case of Southern Africa.

### Biography

Chimwemwe is an Environmental Safeguards Officer Working with the African Development Bank to ensure environmental and social sustainability in bank financed projects. He has a PhD in Biodiversity Management from the University of Kent and a Masters Degree in Human Ecology from the Free University of Brussels. He has over 20 years' experience working in the environment and biodiversity conservation field as an academic, researcher and consultant. He has experience conducting EIAs, Biodiversity Assessments and Gender and Natural Resources Management Research. He has published several book chapters.

### Abstract

Integrated Environmental Management (IEM) is defined as, "the integration of Environmental and Social Impact Assessment and Development Planning to ensure sustainable development". Its objective is to provide principles and tools to achieve sustainable development through integrated development planning. Sustainable Development is the integration of social, economic, and environmental features while also addressing intergenerational equity. IEM can be applied across a range of activities including policies, plans and programs and projects. This paper examines whether policies, plans, and programmes, and projects in Southern Africa are achieving conservation of endangered species and their restoration through IEM by analysing the application of IEM in policies, plans and programmes and projects in Southern Africa. It argues that for policies, plans and programmes such as Environmental Policies and National Biodiversity Strategies and Action Plans and development projects to achieve conservation and protection of Endangered Species there needs to be an awareness and up to date country databases of these Endangered species, their distribution, and their ecology in country and internationally. The Environmental and Social Assessment Studies should be able to conduct detailed baseline biological surveys of the different taxa and link the development and project activities scale and nature with the impacts not just on their habitats, their behaviour, and ecology. The regulatory and enforcement agencies and development financial institutions must ensure due diligence that the assessment processes were rigorous and have identified these species, their habitats and their ecology and determined the direct, indirect, and cumulative impacts. This will ensure that adequate avoidance minimization, compensation and offset measures are determined and implemented so that IEM achieves protection and restoration of endangered species.

## Lynette Munro

Cape Town Environmental Education Trust (CTEET)

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Biophysical Pillar, Lightning Talk



### Title

Can EIA Processes Support Conservation?

### Biography

Lynette Munro has a background in botany and environmental management. Working at the Environmental Evaluation Unit (UCT), she explored EIA and development planning, co-management, and capacity building for sustainable development. She is now employed as a Conservation Partnership Facilitator with the Cape Town Environmental Education Trust (CTEET). Here she aims to secure resources for conservation. She works with Dalton Gibbs and Anthony Roberts, who are the visionaries behind this model.

### Abstract

Many folks have become discouraged around the possibility of EIA processes supporting “sustainable development”, let alone “conservation”. This talk outlines a model which has successfully provided “boots on the ground” for in situ conservation as triggered through NEMA and the EIA process. To frame this discussion within the SDG’s is difficult, but the most obvious would be SDG 15: Protect, restore... halt and reverse land degradation and **halt biodiversity loss**. I choose this option as it is true that the exceptionally high biodiversity value of the vegetation type in the very first project of this nature, was the initial driver. For the other two sites in this story, the high biodiversity value did secure them as sites worthy of restoration, and protection for future generations. This talk will highlight the key elements necessary for the implementation of this model. It will explain the mechanism based on three sites that have provided resources for conservation for more than 10 years. We showcase this mechanism as it is much more than SDG 15. Most importantly, it supports SDG 8: growing the green economy, which ties to SDG 1 (no poverty) and wraps in SDG 3: healthy lives. And the cherry on top: all four sites support SDG 4: inclusive and equitable quality education and lifelong learning opportunities. As you will hear, it *is* possible, in certain instances, for the EIA process to create jobs and provide an ongoing funding stream for conservation. That said, it is probably fair to conclude that this model flies or falls around SDG17: implementation through **partnerships** for sustainable development. It is our hope that this talk will inspire others to think about similar approaches to unlock resources for conservation.

## Letlhogonolo Tsoai

South African Wind Energy Association (SAWEA)

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Biophysical Pillar, Lightning Talk



### Title

An Overview of the South African Energy Sector and its Role in Climate Adaptation through Reducing Carbon Emitting Technologies

### Biography

Letlhogonolo Tsoai is a qualified Environmental Engineering Technologist (Civil). Her career spans over 8 years, where she started in the construction industry and later moved to a coal fired power station, playing a role in the management of the stations coal value chain (from mine to station). She further pursued a Postgraduate Diploma in Project Management and later a Postgraduate Diploma in Energy Leadership which has been key in cementing her commitment to the energy sector. Letlhogonolo is currently pursuing a Masters Degree in Energy Leadership at Wits Business School, and works for The South African Wind Energy Association (SAWEA). SAWEA is a leading advocacy body for the wind industry in South Africa and leads in policy advocacy and representing the wind industry in liaising with government and regulatory stakeholders.

### Abstract

The South African (SA) renewables industry has been in operation for 10 years and has experienced rapid growth since its inception. There are currently over 2000 MW being supplied to the South African Grid. With this development, there have been approximately three iterations of the Integrated Resource Plan (IRP), which is a living document developed by the Department of Mineral Resources and Energy (DMRE). This provides the energy technology plans for the country with the latest version providing projections for energy up to 2030. International drivers for energy policy are largely driven by the need for sources that are clean, affordable, and accessible. These drivers are adapted into SA's energy planning and are accounted for in the IRP. The presentation will have a future look at the renewables sector in South Africa and what that means for carbon emissions, decommissioning of coal power stations and the plans to retrofit old power stations into gas power stations. It will also look at the IRP 2019 and other emerging energy sources for greening the energy sector locally and internationally.

## Kirsten Day

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University of Cape Town  
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Economic Pillar, Lightning Talk

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### Title

From Mathematical Probability to Social Phenomenon: Re-interpreting Risk for IEM.

### Biography

Kirsten Day is a PhD candidate and part-time lecturer at the University of Cape Town, conducting research into competing constructions of risk in the context of environmental management. Her research draws on her work as an Environmental Impact Assessment Practitioner in the private sector for 15 years in South Africa and the United Kingdom. She has a Masters degree in Environmental Management and a second Masters in Environmental Law.

### Abstract

IEM and the tools covered by this term, have been built on the belief that we can rely on rational procedures and methods to anticipate outcomes of proposed projects. Arguably, this idea was plausible in the early days of impact assessment - back in the 1960s when conditions were more stable compared to the kaleidoscope world of today, in which people understandably feel as if they are living in a protracted state of crises. Notwithstanding efforts on behalf of scientists towards understanding complex systems and so-called "Anthropocene risks", a pervasive disconnect between expert assessments and lay responses persists. Impact assessors are partial to a definition for risk as a product of probability and consequence. This interpretation is linked to the obligations that the institution imposes with respect to assessing and rating impacts. However, attention to how the word risk is used in contemporary everyday speech, reminds that it cannot be precisely measured because it is always in the making: an abstract notion that only "exists" for as long as long as it has not happened. This implies, firstly, that risk is not the exclusive prerogative of experts but has morphed into a social phenomenon, available to be appropriated by anyone, according to distinct desires, intentions, and worldviews. Secondly, risk is as much a product of thoughts, intuition, and discourse, as it is of calculation. Thus, to understand the phenomenon of risk, we must recognise that probabilistic ratings and weightings, constitute one facet of risk. With this contribution I offer an alternative three-pronged explanation of risk. This multifaceted rendition highlights the link between risk and social values missing from its customary definition. The benefit of this interpretation lies in its ability to explicate how stakeholders respond to proposals when neither trust nor certainty can be taken for granted.

## Philip Dukas

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Co-authors: Professor Angus Morris-Saunders

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Social Pillar, Lightning Talk

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### Title

To what degree are South African companies adopting the SDG implementation targets, and what are some of the drivers and/or barriers they face?

### Biography

Philip Dukas is a business minded and sustainability orientated practitioner with 15 years of environmental and social sustainability related consulting experience across southern Africa. He is an enthusiastic project manager known for driving on-the-ground sustainability, whilst managing people and resources to deliver on time, within budget and to expectations. He is also the founder of a freelance environmental and social sustainability company called Adaptera Strategic Support Services which aims to create sustainable solutions across the African continent.

### Abstract

Sustainable development has been defined as, "*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*". In 2015 a suite of seventeen international Sustainable Development Goals (SDGs) were developed and agreed upon by 193 countries to form The Agenda 2030 for Sustainable Development and included 169 implementation targets and 231 indicators. The SDGs were born on the back of the eight Millennium Development Goals (MDGs) which spanned a period of fifteen years from 2000 until 2015 in which global leaders came together to shape a broad vision of fighting poverty in its many dimensions. This presentation follows a master's degree research project which was based on the perceived problem facing the successful adoption of the SDGs, in particular the implementation targets by South African companies. Private sector companies are increasingly becoming a key player in the global achievement of the SDGs and could capitalise on an estimated \$12 trillion per annum market that is linked to the SDGs. The research included an in-depth literature review conducted on the SDG implementation targets, their varying degrees of adoption and the role they play in achieving the SDGs within the private sector. This was followed by a document analysis of the JSE Top 40 company Annual Reports for 2019 and a qualitative online survey to understand the drivers and/or barriers that these organizations face with regards to adopting and reporting on the SDG implementation targets. Whilst global progress in achieving the SDGs was already lagging prior to COVID-19, the global pandemic over the course of 2020 and 2021 has unfortunately halted much of the progress to date, even calling for a post COVID-19 review of the SDGs in their current form. On a positive note, the United Nations believes there is still time to achieve the SDGs as humanity is poised on the start of a 'Decade of Action' and whilst this research primarily focused on the degree of SDG implementation target adoption, the majority of the JSE Top 40 companies have already adopted other sustainability reporting frameworks such as the Global Reporting Initiative (GRI), amongst others in which they include and report on numerous targets and indicators under the auspices of environmental and social governance.

## Hsien W. Lou

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Social Pillar, Lightning Talk

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### Title

An Assessment of Sustainability Reporting on JSE-Listed Tourism and Leisure Companies using the Global Reporting Initiative

### Biography

Hsien is an experienced ESG and Assurance Analyst (7+ years) and has conducted numerous ESG due diligences, developed and implemented Environmental and Social Management Systems (ESMS) for a broad range of private equity clients across a variety of sectors – which includes compliance with the IFC standards, ILO Conventions, WHO guidelines, the Equator Principles, UNPRI – Principles for Responsible Investment, ISO (14001, 9001 and OHSAS 18001) standards, Mining Charter and other appropriate International Best Practice standards as well as the Environmental, Social and Governance Legislation of local specific countries. She holds an Honours degree in Environmental Management and has submitted her MSc Dissertation in Environmental Management with UNISA.

### Abstract

South African companies have used the Global Reporting Initiative (GRI) as a sustainability reporting tool to assist in the transparency of their environmental, social and governance (ESG) data in their integrated reporting as they have a responsibility to the environment which their products are derived from and a social obligation to which their services are supplied and received by, furthermore they need to report these ESG attributes in an accountable and transparent manner for stakeholders to make accurate and well-informed decisions. The study assesses if the GRI is being used effectively as an adequate and progressive tool for sustainable issues within reporting and at the same time comparing ESG indicators that are applied within the Tourism and Leisure sector in South Africa over a three-year period, from 2016 to 2018. The study focuses on 11 Johannesburg Stock Exchange (JSE) listed companies within the Tourism and Leisure sector of South Africa.

## Danielle Sanderson

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Envital – Social and Environmental Consulting  
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Social Pillar, Lightning Talk

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### Title

Integrated Engagement for Improved Sustainability.

### Biography

Danielle is an independent consultant with over thirteen years' experience in environmental and social assessment and management in southern Africa. Her experience includes specialist work in social and socio-economic impact assessments, stakeholder engagement, and environmental project management. Danielle has worked in a variety of sectors including oil and gas, renewable energy, mining, industrial, infrastructure, and waste management.

### Abstract

The legislated public participation process (PPP) and specialist social impact assessment are considered two distinct processes within South African Environmental Impact Assessment (EIA). The shortfalls of the “tick-box” PPP approach and lack of alignment with local social context can result in crucial engagement aspects being overlooked, often resulting in distrust and opposition. Integrating PPP and social assessment through applying a “Social Engagement” approach could help bring social sustainability of communities to the forefront of the EIA process. Social Engagement incorporates two key goals. Firstly, to generate a clearer understanding of the local social context, and secondly to ensure inclusive engagement of stakeholders to add value to the practical and legal aspects of the EIA. There are three components of the Social Engagement Process. Firstly, to undertake Strategic Stakeholder Engagement to ensure comprehensive and co-operative consultation with key stakeholders. This should provide a robust foundation (and “social permission”) for public participation and social assessment. Secondly, to fulfil the legislated requirements for PPP. And thirdly, to undertake a Social Impact Assessment (or socio-economic) specialist study. The interconnection between these three components from the outset of planning and the EIA process is critical. This integration will identify critical stakeholders early on, ensure that stakeholders understand the project and process, and that there is close cross-reference between public engagement and social analysis. The Social Engagement approach, whether used for large complex projects or scaled down to achieve specialist efficiencies, could increase transparency, reduce distrust by stakeholders, and develop more sustainable social and environmental relationships.

## Janice Tooley

ALL RISE Attorneys for Climate and Environmental Justice

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Social Pillar, Lightning Talk



### Title

Effective and Informed Public Participation – isiZulu Guide to EIA

### Biography

Janice has been practicing as an environmental attorney since 2013 and has a unique skill set in both environmental management and law. She initially trained in zoology, botany, ecology, and environmental management, and worked as an environmental consultant, facilitator, and environmental impact assessment (EIA) practitioner for many years before pursuing a career as an environmental lawyer. She is a director and co-founder of the newly established law clinic ALL RISE Attorneys for Climate and Environmental Justice, working pro bono for communities who cannot afford legal services.

### Abstract

***IAIAsa was successful in securing an innovation grant from its international body, IAIA, to develop an EIA guide in isiZulu. This tool will be made freely available to IAIAsa members and the public. Partnering with IAIAsa for this project is ALL RISE Attorneys for Climate and Environmental Justice.***

Public participation is integral to Integrated Environmental Management and a mandatory component of the EIA process in South Africa. NEMA, its EIA Regulations and S4J Guidelines qualify that the opportunity to participate must be “reasonable”, “adequate”, “appropriate”, “equitable” and “effective”. NEMA Section 2 requires that “all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured”. BUT how can public participation be any of these things if people do not understand what an EIA is and information is not provided in their mother tongue? The isiZulu EIA guide is intended as a small contribution to addressing the all too common occurrence, that the people who are most affected, are consulted the least. A workshop was held with residents from four KZN rural communities and facilitated by ALL RISE and IAIAsa members. The purpose was to ask participants what they knew and wanted to know, about EIA. The workshop focussed on identifying, assessing and mitigating impacts in the context of the legal framework. It was run entirely in isiZulu. Participatory mapping exercises were used to maximise participation. This simple exercise showed just how big the need is for capacity building in communities. It also showed just how simply this can be achieved in order that the people who are affected by development, are equipped with the necessary skills and knowledge to be able to effectively participate in the EIA process.

# Oral Papers



**Oral paper presentations:** To deliver papers aligned with the Sub-themes in the conference programme.

## Gemma Bluff

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Co-authors: Paul Lee

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Biophysical Pillar, Oral Paper

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### Title

The Cape Flats, South Africa in Relation to Managed Aquifer Recharge.

### Biography

Gemma Bluff is an Environmentalist and Climatologist at Umvoto Africa (Pty) Ltd. Gemma holds a Master's degree in Environmental and Geographical Sciences. During her time at Umvoto, she has gained more than three years' work experience as an Environmental Control Officer on the Cape Flats Aquifer Management Scheme New Water Programme. Gemma worked on the United Nations (UN) Freshwater Chapter of the sixth edition GEO-6, which equipped her with an understanding of the UN's SDGs. Gemma is currently involved in the UN Global Compact SDG Ambition Accelerator which is a call to companies to align their strategies and operations with global standards.

### Abstract

On May 30<sup>th</sup>, 2017, a Section 30A Directive in terms of NEMA (Act 107 of 1998) was issued to the City of Cape Town (CCT) by the Department of Environmental Affairs and Development Planning. The Directive was issued in line with the declaration of the Western Cape as a Disaster Zone (Disaster Management Act No. 57 of 2002) due to prolonged drought conditions (2015/18). The Directive allowed the CCT to carry out listed activities in terms of NEMA EIA regulations (2014 as amended), without the need to apply for an Environmental Authorisation. As such, site-specific method statements were produced, allowing all aspects of the environment to be considered and protected as necessary. The Directive called for the development of a Water Supply Emergency Intervention Plan. Managed Aquifer Recharge (MAR) is the purposeful recharge of treated water into an aquifer for subsequent recovery thereof. MAR in conjunction with abstraction, as a conjunctive use tool, ensures that over-abstraction of the Cape Flats Aquifer does not occur and that pressure is taken off the CCT's dams, while clean water and sanitation are provided (Qu. 1, SDG 6). This intervention is an IEM tool that engages and effectively collaborates with various stakeholders (state departments: environmental affairs and water resources) and specialist involvement (water specialists, biodiversity, and heritage specialists). MAR as an IEM tool also achieves the conservation of Cape Town's water supply as well as restoring and rehabilitating degraded land (e.g., natural, and constructed wetlands) that further protects biomes and endangered species (Qu. 2, SDG 15). Ongoing monitoring by means of a monitoring committee liaising with the necessary specialists ensures the sustainability of abstraction and MAR. This IEM tool delivers the desired mitigation of impacts to restore the ecological integrity of the CFA (Qu. 3). Groundwater development and MAR of the CFA therefore support achieving SDG 6 and SDG 15 as an IEM tool.

## Tandi Breetzke

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Biophysical Pillar, Oral Paper

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### Title

Is it Possible to Improve the Quality of the Water in the iKongeni Estuary? That is the Question.

### Biography

Tandi Breetzke, is affectionately referred to by IAIAsa doyen, Rod Bulman, as the Queen of the Coast, is an environmental specialist. Her aim is to facilitate an understanding of the legislative requirements, interpret the scientific contribution and add a people focus to integrated coastal and estuarine management. She heads Coastwise Consulting, adopting a business model based on a collective network response to issues on the coast – from policy development to specialist impact assessments.

### Abstract

Asking if our rivers, estuaries, and oceans are clean and if our sanitation systems are working efficiently and effectively, especially in relation to the KwaZulu-Natal South Coast, is easy to answer with a resounding 'No'. Asking if IEM is responding to the challenges faced in this regard could elicit a very different response. We propose to consider the recent development and proposed implementation of the iKongeni Estuarine Management Plan, located in the once bustling holiday town of Margate, now a tired old lady in dire need of an upgrade. We will assess if this management plan, one of the IEM tools provided by the National Environmental: Integrated Coastal Management Act (Act 24 of 2008), successfully responds to many of the sustainable development goals? The plan includes a realistic vision, viable management objectives and identified actions responding to water quality concerns and coastal pollution. It also responds to other relevant key issues including climate change resilience, sustainable development and improved governance and management. But will the implementation of the plan achieve the specific objectives set? Does government have the appetite for solving the problems identified? Are local stakeholders and interest groups willing to buy-in to this process? As a policy drafter I have my fingers crossed that this is indeed the case but also acknowledge that estuarine management is a process that takes time and where all steps taken, and all victories achieved (however small) should be celebrated.

## Philippa Burmeister & Ashleigh Maritz

Co-authors: Ashleigh Maritz

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Biophysical Pillar, Dual Oral Paper



### Title

Climate Change [in] Impact Assessment, Requirements, Reduction and Risks.

### Biography

Presented by Ashleigh Maritz and Philippa Burmeister. Ashleigh is a Senior Scientist in SRK's Johannesburg office. She has a MSc (Biochemistry) from the University of Johannesburg and 13 years' experience in the mining, water, climate change, energy, and infrastructure sectors. Using her experience, she focusses on the integration of Climate Change into mine and infrastructure design to ensure that the risks of climate change are addressed at the design and planning phases. Philippa is a Principal Scientist in SRK's Durban office. She has a BSc Hons (Environmental Science) from the University of Rhodes, Grahamstown and 18 years' experience in sustainability assessment focused on air quality and more recently climate change including the use of a range of integrated environmental management tools in the industrial and mining sectors. Philippa brings a strategic perspective to the team to execute innovative solutions to challenges posed by climate change. Ashleigh and Philippa are both professionally registered Natural Scientists and Environmental Assessment Practitioners and are members of NACA and the IAIAAsa.

### Abstract

Local and international requirements for the consideration of climate change in impact assessment are explored. Through outlining best practice in Climate Change Impact Assessment, we demonstrate how Integrated Environmental Management, through impact assessment, can help facilitate reduction in GHG emissions through implementation of innovative technology and clean energy or by influencing design in the earlier phases of the project life cycle. We highlight how impact assessment can assist in identifying and addressing climate risk as well as suitable and practical management measures to ensure resilience, either through adaptation or mitigation, of projects/developments and surrounding communities. We demonstrate, through selected case studies, how Greenhouse Gas emissions have been quantified and assessed with a view to encouraging climate action and alternative approaches. We further demonstrate how climate risk is identified and assessed and then responded to in terms of disaster prevention and response, and proposed adaptation through design. We aim to illustrate the importance of assessing both the impact of the project on climate change and the impact of climate change on the project.

## Dr Oliver Cowan

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Co-authors: Dr Dominic Henry and Dr Ian Little

Endangered Wildlife Trust

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Biophysical Pillar, Oral Paper

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### Title

The Implementation of the Environmental Screening Tool Boosts Conservation of Cryptic Species of Conservation Concern: A Case Study on Golden Moles.

### Biography

Dr Oliver Cowan is conservation scientist working in the Conservation Science Unit of the Endangered Wildlife Trust (EWT). His work includes mapping the distribution of species of conservation concern and, as such, is involved in producing and refining the animal sensitivity of layer of the Environmental Screening Tool. Dr Cowan also coordinates the response of the EWT to proposed developments and has a keen interest in the EIA process.

### Abstract

Afrotheria is an ancient radiation of African mammals which includes the Chrysochloridae (Golden Moles), a highly specialized family of fossorial, range-restricted species, and the regionally endangered forest-dependent *Dendrohyrax arboreus* (Southern Tree Hyrax). South Africa is home to 17 of the 21 currently described Golden Moles, of which 16 are endemic and 10 listed as either Vulnerable, Endangered, or Critically Endangered according to the IUCN regional Red List. As such, improving the conservation of Afrotheria within the country is paramount. Until recently, the legislation tasked with ensuring responsible development in South Africa failed to adequately protect cryptic species such as Golden Moles and the Southern Tree Hyrax during the environmental impact assessment process. In this presentation, I detail how recent legislation which requires the incorporation of a web-based application, the Environmental Screening Tool, will improve the protection levels of Afrotheria species of conservation concern. We describe the process by which 11 species of conservation concern are incorporated into the screening tool, what this tells us of our current knowledge of their distribution and discuss the potential impact the EST may have on Afrotheria conservation going forward.

## Damian Hans

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Biophysical Pillar, Oral Paper

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### Title

Hermanus Conjunctive Groundwater Use Case.

### Biography

Damian Hans completed his BSc and BSc (Hons) in Environmental and Water Science in 2015 and 2016, respectively. Damian was appointed as an Intern Environmentalist in September 2018 at Umvoto Africa. In March 2019, he was offered a permanent position as a Junior Environmentalist by Umvoto Africa. Damian completed a MSc in Environmental and Water Science in August 2019 at the University of the Western Cape. His study looked at the classification of the Kars River Wetland in Struisbaai, Western Cape, where he also looked at the effect that the wetland has on river flows through modelling and developing a water balance of the study area. Since joining Umvoto Africa, Damian has been involved in a variety of different projects across the Western Cape region, including environmental monitoring programs, groundwater abstraction audits, construction of weather stations, environmental compliance audits and stakeholder engagement meetings. Damian has a passion for sustainable development and aims to improve his knowledge and skills to make valuable contributions to this sector in the future.

### Abstract

Umvoto Africa has provided the Overstrand District Municipality with groundwater consultancy services for almost two decades and supports the wellfield management since 2009. The central town of Hermanus services a growing population, currently just under 100 000, which is projected to grow by ~5% annually. Coupled with population growth and the uncertain but negative consequences of climate change on water availability, the small town of Hermanus was not excluded from the 2015/18 water crisis in the Western Cape. This presentation seeks to illustrate the water supply and demand ratios in the past, present and future, to suggest the interventions to mitigate the water shortfall and to describe groundwater abstraction and wellfield development in the context of the Sustainable Development Goals (SDGs). A brief overview of the hydro-geology explains the source and flows of groundwater, while hydro-climatology will look at past and future rain scenarios. An overview of the development of three major wellfields on the outskirts of the town illustrates how groundwater is abstracted and incorporated into the water treatment works as part of a conjunctive usage system alongside surface water. Prior to groundwater abstraction, Hermanus was reliant on surface water only, but now receives on average 30% of its potable drinking water from the aquifer reducing the dependency on the De Bos Dam. While water touches on each of the 17 SDGs, the presentation highlights its specific relationship to SDG 6 "clean water and sanitation for all" under Sub-theme 1, to illustrate that this initiative is preserving resources and life on land and in rivers through decreased, sustainable surface water and groundwater usage, conserving water resources and contributing to the conservation of life in rivers and ultimately contributing to the restoration of the wider natural environment through the decreased reliability on surface water resources in the area.

## Dr Dominic Henry

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Biophysical Pillar, Oral Paper

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### Title

Endangered Wildlife Trust Threatened Species No-go Areas Online Tool.

### Biography

Dr Dominic Henry is an ecologist at the Endangered Wildlife Trust (EWT), and his primary work is focused on generating the animal species layers that are included in the Environmental Screening Tool. As a member of EWT's Conservation Science Unit, Dominic also provides data analysis, study design and scientific support to various programmes within the organisation. Dominic is also an Honorary Research Associate at the Centre for Statistics in Ecology, Environment and Conservation at the University of Cape Town.

### Abstract

The Endangered Wildlife Trust has developed an online threatened species no-go areas tool which aims to inform prospective developers, Environmental Assessment Practitioners, competent authorities and/or the general public about areas of very high biodiversity importance based on the occurrence of threatened animals and plants. The intended purpose of the tool is to inform the placement of potentially detrimental proposed developments to encourage early-stage rejection or avoidance before EIA commencement, and in this way avoid unnecessary cost to the developer, the responding interested and affected parties (especially conservation agencies) and as a result, reduce irreversible loss/risk to the environment. In accordance with the effective implementation of the Mitigation Hierarchy, this tool will facilitate the rapid and easy identification of very high species sensitivity areas to inform avoidance. Development applications within these areas should consider them fatally flawed based on the severe environmental impact that is likely to result and the certain opposition from the conservation community. The data upon which the tool is based are derived from the Department of Forestry, Fisheries and the Environment's National Environmental Screening Tool animal and plant layers. These data are, however, filtered using several criteria and are then imported into the threatened species no-go areas tool. The aim of developing the tool and filtering the screening tool data is to present data of the most sensitive species in a more holistic and accessible manner for the rapid assessment of site sensitivity to inform the first stage of the mitigation hierarchy, avoidance. In this talk we will outline all the steps that have led to the development of the tool as well as the data underlying the proposed no-go areas. We will also provide a demonstration of the tool's functionality and how members of the environmental sector can contribute to it.

## Michael Lambrecht

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Biophysical Pillar, Oral Paper

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### Title

A Preliminary Investigation into the Accuracy and Utility of the Department of Forestry Fisheries and Environment Screening Tool, South Africa.

### Biography

Michael is doing his MPhil in Environmental Management and Sustainability at the University of Cape Town (UCT). Michael was awarded 78% for his BSc (Hons) with a focus on botany in 2019. He achieved a first-class pass for the coursework component of his MPhil, which included modules on environmental law and environmental management. Michael has a working knowledge of physical geography and botany and is a demonstrator at the Environmental & Geographical Science department at UCT. He is passionate about protecting the environment and hopes to work in the EIA field after graduation.

### Abstract

Screening is an essential stage within the EIA process. In this stage, potential environmental impacts associated with a development are considered, determining the type of environmental assessment that is required. The South African Department of Forestry, Fisheries, and the Environment (DFFE) has implemented a web-based spatial screening tool which became mandatory for use by EAPs as of October 2019. The screening tool identifies environmental sensitivities and areas of special interest, such as protected areas or development zones associated with a development footprint. Since the introduction of the screening tool, the accuracy and utility remain untested. A mixed-methods approach involving interviews and an online survey was used to collect qualitative and quantitative data respectively, on the perceptions of environmental professionals on the screening tool. Both the survey and the interviews indicate that environmental professionals believe the screening tool does not accurately assign sensitivities for the various biodiversity themes. In addition, participants of the survey believe that specialists should be required to submit their environmental information for a site to improve the accuracy of the data in the screening tool. The utility of the screening tool scored very poorly in the survey, showing that most environmental professionals do not believe the screening tool is useful. The screening tool instead increases time and costs in the EIA process. Interviewees recommended that there needs to be a clear process to undertake site sensitivity verification, that the competent authorities should be given the discretion to exclude specialist studies, and that there needs to be better alignment between the sector classifications and the NEMA Listed Activities. Additionally, better communication from DFFE on how sensitivities are assigned and the process of generating distribution maps for the various themes is required. Lastly, there is an opportunity for further research on how the process of a specialist feedback loop should be facilitated.

## Paul Lee

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Biophysical Pillar, Oral Paper

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### Title

Groundwater in Pursuit of Achieving the Sustainable Development Goals

### Biography

Paul Lee joined Umvoto in 2012 as the Senior Environmentalist and Climatologist having a BSc in Climatology and Environmental Science from the University of Cape Town. His working career reflects the dual nature of his academic studies; Paul spent 15 years working in various aspects of mining in the South African diaspora which included exploration and prospecting, environmental management of mines, and the international sales of mining material mainly in Asia where he worked and resided. He subsequently left mining to take up a position in the Antarctic, representing the 50<sup>th</sup> South African expedition (2011) to overwinter. He served this role in the twin position as Team Leader and Senior Meteorological Officer for the expedition. On his return to Cape Town, he was employed to assist Umvoto Africa in the setup of a department that subscribes to both practices of environmental and climatological work. His accomplishments within the company include overseeing the operational and environmental management of the Overstrand Groundwater Wellfield in Hermanus, which is described as the flagship of conjunctive groundwater and surface water usage in the country with exemplary environmental controls and a sophisticated high-tech approach towards wellfield control. Paul has also assisted mines in Ethiopia with the construction of meteorological recording stations in the Danakil region (adjacent to the Red Sea and 120 meters below sea level), where he was challenged by the hottest climatic conditions on earth, which contrasted with his Antarctic weather recording experiences.

### Abstract

Climate change is, impacting the hydrogeological cycle. Although the longer-term centennial predictions remain unclear, with future models suggesting both a drier or wetter Western Cape, what is clear is that mean annual rainfall has reduced over the last three decades. Also noted, is that the frequency of rainfall events has decreased (less rain days measured), resulting in more intense and episodic rain. Exacerbating the problem, the rising temperature of the Western Cape causes a consequential increase in evaporation/evapotranspiration reducing the net water storage in our dams. On the backdrop of climate change impacts the additional responsibility of the burgeoning population of the Western Cape, with an inward migration places demands on water resources. While it is exceedingly unlikely that future dam construction is feasible, the challenge is therefore that water planning, security and sustainability in the Western Cape, and South Africa as a whole, until now unduly reliant on surface water storage, needs to look for new solutions to solve the dilemma. In the face of a changing climate, our reliance on these sources of water will be insufficient to meet the SDG 6.4 – “Water Use and Scarcity”. To this extent, Umvoto Africa has been working closely with the City of Cape Town and the Overstrand Municipality to achieve sustainable usage of water resources, by combining sustainably managed groundwater resources to their water use supply systems. By incorporating groundwater into the supply, service providers can better manage their supplies of water, and essentially use groundwater as a giant underground reservoir for the storage of water through Managed Aquifer Recharge. Groundwater is also less susceptible to evapotranspiration and groundwater levels can be accurately monitored to avoid over-abstraction and allow for recharge, either naturally or through Managed Aquifer Recharge.

## Dr Steven Mathetsa

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Biophysical Pillar, Oral Paper

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### Title

Water-centric Approach in Assessing the Water-Energy-Climate Change Nexus in South Africa

### Biography

Dr Steven Mathetsa is a Senior Research Scientist at Eskom SOC's Research, Testing and Development section. In his 17 years' experience in the environmental field, he has occupied various positions within the Department of Water Affairs and Sanitation, Sappi Pulp and Paper, and Anglo America Coal South Africa. He has gained experience within both the legal and operational framework of environmental management. Although he has an understanding and experience in most environmental aspects such as waste and air quality management, his interest lies mostly in sustainable development, energy, water resource management, and climate change. Dr Mathetsa completed his PhD in Environmental Studies at the University of the Witwatersrand with his research topic included, exploring the "intertwined relationship between water, energy and climate change within the discourse of Integrated Water Resource Management in South Africa". His work was presented at virtual conferences and published in peer-reviewed papers.

### Abstract

It is increasingly acknowledged that the water-energy-climate change (WECC) nexus is one of the synergies that pose a significant risk to achievement of sustainable development goals (SDGs), specifically numbers six, seven and thirteen. There are suggestions that climate change outcomes such as increased temperature and drought episodes have implications for water availability, which in turn affects energy production in countries dependent on hydropower, pump-storage, or coal-generated electricity, including South Africa. This development therefore calls for improved understanding of how to effectively manage the challenges that arise from this nexus, to mitigate the impacts it may have on achieving the associated SDGs. This study, which is based on an in-depth appraisal of existing developments, assessed the potential of the integrated water resource management framework in understanding the WECC nexus and its implications for South Africa's sustainable development endeavours, particularly in the context of water resource management and utilisation. The study revealed South Africa's lack of integrated, effective, and efficient institutions and policy framework to comprehensively manage the challenges emanating from this nexus. It identified an urgent need to develop systems and processes through which South Africa can handle the challenges as well as capture the benefits that may be obtained from this nexus.

## Khangwelo Desmond Musetsho (PhD)

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Biophysical Pillar, Oral Paper



### Title

Valuing Ecosystem Services Associated with a Strategic Water Resource Area, a Case of the Mphaphuli Community, South Africa.

### Biography

Desmond is a member in of both IAIA and IAIAsa. For IAIAsa, he served in various positions such as in the NEC and as Branch Chairperson for the Limpopo Branch. He has just completed his PhD at the University of South Africa (UNISA). He also holds a Master of Business Leadership (MBL) from the UNISA Graduate School of Business Leadership. He is currently the Deputy Chairperson of EAPASA, where he serves in various committees, served as Chair of the Audit and Risk Committee, Chair of the Registrations Committee. He is a SACNASP Council member since 2015, where he is also a member of the Environmental Sciences Professional Advisory Committee (PAC), amongst other committees. He is also attached to the Institute of Waste Management of Southern Africa (IWMSA) Central Branch. He is currently also attached to the South African Wetlands Society as a Board Member. A former lecturer from both the University of Venda and the University of Limpopo. Director and Senior Environmental Scientist at Naledzi Environmental Consultants (Pty) Ltd, since 2003.

### Abstract

The study of ecosystem services and the valuation of their contribution to human well-being is a growing field of interest among scientists and decision-makers. There is often limited knowledge and information about the ecosystem services and valuation at the local scale, particularly in rural areas under the jurisdiction of traditional authorities. This study aimed to assess ecosystem services and economic valuation in a critical biodiversity area under the jurisdiction of the Mphaphuli Traditional Authority in South Africa. The Co\$ting Nature Policy Support System V3 was used to identify and undertake economic valuation of services provided by ecosystems. The ecosystem services valuation process was based on the default values of the valuation matrix made available in Co\$ting Nature V3 software. No external datasets were used during the model simulation stage because pre-processes and preloaded data were comprehensive and useful to achieve the study's objectives. The 2018 land-cover map for South Africa was used to summarise the aggregate economic values. The aggregate value of the services flowing from ecosystems was found to be US\$528 280 256. The resulting ecosystem services value shows the importance of maintaining a functioning ecosystem, especially in the impoverished community, which relies heavily on ecosystem services for their livelihoods. Rural communities should be appraised on the importance and value of these ecosystem services, especially as these relate to some income that these communities could derive from such ecosystems. **Keywords:** biodiversity, economic valuation, ecosystem services, LULC, rural development and livelihoods.

## Lionnel Ndeba

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Biophysical Pillar, Oral Paper

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### Title

Atlantis in relation to managed aquifer recharge.

### Biography

Lionnel holds a MSc in Environmental Management from the Cape Peninsula University of Technology. He has also successfully completed an Occupation Health and Safety (OHS) Diploma at Oxbridge Academy. He is a SACNASP registered candidate with 2 years' experience in the environmental management field. In addition to his IAIAsa membership, Lionnel is a keen member of the Green Heart Foundation, having been involved in the reforestation rally in Dakar in 2009 and assuming a managerial role as a team leader in 2018. He is currently employed as a Junior Environmental Scientist at Umvoto Africa, where he is involved in multiple field campaigns (Atlantis, Cape Flats and Steenbras) to collect, process, analyse and quality control groundwater level data.

### Abstract

South Africa is a water-stressed country with effects of climate change projected to exacerbate drought conditions such as those recently experienced between 2015/18 in the Western Cape. To build resilience against the effects of climate change, the City of Cape Town (CoCT) launched the New Water Programme (NWP), a fundamental part of the CoCT water strategy. This strategy responded to priorities set by local Government within the National Development Plan (NDP) and National Water Act which supports sustainable groundwater development. The objectives of the NWP include the refurbishment of the Atlantis Water Resource Management Scheme (AWRMS). The AWRMS is recognized as one of the first large-scale managed aquifer recharge (MAR) schemes in the world, supplying water to the town of Atlantis. It was implemented during the 1970s and has operated to varying degrees of success for almost 40 years. However, since the early 2000s it has been operated on limited capacity with surface-water becoming the main water source. AWRMS is a key example of sustainable water (SDG 6) use that closes the water system, allowing for wise water use, reuse, and recycling. Prior to NWP, the AWRMS was able to supply ~5 million litres per day to the Atlantis region. The goal of the refurbishment and expansion is to produce up to 40 million litres per day in extreme emergencies and allow water to be reticulated to the coastal village of Melkbos – effectively increasing the reach and resilience offered by the AWRMS. A key component to the refurbishment of the scheme has been to establish a robust monitoring network to ensure the long-term sustainability of the groundwater abstraction and MAR components and to offer an early warning system aimed at water resource protection (SDG 13).

## Michael Van Niekerk

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Biophysical Pillar, Oral Paper

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### Title

Real World Application of Climate Change Risk Assessments.

### Biography

Michael joined SLR Consultancy as a Senior Climate Change Specialist for the Advisory team in 2021. This team provides Advisory advice on Environmental Social Governance (ESG) and transactions. He is a climate change specialist with over 13 years consulting experience in South Africa and several other African countries, including Mozambique, Zambia, Kenya, Democratic Republic of Congo, Ethiopia, Ghana, Mali, and Uganda. To date, Michael has worked on several climate change risk assessments, climate change strategies, and Green House Gas (GHG) inventories or carbon footprints. He has experience in a wide range of sectors, including local government, mining, oil & gas, manufacturing, and industry. He has a strong working knowledge of local and international climate-related legislation, regulations, conventions, and agreements. He also has specific experience in conducting energy audits and applying resource efficient and cleaner production ("RECP") methodologies. In the last 13 years, Michael has undertaken several ESIA's, EIAs, and BAs. He also has experience in environmental auditing, solid and hazardous waste management, strategic environmental planning, and ecosystem services.

### Abstract

In recent years, there has been a significant increase in the attention given to climate change, the vulnerability of new and existing projects to the risks/impacts of climate change, and the contribution of new and existing projects to climate change. This raises the question, to what extent is Integrated Environmental Management (IEM) delivering a reduction in the impact of climate change, risk mitigation, disaster responses, and the deployment of innovative technologies? To answer this question, this paper presents examples from actual climate change risk assessments to illustrate how IEM can deliver a reduction in the impact of climate change, risk mitigation, disaster responses, and the deployment of innovative technologies. This includes examples of where climate change risk assessments were used to: (1) Apply for funding to replace existing carbon intensive technologies with less carbon intensive technologies; (2) Motivate for the selection of less carbon intensive technology over a more carbon intensive technology; and (3) Highlight the climate change risks to an existing project resulting in the consideration of additional risk mitigation measures. This paper further presents a discussion on some of the shortfalls of climate change risks assessments and how this prevents IEM from delivering a meaningful reduction. This includes for example, the lack of access to downscaled climate change information, the lack of detailed, technical project information, and where in the planning process climate change risk assessments generally fit in.

## Bryony Walmsley

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Biophysical Pillar, Oral Paper



### Title

Climate Change Assessment: Is EIA fit for purpose?

### Biography

Bryony Walmsley has 41 years' experience as an environmental assessment practitioner. She is the Director of the South African Office of the Southern African Institute for Environmental Assessment and is also a Director of IAIA international. She has worked extensively throughout sub-Saharan Africa and currently focuses on capacity building and training, independent review, due diligence and auditing and she has written several handbooks, manuals, and guidelines.

### Abstract

According to the UN, 2019 was globally the second warmest year on record and over recent years, we have witnessed an unprecedented increase in the frequency and severity of natural disasters. Yet only 85 countries have completed their national disaster risk reduction strategies, aligned to the Sendai Framework. South Africa has various approved and draft climate change-related policies and strategies in place, including its national disaster risk reduction strategy, in line with the obligations of the Paris Agreement. Achieving these national goals will contribute to achieving the targets of SDG13 on Climate Action. As in many countries in sub-Saharan Africa, the EIA legislation has not kept pace with the level of climate change policy and strategy development. While there is no mention of climate change per se in either NEMA or the EIA Regulations, it could be inferred through indirect references to e.g., 'physical environmental impacts', 'risks' and 'other relevant government guidance documents' such as the National Climate Risk and Vulnerability (CRV) Assessment Framework (2020). This creates a lack of legal certainty as to what should be included in an EIA or not, and what a climate change study should encompass. This uncertainty is exacerbated by inconsistencies in the requirements of many international financial institutions. Nevertheless, there is a growing consensus amongst practitioners that all category 'A' projects (and where relevant, category 'B' projects as well) should be subjected to a CCRA and a GHG emissions analysis. Most of the emerging methodologies are extremely cumbersome and time-consuming and therefore the question arises – is project-level EIA the most suitable tool to assess climate risks? This paper examines where SEA can play a much greater role in addressing CRV at national, regional, or municipal level, and where EIA can contribute to meeting our Paris Agreement obligations and SDG13 targets.

## Jeanne-Louise Weise

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Biophysical Pillar, Oral Paper

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### Title

Striking the Balance: The Table Mountain Group Aquifer Story

### Biography

Jeanne-Louise is a senior environmental scientist at Zutari since 2013. She specialises in environmental advisory services for mostly civil, roads and water related projects. She obtained a Bachelor of Science (Honours) in Geography from the University of Pretoria, South Africa, in 2005, after completing her Bachelor of Science in Geography and Zoology at the North-West University (NWU) in 2004. She is a member of the International Association for Impact Assessment (IAIA), South Africa and is registered as a Level A certified natural scientist with the South African Council for Natural Scientific Professions (SACNASP). She is also a registered Environmental Assessment Practitioner with the Environmental Assessment Practitioners Association of South Africa (EAPASA).

### Abstract

The City of Cape Town (CCT) initiated the Table Mountain Group (TMG) Aquifer Project in 2001. The study, which continued until 2013, focused on determining the potential yield from three main groundwater target areas, namely Theewaterskloof, Wemmershoek and Kogelberg-Steenbras. During 2013 the CCT decided to undertake an extended Exploratory Phase, thereby delaying the Pilot Phase, in the three main target areas. The conventional implementation process of the TMG Aquifer groundwater scheme was disrupted in 2017, when a severe drought occurred in the Western Cape; dam levels were dangerously low, and 'Day Zero' loomed for the CCT. A National Disaster was declared under section 41(1) of the Disaster Management Act, 2002 (Act 57 of 2002), the CCT initiated their New Water Programme (NWP) and a Section 30A Directive was issued in terms of the National Environmental Management Act (NEMA), Act 107 of 1998. This meant that a conventional Environmental Impact Assessment (EIA) process was not required for specific listed activities in terms of the NEMA before the implementation of approved water augmentation schemes, provided that the CCT comply with the conditions of the Section 30A Directive. Implementation of the first TMG Aquifer wellfield commenced in the Steenbras area, which included borehole drilling, pipelines, power supply and water treatment works. The project required a truly #allhandsondeck approach where the client, regulatory authorities, stakeholders, engineers, landowners, environmental practitioners, specialists, and contractors. All stakeholders had to work together with the aim of balancing secure water supply and resilience and environmental protection. The project provided valuable opportunities to test, model and adapt environmental protection measures and aquifer management principles, and some useful lessons were learnt, which will be shared as part of the presentation.

## Barry Wiesner

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Biophysical Pillar, Oral Paper



### Title

Size matters: CFA in Impact Assessment to Mitigate Climate Change.

### Biography

Barry is a Green Star SA Accredited Professional in South Africa with extensive site experience working as an Environmental Control Officer (ECO) at major construction sites and has experience in compiling Environmental Audits, EIAs, BARs and EMPs.

### Abstract

Carbon Footprint Assessment (CFA) is an established tool for measuring and managing Green House Gas (GHG) Emissions and thus mitigating climate change. CFA has application in manufacturing, construction, and operational phases of organisations and development. CFA is also applicable to service provision industries. Many of the development projects that are assessed by environmental assessment practitioners in Environmental Impact Assessment (EIA) involve buildings or concrete structures of some form. Buildings are responsible for approximately one third of global GHG emissions primarily through their energy requirements being largely met by the use of fossil fuels. While buildings are assessed with respect to their spatial and visual footprint, they are not specifically assessed in EIA in terms of the carbon footprint and thus the buildings contribution to climate. Including CFA as part of the EIA, will provide project specific mitigation measures that directly reduce GHG emissions and thus impacts on climate change. In the light of global climate change, CFA should be included in EIA. The question is at what stage of the EIA should a CFA be undertaken? Can it be incorporated into the EIA report?

## Jessica Badenhorst

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Economic Pillar, Oral Paper

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### Title

Mechanisms for Integrating the Water-Energy-Food-Ecosystem Nexus into Integrated Environmental Management: A Mpumalanga Case Study.

### Biography

Jessica is an environmental scientist at Jones & Wagener Engineering and Environmental Consultants where she is involved in various environmental projects including Environmental Impact Assessments (EIAs), Environmental Management Programme Reports (EMPRs), Auditing, Water Use Licensing, mine closure, wetland- and aquatic assessments, and research projects. She is also part of the Sustainable Committee at Jones & Wagener, where she contributes to sustainable development initiatives which includes sustainability reporting and carbon footprint calculations. She holds a BSc (Hons) degree in Zoology and an MSc degree in Entomology from the University of Pretoria and is a Candidate Environmental Assessment Practitioner registered with EAPASA. Jessica enjoys scuba diving, hiking, and reading.

### Abstract

The Mpumalanga Province provides the majority of South Africa's coal for energy production, where over 60% of the surface area is subject to mining rights or prospecting right applications. As productive land tends to coincide with high concentrations of coal reserves, Mpumalanga also accounts for almost half of South Africa's high potential arable land. Food security is under threat by both operative coal mining activities as well as derelict and ownerless mines, leaving soil highly disturbed. Water use for mining-, agriculture- and energy production in this province is also becoming increasingly strained. The water-energy-food-ecosystem (WEFE) nexus provides a framework through which to evaluate resource security in a holistic manner, which could aid in contributing to integrated environmental management (IEM). In this study, the interconnectedness of water, energy, food, and ecosystems, with their resultant trade-offs, is assessed for Mpumalanga to motivate for a just transition to affordable and clean energy, particularly in the case of disturbed and abandoned lands. Using the WEFE nexus framework, the potential of renewable energy is investigated with a focus on sustainable mine closure initiatives.

## Taryn Bigwood

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Economic Pillar, Oral Paper



### Title

Meeting Clean Energy Targets through Renewable Energy – Net Zero Carbon Emissions.

### Biography

Taryn is passionate about all aspects of the environment and has worked in multiple sectors from conservation to development, water, energy, and mining in an environmental capacity. In 2013 she started Environmental Management Assistance (Pty) Ltd. (EMA); a company whose goal is to assist developers become sustainable. Taryn was on the IAIAsa Mpumalanga committee for several years and on the IAIAsa NEC in 2019. She is currently in her 3<sup>rd</sup> year as an advisor on the United Nations committee for combating desertification in South Africa and is on a full-time fixed contract with Deloitte international consulting on the Southern Africa energy program, for power Africa and USAid, acting as an environmental specialist, advising the SADC region on environmental practices in the energy sector. Taryn holds a Research Masters in Geography specializing in Geomorphology (landscape change), her research project entailed looking at the Geomorphic Impact of Elephants on the Tembe Elephant Park. She also holds an Honours degree in Social Science Geography (with full academic colours and distinction), a Bachelor of Social Science degree in Environmental Management and Geography, and a Diploma in Game Ranging and Lodge Management. Taryn has a combined 17 years' experience in: conservation, scientific services in protected areas, ecological reporting, ecological monitoring, development of protected areas management plans, assisting with development of elephant management plans, environmental compliance (she was a grade 2 Environmental Management Inspector for iSimangaliso Wetland Park Authority), energy advisory in the SADC region, renewable energy (Solar (PV, CSP, Solar Home systems, mini grids, transmission lines, wind and hydroelectric power), mining, Environmental licensing, working with resettlement actions plans, working with the RAP team, developing the environmental and social sections in operation and maintenance manuals, implementation, developing environmental management systems, environmental auditing and water resource development and training water affairs officials to be EMI on key legislation and utilities on environmental management systems. In addition, she also has extensive experience in a wide range of environmentally related projects, processes, and applications for private, commercial and industrial clients, in addition to local, provincial and national government departments and has project experience funded by development banks, such as the World Bank and the African Development Bank, where she played an advisory role to help utilities implement the safeguards and banks sustainability standards and goals. She has also assisted SAEP with implementing a project relating to Wildlife and Energy in several SADC countries, which is driven by the Endangered Wildlife Trust.

### Abstract

Net – Zero Carbons is the world target in perusing the drive to achieve sustainability through related goals that increase use of renewable energy resources. Renewable Energy is seen as the solution to Climate Change, where investors, financial intermediaries, regulators, non-government organizations and corporations, have invested and sponsored trillion of Dollars in Renewable Energy across emerging markets in the last decade, and yet Africa may not be ready for the impacts and aspects of such technology. It is important to understand that although Renewable Energy brings a clean energy resource and assists with the drive towards Net-Zero Carbon emissions, the key to combating the human contribution to climate change, is not just Carbon emissions alone, clean energy also has impacts that need to be mitigated and managed. Is Africa equipped to prevent or mitigate the environmental impacts from this new technology, from small to large? With, NGO's, funders and investors all preparing Africa to be equipped for a resilient world. In this pursuit to clean energy or renewable energy the environment physically and socially is affected differently by Battery Storage, Solar energy, Wind generation, hydro power, mini grids, bio gas power, Solar Home Systems etc. As Environmental Practitioner we contribute in the adjustment towards green energy solutions by developing real solutions for avoidance, recycling, reusing and mitigation. This presentation will explore renewable energy in relations to impacts and mitigation actions prescribed and will contemplate the new green energy world. Campaigning against climate change is not just for protesters, but for all of us, and is not just for other people, it is also for each of us and therefore we all need to have a holistic view of energy and the impacts and aspects they bring holistically once this approach is adopted, we may have Renewable energy being truly green.

## Dr Glenn Dale

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Economic Pillar, Oral Paper

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### Title

A Decision Support Tool for Improved Performance of Mined-land Rehabilitation by Digital Environmental Sensing and Bayesian Modelling

### Biography

Glenn is Managing Director and Chief Technical Officer of Verterra. Glenn Holds a BSc in Forestry and Biochemistry, a PhD in Molecular & Quantitative Genetics, and an MBA. He currently holds an appointment as Adjunct Associate Professor with the University of Southern Queensland. Glenn has over 34 years' practical experience in natural resource management and ecological engineering, with broad international experience including New Zealand, China, USA, England, Spain, Portugal, Malaysia, Colombia, Brazil, Tanzania, and Rwanda. Glenn's work in breeding salt tolerant eucalypts was nominated as a finalist for the inaugural Institution of Engineers Australia National Salinity Prize in 2002 and was runner up in the 2004 Australian Museum Eureka Science Prize for Industry. Glenn has expertise in management and restoration of saline-sodic environments. He has worked across a wide variety of sectors including forestry, agriculture, water supply, municipal, natural resource management, mining, and coal seam gas, enabling him to bring an integrated, multidisciplinary perspective to new challenges in soil, water and vegetation management in land rehabilitation and beneficial use of wastewater and organics.

### Abstract

Mined-land rehabilitation is a complex process involving decisions on multiple inter-acting management interventions, site characteristics and climatic conditions. A simple, recipe-based approach to rehabilitation design may be prone to poor outcomes where individual factors are ignored, or the interaction between factors influencing performance is not considered. Bayesian modelling allows exploration of the conditional probability of an outcome given the prior probability or state of other interacting factors. Unlike many other modelling approaches, Bayesian modelling uses probabilistic, rather than deterministic expressions to characterise the strength of relationships between variables. Bayesian models can integrate a range of data types (including expert opinion) where data are limiting. Recent advances in digital environmental sensing using proximal and remote platforms have significantly expanded the capacity to collect high-resolution site data. This sensing technology enables full quantitative enumeration of site characteristics affecting the stability or erodibility of rehabilitated sites and enables improved parameterisation of Bayesian models. The use of digital environmental sensing to populate a Bayesian model-based decision support tool describing erosion performance outcomes to inform mine rehabilitation design in complex environments will be discussed.

## Nicola King

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Economic Pillar, Oral Paper

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### Title

The Environmental, Social, and Economic Impact of Water Consumption and Wastewater in the Tourism Industry in South Africa.

### Biography

Nicola King has worked as a resource economist in the environmental, developmental, and private sectors. She has managed multi-disciplinary teams on various projects ranging from infrastructure, water, mining, forestry, sustainable development, climate change, sustainable cities, and various policy issues. She also has experience as an analyst in the financial sector working on commodities and equities. Her research and projects have spanned multiple countries across Africa, Asia, Central America, and Europe. She was awarded an NIHSS-SAHUDA scholarship and a Commonwealth Scholarship Commission's split-site award to complete her PhD in economics at the University of Johannesburg and SOAS University of London, focusing on the impact of the changing role of finance on the sustainability of commodity dependent corporations in South Africa.

### Abstract

Tourism is one of the world's largest economic sectors, creating sustainable jobs, driving exports, and supporting the sustainable livelihoods of many individuals and households across the world. Tourism is a labour-intensive industry, making a significant contribution to employment sector of South Africa, with the sector directly supporting 726,500 jobs (4.5% of total employment) in 2017. While tourism is one of the main driving forces behind economic growth it can also have serious negative environmental impacts, especially with regard to water resources. The water demand of the tourism sector can have serious implication to the water consumption and availability of regions, particularly in areas where water is scarce and in areas, which experience an influx of tourists during peak season. Although the tourism sector is a highly responsive and flexible industry, adapting to demand, activities, and markets, as well as economic, social, ecological, and technological changes and challenges. Water security and restrictions, due to drought, pose a distinct challenge to the tourism sector. The tourism industry will in future, experience difficulties in efficiently managing scarcer and less reliable water resources while serving more guests - they must do more with less. The sector will need to explore innovative solutions, re-imagining the way water is used (and reused) to improve water use efficiency. The tourism industry will need to consider recent technology advances for the provision of water and sanitation that are more effective and efficient, while being simple, low-cost, and having limited energy dependence. This paper analyses the impact of the tourism industry on water consumption and wastewater generation in South Africa, identifying innovative solutions based on best-practice outcomes that will support sustainable economic growth in the sector.

## Gina Martin

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Economic Pillar, Oral Paper



### Title

From Cradle to Grave – the EAP’s Role in Mine Planning and Closure.

### Biography

Gina Martin has a BSc (Honours) in Geography (with an Environmental Management focus) from the University of the Witwatersrand. She has been working at Jones & Wagener (Pty) Ltd Engineering & Environmental Consultants since 2012, where she is an Environmental Scientist in the Environmental Management Division. She has experience in various sectors of Environmental Management and currently specialises in managing and conducting Basic Assessments (BAs), Environmental Impact Assessments (EIAs) and Environmental Management Programmes (EMPrs), Integrated Water Use Licence Applications (IWULAs), General Authorisation (GA) Applications, Site Selections, Environmental Control Officer (ECO) work, Waste Management Licence Applications (WMLA) and Environmental Audits for companies in the mining, construction, chemical, power generation and waste management industries. Gina is a registered Environmental Assessment Practitioner (EAP) through EAPASA and is also an EAPASA Assessor.

### Abstract

Budgetary constraints on ESIA processes, short project timeframes and poor planning can result in higher long-term costs of mining and mine closure. For mine planning to be effective, mining engineers should not be the only role players taking responsibility for this phase. Mines should also proactively prepare for closure from inception, to avoid underbudgeting and mitigate persistent future liabilities related to the eventual closure. This presentation provides insights based on lessons learnt from two separate mining projects currently underway in South Africa. The first project is in the planning phase and the second in the closure phase. Arguments will be made for involving the EAP at the onset of mine planning to facilitate early risk identification relating to site location, attributes, and ecological sensitivity; proposed mine layouts and infrastructure designs; authorisation potential of ESIA applications; as well as future closure requirements for the mine. Methods such as closure provision reporting, and predictive closure stability models will be discussed as tools to be used for sustainable mine rehabilitation and closure planning. Involving the EAP as an integration specialist in the project planning phase allows for legislative requirements, specialist inputs and engineering designs to be comprehensively considered ahead of time and fosters collaboration between role players. Integrated project planning from the onset contributes to mitigating social, environmental, and economic risks which may not be evident in a standard impact assessment process.

## Nolubabalo Ntunzi

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Economic Pillar, Oral Paper



### Title

Disposal of Sewage Sludge from Wastewater Treatment Works within the Buffalo City Metropolitan Municipality.

### Biography

Ntunzi is an EAPASA registered Environmental Assessment Practitioner at AGES Omega (Pty) Ltd. She is also registered as an Environmental Scientist with SACNASP. Ntunzi holds a MSc (Zoology) from UFH and a Master of Environmental Management Degree from UFS.

### Abstract

Increase in sewage sludge production because of urbanisation and industrialisation has resulted in challenges in sludge disposal. Sludge disposal methods such as disposal to landfill, land application, incineration and disposal into the marine environment are commonly used. The aim of the study was to address sewage sludge disposal options for wastewater treatment works with the Buffalo City Metropolitan Municipality and recommend disposal methods that the municipality could use. Existing sludge data for six wastewater treatment works from the Buffalo City Metropolitan Municipality was used for sludge classification. The data included concentration for heavy metals such as arsenic, chromium, copper, lead, mercury, nickel, and zinc. Total solids, volatile solids and volatile fatty acids and pH were also included. Only nitrogen content was available for nutrient data. Faecal coliforms and helminth ova data were used to measure the microbial content of the sludge. The South African Wastewater Sludge Classification System was used to classify the sludge according to microbial, pollutant and stability classes. The results of the classification implied that the sludge from all the treatment works must be disposed in a specifically engineered site with strict monitoring conditions or a hazardous landfill site. Furthermore, the agricultural use of the sludge is considered unfeasible due to the presence of pollutants in the sludge. It is recommended that methods of removal of heavy metals from sewage sludge be considered by the municipality. It is further recommended that the current disposal methods be evaluated as they could be unsuitable for the type of sludge produced. Key words: sewage sludge, sludge classification, sludge disposal, wastewater treatment works, pollutants, landfill.

## Mike O’Kane

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Economic Pillar, Oral Paper

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### Title

Mine Affected Lands Climate Adaptation and Returning Land Use.

### Biography

Mike O’Kane founded Okane Consultants (Okane) in 1996, a company providing integrated mine planning and closure outcomes to the mining industry internationally. Mike continues to work with Okane as a senior technical advisor, using his wide-ranging technical expertise and knowledge on risk management best practices as tools for development and communication of project objectives and designs. He utilizes a life of asset value framework that incorporates evaluation for optimizing the “best” next land use with an acceptable level of residual risk while maximizing incremental net present value and achieving progressive ESG outcomes. Mike provides independent peer review to mine operators and owners, as well as State, Territorial, Provincial, and Federal government agencies, and is a member of several closure planning and/or technical advisory panels. Mike is the lead author on numerous documents pertaining to cover system and landform design, implementation, and performance monitoring. Mike provides landform and cover system design workshops / short courses at leading mine waste management conferences around the world. Mike is a subject matter expert on the application of unsaturated zone hydrology and geochemistry for mine waste management. Mike is a director of the Landform Design Institute and chair of its Technical Advisory Panel. In 2014 Mike received the University of Saskatchewan Alumni Achievement Award in 2014 for “Global Development of his Business and Corporation, and Philanthropy”.

### Abstract

The clean energy transition comes with an increased demand in minerals and metals. Sustainable extraction of minerals and metals includes the recognition of mining as a temporary land use, which requires both new and operational mines to consider the mine affected lands returning land use from day one. A returning land use vision articulates what a mine wants to achieve post-closure and the legacy it wishes to leave behind. Mining operations commonly agree to a post-closure returning land use that provides similar ecological function to that prior to disturbance. However, closure timeframes can be more than 100 years, so any returning land use plan is subject to both changes in climate and socioeconomic demands. When considering socioeconomic demands, supporting infrastructure and land value there is an opportunity to consider future land use options beyond ecological functionality. Mine affected lands may present opportune locations for renewable energy projects like solar arrays, wind turbines, or pumped storage hydropower. A robust closure plan has the resiliency and capacity for adaptation over the long-term timeframe and creates the potential to realize value in the future land use. Development of a robust closure plan requires a conceptual risk management framework that communicates both the complexities of the detailed closure design, and the future potential of the land. Risk can be most appropriately defined as the probability and consequence of a scenario. By combining the likelihood occurrence for various climate outcomes with the magnitude of potential consequences for the land, risk-based design criteria can be developed. Through identification of key risk mechanisms, and the development of monitoring plans associated with them, an integrated mine closure plan can be developed that is truly adaptive and that preserves returning land use value and potential.

## Celia Pretorius

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Economic Pillar, Oral Paper

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### Title

Measuring Management Perceptions of Responsible Tourism Development as an IEM approach in SANParks in support of the SDG's: Learning from Kruger National Park.

### Biography

Cecilia recently obtained her MSc in Environmental Management at UNISA, with her dissertation titled: "Measuring Stakeholder Perceptions of Responsible Tourism Development in SANParks: Learning from the Kruger National Park". She is currently working at the Sustainability and Climate Change division within Pricewaterhouse Coopers (since June 2019), where she mainly works on projects involving mine closure reviews and assurance of sustainability indicators (such as health, safety, and environmental indicators). She has a total of 3 years' experience in the Environmental Management field.

### Abstract

Responsible Tourism (RT) implies that all parties involved in the tourism sector are responsible for making sure that all activities taking place are of a sustainable nature, and that consideration is given to environmental conservation, economic growth, and social integrity. IEM instruments such as "EIA and sustainable tourism initiatives aspire to contribute to sustainable development" by "creating a better life for all people" through achieving the goals of sustainable development. The Kruger National Park (KNP) and the South African National Parks (SANParks) are key role-players in the tourism and conservation sectors in South Africa and have acknowledged and started to implement Responsible Tourism practices into their strategic model. As stakeholders play a key role in RT, this study aimed to determine management perceptions of RT development in the KNP, to assist SANParks achieve their RT goals and as an Integrated Environmental Management (IEM) approach to aid in achieving the SDG's. A qualitative methodological approach was applied for achieving the objective through semi-structured interviews with seven KNP managers to measure perceptions against SANS 1162:2011 criteria. The interviews with employees revealed that there are some RT aspects that are considered to a greater extent than others. It was also found that, despite generally good performance regarding RT aspects, employees find that there are two major stumbling blocks that are hindering SANParks from implementing RT practices in the parks. For SANParks to reach their RT goals, they can consider addressing these gaps, as the core of RT is that of behaviour and actions taken. Emphasis must be on how all those involved in the KNP and SANParks can alter their behaviour to "make better places for people to live in, and better places for people to visit".

## Ivan Reutener

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Economic Pillar, Oral Paper



### Title

Integrated Mobility and Policy for a Highly Effective City

### Biography

Traffic and transport pressures are problematic for three main reasons: they stifle economic growth, contribute to higher carbon emissions, and inconvenience millions of people. Together with public and private clients, Ivan helps to relieve these pressures in our ever-expanding cities, through sustainable development and innovation. In Ivan's preceding position as Director in South Africa & Botswana at Royal HaskoningDHV, he led teams of smart people to design robust and integrated transport networks and mobility nodes to improve urban movement. Ivan approaches every project with dynamic thinking, sustained focus, and financial and business acumen. This has allowed Ivan to thrive in his current role as a Leading Professional with Foresight & Innovation focus. Ivan has completed successful projects in South Africa, Botswana, Australia, and the USA; has published in various technical magazines, including SAICE, Engineering News, and Thinking Highways; and is registered with the Engineering Council of South Africa (ECSA) and the South African Institution of Civil Engineering (SAICE). Ivan enjoys mountain biking and diving. He is voted father of the year, every year, by my two kids, Miamae and Jayden.

### Abstract

A hometown study on, "Leveraging Urban Mobility Disruptions to Create Better Cities" is based on a recently completed course at MIT, which indicates that a 40% reduction in greenhouse gases is achievable through shared mobility principles, integrating transport modes for different parts of the journey, and introducing appropriate modes of choice depending on the distance travelled. Globally, transport accounts for around a quarter of global CO<sub>2</sub> emissions. Shifting transport to more sustainable and suitable modes for the specific trip required (e.g., walking or cycling when travelling less than 500m or catching a bus for a 10km trip) and number of people, is vitally important. Key elements of the study, research and anticipated ITS Strategy aspects will be discussed in detail, but can be briefly listed as: (1) The Future of Mobility: The future of mobility can be grouped into three 4IR disruption categories, namely electrification, automation, and connectivity; (2) Transit: Mass public transit must form the backbone of an integrated public transport system, which should also include shared and on-demand modes; (3) Micro-mobility: Transit as a main line is not flexible and must be supplemented by various feeder services. Micro-mobility is ideal with its flexibility as a first- or last-mile service to and from the mobility hub; (4) Electric Vehicles (EVs) and Vehicle Sharing: EVs are the future of transport, but market forces alone will not support substantial uptake of EVs because of affordability concerns. One of the key factors are EV import and battery costs; (4) Policy aspects: EVs can contribute to various Policy ambitions such as environmental and climate change, transport, public health, South Africa's economy, and energy; (5) Smart Electricity Grid options: The biggest contributor, and game changer, will be our National Government, as they must enable regulation for smart grids, including incentives schemes.

## Yolandi Schoeman

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Economic Pillar, Oral Paper



### Title

A Zero-Waste Multi-Criteria Decision-support Model for the Iron and Steel Industry in Developing Countries: A Case Study.

### Biography

Yolandi Schoeman is a globally recognized Ecological Engineer and Sustainability Specialist. She has innovated and contributed to world-class products and services in ecological engineering, the circular economy and sustainability, specifically in the USA, Europe, Russia, Australia, and Africa. Her track record includes developing global innovations, delivering sustainability service excellence, and building networks that continue to play a critical role in advancing planetary health. She also specializes in water-energy-food nexus accounting and deciphering coupled human and natural systems.

### Abstract

The iron and steel industry is a major global industry that consumes vast quantities of energy and causes environmental degradation through greenhouse gas emissions and industrial waste generation, treatment, and disposal. There is a need to manage complex iron and steel industrial waste in Africa, which requires a system engineering approach to zero waste management as informed by multi-criteria decision-making. The purpose of the current study was to develop a hybrid four-step multi-criteria decision-support model, the i-ZEWATA (Industrial Zero Waste Tiered Analysis). I-ZEWATA acts as a road map to understand, design, assess, and evaluate the iron and steel industrial waste systems with the ultimate objective of moving towards and achieving a zero-waste footprint. The results demonstrate that iron and steel waste can be identified, visualized, prioritized, and managed to promote zero waste by applying a system-engineered approach. Additionally, relationship patterns to environmental, social, operational, and economic aspects with system behavioural patterns and outcomes were identified. It was clear from the case study in South Africa that, although technology and solution investment is essential, waste management, valorization, and treatment components require a concerted effort to improve industrial waste operational management through effective zero-waste decision-support towards a circular economy.

## Kathy Taggart

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Economic Pillar, Oral Paper

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### Title

Pro-active Legal Application for an Emergency Mine Subsidence Situation.

### Biography

Kathy holds a MSc degree in Resource Conservation Biology from the University of the Witwatersrand. She is a wetland ecologist and environmental scientist working at Jones & Wagener Engineering and Environmental Consultants. Kathy has been practising in her field for over 20 years. She is a SACNASP registered ecologist and environmental scientist and is also on the board of trustees of the South African Wetland Society.

### Abstract

An emergency situation, as defined under Government Notice (GN) 509 of 2016, means any emergency that developed that requires immediate intervention for continuation of existing essential service delivery. Jones & Wagener Engineering and Environmental Consultants was recently involved with a project where a high risk of drowning was identified in areas of subsidence. The subsided areas were due to the failure of the underground mine workings and the subsequent subsidence of the surface profile overlying the undermined area. The emergency situation was identified as a drowning event in a flooded area of subsidence. The timing of this emergency situation is of such a nature that it is unknown and could occur at any time during the rainy season, and therefore required immediate intervention to prevent it from occurring. The risk assessment undertaken to identify areas with a high health and safety risk in terms of drowning, and the proactive application submitted to the Department of Water and Sanitation (DWS), to undertake the remediation works, will be shared.

## Lara Tenderini

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Economic Pillar, Oral Paper

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### Title

The Value of an Experienced Environmental Control Officer and Early Communication in Ensuring the Implementation of EIA Mitigation Measures in a Mining Case Study.

### Biography

As an Environmental Consultant with a passion for sustainable development and policy, Lara chooses to make her contribution to a healthier environment every day. After completing her MSc in the Netherlands, learning about enviro-social policy frameworks through a European and multi-governance perspective, she finds herself as an Environmental Scientist working in the energy, waste, mining and civil engineering industries in the South African context. She is also a registered candidate EAP with EAPASA.

### Abstract

Jones & Wagener Engineering and Environmental Consultants (J&W) was appointed to undertake independent environmental audits for a particular project. Monthly audits of the site were undertaken by an experienced Environmental Control Officer (ECO) to ensure compliance with various Environmental Authorisations (EAs), from the pre-construction phase through to post-rehabilitation. According to the National Environmental Management Act (NEMA), the applicant (the Client) would be held liable for any environmental transgressions that may arise, therefore identifying and addressing any non-conformances throughout the process was given high priority by the applicant. Using this project as a case study, the methodology and a summary of the results of the monthly audit reports are presented to demonstrate the value of an independent experienced ECO through the increase in compliance with the EAs over time, thus arguing that an on-site ECO and their integrated interaction with various on-site role players (contract manager, environmental manager, etc.) is vital in order to provide worth to the mitigation measures identified in the Environmental Impact Assessment (EIA). This paper aims to promote that on-the-ground, proactive feedback and integration from an ECO allows for better environmental management, demonstrating one avenue for ensuring that IEM is delivering the desired mitigation of impacts, provided that the measures proposed in the EIA are implemented through compliance monitoring. From our experience, it is the value of an ECO's practical environmental knowledge that is advantageous in pre-empting any environmental issues. In addition, the perspective of an on-site design engineer will also be presented. One of the critical aspects that promotes compliance is the ECO's proactiveness in providing immediate, constant feedback on recommended mitigation actions as they are identified. The above case will demonstrate improvement in compliance over time (and thus environmental preservation of ecological integrity) because of the experience of the ECO.

## Francini van Staden & Professor Francois Retief

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Economic Pillar, Oral Paper

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### Title

Exploring the Economic Growth-impact Assessment Nexus: Theory and Practice.

### Biography

Francini holds a MSc degree in Environmental Management cum laude (North-West University, South Africa) and an MBA in Sustainability Management summa cum laude from the Sustainability Management School, Switzerland. Francini is an environmental and sustainability management professional with fifteen years' experience across private and public sectors, including project and strategic level implementation of sustainable development. Currently as Sustainability Coordinator within the Western Cape Government's Department of Environmental Affairs and Development Planning, she heads up sustainability integration through environmental implementation planning, mainstreaming programmes and State of Environment tracking and reporting. Francini's research interests lie at the economy-environment interface and in the context of interlinked environmental and economic crises, and how policies and practice can respond in sustainable ways.

### Abstract

Economic growth fundamentally links to environmental impact as all economic activities ultimately dependent on natural resources. Economy-environmental interactions are, however, framed by different perspectives and interpretations. This research explored subjective perspectives on economic growth within the Environmental Impact Assessment (EIA) practice and possible influences on EIA outcomes. For the purpose of this research, EIA agents were categorised according to four EIA functions: Development Proponent, Environmental Assessment Practitioner, Civil Society and Regulating Authority. In applying the Q-methodology, research participants representing these agent categories, prioritised, and normatively ranked subjective statements on economic growth within the EIA process and environmental impact context. The results were quantified and statistically analysed, revealing how the EIA practice perceives economic growth. As a collective, the EIA practice was found to be rooted in economic growth, but voices emerged on the need for the practice to pursue alternative economic notions and opposing the primary influence of economic growth in the EIA process. According to agent clusters, Development Proponents patterned a predominant growth imperative with sustainability interest; EAPs aligned to policy objectives and political agenda; Civil Society associated with ethics and post-neoliberalism and the Regulating Authority challenged leading policy objectives. Of relevance to practice is the decision heuristics of individuals that clearly emerged from this research, and which stands in contrast to the technical-rational model on which the EIA is based. This possibly explains the EIA process' poor handling of the highly polarised economic growth-impact assessment disconnect. Having described thought-patterns of active EIA agents for which there is little foothold in the EIA decision-making process, recommendations were made for further research to explore how practice can be equipped for economic growth pluralism and decision heuristics, towards sustainable forms of development

## Kevan Zunckel

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Economic Pillar, Oral Paper

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### Title

The Critical Role Nature Plays in Underpinning Societal Resilience

### Biography

Kevan has thirty-five years of experience in the field of conservation and environmental management and holds an MSc Environmental Science from the University of Cape Town. He is a member of the World Conservation Union's (IUCN) World Commission on Protected Areas (WCPA), the South African chapter of the International Association of Impact Assessment (IAIAsa) and the Environmental Assessment Practitioners Association of South Africa (EAPASA). He also serves on the Executive Committee of the WCPA's Transboundary Conservation Specialist Group as the Chair. His career began in the forestry industry where he was responsible for compiling conservation plans for plantations that were then under the control of the Department of Water Affairs and Forestry in the erstwhile Eastern Transvaal. He later joined the Transvaal Provincial Directorate of Nature Conservation where he was involved in flora conservation planning. He was promoted to head up the team of regional ecologists and their technical staff until 1994 where he played an active role in the establishment of the Mpumalanga Parks Board (MPB). Here he filled the position of General Manager: Research and Development. After politically motivated restructuring resulted in his departure from the MPB he took up a five-year contract with Ezemvelo KZN Wildlife to coordinate the Maloti Drakensberg Transfrontier Project. He was then approached by a multi-national consulting company where he served as a senior ecologist and sustainability consultant for two years, after which he and his wife established their Zunckel Ecological & Environmental Services partnership which has been in operation since 2010.

### Abstract

The concept of the Anthropocene is now just more than a decade old, and the recommendations made by the authors appear not to have been taken seriously by society as a whole. If they had, it is likely that the dynamics responsible for the Covid-19 pandemic might have been better managed thus preventing the pandemic and its associated impacts. However, this has not been the case and we are now well beyond a year of living with the pandemic. It may be safely assumed that many in society long for a return to what they knew, or business as usual. This will be particularly true for those most severely impacted on from a business and/or livelihoods perspective. The reality is though that we simply cannot afford to return to a 'business-as-usual' way of life. Much has been written since the outbreak of this pandemic that calls very clearly for a 'new normal' where nature is recognised as underpinning societal resilience. This paper will discuss some of this work and illustrate how critical is it for society at large to recognise and invest in securing and restoring the integrity of natural areas, be these terrestrial, fresh water and/or marine. It will end with making the case for environmental management decision-making processes to strongly embrace this reality to enhance the value of the discipline and the contribution we make to societal resilience.

## Dr Falko Buschke

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Social Pillar, Oral

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### Title

How a Cohort of Early-career Environmental Professionals Prioritise the Principles in the National Environmental Management Act

### Biography

Falko is a conservation biologist with a PhD in ecology. He currently works as a senior lecturer in environmental management at the University of the Free State as well as a part-time copywriter for the European Commission's Joint Research Centre. His core research is on the way spatial and temporal distribution of biodiversity affects conservation and management outcomes, but he also works at the science-policy interface to understand how scientific research can be implemented more effectively.

### Abstract

Environmental managers must often juggle multiple, equally valid, development aspirations. This is just as true at global scales when managing trade-offs between the supposedly indivisible Sustainable Development Goals as it is at local scales when navigating conflicting land-uses. Despite this, there is a general expectation that environmental legislation should provide a common set of rules that apply to everyone. Here I propose that instead of treating legislation as a common rulebook, environmental professionals interpret South African environmental legislation through a lens of their own personal values. I base this on master's students in environmental management at the University of the Free State who were tasked with reflecting on the environmental principles outlined in Chapter 1 of the *National Environmental Management Act 107 of 1998*. These students identified their three most important legal principles and explained their choices in written essays. This simple exercise uncovered a complete lack of consensus around the most important legal principles. Some students consistently favoured anthropocentric principles whereas others favoured ecocentric principles. However, the important lesson from this exercise was not that these students realised that their peers do not share their judgments, but rather that the lack of agreement can be based on equally valid deliberation and justification. This is an essential form of professional development for environmental managers who need to accept that instead of imposing our own worldviews on others, it might be more effective to pursue common goals even when motivations might differ. By understanding the social, political, and ethical contexts of our work, environmental professionals are more likely to realise a vision for a sustainable future that supports human and ecological flourishing.

## Jessica Edwards & Lisl Pullinger

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Social Pillar, Dual Oral Paper



### Title

Developing and Measuring Sustainable and Resilient Mining Communities

### Biography

**Jessica Edwards** is Senior Social Consultant with over 18 years' experience in social safeguard practices. She holds a Masters degree in Environment and Society from the University of Pretoria, and has completed over 40 Social Impact Assessments and similar social studies. Recently, Jessica has been at the forefront of developing mechanisms to ensure social transition towards mine closure to ensure a sustainable transition for communities beyond mining. Jessica has been working on Social Safeguard Auditing against the International Finance Corporation (IFC) Performance Standards, as well as several Competent Persons Reports and Due Diligence assessments.

**Lisl Pullinger** has 20 years' experience in the field of stakeholder communication and community development. Her core expertise lies in development policy, strategy and designing programs, digital stakeholder engagement and stakeholder management, asset-based community development as well as social and human rights due diligence and auditing. Lisl has worked extensively in the African mining environment and has a thorough understanding of how social license to operate can influence operations and projects. She has deep insight into sustainability requirements across disciplines and how it collates into developing and maintaining sustainable frameworks for projects and operations. She also has experience in developing in-migration management plans for large mining projects and leading experts to develop sustainable town development concept plans for rural mining communities in the Democratic Republic of Congo. Lisl has worked in designing and implementing social engagement and development programs in the mining sector in South Africa and the Democratic Republic of Congo. Recently Lisl was involved in implementing social and environmental safeguards in small-scale projects across the SADC region and formulating a new SADC groundwater management program based on lessons learned from previous projects. Lisl is adept at gender focused supply chain analysis and support as well as supporting clients to apply for development finance and / or support.

### Abstract

Traditional approaches to community development do little to create self-sustainable communities. Key paradigm shifts are required; notably the need to effect meaningful change that avoids perpetuating social injustice based on historical narratives and economic imbalance of power. The process of creating value involves focusing on longer term objectives and turning short-term 'charity projects' into self-sustaining enterprises that can help mining communities build their resilience. Social impact is an important focus of good practice throughout the mining lifecycle as a proactive process of concurrent social self-sustainable development can make communities more resilient. Social impact investment requires the development of measurable impact indicators at the planning phase. Social development programmes can be used as a preparatory mechanism for eventual transitioning to a post mining future. Impact indicators are essential to Environmental, Social and Governance (ESG) investors and other potential commercial, public service and/or civic society partners. A theory of change mechanism allows for the systematic establishment of impact indicators and is used to monitor and evaluate the returns on social investment. It can also be tailored to meet the requirements of company specific policies and objectives as well as country-specific regulations. Another impact investment principle is the appreciative inquiry approach to social development. Appreciative inquiry is a well-documented community development approach where communities are viewed as a partner in development with existing initiatives and projects that are already working. This approach stands directly opposite to the needs-based approach, where communities are viewed as the recipients of projects based on what they do not have. By following these approaches, we can develop and adjust Integrated Environmental Management (IEM) practises to increase resilience and create an environment that fosters self-sustainable community development in mining communities.

## Gerhard Gerber

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Social Pillar, Oral Paper

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### Title

The Need for IEM to Begin to Enable Responses that are Proportional in Terms of Both the Urgency and the Extent of the Problems that Confront us and that Accelerate the Achievement of the SDGs in South Africa.

### Biography

Gerhard has more than 24 years of experience in Environmental Management and Planning (23 years as a public servant, of which 6 years were as a manager and 11 years as a senior manager). He has been with the Western Cape Department of Environmental Affairs and Development Planning for more than 22 years and currently is the Chief Director Development Planning. He holds qualifications in Nature Conservation, Environmental Management, and Planning. He is a member of IAIAsa (International Association for Impact Assessment South Africa) and ELA (Environmental Law Association of South Africa), and he is an EAPASA Registered Environmental Assessment Practitioner and an EAPASA appointed EAP Registration Assessor.

### Abstract

Existing IEM practice is not properly enabling just ecological and socio-economic transitions nor the achievement of the Sustainable Development Goals (SDGs) in SA. Based on more than 22 years of IEM experience and learnings from, amongst others, Complexity Theory, Systems and Resilience Thinking, Transition Management, Lean Management and Problem-Driven Iterative Adaptation, have led to these critical insights: (1) Our actions must be rationally connected to the information before us, and our responses must be proportional i.t.o. both the urgency and the extent of the problems that confront us; (2) We must collectively serve the public interest and be development-oriented; (3) If we want different results, then we need to do things differently and do different things; (4) We must do better to ensure ecological sustainable development, while also doing better to promote justifiable socio-economic development; (5) It is now more urgent than ever before for IEM to act itself into a new way of thinking; (6) The whole of government (capable state) in partnership with the whole of society (active civil society) must negotiate and implement spatial social compacts; (7) Critically, if capacity, implementation, compliance enforcement, monitoring and evaluation actions are to aid the pursuit of the spatial social compacts, then the initial effort at improved planning and improved project-level decision-making, need to be complemented by ongoing collective performance management and transition management; (8) Learning how to solve problems and how to improve, is just as important as solving problems and improving; (9) It is not laws, policies and plans that achieve sustainable development, but rather people making use of laws, policies and plans that achieve sustainable development. While some further law reform and policy development will assist, we have more than enough to get started; (10) We are the ones we have been waiting for; and (11) The best way to get something done is to begin. This presentation shows how we can begin.

## Laurika Harilal

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Social Pillar, Oral Paper



### Title

The Role of ISO 14001:2015 in Enhancing IEM through Sustainable Self-governance: Lessons from the Durban Basin.

### Biography

After winning the first annual KwaZulu-Natal Department of Environmental Affairs Provincial Annual Biodiversity and Climate Change Challenge, my passion for environmental science was further ignited. I went on to represent my high school at the model UN debate, these steps represented the building blocks which would culminate towards my research journey within the environmental arena. I completed a Bachelor of Science degree from the University of KwaZulu-Natal in Environmental Science, followed by a Bachelor of Science Honours degree in Environmental Management Cum Laude with distinctions in Environmental Monitoring, Impact Mitigation and Management as well as Integrated Environmental Management Systems and Auditing. This inculcated a deeply ingrained appreciation for research within sectors such as Integrated Environmental Management, thus motivating me to undertake my Master of Science qualification in Environmental Management. Under the expert guidance of associate Professor Jan Albert Wessels at the University of South Africa, I had commenced on my MSc research journey, coupled with the unparalleled support of my husband and parents I embarked on a research trajectory that has left me inspired and eager to continue research pertaining to environmental monitoring and environmental management.

### Abstract

Environmental Management Systems (EMS) are one of the suites of 'voluntary' environmental management tools which forms a vital facet of Integrated Environmental Management (IEM). The International Organization for Standardization's ISO 14001-based EMS standard requires outcomes of "enhancement of environmental performance" through "achieving environmental objectives". The Durban south region is a pollution 'hotspot' within KwaZulu-Natal and the assessment of the opportunities and risks of ISO 14001:2015 implementation within the region is important as it may potentially assist with proactive mitigation of risks and the utilization of opportunities. The aim of the study is, therefore, to understand Safety, Health, Environmental, Risk and Quality (SHERQ) managerial perspectives of opportunities and risks of ISO 14001:2015 implementation within Durban. The methods included identifying opportunities and risks in ISO 14001:2015 implementation from literature review, thereafter, presenting these in questionnaires distributed among SHERQ managers in Durban via email and LinkedIn. Of 62 questionnaires distributed, 42 participants responded. The respondent's perspectives were assessed through SPSS. Results showed that, aligned with international reports, 57.2% of respondents agreed maintenance costs of compliance to the standard are high and 76.2% shared the perspective that company resources are better managed. Respondents were more agreeable to positive statements, indicating opportunities outweighing the risks. Despite the risks, there are opportunities from an industry perspective such as increased investor inputs and increased top management involvement. Findings from the study are contributory to learning facets pertaining to IEM tool implementation, such as the risks and opportunities of EMS implementation from an environmental, community and financial perspective in the Durban region highlighting the vital role of ISO 14001:2015 in sustainable organizational resource management. Key words: International Organization for Standardization (ISO), SHERQ, Opportunities, Risks, ISO 14001:2015, Durban.

## Jurie Moolman

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Social Pillar, Oral Paper

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### Title

Co-operative Governance for Sustainable Wastewater Treatment: A Myth or Reality?

### Biography

Jurie is an Environmental Management Specialist at the Unit for Environmental Sciences and Management, North-West University, Potchefstroom. He is currently busy with his PhD in Water Governance. His areas of specialisation include: Environmental Impact Assessment, Environmental Management Plans, Geographic Information Systems (GIS) and Environmental Management Systems (EMS) and EMS auditing. He is a SAATCA-registered auditor and a Candidate Natural Scientist registered with SACNASP. Jurie's interests include biking, birding, and hiking.

### Abstract

Fresh water resources across the globe are severely polluted and constrained due to anthropogenic activities. Fresh water pollution challenges in South Africa mirror international trends with rapid urban expansion and agricultural activities contributing to increased water abstraction and industrial point source pollution. One of the major contributing factors to freshwater pollution in the country is poorly managed and controlled municipal waste water treatment works (WWTWs). In most cases, the operation of WWTWs is the responsibility of local government with an administrative, compliance and enforcement function provided by either the provincial or national government. As required by section 41 of the Constitution (1996) co-operative governance between these spheres of government is essential to ensure effective service delivery, including the effective operation of WWTWs. This research aimed to determine the challenges faced by WWTWs in relation to co-operative governance. The research followed a case study approach focusing on the Drakenstein Municipality, located within the Berg River water management area in the Western Cape Province, South Africa.

## Khangwelo Desmond Musetsho (PhD)

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Social Pillar, Oral Paper



### Title

Mapping Land Use Land Cover Changes and Implications for Rural Communities, a Case of the Mphaphuli Community.

### Biography

Desmond is a member in good standing of both IAIA and IAIAsa. At IAIAsa, he served in various positions such as in the NEC and as Branch Chairperson for the Limpopo Branch. He just completed his PhD at the University of South Africa (UNISA). He also holds a Master of Business Leadership (MBL) from the UNISA Graduate School of Business Leadership. He is currently the Deputy Chairperson of EAPASA, where he serves in various committees, served as Chair of the Audit and Risk Committee, Chair of the Registrations Committee. He is a SACNASP Council member since 2015, where he is also a member of the Environmental Sciences Professional Advisory Committee (PAC), amongst other committees. He is also attached to the Institute of Waste Management of Southern Africa (IWMSA) Central Branch. He is currently also attached to the South African Wetlands Society as a Board Member. A former lecturer from both the University of Venda and the University of Limpopo. Director and Senior Environmental Scientist at Naledzi Environmental Consultants (Pty) Ltd, since 2003.

### Abstract

Land Use Land Cover (LULC) changes have implications for the long-term outlook of environmental processes, especially in the wake of factors such as climate change. These changes have serious consequences for humans. Remote sensing and geographic information system methods were used to investigate changes in LULC for a critical biodiversity area (CBA) in the northern sections of the Limpopo province in South Africa for the period from 1990 to 2018, using data obtained from the South African National Land Cover project. In 1990, the dominant land cover was thickets and dense bush, followed by woodlands and built-up areas, covering a proportion of 40%, 24%, and 18% of the total land-cover area, respectively. Bare and forest areas were the least dominant classes during this time. In 2018, the dominant land cover was woodlands, followed by built-up areas, with 71% and 20% of the total areas, respectively. Subsistence agriculture is one of the land-cover classes with relatively higher areas as compared to water bodies, wetlands, and others. Between 1990 and 2018, significant changes in land cover were noticed for thickets and dense bush, woodlands, water bodies, subsistence agriculture, and built-up areas. Woodlands changed by over 1 000 hectares (ha) per year, while thickets decreased by over 900 ha per year. Interviews with locals about what they thought were the drivers behind the observed changes were conducted. According to these interviews, the drivers of these changes include deforestation and land management options, among others. The outcomes of the study are critical for future land-use planning exercises and the long-term conservation of this CBA. The Mphaphuli Traditional Authority wields a lot of influence on the land-use choices in the area; they are to be engaged thoroughly on the appropriate land use planning exercises, which must also include extending conservation areas. Keywords: Land use land cover change, land-use planning, critical biodiversity area.

## Victoria Napier

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Social Pillar, Oral Paper

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### Title

Surviving a Near Death Experience: Managing a Fatal Flaw within the EIA Process.

### Biography

Victoria has more than 12 years' experience as an Environmental Assessment Practitioner (EAP) Project Manager, with over 15 years as an EAP. She is highly experienced in managing large multi-disciplinary project teams for various types of environmental assessments and has often been described by colleagues and clients as having specialist project management skills. In addition, she has experience in training and skills transfer within the environmental management field. Victoria is a Registered Professional Natural Scientist with SACNASP (400215/09).

### Abstract

In principle, within an Environmental Impact Assessment (EIA) application process, there should always be the option for the Environmental Assessment Practitioner (EAP) to present that the proposed development project should not be authorized; however, the examples of where this has happened in practice in South Africa, can probably be counted on the fingers of one hand. In many instances EAPs appear to feel compelled to present an EIA report where all the findings are low or insignificant, even though it is often extremely difficult to see how the impact significance would be reduced based on the mitigation presented. The danger of such an approach is that EIAs run the risk of legitimizing projects that should never go ahead and/or downplaying the need for compliance and enforcement in project implementation. There is no mention of 'fatal flaw' in the EIA Regulations, but it is a widely used concept and often used liberally by Interested and Affected Parties (I&APs) in consultation processes. We contend that the EIA Regulations should provide for the principle of a proposed development being fatally flawed or else the EAP is essentially "hung out to dry" in trying to advance such a conclusion. Being supporters, however, of fatal flaw conclusions is easy. Identifying a fatal flaw, after an Applicant has spent significant amounts of money on the EIA, is something else entirely. In this paper we reflect on a large, costly EIA which was deemed to be fatally flawed from an ecological perspective, by an independent specialist. We outline the circumstances of that EIA, the basis of the fatal flaw and how we managed the fatal flaw, in especially, the public participation process. We examine the roles of the specialist, the EAP, the key I&APs and the Applicant in such a situation and outline our learning in the hope of equipping EAPs to manage such circumstances judiciously.

## Sean O'Beirne

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Social Pillar, Oral Paper

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### Title

Fatal Flaws: The Holy Grail of Impact Assessment or the Unrequited Pipe Dream of Detractors.

### Biography

Sean is an environmental consultant with over 30 years of experience in various forms of environmental assessment and management in Southern Africa and Eastern Europe.

### Abstract

Sean was schooled in the principles of Integrated Environmental Management (IEM) touted then as 'yes-if' rather than 'yes-no' in EIA decision-making. IEM was premised on the country's urgent development needs and a concern that EIA would not survive if it routinely disqualified investment. The concern proved prescient with widespread criticism today that EIA curtails development. Some have even called for the scrapping of EIA so that development happens, unhindered by such worthless items as butterflies. At the same time, there is probably not a single EAP, who has not had to contend with fatal flaws being argued by I&APs in EIA processes. Philosophically, if an EIA cannot conclude with at least a negative decision, then the arduous process of decision-making on the application seems pointless. Negative decisions are scarce though and negative impacts in EIA are sometimes softened by 'mitigation' that enigmatically reduces impact significance. It is difficult to conclude a fatal flaw, not just in surviving client ire but also in the absence of criteria to do so. The current approach to identifying fatal flaws appears one of 'we'll know if we see it!' Interestingly, the IFC PSs present very few opportunities to deem a project fatally flawed. Direct prescriptions appear limited only to activities on the exclusion list or being within an Alliance for Zero Extinction (AZE) site. The net effect is that if an EIA is indeed a decision-making tool, there must be provision for a 'fatal flaw'. We examine criteria to define a fatal flaw in an EIA and argue for the adoption of such criteria but through practice NOT in law.

## Lisl Pullinger & Amelia Visagie

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Social Pillar, Dual Oral Paper



### Title

Intentional Investment for Social Change – Case studies of an Asset-based Approach to Mining Community Development

### Biography

**Amelia Visagie** is an Associate in the Communication and Stakeholder Engagement unit at Zutari and is based in Cape Town. She is responsible for Asset Based Community Development (ABCD), Socio-economic development, enterprise development (ED) of the company's approach to socio-economic development. This work seeks to position Zutari as a differentiator in the market when enrolling in engineering projects across Africa. Amelia is an accredited assessor and facilitator with a national qualification in Adventure-related Experiential Learning (AEL); a Public Participation and stakeholder management facilitator, Professional Coach; Appreciative Inquiry Facilitator and Neurolinguistics Practitioner, and Asset Based Community Development specialist. Her skills include project management, curriculum development, training and facilitation skills, and negotiation skills. ABCD approach which Amelia initiated in all projects, is a key element of the company's sustainable development programmes. Amelia holds a BCom (Hons) degree in Industrial Psychology from the University of South Africa (UNISA). She is the founder member of Chameleon Performance Improvers, a training, and development company. She is registered at the International Association for Impact Assessment in South Africa (IAIAsa). In August 2017 she presented a paper at the IAIAsa Conference on innovative solutions for persistent social problems. She delivered a paper at the 2018 IAIAsa Conference on the topic of inspiring integrated environmental management: Crafting innovative solutions to persistent environmental and social problems through Asset Based Community Development (ABCD). Furthermore, she served on the African Board and was the treasurer of the International Association of Public Participation (I&AP2). She is also the winner of five International Awards for her sustainable approach to community development. Before joining Zutari Amelia was in various community research and development initiatives as well as public participation projects. This portfolio has expanded to include stakeholder engagement strategies, sustainable socio-economic development, and enterprise development initiatives that stretch from tender phase right through to implementation and exit phases. Her goal is to ensure that these initiatives are both interactive and co-creative. She strongly believes that stakeholder engagement and communication between role players are the glue of any project and is the differentiator that sets great projects apart.

**Lisl Pullinger** has 20 years' experience in the field of stakeholder communication and community development where her core expertise lies in development policy, strategy and designing programs, digital stakeholder engagement and stakeholder management, asset-based community development as well as social and human rights due diligence and auditing. She also has experience in developing in-migration management plans for large mining projects and leading experts to develop sustainable town development concept plans for rural mining communities in the Democratic Republic of Congo (DRC). Lisl has worked in designing and implementing social engagement and development programs in the mining sector in South Africa and the DRC. Lisl has worked extensively in the African mining environment and has a thorough understanding of how social license to operate can influence operations and projects. She has deep insight into sustainability requirements across disciplines and how it collates into developing and maintaining sustainable frameworks for projects and operations. Recently Lisl was involved in socio-economic transitioning during mine closure strategy development with international teams focused on mines in Southern Africa and supporting a European Union project with stakeholder perspectives on responsible sourcing practices. Lisl is adept at information management and data visualisation for large, complex projects as demonstrated in the recently completed Integrated State of the Environment Report for the Government of Namibia and Environmental and Social Management Framework for SADC groundwater management.

## Abstract

Over the past few decades social investment in mining communities has been driven by regulatory requirements and a needs-based assessment of perceived community needs. In recent years, evolving good practice from the international development community is challenging the success of a traditional approach to mining community development. These practices include intentional, incremental planning for social change using a theory of change as well as the use of appreciative inquiry as a method to identify and facilitate lasting social change in mining host communities. Theory of change provides a framework through which mining community development practitioners can consider enablers, implementers and influencers of change whilst incrementally planning interventions, outputs, outcomes, and impacts. To illustrate this in practice a case study of applying the theory of change to a sustainable livelihood programme in a mining community in the DRC is used. Despite the impact of COVID-19 and the visible dip in construction projects in South Africa, it is interesting to see how the mining, transport, energy, manufacturing, and government markets are focussing on inclusion and transparency. Innovative stakeholder engagement and community participation models that can be used to mitigate risks, minimize community unrest and conflict on projects are now needed more than ever. A combination of the Asset Based Community Development (ABCD) approach and Appreciative Inquiry(AI) as life-centric change processes are used as innovative approaches to bring out the best in everyone involved and to work with strengths, gifts, knowledge and assets to develop capacity and to use imagination to develop individual and collective destiny. To showcase how ABCD and AI can change perceptions and assist communities to use what already works, a case study will be presented where we use these approaches in a mining community for the Bonega Communities Trust and Ivanplats Mine in Mokopane in South Africa.

## Tiisetso John Rantlo

Co-authors: Dr Germarie Viljoen and  
Professor Willemien du Plessis

North-West University  
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Social Pillar, Oral Paper



### Title

Critical Reflections on Environmental Authorisation Requirements at Defunct Underground Workings: Lessons from the Ezulwini-case.

### Biography

Tiisetso John Rantlo is a Doctoral (LLD) candidate at the North-West University in the Faculty of Law. Tiisetso obtained his LLB degree at the National University of Lesotho. He was admitted as an advocate of the Courts of Lesotho and practiced as such for some time. Tiisetso also obtained his LLM in Environmental Law and Governance in 2015 at the North-West University. He is currently working on his doctoral thesis focusing on Environmental Authorisations in South Africa.

### Abstract

The heads of 194 United Nations Member states, including South Africa, signed the set of 17 Sustainable Development Goals (SDGs) in 2015. Mining companies have the potential to be leading partners in achieving the SDGs and thereby positively impact the natural environment and social capital, amongst others. However, as recently highlighted in the High Court judgment of *Ezulwini Mining Company v Minister of Mineral Resources and Energy* (Ezulwini-case), uncertainty exists as to sustainable or legitimate mine closure and environmental liabilities related thereto. During its operations, Ezulwini mines pumped underground water subject to a water use license (WUL). However, after the Ezulwini mine ceased the underground mining operations, the mine sought to stop the pumping of the water from the defunct underground workings. In order to do so legitimately, the Ezulwini mine applied for environmental authorisation in terms of the National Environmental Management Act 107 of 1998 (NEMA) and the amendment of a WUL following cessation of operations and pumping water from the defunct underground workings. Notably, the issue before the court revolved around the correct interpretation of section 43(4) of the Mineral and Petroleum Resources Development Act 28 of 2002 (MPRDA), sections 24N and 24R of NEMA regarding the cessation of pumping water from the underground workings. Put differently, whether the abovementioned sections place a liability on the mining company that has to pump and treat the underground water? This paper critically reflects on the judgment and provides some legal perspectives on the interpretation of the above legislative sections. Keywords: Sustainable Development Goals, Environmental authorisations, Water use license, National Environmental Management Act 107 of 1998, Mineral and Petroleum Resources Development Act 28 of 2002.

## Dr Greg Schreiner

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CSIR

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Social Pillar, Oral Paper

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### Title

What can we Learn from our not-so-distant cousin called Scientific Assessment?

### Biography

Greg works at the CSIR in Stellenbosch as a Sustainability Scientist. His work mainly focuses on the development of novel approaches for thinking about and doing integrated, multi-disciplinary assessments to support good decision-making.

### Abstract

Scientific assessments are elaborate knowledge-policy processes which convene large numbers of experts, policymakers, and stakeholders. Their purpose is to surface, deliberate and then organise knowledge relevant to multi-faceted problems of high social importance. Well-known examples include the processes and published reports of the Intergovernmental Panel on Climate Change (IPCC) and the Intergovernmental Science-Policy Platform for Biodiversity and Ecosystem Services (IPBES). While the field of Impact Assessment (EIA, SEA, SIA etc.) primarily has its roots within practitioner communities driven by legislation and project specific decision-making, the field of Scientific Assessment was borne from the research community and driven more by global change problems, scientific theory, and level policymaking. Today these two 'fields' (for lack of a better term) are more similar than distinct, despite their different origins. They use reasonably similar approaches and methods for producing the knowledge which might help navigate toward something approximating a sustainable future. But they both operate at an increasingly complex science-society-policy interface, where flexible, robust, and deliberative knowledge production practices are desperately need. It is somewhat surprising that these two fields generally do not speak to one another. The purpose of this presentation is to present some of the data from Greg's PhD research evaluating the processes of Scientific Assessment and unpacking some of the key learning points as they relate to improving Impact Assessment practice.

## Dr Wells Utembe

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National Health Laboratory Services, Johannesburg  
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Social Pillar, Oral Paper

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### Title

The Roles of Toxicology and Chemical Risk Assessment in Integrated Environmental Management, Sustainable Economic Growth and Decent Work in South Africa.

### Biography

Dr Wells Utembe has a PhD in Public Health from the University of the Witwatersrand, focusing on human and environmental risk assessment. His main areas of work include environmental health, regulatory toxicology and the assessment of risks that may emanate from human and environmental exposure to chemicals. He has been involved in many research projects and consultancies in environmental health sciences, Environmental Impact Assessment (EIA) and risk assessment of chemicals where he has published several peer-reviewed articles. Furthermore, Wells has the requisite training and experience to conduct basic and full EIA, Health Impact Assessment (HIA) and Strategic Impact Assessment (SEA) in Malawi, South Africa, and other countries. Wells has over ten years' experience in lecturing and curricula development as well as supervision and examination of students at both undergraduate and graduate levels.

### Abstract

The practice and roles of toxicology and chemical risk assessment (CRA) in sustainable development (SD) are discussed, especially the protection of public and workers in South Africa. Sustainable development is defined as development that meets the needs of the present generation, without compromising the ability of future generations to meet their own needs. From an environmental management perspective, SD is better achieved through holistic and integrated environmental management (i.e., integrated environmental management (IEM)). In that regard, several principles of the *Agenda 21*, a United Nations (UN) blueprint for SD, as well as the 2015 UN SD goals deal directly or indirectly with toxicology and CRA. For example, *Principle number 4* recognizes the indispensable role of environmental protection in SD, while *Principle number 8* discusses the issue of unsustainable patterns of production and consumption. Furthermore, *Principle number 11* states to enact effective indigenous environmental legislation and standards (occupational and environmental). Lastly, *Principle number 17* promotes the use of environmental impact assessment (EIA) for proposed activities that can negatively affect the environment. Similarly, *SD goal number 8* aims to promote sustainable economic growth and decent work for all, while *SD goal number 12* ensures sustainable consumption and production patterns, which involve safe use of hazardous substances. In all these selected *Agenda 21* and SD goals, toxicology and CRA features prominently by their roles in the derivation of health-based criteria such as Acceptable Daily Intakes (ADIs), reference dose (RfD) and occupational exposure limits (OELs). The presentation discusses the roles of toxicology and CRA in *Agenda 21 principles 4, 8, 11 and 17*, SD goals 8 and 12, as well as the challenges that hamper the practice of toxicology and risk assessment in South Africa and other developing economies.

## Caroline Wallington

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Co-authors: Brett Wallington

Paragon +Impact  
[caroline@icapafrika.com](mailto:caroline@icapafrika.com)

Social Pillar, Oral Paper

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### Title

First-of-a-kind +Impact SDG Grading Tool to Assist the IEM Sector in Agenda 2030.

### Biography

Caroline is systems ecologist and environmental scientist with both academic training and practical experience. She has an M.Sc. degree in Environmental Science and is a SACNASP registered Professional Natural Scientist in Ecological Science, with over eight years' experience in the Environmental Impact Assessment industry. Caroline has worked with inter-disciplinary teams to assess the social, economic, and environmental aspects and impacts of projects from rural developments & large-scale mining to restoration and conservation. She gained an understanding of the deep complexity around sustainable development within the Anthropocene and has therefore become particularly passionate about social-ecological systems, resilience and complexity thinking for managing and conserving our natural and cultural worlds.

### Abstract

The degree to which our social and environmental systems are continuing to degrade is triggering the urgent need for sustainable and positive impacts to become mainstream, effective, and verifiable. As we watch the 'tragedy of the commons' play out on the global stage, more sustainable investment strategies are key to not only rescuing our social, cultural, and political systems from failure, but also to transform our economies into more sustainable and resilient systems that safely operate within planetary boundaries. It is also now crucial to ask what qualifies as sustainable or impactful? And how do we assess the impact performance and contribution to global goals, norms and standards? It is way past the time for South Africa to rapidly move beyond simple mitigation and respond to the urgent call to achieve Agenda 2030. The IEM sector and its processes are well placed to take the lead here and guide, assist and facilitate South Africa towards sustainable development. Paragon +Impact has developed a first-of-a-kind **+Impact SDG Investment Grading Tool**, which is a robust, credible, and quantitative methodology that rates an investment/ project's impact performance against the SDGs and other important ESG metrics. It is an amalgamation of multiple Frameworks, Principles and Standards that delivers a holistic solution to measuring and managing impact. The tool is based on the standardised Environmental (and Social) Impact Assessment (EIA) methodology, whereafter it encompasses innovative and detailed steps that generates an impact performance result and +Impact SDG Grade. At Paragon we believe we have developed a tool/ platform that offers tangible solutions to assist all IEM practitioners get better aligned with Agenda 2030 and take the lead in transforming South Africa towards true sustainability.

# Information Session

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## Harry Thema

Statistics South Africa

[HarryT@statssa.gov.za](mailto:HarryT@statssa.gov.za)

Economic Pillar, Information Session

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### Title

Sustainable Development Goals (SDGs) governance structures and Integrated Indicator Framework (IIF)

### Biography

Mr Harry Thema is employed at Statistics South Africa as the Chief Director in the South African National Statistics System (SANSS) branch. He is responsible for coordinating the production of statistics in the economic and social statistics subsystem. He has been working for Statistics South Africa for the past 21 years, in different divisions.

### Abstract

South Africa as a signatory to UN resolutions is obligated to produce a SDG country report. In the past the country produced the Millennium Development Goals (MDGs). The adoption of the Sustainable Development Goals saw the number of indicators that countries are expected to report on increasing exponentially. During the previous MDGs and SDG reporting, South Africa, through Statistics South Africa as a national coordinator to produce the country report, established structures to guide the reporting process. Sectoral Working Groups (SWGs) were established along SDGs (social, economic, environment and governance) to review the indicators, collect indicators values and metadata. The SWG also domesticated some of the indicators. Further, a report drafting team was constituted to guide the reporting process. These structures were accountable to a National Coordinating Committee (NCC). To ensure national ownership of the report, there was extensive consultations across sectors. Stakeholders across different sectors were invited to serve on the SWG, NCC and Expanded Report Writing Team. Statistics South Africa served as the secretariat for the SDG. Experience of international reporting reveal that there is still a shortage of data to report on the indicators. As a result of this, Statistics South Africa embarked on a process of defining the demand for statistics in the country. This resulted in the development of the Integrated Indicators Framework (IIF). The IIF is a compendium of national and international indicators. This framework will ensure ease of both national and international reporting.

# Invited Panel Discussions



**Panel discussions: This involves 5-10 participants on a panel with active audience interaction.**

## Biophysical Pillar, Panel Discussion

**Title**

The opportunities and limitations of biodiversity offsets and ecological mitigation in supporting SDGs.

**Abstract**

Globally, biodiversity and ecosystems are threatened. The ongoing loss of biodiversity together with the complicating effects of climate change place increasing demands on dwindling resources and are key challenges to sustainable development. In South Africa, pressure for economic growth and the additive effects of development pose a threat to the remaining biodiversity through the destruction and fragmentation of natural habitat, introduction of alien invasive organisms and pollution, amongst other impacts. Transformation of natural areas, in most cases, cannot be restored to what it was before transformation. This places an ever increasing and cumulative pressure on natural resources and ecosystem services in two ways. The first is the consumptive use of biodiversity (e.g., commercial fishing), and the second is the competition for physical space required for development (landscape transformation). It is increasingly acknowledged that Environmental Impact Assessment (EIA) as a tool cannot address the cumulative impacts on biodiversity and ecosystem services at landscape scale. EIA aims to find the 'best practicable environmental option', invariably allowing some loss of biodiversity in each instance. The additive effects of these numerous minor losses of biodiversity means that, at ecosystem or landscape scale, biodiversity continues to decline, as do our ecosystem services. South Africa is thus increasingly putting itself into an undesirable state of ecological deficit. Regulatory and other interventions are needed to stop and reverse ecosystem degradation. Biodiversity offsets are seen as one possible method of mitigating the current trends in biodiversity and ecosystem services loss in the country. However, for offsetting to succeed in practice, several barriers will have to be overcome. This panel discussion will give an overview of the policy developments in South Africa. It will then look at the role that biodiversity plays in promoting the achievement of the SDGs (ecosystem services, Green Economy, etc.), and the role that biodiversity offsets can play, through the mitigation hierarchy, achieving national and international biodiversity targets.

**Biographies****Chair:**

**Inba Pillay, Eskom Holdings**

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Inba Pillay is a registered Professional Scientist with SACNASP. She holds a BSc Environmental Management, a BSc Hons Environmental Monitoring and Modelling and is currently completing a Masters in Sustainable Development with the University of Sussex (UK). Her environmental career spans over 17 years stemming from the environmental consultancy industry and developing into the corporate sector. She is currently a Senior Environmental Advisor at Eskom Holdings, Corporate Risk and Sustainability Division. She is passionate about integrating environmental and sustainability principles into business supply chains. Coupled with that is her drive to support people to get to their "aha moment" or "lightbulb moment" on environmental management through appropriate education, awareness, and training. Her two energetic young boys, a tabby cat, a Golden Retriever and starting up her own vegetable garden, further fulfill her time.

**Panellist:**

**Dr Amrei Von Hase, Independent Specialist**

[amreivonhase@gmail.com](mailto:amreivonhase@gmail.com)

Amrei is an ecologist working on biodiversity conservation, risk and impact assessment and application of the mitigation hierarchy including biodiversity offsets/ ecological compensation. She has a PhD from the University of Cape Town. Between 2009 and 2019 Amrei was Science Lead for the international multi-stakeholder Business and Biodiversity Offset Programme (BBOP), hosted by Forest Trends. She led the scientific development of BBOP's widely regarded work on best practice in the mitigation hierarchy and achieving no net loss (NNL) of biodiversity or a net gain (NG). To ground this in practical experiences, she has worked closely with private and public sector development projects (e.g., infrastructure, mining), and with lenders and policy makers across the world. Amrei

continues offering independent specialist advice in this field, working across policy and practice.



**Panellist:**

**Marthán Theart, Department of Forestry, Fisheries & Environment**

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Marthán holds a BA LLB from the University of Cape Town and an LLM in Environmental Law from the University of Cape Town. Before joining the law reform directorate at Department of Forestry, Fisheries, and the Environment, he was a legal specialist (biodiversity and ecological infrastructure) at SANBI. He is particularly interested in biodiversity law and policy.



**Panellist:**

**Mark Botha, Independent Environmental Services Professional**

[mark@ecological.co.za](mailto:mark@ecological.co.za)

Mark is a registered Professional Natural Scientist and has run his own biodiversity consultancy for the last 12 years. He specializes in conservation strategy, tactics, and insight, primarily in the areas of policy, ecological compensation and offsets, land protection and stewardship. His current focus is developing protected area expansion and offset projects. Other interests include biodiversity stewardship for environmental outcomes and financial mechanisms for investments in ecological infrastructure. Mark's experience includes ten years investigating biodiversity stewardship and policy reform (under the Botanical Society of South Africa), and two years heading up the conservation portfolio and protected area land acquisition strategy of WWF-South Africa. Mark holds an MSc in forest ecology from the University of Cape Town.



**Panellist:**

**Susie Brownlie, deVilliers Brownlie Associates**

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Susie has an MSc in Environmental Studies from the University of Cape Town, awarded with distinction. She has worked as an environmental assessment practitioner for over 30 years on a range of development types in both private and public sectors in developed and developing countries. Her strengths lie in both advising on, and acting as an independent reviewer of, environmental assessments involving impacts on biodiversity and ecosystem services and their effective mitigation. Susie is a past co-chair of IAIA international's Biodiversity and Ecology Section and was a member of the international Business and Biodiversity Offset Programme's advisory group. Susie has published a number of papers in peer-reviewed journals on biodiversity-inclusive impact assessment and biodiversity offsets and is the author of – or has contributed to the writing of – several international and national guidelines on impact assessment review, biodiversity-inclusive assessment and biodiversity offsets.



**Panellist:**

**Millicent Solomons, Department of Forestry, Fisheries and the Environment**

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A dedicated professional with ±20 years combined experience as an environmental management professional in both the private and public sector. Millicent is a Director at the Department of Forestry, Fisheries, and the Environment where she specializes in the review and processing of applications for environmental authorisations for mega infrastructure development projects. Some of the key reviews Millicent was responsible for include the Nuclear 1 and N2 Wild Coast applications as well as numerous renewable energy applications. She considers her job crucial to ensure that government as well as private sector complies with relevant environmental legislation and associated requirements. However, it is important that sustainable development is not hindered in the process, and she strives to find solutions to environmental challenges as part of her duties as an environmental manager.

## Biophysical Pillar, Panel Discussion

**Title**

Renewable Energy: Are Standard IEM Procedures Sufficient for Addressing the Sector's Impacts and Meeting SDGs? Weighing up Practical or Innovative Measures.

**Abstract**

The renewable energy sector is becoming an ever more viable alternative to coal-fired power plants, with technology rapidly developing and improving, the cost of renewable power dropping and the environmental impacts of fossil fuels no longer acceptable. Several renewable power plants (RPPs) have been developed, or are currently being developed, in terms of Eskom's Renewable Energy Independent Power Producers Procurement Programme (REIPPPP), introduced in 2011 with the aim of installing 17.8GW of renewable energy generation capacity by 2030, and which is now in its fifth bid window. Apart from the RPPs, smaller-scale renewable power generation has also been gaining traction and is anticipated to grow even faster now that the NERSA licensing threshold for independent power producers is set to be raised from the current 1MW to 100MW. With the development of more RPPs, it has also become clear that although RPPs are relatively "green" as compared to fossil fuel power plants, they can still lead to significant environmental impacts. One impact that has garnered much attention in South Africa relates to bird and bat mortalities associated with wind farms, an aspect which now requires exhaustive investigation as part of EIAs for such projects. As renewable energy looks set to replace coal-fired plants over time, it is crucial that the environmental impacts of RPPs be thoroughly understood, and effective impact mitigation measures be developed. To this end, are the current assessment and application processes sufficient or should they be adjusted to better suit the requirements of this industry? Is there a need to introduce an industry-specific set of procedures, and if so, what will these look like? Expert panellists specialising in different aspects of the renewable energy sector will tackle these issues.

**Biographies****Chair:**

**Rebecca Thomas, Senior Development Manager, Mainstream Renewable Power South Africa**

[Rebecca.thomas@mainstreamrp.com](mailto:Rebecca.thomas@mainstreamrp.com)

Rebecca joined Mainstream in 2016 and is responsible for full project development from early identification of potential renewable energy projects, and pursuing them through to point of construction, the key aspects being identifying and securing suitable quantities of high potential land and obtaining all necessary permits and approvals. Maintaining environmental and social responsibility and integrity while managing the intricacies of the development process are important values to Rebecca. Previously Rebecca practised as an Environmental Consultant for over 10 years, largely involved in the energy sector. Rebecca has completed a Post Graduate Diploma in Business Management from Wits Business School and is currently servicing as Vice Chair on the SAWEA Environmental Working Group.

**Panellist:**

**Babalwa Mbobo, Femme Energy**

[bmbobo@nceda.co.za](mailto:bmbobo@nceda.co.za)

Babalwa is a qualified Scientist currently pursuing a Masters in Management Energy Leadership. She holds a Masters in Development Studies, a BSc Honours Energy Studies, a BSc Environmental Law, a B-Tech Degree Quality and a National Diploma Analytical Chemistry. She has Seventeen (17) years track record working within the Energy sector. Her career started at City Power (City of Johannesburg Municipality) in 2004 as a Laboratory Technician and Environmental Specialist. After 9 years being at City Power, she then worked for the national government the Department of Energy for 2 years as a Deputy Director Renewable Energy Initiatives. In 2014 she was appointed by the Northern Cape Premiers Office as a Director-Renewable Energy Specialist. The project she was appointed for, which was Northern Cape SEZ, was transferred to the Provincial agency, Northern Cape Economic Development Trade, and Investment Promotion Agency (NCEDA) in 2015. She has been with the Northern Cape Province for 7 years and responsible for Renewable Energy inward and outward investment promotion. She has international experience started at the Department of Energy when she represented the country in Clean Energy Ministerial planning meetings in Mexico in 2013 and

2014, the SADC region planning for SACREE in Botswana and being part of the SAGEN programme in Germany in 2013. Since she has promoted the country in different missions such as Hong Kong, Dubai and China.



**Panellist:**

**Samantha Ralston-Paton, Birds and Renewable Energy Project Manager  
Landscape Conservation Programme**

[energy@birdlife.org.za](mailto:energy@birdlife.org.za)

Samantha Ralston-Paton (Sam) is BirdLife South Africa's Birds and Renewable Energy Project Manager, a position Investec Corporate and Institutional Banking has sponsored since its inception in 2012. Sam works with consulting bird specialists, ornithologists, environmental assessment practitioners, government, and the renewable energy industry to help ensure that the impacts of renewable energy on birds and their habitats are understood and minimised. She has an MSc degree in Conservation Biology and over 15 years' experience in the field of integrated environmental management. Sam is passionate about environmental sustainability, and enjoys challenging herself, and other people to have a more positive impact on the planet.



**Panellist:**

**Liandra Scott-Shaw, SLR Consulting**

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Liandra joined SLR in March 2021 in her capacity as Senior Environmental Consultant and has over 8 years' experience as an Environmental Assessment Practitioner within the environmental consulting field. She has degrees in Biological and Ecological Science and has expertise in a wide range of environmental disciplines, including Environmental Impact Assessments, Environmental Management Programmes, Environmental Compliance Monitoring & Auditing and Vegetation Assessments and Diatom Biomonitoring.

She has been responsible for the management of a wide range of projects, including environmental authorisations, compliance monitoring and auditing, vegetation assessments and permitting and diatom biomonitoring.

Over the last few years Liandra's focus has been in the renewable energy sector. Specifically involved with Environmental Impact Assessments and specialist management for the Risk Mitigation Independent Power Producer Procurement and Renewable Energy Independent Power Producer Procurement Programmes (RMIPPPP and REIPPPP).

## Economic Pillar, Panel Discussion

**Title**

## Ecological Engineering Education: Towards Carbon Reduction Technologies

**Abstract**

Ecological Engineering has immense value for combining the rigour of engineering and science with the systems-approach of ecology for pro-active management of the Earth's biodiversity and environmental life-support systems. However, although originating in the 1950s, it remains a niche discipline; is largely unpractised in environmental and engineering problem solving; and is often not included in academic curriculum in South Africa and Internationally. This panel discussions aims to raise awareness on Ecological Engineering Education and how the discipline may be applied towards promoting carbon reduction technologies. The discussion will start by providing definitions for Ecological Engineering, local and international case study examples of the use of Ecological Engineering for solving challenges will be provided. We will then examine the extent or lack thereof of Ecological Engineering in academic curriculum. Lastly solutions are offered. This informative discussion will be followed by a question-and-answer session.

**Structure:**

1. Introduction – Dr Vanessa Weyer & Jessica Badenhorst
2. Ecological Engineering Definitions – Dr Glenn Dale
3. International Case Study Examples - Dr Alexandros Stefanakis
4. South African Case Study Examples – Yolandi Schoeman
5. Ecological Engineering in or the lack-thereof in Curriculum – Professor Jennifer Broadhurst
6. Question & Answer Session

**Biographies****Co-chair:**

**Dr Wanessa Weyer, Enterprises University of Pretoria & Independent Environmental Research Scientist**

[vweyer@ther2ainmodel.com](mailto:vweyer@ther2ainmodel.com)

Vanessa's career commenced as a horticulturist and as a landscape designer and contractor. When the first Environmental Impact Assessment Regulations were promulgated in South Africa in 1997, she transitioned into environmental planning and impact assessment work. This led to her completing her MSc in Environment and Development at the University of Natal in 2002. After gaining environmental impact assessment experience for several years, Vanessa commenced a PhD in 2013 at the Sustainable Minerals Institute, Centre for Mined Land Rehabilitation, University of Queensland, Brisbane, Australia. She later transferred this to the University of Pretoria, South Africa, where her PhD was conferred in 2020. Vanessa specialises in sustainable futures research: environmental, minerals, agriculture, degraded land rehabilitation, risk assessment and integrated environmental modelling.

**Co-chair:**

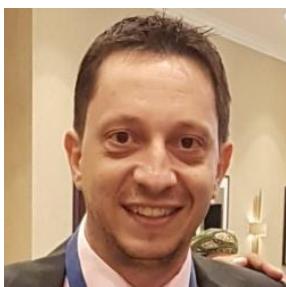
**Jessica Badenhorst, Jones & Wagener**

[jessica@jaws.co.za](mailto:jessica@jaws.co.za)

Jessica is an environmental scientist at Jones & Wagener Engineering and Environmental Consultants where she is involved in various environmental projects including Environmental Impact Assessments (EIAs), Environmental Management Programme Reports (EMPRs), Auditing, Water Use Licensing, mine closure, wetland- and aquatic assessments, and research projects. She is also part of the Sustainable Committee at Jones & Wagener, where she contributes to sustainable development initiatives which includes sustainability reporting and carbon footprint calculations. She holds a BSc (Hons) degree in Zoology and an MSc degree in Entomology from the University of Pretoria and is a Candidate Environmental Assessment Practitioner registered with EAPASA. Jessica enjoys scuba diving, hiking, and reading.

**Panellist:****Dr Glenn Dale, Verterra Ecological Engineering, Australia**[glenn.dale@verterra.com.au](mailto:glenn.dale@verterra.com.au)

Glenn is Managing Director and Chief Technical Officer of Verterra. Glenn Holds a BSc in Forestry and Biochemistry, a PhD in Molecular & Quantitative Genetics, and an MBA. He currently holds an appointment as Adjunct Associate Professor with the University of Southern Queensland. Glenn has over 34 years' practical experience in natural resource management and ecological engineering, with broad international experience including New Zealand, China, USA, England, Spain, Portugal, Malaysia, Colombia, Brazil, Tanzania, and Rwanda. Glenn's work in breeding salt tolerant eucalypts was nominated as a finalist for the inaugural Institution of Engineers Australia National Salinity Prize in 2002 and was runner up in the 2004 Australian Museum Eureka Science Prize for Industry. Glenn has expertise in management and restoration of saline-sodic environments. He has worked across a wide variety of sectors including forestry, agriculture, water supply, municipal, natural resource management, mining, and coal seam gas, enabling him to bring an integrated, multidisciplinary perspective to new challenges in soil, water and vegetation management in land rehabilitation and beneficial use of wastewater and organics. Glenn is adept at the practical application of Ecological Engineering with research to support knowledge gaps and development.

**Panellist:****Professor Alexandros Stefanakis, Technical University of Crete, Greece**[astefanakis@isc.tuc.gr](mailto:astefanakis@isc.tuc.gr)

Dr Stefanakis is Assistant Professor at the School of Chemical and Environmental Engineering, Technical University of Crete, Greece. He is Regional Coordinator of Africa and Middle East for the 'Wetlands for Water Pollution Control' Group of the International Water Association. He is Editor-in-Chief of the journal 'Circular Economy and Sustainability', and Associate Editor in other journals. He is an Environmental Engineer and Researcher focusing on water engineering, specifically on nature-based solutions and ecological engineering, and studies the content and realization of circular economy. He is an expert on sustainable and decentralized water and wastewater treatment systems such as Constructed Wetlands. He has designed, managed, and constructed several such facilities across Europe, Middle East, Africa, USA, and South America. In the past, he worked as Researcher and Lecturer at the University of Brighton (UK), the University of Beira Interior (Portugal), the Helmholtz Center for Environmental Research – UFZ (Germany), and the Democritus University of Thrace (Greece). He has also been employed by a Greek and a German multinational company as professional engineer. His publication record includes 37 articles in scientific journals, more than 50 papers in scientific conferences, three books and several book chapters.

**Panellist:****Yolandi Schoeman, Centre for Environmental Management, Faculty of Natural and Agricultural Sciences, University of the Free State**[schoeman.yolandy@gmail.com](mailto:schoeman.yolandy@gmail.com)

Yolandi Schoeman is a globally recognized Ecological Engineer and Sustainability Specialist. She has innovated and contributed to world-class products and services in ecological engineering, the circular economy and sustainability, specifically in the USA, Europe, Russia, Australia, and Africa. Her track record includes developing global innovations, delivering sustainability service excellence, and building networks that continue to play a critical role in advancing planetary health. She also specializes in water-energy-food nexus accounting and deciphering coupled human and natural systems.

**Panellist:****Associate Professor Jennifer Broadhurst (PhD, Pr.Sci.Nat), Minerals to Metals, University of Cape Town**[jennifer.broadhurst@uct.ac.za](mailto:jennifer.broadhurst@uct.ac.za)

Associate Professor Jennifer Broadhurst has more than 35 years research and development experience in the field of mineral's beneficiation within various industry and academic organisations. Building on her industrial experience, the overarching aim of her academic research over the past two decades has been to actively contribute to a more environmentally and socially-responsible primary minerals industry through the development of an enhanced understanding of, and innovative approaches and effective tools for, minimising the long-term environmental impacts associated with mine waste, polluted water and degraded land, as well as the concomitant adverse effects on the quality of life and livelihoods of surrounding communities. She is currently serving as Research Director of the Department of Chemical Engineering, Deputy Director of Minerals to Metals, Director of the GCRF Mine Dust & Health Network, and Interim SARChI: Bioprocess Engineering.

**Panellist:****Kirthi Chetty, University of Cape Town**[kirthi1999@outlook.com](mailto:kirthi1999@outlook.com)

Kirthi Chetty is a final year Chemical Engineering student at the University of Cape Town. Her passions and interests include issues of social justice, the ocean and sustainability. She wishes to use her skills to develop sustainable and affordable solutions to help develop South Africa, Africa, and the world.

## Economic Pillar, Panel Discussion

**Title**

## Decarbonisation and Renewables: New Environmental Impacts to Mitigate

**Abstract**

Whilst it is recognised that decarbonisation and a move away from coal mining activities is necessary to mitigate climate change, the transition will not be without challenges. A new set of bio-physical and social-economic impacts associated with the closure of existing coal mines and the opening of new mines to service renewable energy production will need to be mitigated. This panel discussion unpacks the complex issues around this. We start by contextualising the Just Transition. We then delve into the type of minerals and the vast quantities that will be required to produce renewable energy, followed by insights into the impacts that are likely to occur from the closure of coal mines and the opening of new mine types. A synopsis of the impacts associated with renewable energy is then provided, noting that renewable energy production is not impact free and, in some instances, substantial impacts exist. We close by providing a vision of what mining could look like into the future.

**Structure:**

1. Introduction – Dr Vanessa Weyer & Jessica Badenhorst
2. The Just Transition Contextualised – Gaylor Montmasson-Clair
3. Large Quantities of Minerals from Where? – Professor Jennifer Broadhurst
4. General Impacts from Closing Mines & New Mine Types Opening – Mike O’Kane
5. Social Impacts from Closing Mines & New Mine Types Opening – Jessica Edwards
6. A Focus on Impacts from Renewables: Not Impact Free – Taryn Bigwood
7. A Future Vision for Mining – Mike O’Kane
8. Question & Answer Session

**Biographies****Co-chair:**

**Dr Vanessa Weyer, Enterprises University of Pretoria/ Independent Environmental Research Scientist**

[vweyer@ther2ainmodel.com](mailto:vweyer@ther2ainmodel.com)

Vanessa’s career commenced as a horticulturist and as a landscape designer and contractor. When the first Environmental Impact Assessment Regulations were promulgated in South Africa in 1997, she transitioned into environmental planning and impact assessment work. This led to her completing her MSc in Environment and Development at the University of Natal in 2002. After gaining environmental impact assessment experience for several years, Vanessa commenced a PhD in 2013 at the Sustainable Minerals Institute, Centre for Mined Land Rehabilitation, University of Queensland, Brisbane, Australia. She later transferred this to the University of Pretoria, South Africa, where her PhD was conferred in 2020. Vanessa specialises in sustainable futures research: environmental, minerals, agriculture, degraded land rehabilitation, risk assessment and integrated environmental modelling.

**Co-chair:**

**Jessica Badenhorst, Jones & Wagener**

[jessica@jaws.co.za](mailto:jessica@jaws.co.za)

Jessica is an environmental scientist at Jones & Wagener Engineering and Environmental Consultants where she is involved in various environmental projects including Environmental Impact Assessments (EIAs), Environmental Management Programme Reports (EMPRs), Auditing, Water Use Licensing, mine closure, wetland- and aquatic assessments, and research projects. She is also part of the Sustainable Committee at Jones & Wagener, where she contributes to sustainable development initiatives which includes sustainability reporting and carbon footprint calculations. She holds a BSc (Hons) degree in Zoology and an MSc degree in Entomology from the University of Pretoria and is a Candidate Environmental Assessment Practitioner registered with EAPASA. Jessica enjoys scuba diving, hiking, and reading.

**Panellist:****Gaylor Montmasson-Clair, Trade & Industry Policy Strategies**

[gaylor@tips.org.za](mailto:gaylor@tips.org.za)

Gaylor Montmasson-Clair is a Senior Economist at Trade & Industrial Policy Strategies (TIPS). He leads TIPS's work on Sustainable Growth. Gaylor is also a Research Associate at the University of Johannesburg's Centre for Competition, Regulation and Economic Development (CCRED). He holds two Masters degree, respectively in International Affairs from the Institut d'Etudes Politiques (Sciences Po) of Grenoble, France, and in Energy and Environment Economics from the Grenoble Faculty of Economics, France. Gaylor has been working on green economy issues for more than 12 years and has carried out extensive research on the transition to an inclusive green economy from a developing country perspective, with a focus on policy frameworks, industrial development, just transition and resource security. Prior to TIPS, Gaylor worked at the French Ministry of Economy and Finance as well as the United Nations Environment Programme (UNEP).

**Panellist:****Professor Jennifer Broadhurst, Minerals to Metals, University of Cape Town**

[jennifer.broadhurst@uct.ac.za](mailto:jennifer.broadhurst@uct.ac.za)

Associate Professor Jennifer Broadhurst has more than 35 years research and development experience in the field of mineral's beneficiation within various industry and academic organisations. Building on her industrial experience, the overarching aim of her academic research over the past two decades has been to actively contribute to a more environmentally and socially-responsible primary minerals industry through the development of an enhanced understanding of, and innovative approaches and effective tools for, minimising the long-term environmental impacts associated with mine waste, polluted water and degraded land, as well as the concomitant adverse effects on the quality of life and livelihoods of surrounding communities. She is currently serving as Research Director of the Department of Chemical Engineering, Deputy Director of Minerals to Metals, Director of the GCRF Mine Dust & Health Network, and Interim SARChI: Bioprocess Engineering.

**Panellist:****Jessica Edwards, SRK Consulting**

[jedwards@srk.co.za](mailto:jedwards@srk.co.za)

Jessica Edwards is Senior Social Consultant with over 18 years' experience in social safeguard practices. She holds a Masters degree in Environment and Society from the University of Pretoria, and has completed over 40 Social Impact Assessments and similar social studies. Recently, Jessica has been at the forefront of developing mechanisms to ensure social transition towards mine closure to ensure a sustainable transition for communities beyond mining. Jessica has been working on Social Safeguard Auditing against the International Finance Corporation (IFC) Performance Standards, as well as several Competent Persons Reports and Due Diligence assessments.

**Panellist:****Mike O'Kane, O'Kane Consultants**

[mokane@okc-sk.com](mailto:mokane@okc-sk.com)

Mike O'Kane founded Okane Consultants (Okane) in 1996, a company providing integrated mine planning and closure outcomes to the mining industry internationally. Mike continues to work with Okane as a senior technical advisor, using his wide-ranging technical expertise and knowledge on risk management best practices as tools for development and communication of project objectives and designs. He utilizes a life of asset value framework that incorporates evaluation for optimizing the "best" next land use with an acceptable level of residual risk while maximizing incremental net present value and achieving progressive ESG outcomes. Mike provides independent peer review to mine operators and owners, as well as State, Territorial, Provincial, and Federal government agencies, and is a member of several closure planning and/or technical advisory panels. Mike is the lead author on numerous documents pertaining to cover system and landform design, implementation, and performance monitoring. Mike provides landform and cover system design workshops / short courses at leading mine waste management conferences around the world. Mike

is a subject matter expert on the application of unsaturated zone hydrology and geochemistry for mine waste management. Mike is a director of the Landform Design Institute and chair of its Technical Advisory Panel. In 2014 Mike received the University of Saskatchewan Alumni Achievement Award in 2014 for "Global Development of his Business and Corporation, and Philanthropy".



**Panellist:**

**Taryn Bigwood, Southern Africa Energy Program**

[tbigwood@southernafricaenergy.org](mailto:tbigwood@southernafricaenergy.org)

Taryn is passionate about all aspects of the environment and has worked in multiple sectors from conservation to development, water, energy, and mining in an environmental capacity. In 2013 she started Environmental Management Assistance (Pty) Ltd. (EMA); a company whose goal is to assist developers become sustainable. Taryn was on the IAIAsa Mpumalanga committee for several years and on the IAIAsa NEC in 2019. She is currently in her 3<sup>rd</sup> year as an advisor on the United Nations committee for combating desertification in South Africa and is on a full-time fixed contract with Deloitte international consulting on the Southern Africa energy program, for power Africa and USAid, acting as an environmental specialist, advising the SADC region on environmental practices in the energy sector. Taryn holds a Research Masters in Geography specializing in Geomorphology (landscape change), her research project entailed looking at the Geomorphic Impact of Elephants on the Tembe Elephant Park. She also holds an Honours degree in Social Science Geography (with full academic colours and distinction), a Bachelor of Social Science degree in Environmental Management and Geography, and a Diploma in Game Ranging and Lodge Management. Taryn has a combined 17 years' experience in: conservation, scientific services in protected areas, ecological reporting, ecological monitoring, development of protected areas management plans, assisting with development of elephant management plans, environmental compliance (she was a grade 2 Environmental Management Inspector for iSimangaliso Wetland Park Authority), energy advisory in the SADC region, renewable energy (Solar (PV, CSP, Solar Home systems, mini grids, transmission lines, wind and hydroelectric power), mining, Environmental licensing, working with resettlement actions plans, working with the RAP team, developing the environmental and social sections in operation and maintenance manuals, implementation, developing environmental management systems, environmental auditing and water resource development and training water affairs officials to be EMI on key legislation and utilities on environmental management systems. In addition, she also has extensive experience in a wide range of environmentally related projects, processes, and applications for private, commercial and industrial clients, in addition to local, provincial and national government departments and has project experience funded by development banks, such as the World Bank and the African Development Bank, where she played an advisory role to help utilities implement the safeguards and banks sustainability standards and goals. She has also assisted SAEP with implementing a project relating to Wildlife and Energy in several SADC countries, which is driven by the Endangered Wildlife Trust.

## Social Pillar, Panel Discussion

**Title**

## The Sustainable Development Goals in Practice: Examples from the field

**Abstract**

It is easy to impact assessment practitioners to relate to the environmental pillar of the SDGs. Although it is common knowledge that there are a social and economic pillar as well, it is not always clear on how to integrate these pillars from an environmental perspective. The aim of this panel is to hear from practitioners that are implementing and researching socio-economic projects in the environmental field to share their experiences and tell some of their stories. Jules Newton will share her experiences as director of the The Green Business Value Chain, which seeks to catalyse South African society towards integrated approaches to building rural and urban economies in the green sector. Dr Gomotsegang Fred Molelekwa will share his vision and experience of assisting communities to create economically viable and environmentally friendly projects out of waste material such as invader plants. Justin du Toit will share his experience as an agricultural economist and agribusiness specialist. Lehman Lindeque will share his experience as manager of the Sustainable Land Management programme of the UNDP and give feedback on some of the small grant projects awarded to encourage sustainable land management. The panel will then discuss practical ways to put the SDGs in action in the field of integrated environmental management. Challenges, obstacles, and opportunities will be discussed.

**Format:** Each panellist will be allocated 10 minutes, which will include a seven-minute presentation, with three minutes for questions. For the remaining 20 minutes Ilse Aucamp will facilitate a group discussion, including the audience.

**Biographies****Chair:****Dr Ilse Aucamp, Director Equispectives Research and Consulting Services**

[ilse@equispectives.co.za](mailto:ilse@equispectives.co.za)

Ilse Aucamp is a Director of Equispectives Research and Consulting Services in South Africa. She conducts social, gender and human rights assessments, due diligence studies, public consultation, stakeholder management processes and designs and implement social impact management strategies. She has a keen interest in social development and social entrepreneurship. Ilse is an internationally published author and has a passion for research. As such, she has worked on large research projects with a focus on integrating social aspects of environmental management into the biophysical sciences. Ilse teaches Social Impact Assessment on a masters' degree level at several universities in South Africa. She also supervises masters and doctoral students in the environmental and social fields. Her passion is working with grassroots communities. Ilse has 25 years' experience as a social scientist and has worked all over the African continent. She also worked as a social worker in the United Kingdom and an English teacher in Taiwan. She holds a DPhil degree in Social Work from the University of Pretoria and a Masters' degree in Environmental Management from North-West University.

**Panellist:****Jules Newton, Avocado Vision**

[jules.newton@avovision.co.za](mailto:jules.newton@avovision.co.za)

Jules is at heart a social entrepreneur. After founding and building Avocado Vision for 22 years, she has now taken on the role as Programme Director for the Green Business Value Chain, run in partnership with the Department of the Environment, Forestry and Fisheries. She brings together her decades of experience in small business and supplier development, innovative community education solutions, and a passion for connecting informal and formal economies to the new role. The Green Business Value Chain seeks to catalyse South African society towards integrated approaches to building rural and urban economies in the green sector. Corporate imagination and innovation are necessary to create the market links to enable rural economies to thrive, and to create the conditions under which the rivers we all depend on can begin to flow again.

**Panellist:****Dr Gomotsegang Fred Molelekwa, Gomotsegang Consultancy**

[molelekwagf@tut.ac.za](mailto:molelekwagf@tut.ac.za)

Dr Molelekwa is the founder of Gomotsegang Consultancy, a company that provides professional services in the fields of health and environment. Fred is a Research and Innovation Associate at TUT in the Faculty of Science. He has extensive experience in Environmental Health (Public Health), Environmental Management and Membrane Technology. He worked for both the public and private sector, including the United Nations' Basel Convention Regional Training Centre, focusing on Hazardous Waste Management Training in Africa. He lectured various courses, including Epidemiology, Water, Air Quality and Waste Management at TUT. He has been involved in community education and awareness raising programmes in collaboration with various municipalities and private sector companies. He is currently giving health talks once a week on Motswedding FM about COVID-19 related matters. Dr Molelekwa is an experienced project manager including, but not limited to, the following: (1) Research on Waste Minimization Approach: International and Local Case Studies in preparation of South Africa's National Waste Management Strategy (2018); (2) Improvement of activity data in the solid waste disposal, incineration and open-burning of waste for the period 2000 – 2017 in preparation for South Africa's GHG emissions Inventory-GIZ (2019); (3) Economic Assessment and Development of Funding Model for the delivery of Municipal Health Services in Ekurhuleni Metropolitan Municipality, Buffalo City Metropolitan Municipality, Gert Sibande District Municipality and Pixley ka Seme District Municipality (2019); (4) Conducting Research Capacity Building Workshop for the officials of the Department of Higher Education & Training (2020). He has supervised research projects for postgraduate and wrote book chapters, published his research work in peer reviewed journals and presented at local and international conferences. Dr Molelekwa has two patents to his name, the first is the method for the development of low-cost membranes from plastic waste for the purification of drinking water in small rural communities; and the second is the technology for energy efficiency at household, industrial and municipal level. He is currently involved in the production of low cost and environmentally friendly briquettes from waste biomass to fulfil the energy needs of low-income communities, while at the same time addressing the challenges of waste management, especially at municipal level.

**Panellist:****Lehman Lindeque, UNDP**

[lehman.lindeque@undp.org](mailto:lehman.lindeque@undp.org)

Lehman Lindeque was born in the Northeastern Free State town of Reitz where he is currently living. Lehman has 24 years' experience at the National Department of Agriculture where he contributed extensively to the monitoring and assessment of natural resources, training in land degradation, Sustainable Land Management, as well as the design and impact monitoring of LandCare Projects. In addition, he led the technical and participatory assessments of land degradation in South Africa as part of the FAO funded Land Degradation Assessment in Drylands (LADA) Project and provided expert advice to many local and other African projects. In 2016, he joined the United Nations Development Programme (UNDP) as the Project Manager for a Global Environment Facility funded project on Sustainable Land Management. Lehman's field of expertise is the assessment and evaluation of land degradation; the design, management, and monitoring of SLM interventions in agro-ecological systems; and the use of holistic and integrated approaches based on the understanding of the interaction between humans and nature in these systems. Lehman has a National Diploma in Agriculture: Resource Conservation and Utilization, a BSc degree in Geography and Operational Research, Honours in Geography from UNISA and a master's in environmental studies from the University of Newcastle in Australia.

**Panellist:****Justin du Toit, Vuna Agribusiness**[jdutoit@vunaagribusiness.com](mailto:jdutoit@vunaagribusiness.com)

Justin du Toit is the Managing Director of Vuna Agribusiness (Pty) Ltd – a Durban-based consultancy specialising in agricultural development and agribusiness. Justin is an Agricultural Economist by training and profession who uses his strengths in strategic, critical and 'outside-the-box' thinking to develop client-focused solutions across a wide range of consulting projects. Since 2009, he has contributed to and managed over 130 large and small scale agricultural, sustainable development and spatial planning projects in countries including Angola, Botswana, Kenya, Lesotho, Malawi, Mozambique, the Sultanate of Oman, Rwanda, South Africa, Sudan, Tanzania, and Zambia. Through these projects he has developed a core skill set which comprises the ability to gather, analyse and interpret data and to generate meaningful recommendations for Clients. These projects have also allowed him to develop his skills as a project and people manager of integrated and sometimes complex projects.

## Social Pillar, Panel Discussion

**Title**

## Recent Court Responses to the Shifting Social Agenda and Lessons for IEM

**Abstract**

Recent cases will be discussed that talk to the inclusion/consideration of SDGs in our SA IEM tools or unpacking the legal issues and how to bind SDGs into EIA's. The panel will be chaired by Advocate Peter Kantor, Chairman of the ELA, and comprise of members of the Environmental Law Association. Each panel member will present on a recent court case dealing with a significant environmental law issue and this will be followed by a short discussion on the case. Peter Kantor will then guide a more general session on the key themes that emerge from the panel's deliberations.

**Biographies**

**Chair:**  
**Advocate Peter Kantor, Environmental Law Association**  
[kantorcc@iafrica.com](mailto:kantorcc@iafrica.com)

Advocate Peter Kantor has 25 years' experience in environmental law and practices as an advocate of the High Court of SA in Cape Town specialising in environmental, labour, and constitutional law. He was previously a partner in a firm of attorneys in Cape Town and is currently chairman of the Environmental Law Association and a trustee of the Cape Town Heritage Trust.



**Panellist:**  
**Tiisetso John Rantlo, North-West University**  
[John.Rantlo@nwu.ac.za](mailto:John.Rantlo@nwu.ac.za)

Tiisetso John Rantlo is a Doctoral (LLD) candidate at the North-West University in the Faculty of Law. Tiisetso obtained his LLB degree at the National University of Lesotho. He was admitted as an advocate of the Courts of Lesotho and practiced as such for some time. Tiisetso also obtained his LLM in Environmental Law and Governance in 2015 at the North-West University. He is currently working on his doctoral thesis focusing on Environmental Authorisations in South Africa.



**Panellist:**  
**Dr Angela van der Berg, Global Environmental Law Centre**

Dr Angela van der Berg is the Acting Director of the newly established Global Environmental Law Centre (GELC) at the University of the Western Cape, Faculty of Law. She holds this position with the position of Senior Lecturer in the Department of Public Law and Jurisprudence where she runs and teaches in the LLM (masters) in Environmental Law. Before joining UWC in March 2021, Angela was appointed as Assistant Professor: International Justice and Global Challenges at Leiden University, Netherlands. Angela obtained a joint PhD in Law and Development in December 2019 with Tilburg University, Netherlands, and the North-West University, South Africa. Her PhD research concerned the Role of Municipal Planning Law and Policy in the Pursuit of SDG 11 (sustainable cities) in the South African context. Her current research pertains to climate law and governance in cities, and comparative constitutional law and nature.

**Panellist:****Catherine Warburton, Managing Director, Warburton Attorneys Inc.**[catherine@imbewu.co.za](mailto:catherine@imbewu.co.za)

Catherine Warburton established Warburton Attorneys in the year 2000 and the firm celebrated its 20<sup>th</sup> year of operation last year. Catherine has acted as the Managing Partner of Warburton Attorneys since inception and the Managing Director of Warburton Attorneys Inc from 1 March 2020. (See [www.warburtons.co.za](http://www.warburtons.co.za).) Catherine has more than twenty years of practical experience in the relatively new field of sustainability law in South Africa. Her experience has been mainly developed across a broad spectrum of infrastructure development and mining projects. She has also assisted NGO groups and government with legal advice and has provided input into governmental policy development in South Africa. Catherine was involved in the environmental legal aspects of the Gautrain Project as specialist advisor from 2002 to 2016 and has advised on several development projects and climate and energy related projects. Whilst working as in-house Environmental Legal Counsel for Anglo American she completed a two-and-a-half-year international sustainable development training programme in 2001 entitled LEAD i.e., Leadership for the Environment and Development. In 2012 Catherine completed a Sustainability Reporting Course, certified by the Global Reporting Initiative (GRI). In 2013 she completed the GRI Certified Course based on the G4 reporting guidelines. Catherine completed her dissertation for her Master of Laws at Wits University in 2014 with distinction. The title of her dissertation was, "Evaluating South African EIA processes in the context of the Gautrain Project". Catherine has developed specific expertise in the area of climate change. She has attended UNFCCC meetings as a South African business representative and has worked on greenhouse gas mitigation and reporting projects in South Africa. She presents papers and training courses on a wide range of sustainability legal issues in South Africa. She provides strategic legal advice at the Board level, is currently advising on a number of mine closure projects and is acting in a large corporate criminal environmental prosecution. From 2007 - 2012 the Practical Law Company in London rated Catherine as a "highly recommended" attorney in the field of environmental law in South Africa. From 2013 – 2021 Catherine Warburton has been listed as one of the Best Environmental Lawyers in South Africa by Best Lawyers SA. She was ranked in the Chambers & Partners Guide (Environmental) on Band One from 2016 to 2020, in Who's Who Legal (Environmental) from 2015 to 2020 and in Who's Who Legal (Climate Change) in 2018 -2020. The Chambers 2020 Guide reported that she possesses a wealth of knowledge covering all manner of environmental advisory, compliance and contentious issues. Clients are quick to praise her as "extremely approachable while simultaneously being an expert in environmental law with vast amounts of experience" and describe her as "methodical, meticulous, experienced and efficient". Catherine serves as the vice-Chairperson of the Law Society of South Africa's Committee for Environmental Law and was a member of the Gauteng MEC's External EIA Appeals Advisory Panel from 2015 to 2019.

## Social Pillar, Panel Discussion

### Title

## Fulfilling Mandates Towards Improved Governance and Professional Standards

### Abstract

The aim of this panel discussion is to interrogate how existing legislation and institutions have improved environmental and social governance issues in South Africa. The panel will also focus on how institutions such as Department of Forestry, Fisheries and Environment (DFFE), the Environmental Assessment Practitioners Association of South Africa (EAPASA), the South African Council for Natural and Scientific Professionals (SACNASP), and the International Association of Impact Assessments South African Affiliate (IAIAsa), have managed the registration and regulatory aspects of practicing environmental professionals. Focus will also be placed on the public and media expectations with regards to governance and ethical considerations within the Environmental sector. A case study of EAPASA as the single legally constituted entity which is appointed under Section 24H of the National Environmental Management Act, Act No. 107 of 1998 (NEMA) and Section 24H Registration Authority Regulations as the only registration and regulatory body for professional Environmental Assessment Practitioners (EAPs) in South Africa will be used as the reference point. EAPASA has also been recognised by the South African Qualifications Authority (SAQA) as a Statutory Professional Body in terms of the NQF Act, Act 67 of 2008 (as amended, March 2018). The panel discussion will highlight key performance indicators that enable the successful implementation of such legislation and related institutions as well as challenges and obstacles encountered along the way. This will be unpacked by providing each panellist with an opportunity to present their organisation's mandate, achievements and areas for growth particularly looking at:

- registration numbers and numbers of misconduct complaints received by professional bodies such as EAPASA and SACNASP;
- EIA applications received and processed as well as appeals received and resolved by the National competent authority; and
- The number of training opportunities, communications, networking opportunities and complaints received with respect to voluntary members (who are also subject to a code of conduct as members).

The panel discussion aims to promote transparency; provide an opportunity for information sharing and reflection; and to provide the audience with an opportunity to engage in personal experiences and queries in this regard that they would ordinarily not be in a position to discuss with the relevant role players.

### Biographies



#### Chair:

#### Jacqui Hex, EAPASA & Jones & Wagener

[jacqui@jaws.co.za](mailto:jacqui@jaws.co.za)

Jacqui Hex completed her MSc in Environmental Management (cum laude) in 2006 at the University of Johannesburg. She has worked at Jones & Wagener for over 10 years as an Environmental Scientist and is the Head of the Environmental Management department where she leads a team of knowledgeable, diligent, and dedicated Environmental Assessment Practitioners and Scientists. Jacqui is responsible for the Health and Safety portfolio at Jones & Wagener, ensuring the company achieves its first priority, which is the safety and wellbeing of their staff, their families, and the community as a whole. Jacqui is also a Director on the Board for Jones & Wagener International Limited and also serves on the Board for EAPASA where she is also a member of EXCO, the Registrations Committee and is the Chair of the PR Committee since 2017. She is a Registered Scientist with SACNASP since 2011 and a Registered EAP with EAPASA since 2019 and has been a continuous member of the IAIAsa since 2008.



**Panellist:**  
**Snowy Makhudu, EAPASA**  
[chairperson@eapasa.org](mailto:chairperson@eapasa.org)

Snowy Makhudu is Board Chairperson EPASA, Managing Director/Owner Tholoana Sustainable Development & Environmental Consultants. Snowy has vast experience in the environmental sector as a consultant and also having previously worked in government.



**Panellist:**  
**Sabelo Malaza, Department of Environment, Forestry & Fisheries**  
[Smalaza@environment.gov.za](mailto:Smalaza@environment.gov.za)

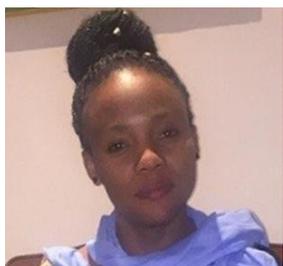
Mr Malaza is currently working as a Chief Director with over 18 years work experience in the Public Sector. His experience is notable in that it has been acquired exclusively in two national department, which are the Department of Water Affairs and Forestry as well as the Department of Forestry Fisheries and the Environmental, in diverse capacities. He has been instrumental in resolving national environmental issues, developing environmental policies, strategies, initiating and establishing various units from scratch and systems to aid the units to function effectively as well as setting up and chairing task teams to deliver particular deliverables. He has conducted several complex environmental regulatory audits of large-scale infrastructure projects and have served on several inter-governmental investigative panels tasked with investigating major environmental pollution incidents. He has represented the country in different capacities on issues relating to environmental management at an international level.

Mr Malaza has an Honours Degree in Information and Knowledge Management, his Masters in Business Administration and is currently doing his PhD in Business Administration.



**Panellist:**  
**Dr Pradish Rampersadh, SACNASP**  
[Prampersadh@sacnasp.org.za](mailto:Prampersadh@sacnasp.org.za)

Dr Pradish Rampersadh joined the South African Council for Natural Scientific Professions as its Chief Executive Officer on the 1st January 2016. SACNASP is the legislated regulatory body for natural science practitioners in South Africa. The natural sciences encompass a wide range of scientific fields covering all of the basic sciences and many of their applied derivatives. The key role of SACNASP is as a registration body for natural scientists and in so doing, provide protection to the public and the profession. As the CEO he is responsible for the operations and management of SACNASP and its activities. He brings with him a wealth of experience due to his diverse exposure to teaching, scientific research and management. Prior to joining SACNASP he was the Content Adviser to the Portfolio Committee on Energy in the National Assembly at the Parliament of South Africa. In this role he advised the Portfolio Committee on aspects related to its oversight role of the Department and entities involved in the Energy space in South Africa. The majority of his experience was however gained in the nuclear industry, ranging from research to regulatory management. Dr Rampersadh obtained his PhD in Inorganic Chemistry at the University of Witwatersrand and completed the Management Advancement Programme at the Wits Business School and the Technology Leadership Programme through Tshwane University of Technology. He currently represents SACNASP on various national platforms including voluntary associations.



**Panellist:**  
**Rethabile Mbokodi, IAIAsa & Eskom Holdings**  
[MbokodR@eskom.co.za](mailto:MbokodR@eskom.co.za)

Rethabile Mbokodi is the current President of IAIAsa. She is passionate about sustainable development and how the goal of sustainability can be achieved. She has 18 years working experience in environmental management and overall sustainable development. She is a registered Professional Natural Scientist with South African Council for Natural Scientific Professions (SACNASP). She is also a member of the Institute of Directors South Africa.

Some of her hobbies include teaching, training, facilitating and emceeding events.

**Panellist:****Dr Patrick Sithole, EAPASA**[sitholetp@gems.co.za](mailto:sitholetp@gems.co.za)

Dr Patrick Sithole is currently the Registrar of EAPASA. He is a Registered Environmental Assessment Practitioner (EAPASA), a Registered Natural Scientific Professional (SACNASP – Environmental and Chemical scientist) and a Social and Sustainability expert with 21 years of experience. Patrick specialises in Strategic Environmental projects, Social and Sustainable Development projects, Climate Change and Health, Environmental Management issues and Construction Supervision of all infrastructural projects. Dr Sithole is also involved in vegetation clearance and pest control projects along infrastructural projects e.g., roads, railway lines, power lines, golf courses and buildings like complexes, houses, malls, etc. Patrick has a very strong business development mindset that has seen him winning and working on projects across Africa and in Europe. His key experience includes the following areas; Environmental (Natural Resource) Management; Environmental Compliance; Social Facilitation and Consultation; Compensation of Land Claims; Climate Change; Climate (Change) and Human Health; Air Quality Management; Renewable Energy; Waste Management; Land Rehabilitation; Water Quality/Demand Management; Strategic Environmental Assessment; Waste Water (sewer) Treatment; Project Management; ISO 9001 and ISO14001; Vegetation Control Bush Clearance (Invasive plants).

# Stewardship Initiative

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One of the Associations' objectives for the Strategy Framework for 2025 and beyond is *advocating for sustainable outcomes and ethical practice in IEM*. In being consistent with aligning our work and events with the objectives of the Association and the conference theme *Rethinking IEM in pursuit of the Sustainable Development Goals (SDG)*, the Stewardship initiative for this year's virtual conference focuses on amplifying the positive work that members are doing in their personal and/or professional capacity. The Merriam-Webster dictionary defines Stewardship as the conducting, supervising, or managing of something especially the careful and responsible management of something entrusted to one's care.

The aim of the stewardship initiative this year was to get members to reflect on the legacy and impact their work and personal actions have in contributing towards attaining the SDGs. Members were requested to submit any projects they have worked on in their personal and/or professional capacity that are in line with the SDGs. Two types of categories were available for submissions namely.

1. Stewardship (legacy) projects in the professional capacity of members; and
2. Stewardship (carbon offsetting) projects in the personal capacity of members.

Our members are engaged in several stewardship initiatives in their professional and/or personal capacity and the submissions received reflected the variety of work members are doing. Submissions ranged from projects involving geospatial planning to modelling threatened species datasets.

IAIAsa would like to thank our members for continuing to leave a positive legacy that contributes towards a united global vision of sustainable development. We would like to encourage all members to continue in their pursuit of realising the SDGs and to endeavour to leave a positive legacy in the in the IEM field.

## Abulele Adams

