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## 1. PURPOSE

The Gauteng Environmental Research Symposium (GERS) is an annual event organized by The Gauteng Department of Agriculture, Rural Development and Environment in partnership with the University of Johannesburg's Process Energy and Environment Technology Station. This concept note outlines the plan of execution for the 6<sup>th</sup> Annual Symposium.

Its main purpose is to bring together officials from various departments, academia, research and other stakeholders, who shape the discussions that respond to the provincial government's contribution to South Africa's (National) environmental commitments, priorities and monitoring, evaluation and reporting (MER); provides a platform for providing feedback on actions, initiatives and programmes that are in line on the selected theme of the year as well as planned initiatives by various implementing and benefiting institutions; enhance knowledge sharing and networking (research collaboration) particularly regarding operational and strategic environmental issues, identifying gaps in available research and also to the networking and working together within the Gauteng City Region (GCR) while benefiting the general public.

Discussion of this year's symposium aims to promote sustainable environmental practices in the Anthropocene epoch. This period is characterized by significant human impact on Earth's geology and ecosystems. As Gauteng is the economic hub of South Africa, it is imperative to explore sustainable development pathways that balance economic growth with environmental stewardship. Therefore encourage the shift from policy to practice. This symposium aligns with the United Nations Environment Programme (UNEP) World Environment Day 2024 theme, **"Restore Our Earth: From Policy to Practice"**, which emphasizes the importance of translating environmental policies into actionable practices. The theme underscores the urgent need to restore ecosystems and promote sustainable development in line

with the United Nations' 2030 Agenda for Sustainable Development (United Nations, 2015).

The symposium will be held in a hybrid format as this has proven to increase attendance as it offers an option of attending either virtually or physically from various locations. This will enrich the outcomes of the sixth annual environmental research symposium.

## 2. OBJECTIVES

The primary objectives of this year's event are as follows:

- Discuss and determine the steps that can encourage a translation from policy to practice.
- Promote interdisciplinary collaboration by providing a platform that is conducive for sharing best practice approaches that can advance the province to be a positive contributor to the environmental sustainability objectives.
- Strengthen the knowledge sharing amongst government officials, academia, research and other stakeholders.
- Showcase innovation that is in line with the shift from policy to practice in the Anthropocene.
- Identify gaps in available research through a live polling system.

## 3. THEME

The selected theme of this financial year is ***"Sustainability: Translation From Policy to Practice"***

The United Nations Environment Programme (UNEP) World Environment Day 2024 theme, "Restore Our Earth: From Policy to Practice", emphasizes the critical need

to transition from theoretical environmental policies to practical, actionable measures aimed at ecological restoration and sustainability. This theme resonates globally, urging nations, communities, and individuals to engage in activities that regenerate ecosystems, mitigate climate change, and foster sustainable living practices.

In the context of Gauteng, South Africa's economic powerhouse, the theme "Sustainability in the Anthropocene: Integrating Research, Policy, and Practice" takes on special significance. Gauteng faces unique environmental challenges due to its rapid urbanization, industrial activities, and population growth, which exert considerable pressure on its natural resources and ecosystems. Integrating the UNEP theme into our symposium highlights the province's urgent need to implement sustainable practices that align with global sustainability trends.

Gauteng's ecosystems, including its wetlands, grasslands, and rivers, are under threat from urban sprawl and pollution. Restoring these ecosystems is vital for maintaining biodiversity, enhancing climate resilience, and securing water resources (UNEP, 2024). While Gauteng has progressive environmental policies, there is a pressing need to translate these policies into concrete actions. This involves community engagement, enforcement of environmental regulations, and investment in sustainable technologies (Swilling & Annecke, 2012). Gauteng is vulnerable to the impacts of climate change, such as extreme weather events and water scarcity. Implementing nature-based solutions and adaptive strategies is essential for building resilient communities (Rockström et al., 2009). As the economic hub, Gauteng can lead in sustainable urban development and green economy initiatives, creating jobs while reducing environmental impacts. This aligns with UNEP's call for green recovery and sustainable development (United Nations, 2015).

By adopting the UNEP theme, the symposium aims to foster a holistic approach that combines research, policy, and practical interventions tailored to Gauteng's specific environmental challenges. This alignment ensures that local actions contribute to global sustainability goals, reinforcing Gauteng's role in the global movement towards a sustainable future.

#### **4. BACKGROUND**

The Research and Development sub-unit within the Environmental Policy, Planning and Coordination (EPPC) Directorate, is planning to host its 6<sup>th</sup> Annual Gauteng Environment Research Symposium this year through a hybrid platform. The symposium is hosted in partnership with the University of Johannesburg's (Africa Centre of Evidence (ACE) and Process, Energy & Environmental Technology Station (PEETS); Centre of Environmental Education (CEE) and supported by few other organisations.

From the experience gained from successfully hosting the fifth annual symposium using a hybrid platform, the sixth annual symposium will also be hosted using the same platform. This platform can host over 600 participants at a time (the symposium is envisaged to have at least 180 physical attendees and 300 virtually); it can have multiple presenters and attendees based in different locations; moderators and chat/messaging during the proceedings.

The symposium's ability to provide great exposure for researchers and research institutes and its ability to improve the spirit of collaboration and sharing was proven in last years' annual event where more than 1000 (collectively) attendees participated and engaged on the theme of the day.

#### **5. PROBLEM STATEMENT**

While Gauteng has enacted progressive environmental policies, there is a notable gap between policy and practice. This disconnect is often due to insufficient enforcement, lack of public awareness, and inadequate funding for sustainability initiatives (Swilling & Annecke, 2012; Todes et al., 2020). Bridging this gap is

essential to ensure that environmental policies translate into effective actions that promote sustainable development (Swilling & Annecke, 2012; Hajer et al., 2015).

Despite these challenges, Gauteng has the potential to lead in sustainability through innovative approaches and interdisciplinary collaborations. Advancements in renewable energy, sustainable urban development, and artificial intelligence offer promising solutions for addressing environmental issues (UNEP, 2024; South African National Biodiversity Institute, 2016). By integrating research, policy, and practice, Gauteng can enhance its resilience and sustainability, contributing to global environmental goals (UNEP, 2024; Rockström et al., 2009).

Gauteng's environmental challenges require urgent and coordinated efforts to restore ecosystems, manage resources sustainably, and build climate resilience. The Gauteng Environmental Research Symposium 2024 aims to address these issues by fostering interdisciplinary collaboration, promoting innovative solutions, and bridging the gap between policy and practice.

Gauteng's ecosystems, including wetlands, grasslands, and rivers, are increasingly threatened by pollution, land use changes, and habitat destruction. Urban sprawl and industrial activities have resulted in significant loss of biodiversity and ecosystem services. For instance, water bodies in the province are heavily polluted with industrial effluents, posing risks to both human health and aquatic life (UNEP, 2024; Department of Environmental Affairs, 2018). The degradation of these natural resources undermines the ecological resilience of the region, making it vulnerable to climate change impacts such as droughts and floods (Rockström et al., 2009; Strydom & Hill, 2019).

The rapid growth of Gauteng has placed immense pressure on its natural resources. Water scarcity is a critical issue, exacerbated by over-extraction and pollution. The province's energy consumption is predominantly reliant on non-renewable sources, contributing to high carbon emissions and air pollution (Bhorat et al., 2017; South

African National Biodiversity Institute, 2016). The unsustainable use of these resources not only threatens environmental sustainability but also the economic stability of the region, as it faces increased costs and risks associated with resource shortages (Swilling & Annecke, 2012; Wossink & Swinton, 2007).

Gauteng is increasingly experiencing the adverse effects of climate change, including extreme weather events, heatwaves, and water scarcity. The region's infrastructure and communities are not adequately equipped to handle these impacts, leading to significant socio-economic disruptions (Ziervogel et al., 2014; Cartwright, 2015). Vulnerable populations, particularly in informal settlements, are disproportionately affected, highlighting the need for resilient infrastructure and adaptive strategies (United Nations, 2015; Parnell & Pieterse, 2014).

## **6. STRUCTURE OF THE SYMPOSIUM**

The ideal structure of the symposium includes a plenary session for presentations to the entire audience, which would then be followed by group discussions which have proven to yield better results in terms of getting enhanced engagement of stakeholders and collecting a large array of information on different sessions simultaneously.

The proposed keynote address for the plenary session:

This year the presenters, panelists and facilitators for the symposium will include government officials, non-governmental organizations, academia, researchers, private sector, etc. The GERS programme will include a Plenary Session which will be followed by three Parallel Group Discussions or breakaway sessions.

**Parallel Group Discussions are as follows:**



## 1. **Nature-based Solutions for Climate Resilience-** "Resilient Communities, Thriving Future."

This session will focus on the need for communities to develop resilience against climate change impacts, ensuring they not only survive but thrive in the face of environmental challenges. It echoes UNEP's focus on community-driven resilience and sustainability.

### **Discussion Questions:**

- How can community-led restoration projects be scaled up to effectively restore ecosystems and enhance resilience against climate change?
- What role does traditional knowledge play in modern conservation practices, and how can it be integrated effectively?
- What policy frameworks and incentives are necessary to support the widespread adoption of nature-based solutions in urban and rural areas?
- What are the economic and social benefits of nature-based solutions, and how can they be quantified and communicated to stakeholders?
- How can nature-based solutions contribute to both climate adaptation and mitigation, and what strategies are needed to implement these solutions at scale?

## 2. **Circular Economy Models in Urban Environments-** "Building Green Cities for Tomorrow."

This session will be discussing pathways towards achieving the UNEP's commitment to sustainable urbanization as well as engage in conversation that highlights the importance of planning and building cities that are environmentally friendly and sustainable for future generations.

### **Discussion Questions:**

- What are the most effective circular economy practices in urban waste management, and how can they be implemented more broadly?

- How can circular economy principles be integrated into urban planning and building design to promote sustainability?
- What are the best examples of public-private partnerships in circular economy projects, and what lessons can be learned from them?
- What are the economic benefits of circular economy models in urban environments, and how can they be leveraged to drive adoption?
- How can consumer behavior be shifted towards sustainable consumption, and what role does education play in this process?

### 3. **Decentralized Renewable Energy Systems and Microgrids-** "Powering Sustainability with Renewables."

This session will focus on the transition to renewable energy sources, crucial for reducing carbon footprints and achieving sustainable energy goals, mirroring UNEP's advocacy for clean and sustainable energy solutions.

#### **Discussion Questions:**

- What recent technological innovations in decentralized renewable energy systems show the most promise, and how can they be applied in various settings?
- How can microgrids be designed, deployed, and managed to enhance energy resilience and sustainability?
- What policy and regulatory frameworks are necessary to support decentralized renewable energy systems, and how can they be improved?
- What is the economic impact of decentralized renewable energy systems, and what innovative financing models can support their development?
- How can communities and stakeholders be effectively involved in the planning and implementation of decentralized renewable energy projects?

### 4. **AI for Predictive Analytics in Environmental Conservation-** "Innovating with AI for a Greener Earth."

This session will be deliberating on the intersection of technology and sustainability, this emphasizes the role of AI in advancing environmental conservation and innovation, supporting UNEP's initiatives on integrating advanced technologies for environmental protection.

### **Discussion Questions:**

- How can AI be used in wildlife monitoring and protection to enhance conservation efforts, and what are the most successful applications to date?
- How can AI be applied to assess ecosystem health, and what are the most promising technologies and methodologies?
- How can AI improve climate modeling and forecasting, and what impact does this have on policy decisions and climate resilience?
- How can AI-driven solutions for detecting and controlling pollution be implemented, and what are the key challenges and opportunities?
- What ethical and social implications arise from using AI in environmental conservation, and how can these be addressed to ensure responsible and equitable use?

## **5. DATE**

The proposed date for the Gauteng Environment Research Symposium for the 2024/25 financial year is 22 October 2024.

## **6. TARGET AUDIENCE**

The stakeholder database of the attendees from the previous environmental research symposium will be updated to ensure a wider engagement. The University of Johannesburg who we have entered into a memorandum of agreement with will also be afforded an opportunity to add their own stakeholders as they have been identified as possible presenters of their research projects. The stakeholder list of

the symposium is made up of officials from various directorates within various government departments, academia, research institutions and other stakeholders.

## **7. LINKAGE TO PROVINCIAL STRATEGIC PRIORITIES**

The Gauteng Environment Research Symposium is directly linked to key strategic plans such as: The Gauteng Provincial Government Priorities (GPG's) objective of radically transforming, modernizing and re-industrializing (TMR) of the province. The symposium's ability to draw a number of researchers in the environmental field to share experiences, key learning's and improvement of research will not only eliminate working in silos, competition and fragmentation but will also allow networking, collaboration and transform- improve the way research is conducted and sharing of outputs. The report that will be generated from the proceedings of the day will be shared to a wider audience and recommendations may be used to modernize the Gauteng City Region.

## **8. EXPECTED OUTPUT OF THE SYMPOSIUM**

A comprehensive report on the proceedings of the day, questions and answer session, recommendations, way forward, as well as feedback forms will be drafted and approved. The report will be shared to attendees as well as interested stakeholders who couldn't make it due to a number of reasons. The report will be used as a baseline for future research projects symposiums need to be undertaken in the Province. This will be complemented by presentations, recordings, etc.