



# Welcome

# Geep

GLOBAL 全球  
ENVIRONMENTAL 環境  
EDUCATION 教育  
PARTNERSHIP 夥伴

**GEEP Africa**

**Webinar: 19 May 2026**

# Welcome to the GEEP Webinar!



**GEEP Africa Webinar**  
**Environmental Education for  
Sustainable Land Use and  
Water Stewardship**  
May 19, 2026 | 12:00 PM ET  
[bit.ly/SustainableLandWaterWebinar](https://bit.ly/SustainableLandWaterWebinar)

**GeEP**  **naaee**



**Dr. Beatrice Olutoyin Opeolu**  
Professor  
Cape Peninsula University of Technology  
Founder of BEE Solutions and Consultancy Services



**Caleb Nyatuame, MA**  
PhD Student, School of Natural Resources & Environment,  
University of Florida 2025 NAAEE CEE-Change Fellow  
Volunteer, GEEP Africa Initiative & Reeves Scholar

# GEEP Africa Team



MJ

**Mphemelang Kethoiwe**  
Professor  
University of Botswana  
GEEP Africa Advisory Group



Adedoyin

**Adedoyin Adeleke**  
Founder and Executive  
Director, Green Growth Africa  
UN Science-Policy Leader



Cindy

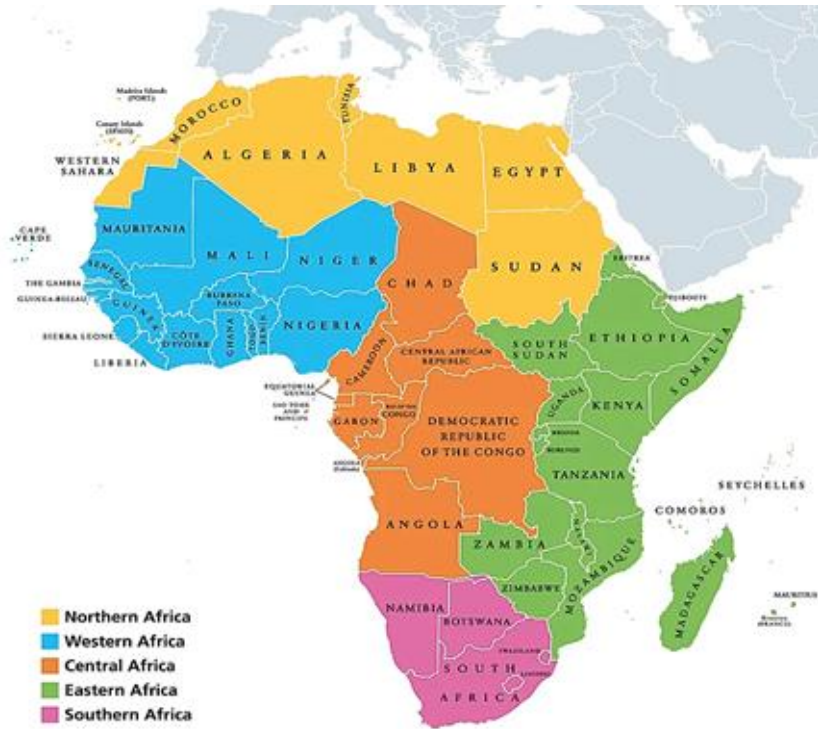
**Cindy-Lee Cloete**  
CEO  
WESSA (Wildlife and  
Environment Society,  
South Africa)



Ravhee

**Dr Ravhee Bholah**  
Associate Professor  
Mauritius Institute  
of Education

## GEEP AFRICA VISION AND MISSION



### VISION

A **just** and **sustainable** Africa through meaningful thought leadership and lifelong learning to maximise Africa's potential

### MISSION

To enable and strengthen a dynamic regional sustainability **movement** that is **transformational**, **collaborative**, and **grassroots oriented**, using multi-sectoral networks, social inclusion, and indigenous knowledge to advance Environmental Education for a just and sustainable Africa.

Use chat to join conversation & ask questions

**We Want To Hear From You**



**Add comments or questions in the chat!**

Live captioning and translations: click **Closed Caption**



The Zoom meeting control bar at the bottom of the screen. From left to right, it includes: a muted microphone icon, a video camera icon with a slash through it, a 'Participants' icon showing 2 people, a 'Chat' icon, a green 'Share Screen' icon, a 'Record' icon, a 'Show Captions' icon with 'CC', a 'Reactions' icon, an 'Apps' icon, a 'Whiteboards' icon, and a red 'Leave' button.

**This webinar will be recorded and shared**



# The Global Environmental Education Partnership



[thegeep.org](http://thegeep.org)

# MISSION of the GEEP



To create a vibrant learning network designed to build capacity in countries around the world to strengthen environmental education (EE) to create a more equitable and sustainable future.



# Incredible Partnerships!



International  
Environmental  
Partnership



Taiwan Ministry of the  
Environment



**Geep APRC**  
全球環境教育夥伴亞太中心  
Global Environmental Education Partnership  
Asia-Pacific Regional Center

**Geep Africa**

# Expert Advisory Group from around the world



# A Different Approach

Provide a space for leaders to talk openly, think creatively, and discuss how we can build capacity and have more impact in the field.



# Our Goal Is to Collaborate Across Borders and Share Effective Practice and Spark Collaboration and Learning!



# Working with Organizations around the World!





## **GEEP: A Network of Networks**

# Visit the Website to Find Out More

Join us on eePRO Global! Post resources, events, jobs, join groups, and share your profile with the community!

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A close-up photograph of several fossil shells, likely ammonites, showing their characteristic spiral patterns. The shells are illuminated with vibrant colors: purple, green, blue, and orange, set against a dark background.

**A Champion for Environmental Education  
Around the World**

**thegeep.org**



**Dr. Beatrice Olutoyin Opeolu**  
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**Caleb Nyatuame, MA**

PhD Student, Natural Resources &  
Environment

University of Florida

2025 NAAEE CEE-Change Fellow

Volunteer, GEEP Africa Initiative

- Caleb is advancing environmental education among non-formal environmental educators in Africa by integrating traditional ecological knowledge, AI innovation, and community engagement to promote sustainable futures.
- Caleb is an aspiring researcher and educator pursuing a Ph.D. in Interdisciplinary Ecology at the University of Florida.
- He has an undergraduate degree in Economics Education and a Master's in Sustainable Communities and his work focuses on environmental and place-based education
- His previous research examined how teacher educators, especially in Ghana, incorporate ecological issues and place-based education into their teaching practices
- His favorite memory in nature is walking to the beach to watch the waves come and go. It gives him the space to reflect and appreciate nature!



**Dr. Beatrice Olutoyin Opeolu**

Professor

Cape Peninsula University of Technology

Founder of BEE Solutions and Consultancy Services

- Founder and Director of BEE Solutions and Consultancy Services, which drives impactful solutions in environmental toxicology
- BEE Solutions tackles contamination challenges and health risks, emphasizing sustainable remediation strategies.
- She has extensive experience in environmental chemistry and toxicology, which informs her mission to foster healthier ecosystems and communities.
- She is passionate about capacity building and sustainability in the higher education sector.
- Immediate Past President of SETAC and contributor to global initiatives
- Beatrice champions collaboration and innovation in environmental science.
- Her commitment to empowering others and advancing science underscores her contributions to the field.



## ***Environmental Education for Sustainable Land Use and Water Stewardship***

Beatrice Olutoyin Opeolu (PhD Environmental Toxicology)

Founder & Director, Bee Solutions & Consultancy Services

Beatrice@bcshive.co.za



GEEP AFRICA WEBINAR

# *Land and Water: Requirements, Not Amenities*

## *Why they matter*

- Food security
- Freshwater supply
- Biodiversity and climate regulation

## *What's happening*

- 15.98% of global land is degraded
- 263.15M ha affected in Africa
- 45%+ of degraded global land is in Africa

## *What education must do*

- Support informed land-use choices
- Protect watersheds
- Build long-term stewardship

# The Scale of the Crisis: Key Statistics

Global water and land stress is already severe.

## 75%

### **Drought Risk**

By 2050, three in four people worldwide could face drought impacts. Current annual drought costs already exceed **\$307 billion** (UNU-INWEH, 2024).

## 3.2B

### **Water Stress**

People living in agricultural areas with high to very high-water shortages or scarcity, including **1.2 billion** in severely constrained areas (FAO, 2020).

## 1.42B


### **Water Vulnerability**

People — including **450 million children** — living in areas of high or extremely high water vulnerability (UNICEF, 2021).

## 72%

### **Agriculture**

Of all global water withdrawals consumed by agriculture; 16% by municipalities and 12% by industries (UN-Water, 2021).

 Nearly **4 billion people** experience severe water scarcity for at least one month each year.

# ***Three Core Questions Guiding This Presentation***

**1**

***What Pressures Do Land & Water Face?***

**2**

***What Knowledge & Skills Are Required?***

**3**

***How Can Education Deliver?***

# Understanding Land & Water Systems Under Pressure

Land and water are deeply interconnected. Stewardship depends on understanding both together.



## ***Agricultural expansion***

- Soil erosion
- Nutrient depletion
- Higher freshwater demand



## ***Urbanisation***

- More runoff
- Less groundwater recharge
- Pollution from impervious surfaces



## ***Industrial activity***

- Heavy metals
- Persistent pollutants
- Health risks



## ***Climate & water stress***

- Droughts and floods
- Changing river flows
- Competing water demands

# ***Implications for Livelihoods, Ecosystems & Resilience***

## ***Smallholder Farmers & Pastoralists***

- Degraded soils reduce crop yields
- Unreliable water threatens livestock and irrigation
- Contaminated water increases health risks

## ***Ecosystem Integrity***

- Wetlands are drained
- Riparian zones degrade
- Aquatic biodiversity declines

## ***Community Resilience***

- Soils retain less water during droughts
- Polluted aquifers are unsafe in emergencies
- Recovery from climate extremes is weakened

## ***Economic Productivity***

- Lost agricultural productivity
- Higher food insecurity
- Rising water treatment and infrastructure costs

# *Five Competency Areas for Sustainable Stewardship*

If education is meant to support informed decision-making and effective stewardship, it must build specific, actionable competencies.



***Ecological Systems***



***Impact Assessment***



***Sustainable Practices***



***Governance Frameworks***



***Adaptive Problem-Solving***

# ***Competency 1 & 2: Ecological Understanding & Impact Assessment***

## ***Understanding Ecological Processes***

- Soil formation, nutrients, erosion
- Watershed flows and water quality
- Ecosystem services: food, regulation, culture

## ***Assessing Impacts & Trade-offs***

- Basic environmental assessments
- Soil-health and water-quality data
- Compare productivity, impact, equity

# Competencies 3–5: Practice, Governance & Adaptive Management

## **Sustainable Practices**

- Conservation agriculture
- Agroforestry and grazing
- Drip irrigation and rainwater harvesting

## **Governance Frameworks**

- Land tenure and water rights
- Environmental regulations
- Stakeholder participation and conflict resolution

## **Adaptive Management**

- Identify and test solutions
- Monitor outcomes
- Learn and adjust



# ***How Environmental Education Can Deliver These Competencies***

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***Curriculum Integration***

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***Hands-on Learning***

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***Community Partnerships***

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***Knowledge + Digital Tools***

# Approach 1: Integrating Land & Water Learning Across Curricula



## **Primary & Secondary Education**

- Embed soil and water in science, geography, and health
- Use local environments as learning laboratories



## **Tertiary Education**

- Balance theory with applied skills
- Build interdisciplinary sustainability learning



## **Professional & Continuing Education**

- Offer short courses and certification programmes
- Keep practitioners current with best practice

## ***Approach 2: Experiential & Place-Based Learning***

- ***Soil tests***
- ***Water quality monitoring***
- ***Farm visits***
- ***Restoration projects***



# Approach 3: Community-Based Education & Extension

Formal education reaches some groups — but community-based approaches can reach many more, particularly farmers, water users, and local institutions who are the frontline stewards of land and water.



## **Farmer Field Schools**

- Participatory learning
- Test, observe, share



## **Community Water Committees**

- Monitor water sources
- Support fair governance



## **Extension Services**

- Translate research into practice
- Provide ongoing technical support

<b>Items Produced</b>	<b>Water Used (Litres)</b>
<b>1 chocolate bar</b>	<b>1</b>
<b>1 apple</b>	<b>35</b>
<b>1 glass of milk</b>	<b>250</b>
<b>1 portion of beef</b>	<b>1900</b>



# ***Approach 4: Integrating Scientific & Indigenous Knowledge***

## ***Indigenous Knowledge***

- Local soil and seasonal indicators
- Water protection practices
- Ecological calendars and harvesting methods

## ***Scientific Knowledge***

- Document and validate traditional practices
- Create genuine two-way dialogue
- Introduce evidence-based methods when appropriate

# ***Approach 5: Digital Tools & Professional Development***



## ***Mobile Platforms***

Share weather and advisory updates.



## ***GIS & Remote Sensing***

Map land use and monitor change.



## ***E-Learning Platforms***

Expand access to training and peer learning.



## ***Citizen Science***

Engage communities in data collection.

# *Evidence from Implementation*

## ***Soil & Yields***

Farmer field schools have improved soil health, reduced erosion, and increased crop yields.

## ***Water Governance***

Community water committees have improved local water quality and resource allocation.

## ***Shared Learning***

University–community partnerships produce applied research and strengthen local capacity.

## ***Youth Stewardship***

School clubs and youth restoration programmes improve attitudes and behaviours over time.

# Strengthening Environmental Education: Priority Actions

## SECTION F

01

### **Define Clear Environmental Literacy Outcomes**

Set explicit learning goals and assess both knowledge and applied skills.

02

### **Build Educator Capacity at Scale**

Invest in training, resources, and field equipment for experiential learning.

03

### **Strengthen Extension & Community Learning Systems**

Use extension and community platforms to spread evidence-based practices.

04

### **Support Interdisciplinary, Problem-Based Learning**

Design learning around real land and water decisions across sectors.

05

### **Use Technology Responsibly to Extend Reach**

Deploy digital tools to expand access without widening inequalities.

# Conclusion: Commitment, Investment & Action

## SECTION G

### ***The Problem is Real & Urgent***

Land and water stress livelihoods, food, health, and growth.

### ***Solutions Require Knowledge & Skills***

Stewardship needs ecological understanding and adaptive practice.

### ***Education is the Mechanism***

Education builds the capacity to think, solve, and act.

### ***Multiple Approaches Are Required***

Combine curricula, learning by doing, local knowledge, technology, and training.

"Stewardship begins with knowledge. Knowledge develops through education. Education requires our collective commitment."

# *What Is Required from Each of Us*



## ***Governments***

Set policy and fund environmental education.



## ***Educational Institutions***

Develop curricula and train educators.



## ***Researchers***

Produce evidence and share practical knowledge.



## ***NGOs & Practitioners***

Deliver programmes in affected communities.



## ***Communities***

Share knowledge and lead stewardship action.

# Five Key Take-Home Messages

APPENDIX: SUMMARY

## 1 **Land & Water Face Intense Pressures**

Agriculture, urbanisation, pollution, and climate variability are intensifying impacts.

## 2 **Stewardship Needs Core Competencies**

Effective action depends on ecological understanding, governance, and adaptive management.

## 3 **Multiple Educational Approaches Matter**

Formal, community-based, Indigenous, and digital approaches each play a role.

## 4 **Good Education Changes Practice**

Well-designed programmes improve decision-making and adoption of better practices.

## 5 **Scaling Needs Collective Action**

Governments, institutions, researchers, NGOs, and communities all have essential roles.



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# Thank You

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“We do not inherit the earth from our ancestors; we borrow it from our children”



# YOUR WORK. YOUR IMPACT. YOUR STORY.



Across Africa, amazing educators and organizations are advancing environmental education every day.  
**Let's shine a light on your work!**



### SHARE YOUR EE INITIATIVE

We are highlighting environmental education programs, projects, and people making a difference across the continent.

### WHAT YOU CAN SHARE:

- Your program or project
- Impact and outcomes
- Innovative approaches
- Photos and stories



### FEATURED ON GLOBAL PLATFORMS

Selected stories will be shared on GEEP Africa and global EE networks, including NAAEE eePRO and other partner platforms.



## PROFESSIONAL DEVELOPMENT WORKSHOPS COMING SOON!

As part of my CEE-Change Fellowship and dissertation research, I am collaborating with GEEP Africa to organize professional development workshops that aim to help environmental educators build capacity to effectively integrate:



### PLACE-BASED EDUCATION

(Traditional Ecological Knowledge, Community Engagement and Outdoor Learning)



### AI IN ENVIRONMENTAL EDUCATION



### PRACTICAL TOOLS AND STRATEGIES

for meaningful, context-based EE

## ONLINE SURVEY PBE & AI IN EE



Take our short survey to help shape the workshops!

At the end of the survey, you can leave your email if you wish to be part of the upcoming workshops.



### WHO CAN PARTICIPATE?

Environmental educators, practitioners, NGOs, youth leaders, teachers, community organizations, and anyone passionate about environmental education in Africa.



## WE WANT TO HEAR FROM YOU!

Share your ongoing EE projects and activities with us.

Email: [c.nyatuame@ufl.edu](mailto:c.nyatuame@ufl.edu)

*Let's collaborate, learn, and amplify environmental education across Africa!*



A photograph of a savanna landscape with a herd of elephants. A large acacia tree stands in the center. The text 'THANK YOU' is overlaid in large white letters. In the top right corner, the Geep logo and its meaning are displayed.

**Geep**

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ENVIRONMENTAL 環境  
EDUCATION 教育  
PARTNERSHIP 夥伴

THANK YOU