## Alumni Talk

Hosted by OeAD-GmbH (Austrian Agency for Education and Internationalisation)

## Paul T. Yillia (Dr. techn.)

Development Specialist, Freetown - Sierra Leone





## From Global Expert to Local Champion: Paul T. Yillia's Energy Ecosystem Vision for Sierra Leone

Dr. Paul Yillia is turning global experience into local impact—electrifying rural clinics, powering sustainable businesses, and building strong ecosystems for decentralized energy in Sierra Leone. Through TENN and national leadership roles, he's driving climate-smart innovation at the energy–livelihood–healthcare nexus.

2 min lesen · 01. September 2025

#### EMPLOYMENT RECORD

- 2021- ongoing: The Energy Nexus Network (TENN), Freetown, Sierra Leone;
   Manager & Chief of Operations (COO) Sierra Leone
- 2021-2023: Sustainable Energy for ALL (SEforALL), Homebase (Freetown, Sierra Leone); National Energy Consultant – Sierra Leone
- 3 2017-2021: International Institute for Applied Syst.
  - 3. 2017-2021: International Institute for Applied Systems Analysis (IIASA),
  - Schlossplatz 1, A-2361 Laxenburg, Austria; Research Scholar

    2014-2017: Sustainable Energy for ALL (SEforALL) Vienna Au
  - 4. 2014-2017: Sustainable Energy for ALL (SEforALL), Vienna, Austria; Lead Policy Specialist (2015-2017); Program Manager: Water-Energy Nexus (2014-2015)
  - Program (WAT), Laxenburg, Austria; **Research Scholar**6. **2005-2012**: Vienna University of Technology, Institute for Water Quality, Resource

2012-2014: International Institute for Applied Systems Analysis (IIASA), Water

- and Waste Management, Vienna, Austria: Research Scholar (2008-2012), PhD
   Scholar (2005-2008)
   7. 2004-2005: University of Sierra Leone, Fourah Bay College, Freetown, Sierra Leone:
- Lecturer & Research Fellow
- 2002-2004: UNDP Cap-Net & UNESCO-IHE Delft, Netherlands: Associate
   Expert/Research Assistant Partnerships & Regional Networks
- 1995-2002: University of Sierra Leone, Fourah Bay College, Freetown, Sierra Leone;
   Research & Teaching Assistance

## **Vienna University of Technology 2005 - 2012**



Yillia's PhD thesis, submitted to the Vienna University of Technology, is titled "Linking Land Use to Stream Pollution: Pollutant Dynamics and Management Implications". The dissertation, defended in 2008 by Paul T. Yillia, explores the relationship between how land is used and the resulting pollution in streams.

• **Title:** Linking Land Use to Stream Pollution: Pollutant Dynamics and Management Implications

• Author: Paul T. Yillia

Institution: Vienna University of Technology

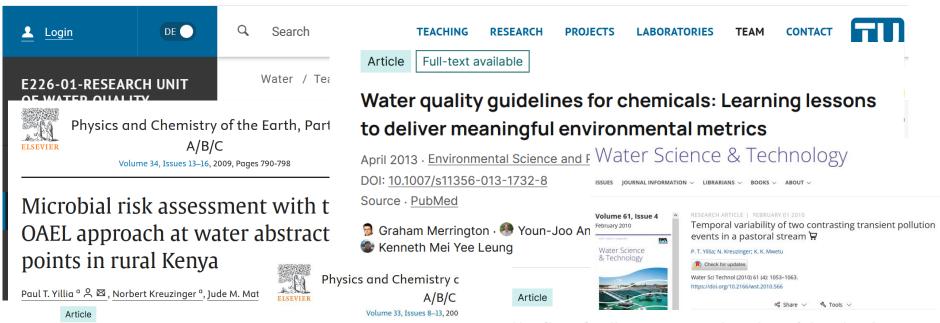
• Year of Defense: 2008

 Research Area: Investigates the connection between land use patterns and stream pollution, focusing on pollutant dynamics and their implications for management strategies.

Dive deeper in Al Mode



## **Vienna University of Technology 2005 - 2012**



The effect of in-stream activiti Kenya. Part I: Stream flow and

December 2008 · <u>Physics and Chemistry of the E</u> DOI: <u>10.1016/j.pce.2008.06.041</u>

🥐 Paul T. Yillia . 📟 Norbert Kreuzinger . 🔘 Math

The effect of in-stream the Njoro River, Kenya Microbial water quali

Show more V

Net flux of pollutants at a reduced spatial scale - An index of catchment vulnerability

February 2009 · Water Science & Technology 59(1):109-16

DOI: 10.2166/wst.2009.568

Source · PubMed

🌓 Paul T. Yillia - 🕮 Norbert Kreuzinger

## **IIASA 2012 - 2021**









### **IIASA 2012 - 2021**

#### IIASA Water Program, Research Scholar, Austria

- Led cross-cutting analytical work on several ground-breaking research initiatives and contributed prominently to translating technical and cross-country knowledge into practical applications to country specific sector strategies.
- Led policy-driven research opportunities, sourced funding, developed and implemented projects within multi-stakeholder consortia in partnership with UNESCO, IWA, World Water Council, ADA, East African Community/LVBC, etc. and ensured that the objectives and expected deliverables were met on time, with high technical quality and within the stipulated budget.

Geosci. Model Dev., 9, 175–222, 2016 www.geosci-model-dev.net/9/175/2016/ doi:10.5194/gmd-9-175-2016 © Author(s) 2016. CC Attribution 3.0 License.





## Modeling global water use for the 21st century: the Water Futures and Solutions (WFaS) initiative and its approaches

Y. Wada<sup>1,2,3</sup>, M. Flörke<sup>4</sup>, N. Hanasaki<sup>5</sup>, S. Eisner<sup>4</sup>, G. Fischer<sup>6</sup>, S. Tramberend<sup>6</sup>, Y. Satoh<sup>6</sup>, M. T. H. van Vliet<sup>6,7</sup>, P. Yillia<sup>6</sup>, C. Ringler<sup>8</sup>, P. Burek<sup>6</sup>, and D. Wiberg<sup>6</sup>

<sup>1</sup>Department of Physical Geography, Utrecht University, Heidelberglaan 2, 3584 CS Utrecht, the Netherlands

<sup>2</sup>NASA Goddard Institute for Space Studies, 2880 Broadway, New York, NY 10025, USA

<sup>3</sup>Center for Climate Systems Research, Columbia University, 2880 Broadway, New York, NY 10025, USA <sup>4</sup>Center for Environmental Systems Research, University of Kassel, Kassel, Germany

National Institute for Environmental Studies, Tsukuba, Japan

<sup>6</sup>International Institute for Applied Systems Analysis, Laxenburg, Austria

Earth System Science, Climate Change and Adaptive Land and Water Management, Wageningen University and Research

Centre, Wageningen, the Netherlands

<sup>8</sup>International Food Policy Research Institute, Washington, D.C., USA

Correspondence to: Y. Wada (y.wada@uu.nl)

The most complex challenge of all:

| Continue | Contin

Received: 2 July 2015 – Published in Geosci. Model Dev. Discuss.: 13 August 2015 Revised: 21 November 2015 – Accepted: 5 January 2016 – Published: 21 January 2016

## From MDGs to SDGs

## SUSTAINABLE GEALS DEVELOPMENT









10 REDUCED INEQUALITIES































#### Available online at www.sciencedirect.com

#### **ScienceDirect**

Aquatic Procedia 5 (2015) 8 - 12



World Water Week, 31 August to 5 September 2014, Stockholm, Sweden

## Framing the water-energy nexus for the post-2015 development agenda

K. K. Yumkellaa and P. T. Yilliaab\*

\*United Nations Sustainable Energy for All (SE4All) Initiative, P.O. Box 500 F-162, A- 1400, Vienna, Austria
\*International Institute for Applied Systems Analysis (IIASA), Laxenburg, Austria

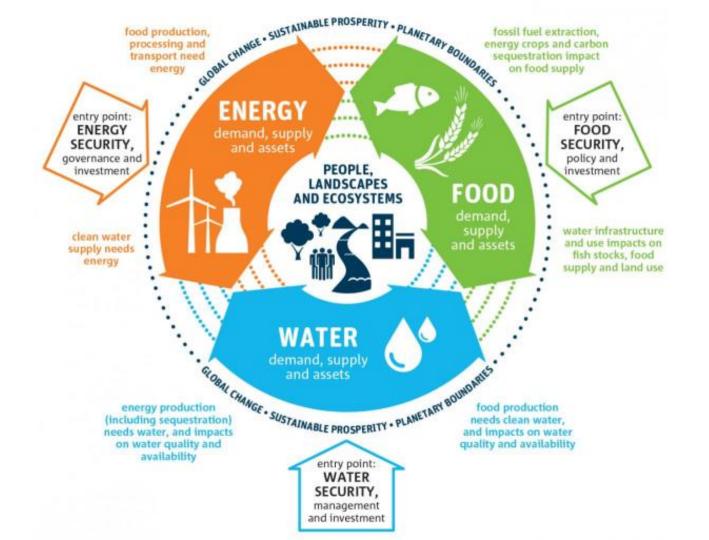
#### Abstract

World leaders are increasingly recognizing the importance of the water-energy nexus perspective as a conceptual framework to facilitate integrated planning and decision-making for the post-2015 development agenda. We present three fundamental narratives of the United Nations Sustainable Energy for All (SE4AII) initiative to reinforce the argument for a global nexus perspective aimed at sustainable development: i) energy ought to be placed at the center of the global development agenda to address development challenges such as hunger, poverty, gender empowerment, education and access to water and sanitation; ii) by changing the way we produce and use energy, GHG emissions can be decoupled from economic growth with the possibility to stabilize climate change below 2 degrees Celsius; and iii) the energy system is intertwined with other global systems (e.g. water, climate change, land and food production systems, etc.), which are strongly interdependent. All three narratives require systems thinking and a nexus framework for a more coordinated approach to sustainable resources management, which in turn requires concerted action in all spheres of influence and at all levels of implementation. We seek the attention and support of international development partners to commit resources and support ongoing initiatives aimed at operationalizing the nexus perspective into concrete actions for the post-2015 development agenda.

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Peer-review under responsibility of Stockholm International Water Institute.

Keywords: Post-2015 Development Agenda; Sustainable Development Goals; Water-Energy Nexus









## Nexus as an operational tool for the SDGs



In "framing the water-energy nexus for the SDGs," Yillia's work uses the water-energy-food (WEF) nexus as an integrated framework to address the challenges and opportunities in implementing the Sustainable Development Goals (SDGs). The approach highlights how decisions in one sector (water, energy, or food) affect the others, promoting more holistic and synergistic policy planning that avoids the negative trade-offs that can arise from a fragmented, siloed approach.

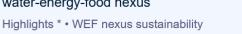
- Integrated planning: The nexus approach moves beyond isolated policies to create a more holistic and integrated strategy for achieving the SDGs.
- Synergies and trade-offs: It emphasizes understanding and managing the interconnections to find mutually beneficial solutions and avoid negative consequences, such as how cheap energy for irrigation can lead to water depletion, as seen in this FAO article.
- Holistic analysis: The framework encourages a single, unified assessment of resource management instead of managing water, energy, and food in separate "silos". @

#### Water-Energy-Food nexus: framing the opportunities ...

... Hence, an action aimed at implementing the SDGs needs to reflect on their synergies (Yillia 2016 Climate change also...

R<sup>6</sup> ResearchGate :

#### An integrative analytical model for the water-energy-food nexus



indicators are a means of assessing resource...

F ScienceDirect.com

#### Sustainable development and the waterenergy-food nexus

Abstract. Traditionally water, energy and food (WEF) resources are governed in many...

E ScienceDirect.com







## Water Award - 2018



The "Outstanding Contribution Award – Water" at the African Utility Week Industry
Awards in May 2018 was awarded to Paul Yillia for his work on advancing sustainable
water management and capacity building through UNESCO water centers in Africa.
This award recognizes individuals with leadership, vision, and commitment to the water
industry.

- Winner: Paul Yillia 🕢
- Award: Outstanding Contribution Award: Water @
- Event: African Utility Week Industry Awards
- Date: May 2018 🕖
- Significance: The award celebrated individuals demonstrating passion and commitment to the water industry, leadership, vision, and success. Yillia's work involved establishing UNESCO Water Centers to promote sustainable water management and capacity development in Africa.

#### Activities and scientific achievements - OeAD-GmbH

- © Paul Yillia. activities of scholarship holders. North-South-Dialogue alumnus received the African Utility Week Industry...
- OeAD-GmbH Agentur für Bildung und Internationalisierung

## African Utility Week: Awards announced for projects in Africa



17 May 2019 — BioTherm has expanded its development activities to build a pan African...

African Review :

## Crowning the energy/water influencers in Africa



17 May 2018 — Professor Emeritus of Hydrology Centre for Water Resources...

ESI ESI-Africa.com

## **SEforALL 2014 - 2018**



#### SEforALL, Program Manager: Water-Energy Nexus, Austria

- Led global action to galvanize interest on the Water-Energy Nexus for the post-2015 development agenda/SDGs - planned, moderated and/or participated in several highlevel events, <u>initiated</u> and coordinated training workshops and seminars.
- Coordinated implementation of SEforALL Nexus portfolio globally and led in identifying
  and operationalizing opportunities with partners, e.g., FAO, GIZ, REEEP, IRENA,
  OFID, facilitated dialogue with relevant counterparts, the donor community, the
  private sector, government officials, as well as with civil society and academia.
- Led the Global Facilitation Team and participated in large, complex field missions in SEforALL client countries, including provision of guidance to external consultants, government officials and other parties and drafting mission summaries, etc.
- Coordinated activities related to budget funding (programme/project preparation and submissions, progress reports, financial statements, etc.) and prepared related documents/reports (i.e., concept notes, work programme, programme budget, etc.).

Sustainable Energy for All (SEforALL) works with governments, the private sector, and civil society to accelerate progress toward Sustainable Development Goal 7 (SDG7).

## **SEforALL 2014 - 2018**



#### SEforALL, Lead Policy Specialist, Austria

- Served as focal point for knowledge sourcing for the UN Special Representative of the Secretary General (SRSG)/CEO and the entire senior management team, e.g., led research/analysis and produced several background papers, policy briefs, etc.
- Provided expert advice on programmatic issues, coordinated policy development, including review and analysis of issues and trends, preparation of impact evaluation and equivalent studies and selecting and supervising project consultants.
- Supported the Director of Policy on interactions with the SEforALL Knowledge Hub
  consisting of over 20 international organizations, including the World Bank Group, IEA
  <u>UNDP</u> and IRENA on tracking progress on SDG7 targets.

Sustainable Energy for All (SEforALL) works with governments, the private sector, and civil society to accelerate progress toward Sustainable Development Goal 7 (SDG7).

### **IIASA 2012 - 2021**

## **IIASA ScaleWAYS Project – Theory of Change**

#### **Methodologies**

#### **Project Outputs**

#### Channels of Influence

## Impacts on EAC Development

- Social network analysis of water management actors
- Aquacrop (agricultural model), CWATM (hydrological model), ECHO (hydro-economic model) and Crop kites
- Comparative political economy analysis
- Establishment of Community of Practice and introduction of learning platforms.

- Identification of promising pilot initiatives
- Multidimensional upscaling simulation, advancement of up scaling methodology
- Understanding political economic drivers and constraints of upscaling
- Enhanced capacities of researchers and practitioners

- Relevant water and agriculture ministries in EAC countries through the Lake Victoria Basin Commission
- Methodological development of upscaling modelling tools
- Capacity development of researchers at local partner organisations and universities

Resilience of future water

and land resources

- Sustainable contribution of agriculture to economic development
- Improved health of ecosystems and human wellbeing

#### Research

Analysis improves understanding of upscaling sustainable rainfed and irrigated agricultural practices

#### Policy

Researchers and practitioners support policy makers decisions on upscaling

#### Practice

Evidence-based policies increase uptake of sustainable agricultural water management practices

## IIASA scaleWAYS Project — Output 4

- 1. MSc students must be citizens of the EAC, i.e. one of the 5 (five) Lake Victoria Basin (LVB) countries, namely, Burundi, Kenya, Rwanda, Tanzania and Uganda.
- 2. They must be registered for MSc study in an academic institution located in one of the 5 (five) LVB countries mentioned above.
- 3. Registered MSc students seeking scaleWAYS project research grant must apply in writing not later than 30 April 2020 by submitting the following:
  - a) A motivation statement by MSc student indicating his/her research interests and experience.
  - b) A preliminary research concept note (maximum 2 pages) developed from any of the potential research topics listed in Section 5.0 (Potential Research Topics) below that allows scaleWAYS researchers insight into the applicant's interest and understanding of the topic
  - c) A statement of endorsement from the academic institution where the student is registered for MSc studies. Such statement must include the name and contact details of the student's designated academic supervisor.
  - d) Proof that the MSc student is a citizen of any of the following LVB countries, i.e. Burundi, Kenya, Rwanda, Tanzania and Uganda. A copy of national passport or other national identification document will be adequate.
- 4. All applications must be addressed to Dr. Paul T. Yillia, Research Scholar, International Institute for Applied Systems Analysis (Email: <a href="mailto:yillia@iiasa.ac.at">yillia@iiasa.ac.at</a>).

## What is a Community of Practice?

A group of people with a common interest



## **Family life in Vienna**



"Macharia and Yillia" refers to the collaboration between researchers Pauline Macharia and Paul Yillia, who have co-authored several academic papers on water quality, energy, and migration. Their work includes studies on the microbial quality of domestic water and the impact of drivers on energy input for municipal water supply, often collaborating with other researchers from institutions



like the International Institute for Applied Systems Analysis (IIASA) and TU Wien.



- Pauline Macharia: A researcher with interests in water quality, energy use for water, and the nexus between migration and environment. She is associated with the Institute for Water Quality and Resource Management at TU Wien.
- Paul Yillia: A researcher and former Lead Policy Specialist at Sustainable Energy for All (SEforALL) who has held positions at the International Institute for Applied Systems Analysis (IIASA) and is a visiting scholar at the Vienna University of Technology. His work focuses on the water-energy nexus and sustainable energy.

#### Examining the Relative Impact of Drivers on Energy Input for ...

Author \* Pauline Macharia. (Institute for Water Quality and Resource Management, 1040 Vienna, Austria) \* Maria Wirth....

RePEc: Research Papers in Economics

#### Examining the relative impact of drivers on energy input for ...

29 Jul 2021 — Macharia, P., Wirth, M., Yillia, P., & Kreuzinger, N. (2021). Examining the relative impact of drivers on energy...

▼ TU Wien 
 ▼ TU Wien 

#### Prof. Paul Yillia | Author | International Institute for Applied Systems ...

Previously, he was Lead Policy Specialist at Sustainable Energy for All (SEforALL), leading and undertaking several ke...

Journal article Assessing Future Water Demand and Associated Energy Input with Plausible Download Scenarios for Water Service Providers (WSPs) in Sub-Saharan Africa R Nzula Kitaka R Paul Yillia Pauline Macharia Norbert Kreuzinger Journal article https://doi.org/10.3390/en14082169 Published: 13 April 2021 in Energies Examining the Relative Impact of Drivers on Energy Input for Municipal Water Supply Download in Africa 个个 Pauline Macharia R Maria Wirth Paul Yillia R Norbert Kreuzinger //doi.org/10.3390/su13158480 RESEARCH ARTICLE | DECEMBER 18 2014 Microbial quality of domestic water: following the 29 July 2021 in Sustainability contamination chain in a rural township in Kenya 🖼 Pauline W. Macharia; Paul T. Yillia; Wairimu A. Muia; Denis Byamukama; Norbert Kreuzinger ≈0eap Q Wonach suchen Sie? Check for updates Bildung: Digital Bildungssystem: Entwickeln Erasmus+ und ESK Hochschule: Strategie: International Journal of Water, Sanitation and Hygiene for Development (2015) 5 (1): 39-49. https://doi.org/10.2166/washdev.2014.070 Article history 🕒 Pauline Macharia: On the Nexus between Migration and Environment - from Theory to «ട്ട Share ∨ ₹ Tools ∨ Practice A study was undertaken in Njoro Township, Kenya to evaluate the extent to which drinking After earning her PhD from Vienna Technical University in 2021, Pauline Macharia shifted water was subjected to post-collection faecal contamination in low-income and high-income her career path from academia to international development. She joined the International households. Boreholes were the main drinking water sources, accounting for roughly 70% Organization for Migration in Sierra Leone exploring the nexus between human mobility and singular access. The microbial quality of drinking water from the boreholes deteriorated climate change. Drawing from her own experience as a student migrant, she now advocates from the point-of-collection through conveying containers of small-scale water vendors to for youth empowerment and safe, regular migration pathways to help others avoid the dangers of irregular migration. household storage containers, irrespective of their income status. The densities of

Escherichia coli (EC) were relatively low at the point-of-collection – median (M): 18 CFU/100

## **COVID 19 Pandemic Vienna - Freetown**



Contents lists available at ScienceDirect

#### Water Research

iournal homepage: www.elsevier.com/locate/watres



#### Making Waves

## COVID-19 pandemic: Water, sanitation and hygiene (WASH) as a critical control measure remains a major challenge in low-income countries



Oscar Omondi Donde a.\*, Evans Atoni b, Anastasia Wairimu Muia C, Paul T. Yillia d

- <sup>a</sup>Department of Environmental Science, Egerton University, P.O. Box 536, Egerton Kenya
- b Key Laboratory of Special Pathogens and Biosafety, Wuhan Institute of Virology, Chinese Academy of Sciences, Wuhan 430071, Hubei, China
- <sup>c</sup> Department of Biological Science, Egerton University, P.O. Box 536, Egerton Kenya
- International Institute for Applied Systems Analysis (IIASA), Schlossplatz 1 A-2361 Laxenburg, Austria

#### ARTICLE INFO

Article history: Received 4 May 2020 Revised 20 December 2020 Accepted 25 December 2020 Available online 27 December 2020

Keywords: COVID-19 Low-income countries SARS-CoV-2 WASH (Water, Sanitation and Hygiene)

#### ABSTRACT

Severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) is responsible for the deadly respiratory disease called coronavirus disease of 2019 (COVID-19), an ongoing global public health emergency that has been declared a pandemic by the World Health Organization. We review literature on the transmission and control of SARS-CoV-2 and discuss the challenges of focusing on water, sanitation and hygiene (WASH) as critical control measures in low-income countries. A significantly higher prevalence of SARS-CoV-2 infection and COVID-19 related deaths has been reported for the United States of America and other high-income countries in Europe and Asia, regardless of advanced medical facilities in those countries. In contrast, much lower COVID-19 related morbidity and mortality rates have been documented in many low-income countries, despite having comparatively higher socioeconomic burdens and suboptimal medical facilities. By September 29, 2020 over one million deaths have been reported. On the same day, the cumulative total of COVID-19 related morbidity for Africa was 35.954 with 3.5% of the global COVID-19 related deaths. We present arguments for the relatively low COVID-19 morbidity and mortality rates in many low-income countries and discuss the critical importance of WASH for preventing the spread of infectious diseases like COVID-19. We observe that the key recommendations put forward by the World Health Organization to effectively control the pandemic have been difficult to implement in low-income countries. We conclude that the pandemic reinforces previous pronouncements that adequate and effective WASH measures are crucial for public health and recommend closer coordination between public health and WASH sectors.

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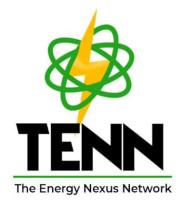


Foreign, Commonwealth & Development Office

Powering
Social Infrastructure
in Sierra Leone:

Market Assessment and Roadmap for Health Facilities





**30 FAO Drive Aberdeen, Freetown Sierra Leone** 

Tel: +232 79084220



Regional Knowledge & Facilitation Hub for Scaling Decentralized Renewable Energy (DRE) Solutions









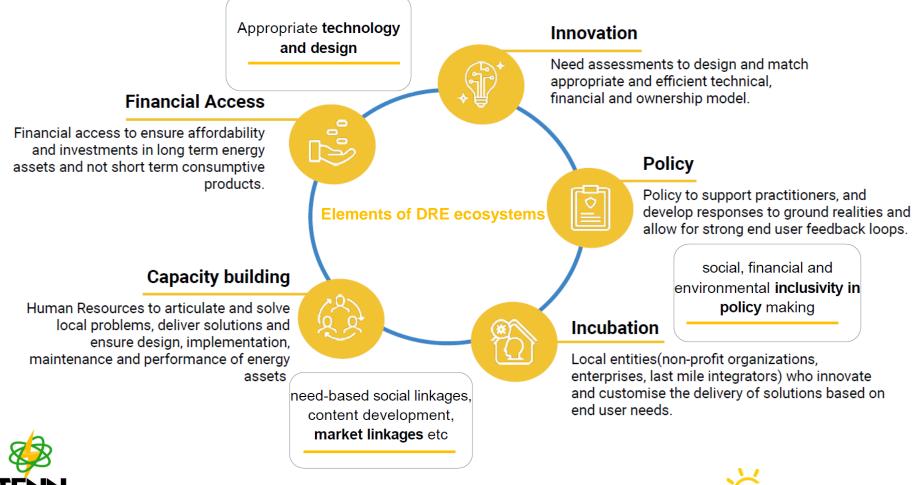
Our Mission is BREAD for Lives and Livelihoods

Building resilient ecosystems around decentralised

(BREAD) renewable energy to improve lives and livelihoods







## **Ecosystem pillars**

Innovation

Incubation

**Capacity building** 

**Financial inclusion** 

Knowledge

**Policy** 

## Sectors and themes



Gender

Local ownership

Climate

Energy efficiency











- Identifying requirements to realize DRE opportunities across multiple SDGs;
- Developing proof-of-concepts on DRE opportunities and solutions;
- Demonstrating feasibility & scalability for knowledge exchange and learning
- Incubating clean energy enterprises and strengthening local ownership





### **Health Innovation Programme (HIP)**

Innovation in the health value chain to improve outcomes on maternal and child healthcare in off-grid communities

### **Livelihood Innovation Programme (LIP)**

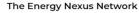
Innovation on productive use application of DRE to improve livelihood and social inclusion in off-grid communities

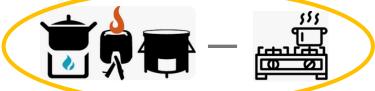


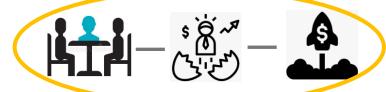












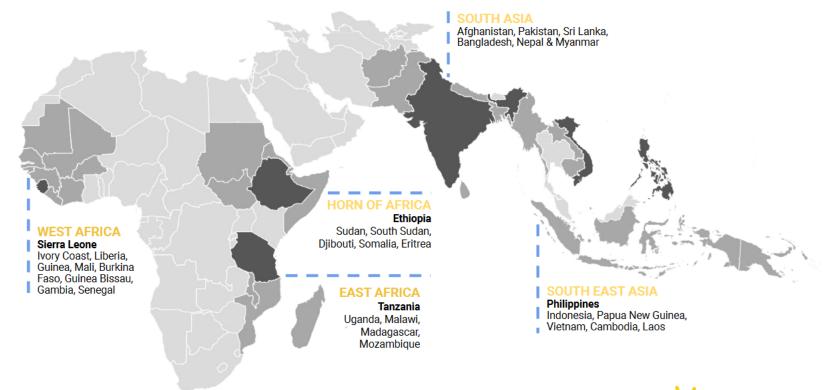
### **Energy for Cooking (E4C) Programme**

Regional facilitation mechanism for global initiatives and business development opportunities on modern energy for cooking

### **Business Incubation Programme (BIP)**

Mentorship and market development for small/medium-sized DRE businesses to support innovation in off-grid communities

## Regional knowledge & facilitation hub for scaling DRE solutions



## **Enabling global south-south knowledge/learning exchange**





South-south, north-south triagulation



## Climate Finance & Energy Innovation Hub

## Office of the President Sierra Leone

The Hub was established to facilitate the operationalization of the Just Energy Transition and Green Growth Plan, the National Clean Cooking Strategy and other climate related development plans.

#### The Hub is tasked with:

- Developing a suite of transformative pipeline climate and energy projects;
- Identifying gaps and providing support for climate and energy sectors policy reforms;
- Supporting resource mobilization and partnerships with IFIs and development partners;

#### **Key strategic delivery functions:**

- Data on high-impact climate and energy investment opportunities;
- Formulation of Energy Compact, and provision of Policy and Regulatory Support;
- Knowledge and Capacity Building of MDAs;
- Development of Transformative Pipeline projects;
- Introduction of Innovative Financing Solutions;
- Establishing Financing Partnerships.





# Thanks!