



# REGIONAL ACTIVITIES OF THE WACREN-ICTP PROGRAMME

---

**WACREN and ICTP: A Partnership for Sustainable development**

**Prof. (Mrs.) Aderonke A. OKOYA**

*Director Institute of Ecology and Environmental Studies (IEES), Obafemi Awolowo University, Ile-Ife,  
Nigeria. and Coordinator, Solid Waste, Water and Environmental Chemistry (SwWECh) Research Unit, IEES*

# WACREN-ICTP Collaboration: Supporting Regional Scientific Research

## Advancing Education, Research and Innovation

Empowering Collaboration and Innovation in West and Central Africa

**Promoting ICT advancement** - Aiding the enhancement of local expertise in information and communication technology

**Fostering Scientific Advancements** - advancing scientific research and education on a regional and global scale, thereby enhancing the exchange of knowledge and specialized skills

**Building Key Partnerships** - participates in strategic partnerships and cooperative initiatives to enhance its influence, cultivating a network dedicated to exchanging knowledge and specialized skills



# WACREN – ICTP COLLABORATION

A core focus of the WACREN-ICTP collaboration is to promote research and development endeavours in the use Internet of things (IoT) for sustainable development especially in the environmental management

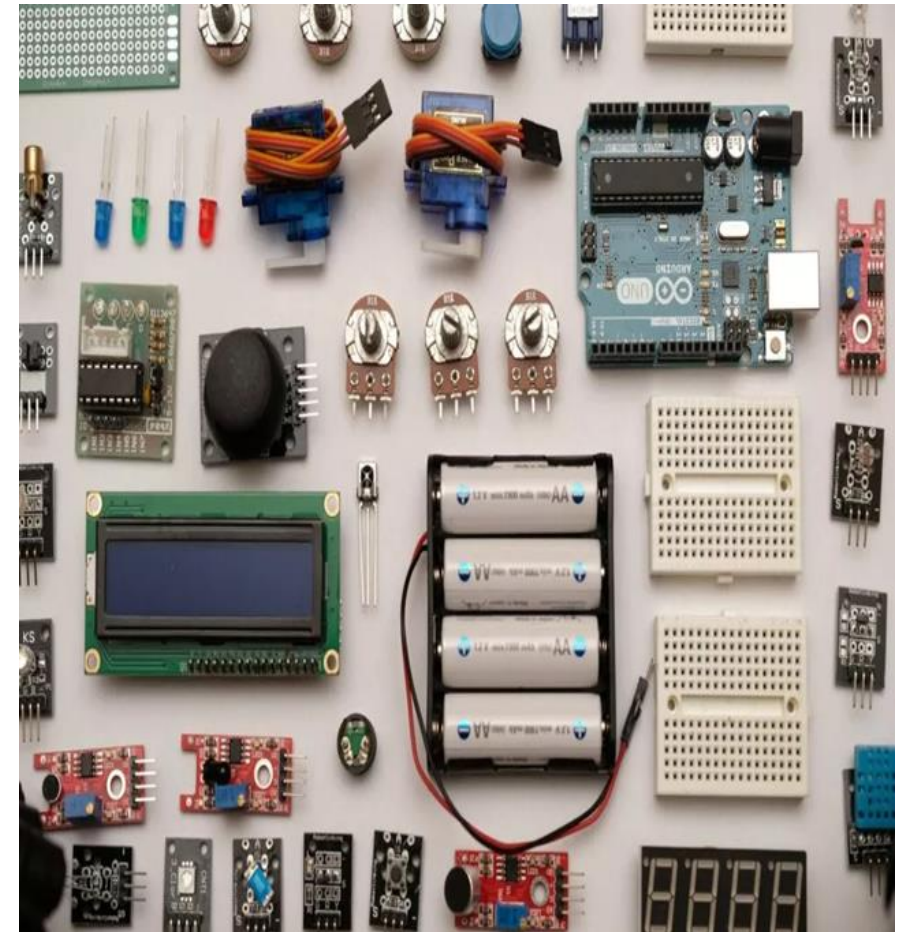
## Key Areas exploited so far in the Collaboration

**Surface Water Pollution Monitoring** - This initiative involves the deployment of IoT-based sensors on water surfaces to gather real-time data on various water quality parameters

**Weather Monitoring** - IoT-based weather stations are being positioned to collect meteorological data, crucial for climate research, agricultural planning, and disaster preparedness

**Data Management and Analysis** - Both organizations are collaborating on the development of robust data management systems and analytical tools to process the acquired data and derive valuable insights.

**Capacity Building** - The partnership encompasses training programs and capacity building initiatives for researchers and engineers in the fields of IoT technologies, data analysis, and environmental monitoring.



---

# OVERVIEW OF EVENTS THAT EMANATE

WACREN and ICTP COLLABORATION



# IoT-Based Surface Water Pollution Monitoring

SwWECh Research Unit of IEES at Obafemi Awolowo University, Ile-Ife, Nigeria, are collaborating to conduct real-time monitoring of surface water pollution using IoT-based sensors.



This initiative aims to advance research in IoT technology for environmental monitoring, contributing to a more sustainable future and aligning with WACREN's efforts to achieve SDG 6 Target 6.3.



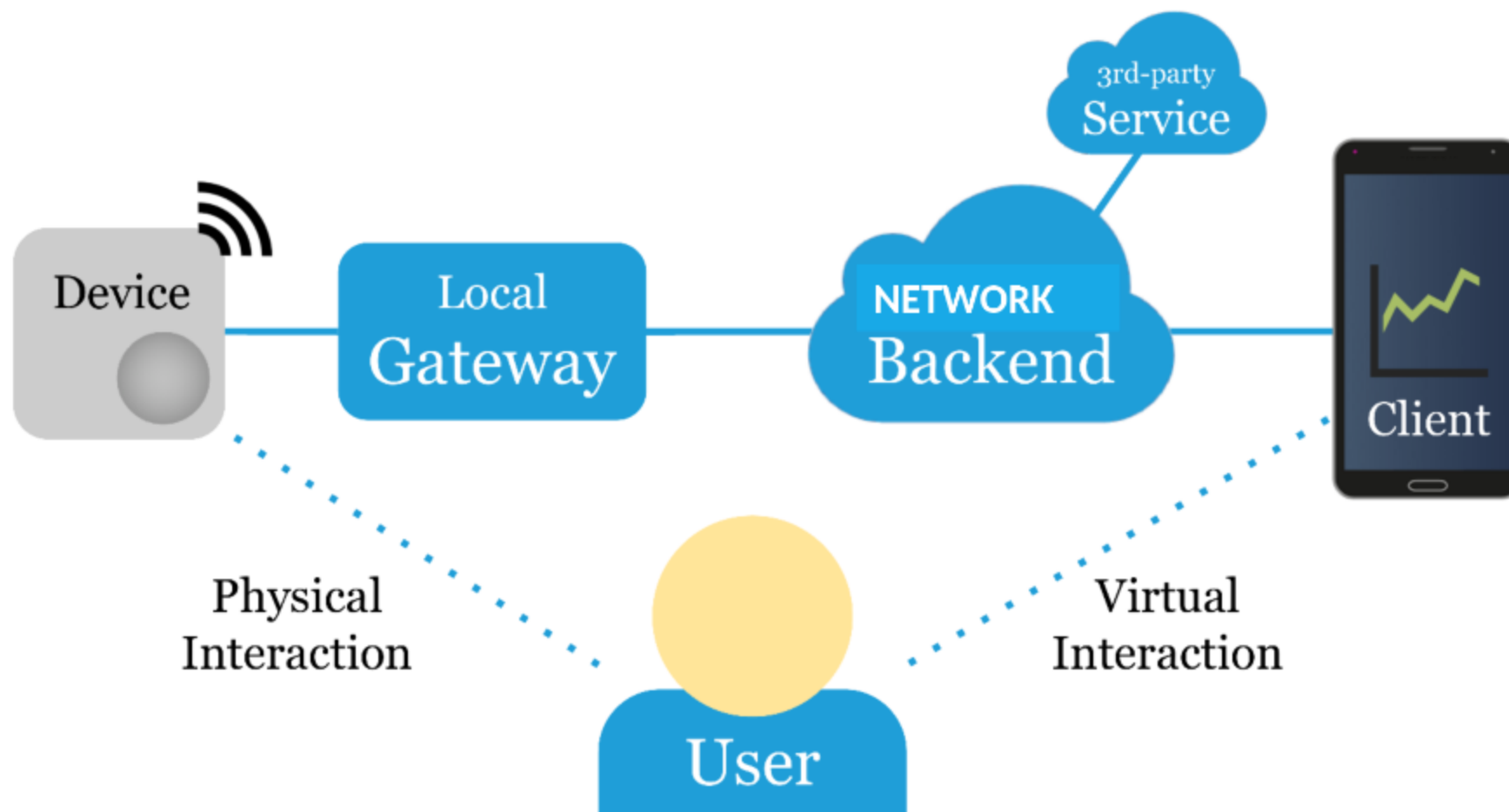
**THE PROGRAMME INVOLVE HANDS-ON  
TRAINING ON INSTALLATION AND  
DEPLOYMENT**

- Initial Configuration and setup
  - STI unit, ICTP, Trieste, Italy
- Assembly, verification & testing
  - All workshop participants
- Deployment at site
  - Resource persons, WACREN delegates, representatives of other institutions and Management team.

See below for the commissioning

<https://www.youtube.com/watch?v=0o6NsFyQaqQ>

# CONCEPT AND DEPLOYMENT MODEL SCHEMATIC





WORKSHOP ON DATA MANAGEMENT AND ANALYSIS WAS ALSO CONDUCTED

- Secure access to IoT platform dashboard
  - researchers
  - stakeholders
- Secure access to data files
  - CSV formatted daily-data files



# IoT-Based Weather Monitoring in Accra

Collaborative Efforts of WACREN and ICTP with GARNET and GMet for Environmental Monitoring and Sustainable Development in West and Central Africa



- In 2023, workshop was organized which saw the installation of IoT-based weather monitoring systems in Accra to transmit weather data for monitoring purposes.
- At the deployment sites, battery-operated sensors utilizing the LoRaWAN protocol gather essential meteorological data.
- The project not only emphasizes local engagement but also showcases the potential transformative impact of technology on weather data collection and analysis.
- The outcomes are expected to reverberate across sectors, boosting agricultural resilience and enhancing disaster preparedness.



---

# IMPACT

WACREN and ICTP COLLABORATION



The collaboration between WACREN and ICTP is expected to have a significant impact on West and Central Africa by utilizing IoT technology for environmental monitoring. This partnership addresses key challenges and promotes sustainable development.

### **Enhancing Environmental Monitoring**

Collaborative efforts between WACREN and ICTP, focus on utilizing IoT technology for real-time monitoring of surface water pollution and weather in West and Central Africa.

### **Promoting Sustainable Development Goals**

The partnership aims to contribute to the achievement of Sustainable Development Goals by providing valuable data and promoting sustainability in the region.

### **Capacity Building and Knowledge Transfer**

Initiatives include training programs for local researchers and engineers, technology transfer, and supporting evidence-based policymaking for environmental conservation to build expertise

### **Resilience Through Innovation**

By harnessing IoT technology and collaborative research, the partnership is paving the way for a sustainable and resilient future in West and Central Africa

## **Socioeconomic Benefits**

The collaboration between WACREN and ICTP not only enhances environmental monitoring but also leads to improved public health outcomes, economic growth through environmental sustainability, and job creation from the implementation of IoT solutions.





WACREN



<https://www.youtube.com/watch?v=0o6NsFyQaqQ>

# Thank you

