



PROFILE OF THE CENTRE FOR MARINE POLLUTION MONITORING AND SEAFOOD SAFETY



TEAM OF INNOVATORS / COLLABORATORS

- The Nigeria Atomic Energy Commission (NAEC)
- Port Harcourt international airport
- Nigeria Information Technology Development Agency (NITDA);
- Nigeria Maritime Administration and Safety Agency, (NIMASA);
- National institute for Freshwater Fisheries Research (NIFFR), New Busa;
- Centre National de L'Energie, des Sciences et des Techniques Nucléaires (CNESTEN), Rabat, Morocco;
- ORTEC / AMETEK, Advanced Measurement Technology, Spectrum house, United Kingdom;
- The Intergovernmental Oceanographic Commission (IOC) of UNESCO, University of Copenhagen, Denmark.
- Raw Material Research and Development Council (RMRDC)
- International institute of Tropical Agriculture (IITA)
- Federal Collage of Agriculture Ishiagu
- ADBAS International
- JACIL international
- TeeFelly International
- KIPHIL EcoSolutions Ltd
- Queen Adedumy Nig Ltd
- Royal Diadem Research and Laboratories Nig Ltd
- Non-Governmental Organizations (NGOs)
- Department Agriculture, University of Jos, Nigeria
- Department of Marine and fisheries Science, University of Ghana, Ghana
- Health and Human Service Commission Texas, USA

About CEMPOS: Bridging Regional Needs and Global Impact

In a rapidly evolving world, research centers serve as essential engines of innovation and collaboration. By creating transformative opportunities that yield measurable results, they play a pivotal role in addressing global challenges. The

Centre for Marine Pollution Monitoring and Seafood Safety (CEMPOS) is one such institution, domiciled at the University of Port Harcourt.

The University of Port Harcourt is one of seven second-generation universities established by the Federal Military Government of Nigeria in 1975. Its founding was the culmination of a long-standing demand for a university in the Niger Delta region—a need highlighted both before and after the 1960 Ashby Commission report, which recommended establishing an institution in the area. Guided by the motto "**FOR ENLIGHTENMENT AND SELF-RELIANCE**," the university's academic mission is to contribute to national development,

self-reliance, and unity through the advancement and propagation of knowledge, ultimately leveraging this expertise in service to the community and humanity.

CEMPOS was established in April 2009 to implement Technical Cooperation projects for the International Atomic Energy Agency (IAEA). Founded in July 1957 as an independent international organization, the IAEA operates under a United Nations mandate to assist member nations in addressing critical global issues, including environmental restoration, food security, and sustainable agriculture.

Through the support of these IAEA projects, CEMPOS has sponsored scientists to train at prestigious international institutions across Egypt, Spain, Germany, Monaco, Morocco, Austria, and Tunisia, significantly enhancing regional expertise. Furthermore, the Centre operates two dedicated laboratories, both fully equipped with state-of-the-art analytical and field-sampling instrumentation.

The Centre is staffed by a highly qualified, experienced, and dedicated team of research scientists, associates, and technologists. Most staff members regularly participate in international conferences, collaborative research initiatives, and advanced professional development programs to stay at the forefront of their respective fields.

In the post-COVID-19 era, intensified economic complexities have heightened the critical need to strengthen organizations that drive national growth. Responding to this shift, CEMPOS has diversified its portfolio to become a national coordinating center dedicated to addressing societal challenges through research-based solutions. To achieve this, the Centre leverages a consortium of diverse researchers and experts from both domestic and international universities, actively collaborating with NGOs, corporations, and government agencies.

Core Pillars of Activity:

- **Research & Technology Application:** Applying nuclear and nuclear-related techniques to food, agriculture, the environment, and the blue economy; deploying digital and advanced AI technologies; and developing models for practical solutions using smart technologies.
- **Sustainability & Environmental Solutions:** Executing waste-to-wealth projects; recycling and upcycling marine resources; and formulating nature-based cosmetics, healthcare, and food products.
- **Community & Infrastructure Development:** Establishing demonstration farms, storage facilities, living laboratories, coastal forest cities, and forest villages to build resilient, sustainable communities.
- **Strategic Partnerships:** Coordinating collaborations with local and international experts, and establishing strategic links with global organizations and agencies.

Academic Hub: Postgraduate Pathways:

CEMPOS serves as a premier educational hub offering advanced professional courses, entrepreneurship training, and startup business development. The Centre offers comprehensive Postgraduate Programmes (PGD, M.Sc., and Ph.D.) in Environmental and Pollution Studies, featuring nine specialized tracks tailored to distinct career goals:

- **Environmental Pollution Management**
- **Marine Biology and Aquaculture**
- **Oceanography**
- **Marine Policy and Conservation**
- **Marine Safety**
- **Seafood Safety Policy**
- **Marine Pollution and Toxicology**
- **Marine and Coastal Pollution**
- **Oil Spillage Monitoring and Evaluation**

CEMPOS: Global Collaborations, Research Milestones, and National Solutions

CEMPOS is dedicated to addressing national challenges through research-based solutions and developing practical frameworks for rapid economic growth and nation-building.

Key Achievements & Impact:

International Atomic Energy Agency (IAEA) Projects (Achievements and Outcomes)

- Project RAF/7/009: Supported an integrated approach for marine pollution monitoring using nuclear analytical techniques.
- Project RAF/7/012: Utilized nuclear analytical techniques to support harmful algal bloom management.
- Reconstructed a 100-year pollution history of the Niger Delta using sediment core dating techniques.
- Identified harmful algae species within Nigeria's coastal waters.
- Established a comprehensive scientific database tracking environmental radioactivity pollution stocks and seafood safety in coastal waters from 2011 to date.
- Mapped pollution hotspots within central coastal waters.
- Mapped water hyacinth infestation zones across the Niger Delta.
- Developed specialized methods to utilize water hyacinth as a raw material for producing crafts, furniture, cosmetics, healthcare products, and textiles.

- · Disseminated research findings through numerous publications and presentations at national and international scientific conferences.

United Nations & NGO Collaborations (Achievements and Outcomes)

- Developed smart-technology models tailored to various organizational needs.
- Executed "waste-to-wealth" initiatives, resulting in the development of over 300 distinct water hyacinth products.
- Formulated more than 1,500 new blends of nature-based cosmetic, healthcare, and food products.
- Recycled and upcycled over 20 classifications of marine resources ("sea treasures").
- Established demonstration farms, storage facilities, forest villages, therapeutic office gardens, and living laboratories.
- Coordinated high-level collaborations and consultations with local and international subject-matter experts.
- Facilitated strategic linkages with foreign and domestic organizations and agencies.

Capacity Building & Community Development

- Built resilient and sustainable local communities.
- Provided professional and technical training for entrepreneurs.

Partnerships. Innovation. Impact.

We collaborate with several organizations and partner agencies to develop and implement sustainable project initiatives. Our collective efforts have yielded significant advancements in the following areas:

- **Agricultural Innovation:** Utilizing nuclear and related technologies to maximize crop yields, enhance food production, and address food security concerns.
- **Environmental & Community Wellness** Restoring ecosystems and promoting community well-being by establishing indoor and outdoor therapeutic gardens for offices and homes. This aligns with the First Lady of the Federal Republic of Nigeria's vision to enhance food security by growing food in every home.
- **Community Empowerment:** Developing practical initiatives that solve organizational needs, empower rural communities, and generate sustainable livelihoods.



PLATE 1: THE COASTLINE OF NIGERIA; CEMPOS SAMPLING LOCATION



PLATE 2: SAMPLING



PLATE 3: WATER HYACINTH UTILIZATION

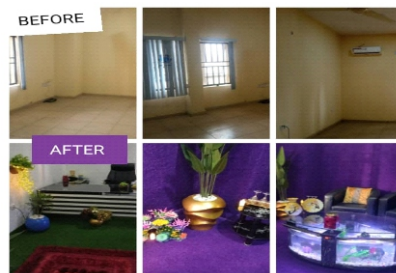


PLATE 5: THERAPEUTIC OFFICE GARDEN



PLATE6: NATURE-BASED PRODUCTS



**PROFILE OF THE
CENTRE FOR MARINE POLLUTION
MONITORING AND SEAFOOD SAFETY**