International Waste Management

International Study mission – Cross learning session

Universität Rostock
Traditio et Innovatio

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Professorship for Waste and Resource Management
Founded in 1419 – This year we are celebrating 600 yrs

- It is the oldest and largest university in continental northern Europe and the Baltic Sea area
- 8th oldest in Central Europe
- 5th university established in the Holy Roman Empire

Department of Waste and Resource Management

Research and teaching focuses

- Waste Management and Circular Economy
- Waste to energy as well as material applications
- Development of partial masterplans for cities with focus on waste management
- Development of Waste management models for cities and municipalities
- Practical implementation of research - close collaborations with Ministries and SMEs
- etc....
DBFZ
Deutsches BiomasseForschungsZentrum gGmbH

- Federal research centre for bioenergy and material applications
- Based in Leipzig/Germany

- Founded in 2008
- 300 employees
  (incl. students, PhDs, administration)

- Four departments
  - Biochemical conversion
  - Thermochemical conversion
  - Biorefineries
  - Bioenergy systems
Main Activities

- **Scientifics consulting** in the sustainable waste management and circular economy
- **Support the universities and research institutes** by the development of education and research
- Advice on **sustainable strategies** for sustainable waste management and circular economy
- Short-, medium-, and long-term **trainings** as well as advanced education
- Waste analysis, laboratory control and environmental impact assessment
- Advice on **financing** of waste management and circular economy
- Support of **international networks** between Germany and other countries
Integrated hybrid thermal and biological treatment of waste potential

A hybrid system will improve process efficiency
Innovative and complimenting each other
About 85-90% of the waste stream will be treated
Significant reduction in carbon emissions

Waste

RDF

Anaerobic digestion

Biogas

Heat

Composting

Air-recirculation reducing odor

Stabilized organic waste

Landfill

Organic fraction

Power and heat

Thermal treatment

About 85-90% of the waste stream will be treated
West Africa
Green Hydrogen study course in West Africa

- Advertising Call for application
- Selection Language courses
- Semester 1: Fundamental Common courses
- Semester 2: Fundamentals- Energy/hydrogen courses
- Semester 3: PV, System analysis, Hydrogen, Geo-resources, Bioenergy/Biofuels, Economy/Policy
- Semester 4: Thesis/Hand-on practical in Germany

Niger, Niger, Cote d'ivoire, Cote d'ivoire, Togo, Senegal
LabTogo: Biogas lab

- Design and Equipment is specified
- Procurement and tendering process is completed
- Site preparation in Lomé also completed
- The pre-fit containers have been shipped beginning of October and are expected on 6. November 2022

1: Lab for feed analysis
2: Sample preparation / milling
3: Drying ovens, muffle furnace and general working area
4: Biogas lab with CSTR and Batch-Test-Systems
5: Analytic lab with GC-FID
6: Store for chemicals, samples / water purification unit
7: Cold store (refrigerated container)
8: Central energy hub
Hybrid waste2energy plant in West Africa

HYBRID WASTE TO ENERGY PLANT
Hybrid waste2energy plant in West Africa

Govt keen on renewable energy penetration — President

From Commander Bank.

A new plant at Kumasi has a capacity to generate 400kW of power from waste materials, including organic waste, and will also help reduce pollution in the area. The plant, which is expected to start operations soon, is a significant step towards achieving the government's goal of increasing renewable energy generation. The plant will also serve as a model for other areas in the country to follow.

Sustainable alternative by example

The plant's success will not only benefit local residents but also serve as an example for other countries in West Africa. The government is committed to promoting sustainable energy solutions, and this plant is a testament to that commitment.

Background

The government has set ambitious targets for renewable energy generation, with the aim of achieving 10% of the country's energy needs from renewable sources by 2030. The Kumasi plant is part of this broader strategy and will contribute significantly towards achieving these goals.

Study discovers organic fertiliser for high yields

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Researchers have discovered a new type of organic fertiliser that can increase crop yields by up to 40%. The fertiliser is made from waste materials and is environmentally friendly. The study was conducted over a period of three years and involved testing the fertiliser on various crops. The results showed a significant increase in yields, making it a promising solution for farmers looking to boost their productivity.

Farmer preferences

Farmers in the region have expressed interest in using the new fertiliser, with many reporting improved crop yields. The fertiliser is easy to use and can be applied in a variety of ways, making it accessible to farmers of all levels.

Further research is needed to fully understand the potential of this fertiliser, and the government is supporting further studies to ensure its widespread adoption.

The new fertiliser is expected to revolutionise crop production in the region, helping farmers to increase their yields and improve their livelihoods.
Extension of the project into four west african countries

- Senegal
- Cote d’Ivoire
- Burkina Faso
- Togo
Hybrid waste2energy plant in West Africa

Waste Sorting at Akepé

Biomass pelletization

Tyre recycling

International Conference
“Innovations in Circular Economy, Renewable energies and Green Hydrogen in Africa”

In Planning:
19-21 September 2023 in Kumasi, Ghana

Website:
Icerafrica.com
What we offer

• Extensive research into biomass utilization to produce solid, liquid and gaseous fuels – process development and optimization

• Strong local and intentional industrial collaboration to deliver high quality projects

• Capacity building for industrial and research institutions (Masters, PhD and postdocs)

• Consult for local and international bodies on bioenergy related projects

• Carry out laboratory analysis for local and international companies using international standards

• Develop bankable projects for our clients
Thank you