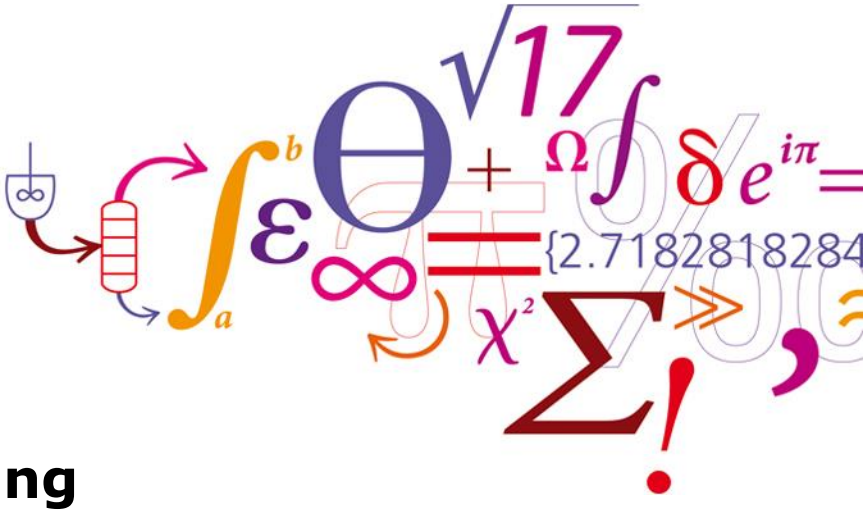
EU-AU Partnership:
Developing the New Bioeconomy for Africa

For increased resource efficiency (more food and feed), healthier diets, and improved rural and urban livelihood



by

Lene Lange,

Professor, PhD et Dr. scient.

Center for Bioprocess Engineering

DTU Chemical Engineering

Department of Chemical and Biochemical Engineering

Bioeconnomy:
Unexploited opportunities forAfrica

Background:

"Biomass to Biofuel" enzyme technologies can open plant biomass structures -also for feed and fertilizer use:

- *So far used only in big biorefineries (1:1 to Oil refineries!)*
- *Can also be used decentralized: small scale, local resources*

Opportunity:

- Upgrade of crop residues and agroindustrial side streams => more Food, Feed, Fibers, Fertilizer & Fuel

Results:

- Strengthening climate-change-challenged agriculture
- More out of less! => lower CO2 emission per ton produced
- Creating Jobs, and Generating income *also in rural areas*

CSR and Market Forces are not enough
-we need new solutions and to move faster forward

- Substitution of fossil-based products is a necessity for climate change effects not to get out of control
  - A rapidly growing population in Africa, based on fossil resources, is locally and globally unbearable

- Biobased production is an opportunity for local development, Jobs and livelihood

- Climate change challenged agriculture cannot feed the African population just few decades from now
  - Improved use of the harvest is a necessity (now:>50% is lost)
  - Waiting for commercial, huge 2G Biorefineries is not an option

The UN-SDGs have attracted global attention

- Interest from National governments, Development Agencies, NGOs, industries, and public in general

- BUT:
- **One significant aspect has almost totally neglected:**
  - The need for developing new technologies in order to reach the UN SDG goals

- ***Smarter, more sustainable & inclusive technologies are enablers and vehicles for reaching the UN-Goals***!

SDG # 1: No Poverty!

More food, jobs and income through smart technologies and circular economy

Robust crop plants through use of micro-organisms
=>increased nutrient and water efficiency!

Microbial upgrade of agricultural residues, side streams and waste, creating Jobs and New value chains in rural areas

Improved soil fertility by new, biobased soil improving products, made as side streams of local biorefineries

Ex. *New local biobased value chains:*

Bioplastic, food & feed ingredients, fertilizer , fuel

Collecting, Recycling and Upgrade of Wastes

New Funding Instruments needed for EU-AU SDG Sustainable Solutions Partnerships

- **A proposal for new type of EU-AU SDG PhDs**
  - Cross disciplinary: soil, plants, microbes, local-economy
- Supervisors from both University and Industry
  - South & North
- Making a team of PhD, Postdoc and Supervisors
  - Funding also for supervisors; South and North
- Establishing local partnerships for developing the solutions to concrete local challenges,
  - Building local capacity -solving problems while doing it!

Proposal for a new international initiative:
*"***Sustainable Solutions SDG Partnership"**

- Internationally leading scientists from EU Universities of relevance for developing optimized local solutions for urban, rural and coastal areas
- Partnering with leading scientists from African universities
- Collaborating with R&D-leading industries and SME´s in Africa and in Denmark

- **Objectives:**
- Establishment of local, economically, socially and environmentally sustainable solutions, through cross disciplinary partnerships
- Creating Jobs and Building skills; moving faster together
- "Copy/paste" dessimination perspective very promising!

Let us aim high and move fast!

Lene,
BioEng, KT, DTU