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Bioeconomy between Europe and Africa

summarizing workshop outcomes

GLOBAL BIOECONOMY SUMMIT IN BERLIN, 19-20 APRIL 2018

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During the 2018 Global Bioeconomy Summit, 14 parallel workshops were held bringing European and African bioeconomy professionals together for a mutual exchange of experiences and ideas and to look out the depth for potential collaborations. A set of these workshops focused on developing a bioeconomy in different regions of the world. This brief summarizes the workshop's presentations and the discussions focusing on bioeconomy development in Africa.

The aim of this interactive workshop, gathering some 70 participants from Europe and Africa, was to discuss

strategies for bioeconomy development in Africa in support of the Sustainable Development Goals (SDGs) and to highlight opportunities for international collaboration in the development of African bioeconomies. The workshop also addressed challenges and opportunities for integrating African bioeconomy regions into a global bioeconomy while using the SDGs as sustainability safeguards.

For a more detailed workshop program, please see <http://gbs2018.com/workshops/bioeconomy-of-world-regions-africa/>.



KEY MESSAGES

1. African nations need to develop strategic bioeconomy blueprints to help prioritise investments, government interventions, capacity building and to guide policy agendas for bio-based economic growth, while steering overall societal gains towards a more circular economies.
2. Private sector entrepreneurship as well as public sector research and development institutions should to play a leading role for translating scientific innovations in the agricultural, health, and industry sectors into new jobs and bio-based, inclusive socioeconomic developments. A conducive and incentivised policy environment is crucial in this regard, while also developing the necessary resources and capabilities (capacity) to practically implement such policies.
3. An African bioeconomy agenda should emphasize linking African farmers to regional, national and global markets, and seek to catalyse agro-value chain expansion within Africa through foreign investments on the continent including multiple south-south-north bioeconomy partnerships and collaborative ventures between African and overseas companies with experience in the deployment of bioeconomy technologies and innovations.
4. Building national capacities and strengthening regional integration for biosciences related research and development and innovation to promote African bioeconomy, which include educational programs, capacity building initiatives and research collaborations play a key role in developing a sustainable African bioeconomy.

Opportunities and Challenges in fostering an African Bioeconomy

A key feature of the bioeconomy is an extending biomass production and processing beyond food, feed and fibre to include a range of value-added products with potential applications in many sectors, such as pharmaceuticals, green chemicals, industrial materials and energy. Many African countries are endowed with relatively abundant natural resources, including about 60% of the world's arable land, significant potential for solar energy and vast

freshwater and marine resources. These resources are however unevenly distributed, and agro-ecological niches and biomass production conditions, such as availability of water, land, infrastructure, markets etc., vary widely across the continent. Continued improvements in biomass productivity and an optimization of biomass use, combined with viable bio-business sector that adds value to primary production, can drive a broader African bio-based economic dynamic. The African bioprocessing sector is however running at a suboptimal level



International delegates of the GBS 2018

and produces large amounts of waste and severe environmental problems. Transforming the African bioprocessing sector so that it adds value to the primary production and converts waste to valuable products in a resource efficient and environmentally friendly manner will be central for emerging African bioeconomies.

The development of African bioeconomies is complex and challenging and governments and policy makers in the region face many questions, such as:

- How can countries in sub-Saharan Africa, given their constraints regarding human and industrial capabilities and financial resources, make the most of their large biological resources using new technologies and new market conditions?
- What type of investments in science and technology platforms, bioscience innovation as well as natural resource management and productions systems can best connect small-holder farmers to markets, value chains and agro-processing opportunities?
- How to get there? What specific investments are needed and how can bioeconomic capacities be built?



What strategies and what policies need to be put in place? What type R&D systems, entrepreneurship, business and financing models needs to be fostered?

- How to ensure that investments in the bioeconomy consider contextual issues of social, economic and environmental constraints?

In Africa, only South Africa has a comprehensive bioeconomy strategy currently implemented. Developing regional and national bioeconomy strategies is therefore an important step in the process of moving towards modern bioeconomies in Africa. However, new technologies and changing socioeconomic patterns of production and consumption rarely have only positive implications, but can also hold considerable risks. Keeping bioeconomic developments within planetary boundaries is essential in this regard and the global SDG targets are an expression of this ecological imperative. Despite this, early research results of analyzing 43 global bioeconomy strategies in the STRIVE project at the Center for Development Research (ZEF) at the University of Bonn show a significant gap in governing Bioeconomy towards greater sustainability. The large majority of countries with a political Bioeconomy strategy had neither identified any conflicting goals between SDG achievement and fostering the Bioeconomy or had not addressed them with regulatory frameworks. Especially for an African continent associated with relatively abundant natural resources, but often rather weak governance structures, more efficient regulatory

safeguards for socio-ecological sustainability are important, while not stalling aspired socioeconomic dynamics.

Raising the volume for an African Bioeconomy: recommendations and suggested actions

In three working group discussions, some of the key elements in an African Bioeconomy agenda in support of the SDGs were identified. The discussion focused on how to move forward and to what extent countries in the region were able to address the opportunities and challenges of an African bio-based economic growth. The main recommendations from the groups were as follows.

African national bioeconomy strategies

In order to prioritise investments, government interventions, capacity building, and guiding policy agendas for bio-based economic dynamics to emerge, there is an urgent need for African countries to develop concrete national bioeconomy visions and strategies.

Job creation through bio-based economies in Africa

A focus for the bioeconomy in Africa is the creation of new jobs and sustainable, inclusive economic growth. To this end, African countries need to create an enabling environment for private sector led investments and advancements in bio-based production. This includes policies and regulatory frameworks creating demand for bio-based technologies and knowledge (e.g. certification, quality



and environmental standards, public procurement efforts and tax incentives).

A broadening of the innovation agenda

African countries need supporting partnerships to build further capacities in public research and development sectors to link to market actors and translate promising technologies and knowledge into societal benefits at a large scale. This also includes a support for entrepreneurship training and platforms for communication enabling academia to effectively interact with market actors. The European Commission is contributing to these processes via tailored policy initiatives and sustaining joint research and investment projects.

Linking African farmers to markets and agro-value chains to benefit from bioeconomy developments

Diverse and resource-efficient agro-processing, agro-waste and biomass value chains are central in an African bioeconomy and crucial to African farm and biomass producers. Supporting them to diversify their production and connect them to local, regional and international markets is imperative. Integrated agro-industrial parks encompassing the whole value chain from farm to processing centres model should be promoted as integrated and holistic approach to link small-holder farmers to value adding and processing centres, while not underemphasizing the importance of a more local and small-scale everyday Bioeconomy.

Supporting African bio-based companies

A strong, active and engaged African private sector and in particular small

and medium enterprises (SME) are crucial for translating the promises of the bioeconomy into functional tools for practitioners on the ground including smallholder farmers. A challenge is that the private sector in most African countries lacks the capacity and the resources to move research and development efforts to the markets with limited collaboration between knowledge producers and innovators in SMEs. There is thus a need for urgent investments and support to African SMEs enabling them to fulfil their role in deploying modern bioeconomy technologies for African markets. To this end African countries need to create an enabling environment (policies, incentive structures, intellectual property frameworks, business incubators, venture capital etc.) to facilitate African driven public-private partnerships.

Addressing issues of climate change resilience

In the context of enhancing Bioeconomy for sustainable development, while addressing Africa's vision 2063 of industrialisation, energy efficiency, food security and health are crucial.

Assess and address tensions and potential conflicts in an emerging African Bioeconomy

Challenges, potential resource conflicts (e.g. food vs non-food biomass production) and socioeconomic challenges (e.g. small scale vs. large-scale biomass production) in the emerging African Bioeconomy need to be addressed. African countries also need to develop expedient capacities to evaluate potential risks and benefits associated with new biosciences, biomass production regimes and value



chains. Such assessments should also include the consideration of environmental, socioeconomic and social issues (e.g. creating potential winners and losers).

Visualise potential of bioeconomy technologies in Africa

Educating and training the African youth in using the bioeconomy and bio-entrepreneurship as a tool to support an African SDG 2030 agenda is strategically needed as a long-term solution. An urgent need currently, is to visualise the potential for and benefits of the deployment of bioeconomy technologies in Africa. This could be achieved through partnership with African and overseas companies commercializing, scaling up existing and functional bioeconomy technologies visualizing societal impact, models and “success stories” of deployment. Such partnerships and support should of course should be driven by African needs and livelihood realities and be adjusted to local contexts.

Strengthen national and international partnerships and collaboration and multiple south-south-north partnerships.

Ensuring that African countries access best available knowledge, experience and capital, such partnerships would draw strongly on Africa's strengths, like relatively good land availability, favorable climate, large workforce, potential for rapid economic growth. Such partnerships would provide opportunities for sharing knowledge, technology and innovations, revitalizing and modernizing African agriculture and biomass production.

Working with global development agencies.

The United Nations agencies of UNESCO, WHO, FAO, UNIDO and others provide opportunities for leveraging global partnership for knowledge sharing and advocacy in moving the bioeconomy agenda forward in Africa.

Outlook

The workshop between African and European partners at the Global Bioeconomy Summit 2018 addressed challenges and opportunities for developing African bioeconomy regions and integrate them into a global bioeconomy while using the SDGs as sustainability safeguards. It had identified a number of fields for action including capacity building, institutionalized cooperation and partnerships for knowledge transfer with key actors from academia, private sector and government. The opportunities for a bioeconomy in Africa are numerous, as well as there are challenges. Addressing these through the mentioned fields for action was identified as the way forward. Developing enabling governance frameworks tailored to local contexts, which govern those actions are also crucial.

The aspects seem to be at the core of the multiple pathways for an African Bioeconomy to emerge or to take off.



PRESENTERS' INSTITUTIONAL AFFILIATIONS AND THEIR TOPICS

- *BioInnovate*. Presentation of the largest bioeconomy platform in eastern Africa - *Julius Ecuru, Icipe*.
- *STRIVE Project*. Interdisciplinary research project consisting of economic, political and natural scientists at the *Center for Development Research (ZEF)* at the University of Bonn on Sustainable Trade and Innovation Transfer in the Bioeconomy (STRIVE) - *Jan Janosch Förster and Jan Börner, University of Bonn*.
- *PRIMA*. An integrated research and innovation program on food systems and water resources. The Bioeconomy in the Mediterranean, *Fabio Fava, University Bologna*.
- *Ethiopian Biotechnology Institute*. Emerging Opportunities and Challenges of Fostering Bioeconomic Development in Africa - *Kassahun Tesfaye*.
- *Applied Biotech Inc. USA/Nigeria*. Opportunities and challenges for bioeconomic transformation in Africa: Harnessing Africa's expansive Bioresource for the Bioeconomy - *Nwadiuto (Diuto) Esiobu, Florida Atlantic University, CEO Applied Biotech Inc.*
- *Blue bioeconomy* - Blue Growth in the Mediterranean and the Southern Atlantic - *Fabio Fava, University Bologna*.
- *UNESCO*. Opportunity for Bioeconomy in Africa, Need for Partnership - *Peggy Oti-Boateng, UNESCO Regional Office for Southern Africa*.



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