

Berlin, November 26th 2015

Communiqué Global Bioeconomy Summit 2015

Making Bioeconomy Work for Sustainable Development

Communiqué of the Global Bioeconomy Summit 2015

Making Bioeconomy Work for Sustainable Development

The first part of this document summarizes the key messages of the communiqué of the Global Bioeconomy Summit 2015. The second part presents the full version of the communiqué.

I. Executive Summary: Cornerstones and Measures of a Global Agenda

To date, more than forty countries are actively promoting bioeconomy with a view to meeting the grand societal challenges of sustainable development. Governments should consider the full potential of biological resources and the scope of useful applications. Bioeconomy policy should not be fragmented into diverse policy areas or technology sectors, but comprise RD&I, agriculture/forestry/marine sectors, food, healthcare, biotechnology, converging technologies, renewable energy and conservation, and all these in combination with digitalization. For bioeconomy to become a key driving force of sustainability transformation in the circular economy, a more systematic, inter-sectoral and international approach is needed. This communiqué of the first Global Bioeconomy Summit outlines cornerstones of a global agenda, together with policy measures, towards a sustainable bioeconomy:

Cornerstones

International dialogue will result in a more comprehensive and shared understanding of the concept of bioeconomy, which defines biological resources holistically, and considers the challenges together with the unique features and advantages, like its potential for resilience, carbon neutrality, its renewability, re-usability and multi-functionality.

1. Biomass and biological resources are not yet used and preserved in an optimal way. Collaboration across borders, disciplines and sectors is required in order to achieve conservation of nature and minimal waste of natural resources alongside global value-networks. Exemplary topics for joint action are sustainable intensification in agriculture, establishing libraries of biodiversity, restoring and preserving soil health, biomass supply chain management, and trade.
2. Bioeconomy and its contribution to sustainable development must become measurable through monitoring at national level and include the international dimensions. International fora are needed involving all relevant actors, from producers to consumers, from scientists to policymakers, to discuss priority goals and targets informed by suitable assessment criteria.
3. International collaboration in education, research and development should aim for creating synergies so as to advance the capacities that help advance progress in bioeconomy. Global support and grant programs are required to encourage alliances in teaching and joint efforts in research, for example in selected global mega-projects.
4. Many countries now support biobased private sector and market development. However, there should be more exchange of experiences and coordination in innovation, application of local knowledge, industrial and trade policies. Mutual learning is necessary, specifically with regard to successful business models, suitable policy practices and sustainability standards. Further, the engagement of citizens is pivotal for enhancing participatory deliberation, and

societal appraisal of bioeconomy, allowing for a more robust development of science and technology in society.

5. Bioeconomy initiatives need to relate to the agendas of international organizations, and be introduced into multilateral policy processes and inter-governmental discussions, such as the SDGs, the COP or the trade conferences.

Measures

The International Advisory Committee has elaborated and agreed on the following actions to be taken and presented these to the plenary of the Global Bioeconomy Summit in Berlin:

1. To establish an international forum for bioeconomy as an informal network to foster strategic dialogue with policy-makers, private sector, civil society and scientists, including foresight and think tank oriented activities. In addition a shared understanding of sustainable bioeconomy, and monitoring and reviewing progress at an international level should be part of its agenda.
2. To explore opportunities for long-term international research and development collaboration to advance biobased technologies, processes and products in selected innovation areas, building on key themes identified at the Global Bioeconomy Summit in Berlin.
3. To initiate a dialogue among stakeholders regarding the knowledge, skills and competencies, which will be crucial for implementing the bioeconomy, and to promote mutual capacity building efforts.
4. To build up dialogue with civil society and the interested publics to render bioeconomy a venture based on a widely shared vision of a sustainable future; innovative ways of communication with the public must be identified and developed, based on principles of transparency, openness and evidence.
5. To include bioeconomy topics into ongoing discussions on how to achieve the Sustainable Development Goals at international and national levels.
6. To exploit synergies from collaboration at regional level, in particular by coordination of smart regional innovation strategies.
7. To hold the next Global Bioeconomy Summit in two years, and to maintain the IAC until then as an informal mechanism for international coordination and cooperation activities, incl. facilitating the above mentioned international forum.

II. Communiqué of the Global Bioeconomy Summit

Aim and Purpose

This communiqué of the first Global Bioeconomy Summit, held in Berlin from 24 to 26 November 2015, was developed by an International Advisory Committee and tabled at the Summit.

We, a community of experts and stakeholders from more than 50 countries, met in Berlin to review the state of bioeconomy in different parts of the world and to identify opportunities for accelerated transition to a more biobased economy, i.e., an economy that fulfills criteria of ecological and social sustainability.

We note that in the past ten years many countries have pursued bioeconomy strategies with a particular focus on research and policy-making. We hold that there are manifold opportunities for learning from experience across national borders and institutional domains. We thus advocate sharing insights from bioeconomy research and innovation. We have also identified significant large-scale research projects that would benefit from global cooperation.

This communiqué highlights key elements of the emerging global agenda for a sustainable bioeconomy. We emphasize that a sustainable bioeconomy will make essential contributions to achieving Sustainable Development Goals (SDGs) as its potentials are particularly geared to the SDGs related to food security and nutrition (Goal 2), healthy lives (Goal 3), water and sanitation (Goal 6), affordable and clean energy (Goal 7), sustainable consumption and production (Goal 12), climate change (Goal 13), oceans, seas and marine resources (Goal 14), and terrestrial ecosystems, forests, desertification, land degradation, and biodiversity (Goal 15).

Opportunities and Challenges

Bioeconomy is defined in different ways around the world. We have not aimed for a unified definition but note that an understanding of *“bioeconomy as the knowledge-based production and utilization of biological resources, innovative biological processes and principles to sustainably provide goods and services across all economic sectors”* is shared by many.

On the supply-side, a rapid progress in the life sciences as well as in key enabling and converging technologies are central engines of bioeconomy development. Primary industry (in particular agriculture and forestry), food processing, bioenergy, healthcare, biotechnology and green chemistry are key bioeconomy sectors. We note the employment potential resulting from bioeconomy development not only in industrialized countries but also in emerging and developing countries. Especially, rural areas would not depend on agriculture or fisheries anymore, but benefit from new bioeconomy value webs.

On the demand-side, bioeconomy development is driven by the desire to meet some of the grand societal challenges, such as achieving food security and sustainable resource use for a growing world population, mitigating and adapting to climate change, and sustainably managing the planet's vital resources, i.e., fertile soils, clean water, clean air, and biodiversity.

Globally, more than forty countries have integrated bioeconomy in their policy strategies. Among others, the G7 and the BRICS countries have launched comprehensive initiatives fostering the advancement of a bioeconomy. Some country strategies have emphasized linkages between bioeconomy and health (e.g. biopharmaceuticals; healthy nutrition), whereas other country strategies have focused on sustainable biomass production and utilization. We further note the emerging trend of combining bioeconomy innovations with information technology, for instance in ecosystem-monitoring, precision agriculture and consumer information.

Against the background of diverging conditions in different countries, we recognize that bioeconomy deals with complex issues and systems. Bioeconomy might best be moved forward with a set of diverse strategies adjusted to specific national and regional opportunities. We note, however, that bioeconomy as such is not inherently sustainable. The pursuit of the above-mentioned grand challenges one by one in singular ways may entail tradeoffs. **Food security is a fundamental priority**, and bioeconomy is only sustainable if the planet's natural capital is improved. Bioeconomy should provide solutions for managing resources in a responsible, inclusive and efficient way. Technological and social innovations play a key role in achieving a sustainable bioeconomy. Furthermore, potential conflicts between societal goals and the interests of stakeholders and citizens need to be both acknowledged and appropriately addressed. This requires a global dialogue on strategies and concepts, methods and technologies, experiences and outcomes, guided by common principles for a sustainable bioeconomy.

Key areas of action

Three key areas of action have been agreed upon that are crucial for the creation of a sustainable bioeconomy: (1) promoting innovative as well as proven technologies and measures for a sustainable bioeconomy, (2) establishing good governance for a sustainable bioeconomy, (3) initiating and strengthening international dialogue and cooperation.

1) Promoting innovative and proven technologies and measures for a sustainable bioeconomy

The transition to more biobased production with integrated material cycles requires active political support and policy coordination. We thus consider it an important task to align the principles of a sustainable bioeconomy with those of a circular economy. This would involve systemic approaches across sectors (i.e. nexus thinking), particularly innovation policy measures that aim at optimizing Bioeconomy value networks and minimizing waste and losses.

Investing in research to foster innovation and apply proven technologies

Bioeconomy innovations are driven by research that allows for rapid progress in the life sciences and related knowledge areas. Combining knowledge in biosciences with inventions in chemistry, energy, primary industry, information technology as well as in engineering, is crucial and especially promising. Open innovation, interdisciplinary research and public-private-partnerships are promising approaches to enhance innovativeness. Support infrastructures, for example incubators and technology transfer offices, as well as regulatory frameworks are most effective if designed accordingly. Furthermore, national and international policies help establish collaboration in research and innovation through global consortia and networks.

We take note of a new international Delphi study among bioeconomy experts which defined a priority set of complementary mega-projects: 1) new food and sustainable agri-food systems; 2) bio-smart and integrated urban areas; 3) the next generation biorefineries; 4) artificial photosynthesis; 5) marine bioeconomy; together with projects that foster 6) the development of consumer markets and 7) the international regulation and governance of bioeconomy. Further discussions on these and other mega-projects could encourage requisite international cooperation.

Expanding education

Education and research are the basis for creating and understanding the significant body of knowledge needed to shape a sustainable bioeconomy. It is key not only to develop bioeconomy-related capacities but to also tailor them to the circumstances and requirements at international,

national and local levels. For this reason, a strong interconnection among education providers, researchers and innovators and, ultimately, bioeconomy employers, should be supported and facilitated. The provision of appropriate knowledge and skills needs to be integrated in primary education, in vocational training and continuing education and in academic studies. New interdisciplinary and international study programs should be conceived. International sharing of teaching programs, for example through open learning platforms, will enhance the mutual capacity building for the worldwide implementation of bioeconomy.

Increasing value, reducing structural costs

The bioeconomy will only succeed if it is competitive under consideration of the costs of negative externalities. Innovation efforts will need to focus on increasing and maintaining biobased value. "Value" hereby refers not only to economic usage and gains but also to nutritional content per unit of food or feed, to natural and social capital, as well as to biological knowledge. Minimizing losses and waste over the production, distribution and consumption cycles is an important area for international collaboration. New procedures and business models are needed in a circular economy to decouple growth from the exploitation of scarce resources and the emission of greenhouse gases.

Funding for innovation and capacity development

If bioeconomy is to thrive worldwide, helping to increase our planet's resilience and sustainability, significant new investments are required. International funding mechanisms targeting sustainable development, such as the Green Climate Fund, should be considered as a means to foster the development and dissemination of biobased products and processes. In addition, financial capital is needed for increasing investments, mobilizing industrial stakeholders along the bioeconomy value chains, and leveraging public with private funds.

Strengthening the role of businesses

Business is a key stakeholder in and driver of bioeconomy which needs to be integrated in policy planning and strategy building. Bioeconomy will benefit from a vibrant start-up environment which fosters innovation and the introduction of new biobased products. In many countries, small and medium-sized enterprises are key drivers of biobased innovation. Small-scale producers also serve as custodians of a significant proportion of natural resources, thus rendering important ecosystem services. Bioeconomy policy should therefore empower small and medium-sized businesses to participate in bioeconomy development.

Governments are responsible for creating an enabling environment for biobased businesses. They can further support market entry for business innovations by including biobased products in public procurement policies. Furthermore, procurement policies might serve as an example and role model for establishing sustainability criteria. Governments can thus play an important role in setting trends toward more sustainable production and consumption.

Bioeconomy also offers tools for regenerating degraded land, former or no longer active industrial sites, in particular oil refineries and chemical or biochemical plants.

2) Establishing Good Governance for a Sustainable Bioeconomy

The worldwide development of bioeconomy might involve conflicts between societal goals and between stakeholder interests over the production and use of particular resources. National and local policy-making needs to appropriately address such issues. Therefore, the development of

bioeconomy would greatly benefit from harmonization in international policy frameworks and inter-governmental negotiations.

Addressing societal needs and market development

We note that the route towards sustainable bioeconomy must be appraised and supported by society. We emphasize that opportunities for inclusive dialogues with civil society are an essential component of any bioeconomy-related innovation strategy. It will be especially important to address the needs of the poorer and more vulnerable population in each society, so that benefits are indeed shared at all levels in equitable ways.

Open dialogue among scientists, policy-makers, business, and civil society concerning the benefits and the safety of converging technologies, and products derived thereof, is considered essential. Given the complexity of the products and processes as well as the expertise required, internationally respected bodies could take the lead in verifying the safety and sustainability of existing and emerging methods and applications. International exchange of experiences with suitable or unsuitable regulatory environments should be encouraged. Multilateral harmonization of regulations, including standards and labels, may stimulate the development of new technologies, create a bigger market for biobased innovations and ensure fair competition. However, potentially negative effects of single state interventions would best be considered in advance and monitored subsequently on a regular basis. In this respect, it also seems imperative to consider the state of bioeconomy-related capabilities across different sectors and institutional domains at local, national and international levels.

Ensuring sustainable production and consumption of natural resources

Bioeconomy development necessitates the sustainable management and use of natural resources, including soil, air, water and biodiversity. This will require cooperation on behalf of the conservation and sustainable management of vital natural resources to safeguard the functioning of global ecosystems. Trade-offs and possible synergies from the use of natural resources need to be addressed through integrated approaches (e.g., the water-energy-food nexus). Besides, knowledge of biological principles and genetic resources are crucial sources of biobased innovation. Biodiversity libraries require international attention and funding. They are key for discovery, research, conservation and sustainable use of genetic resources. Bioeconomy development not only needs to foster innovations for optimized biobased value- networks but also to develop valuable policy measures to guiding changes in business practices and consumer behavior.

Integrating bioeconomy into multilateral policy processes and global policy frameworks

There is global responsibility for sustainable development. Recognizing that global resources are not evenly distributed, mechanisms should allow for equitable sharing among countries of resources, skills and infrastructures. This will require the application of appropriate mechanisms to ensure that sustainable livelihoods and employment are developed preferentially in the areas most needed. These mechanisms relate especially to development finance and funding, skills and technology transfer and intellectual property partnerships. Bioeconomy development needs to become better integrated and considered in international policy and trade agendas. Regulations governing international knowledge and innovation transfer, such as intellectual property and biodiversity regulations, are of significant import. Furthermore, trade in biobased products and services requires efficient and equitable market conditions. This implicates unbiased trade regulations and procedures. With a view to ensuring food security and sustainable resources management, bioeconomy policy needs to be embedded within existing global policy frameworks,

while allowing for solutions that are adapted to national and local conditions. However, global policy frameworks have so far been negotiated in parallel and without integration of bioeconomy-related issues. Examples are the Nagoya Protocol, the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS), the WTO Environmental Goods Agreement, and the Principles for Responsible Investment in Agriculture and Food Systems. Harmonization of regulatory frameworks is key for creating coherent pathways towards a global bioeconomy.

Assessing policy impact

Finding agreement on the need for and approaches to monitoring the positive and negative impacts of an expanding bioeconomy at both global and local scales is key. Scientists, policy-makers, business and civil society are to be involved in these efforts. Issues of global import focus on recognizing and recording unsustainable developments, such as resource conflicts, as well as supporting and initiating corrective measures.

3) Initiating and strengthening international dialogue and cooperation

Sustainable bioeconomy research, innovation and policy-making require international dialogue and cooperation to move forward and simultaneously ensure sustainable development at all levels.

An international platform, for example a Forum of Bioeconomy Councils, may serve as a possible first step in that respect. We consider scientists, policy-makers, and representatives from civil society and the private sector key constituents of such an initiative.

The way forward from the Berlin Bioeconomy Summit

Now that the stage for a global bioeconomy is set, the International Advisory Committee has agreed on the following measures to be taken and discussed these with the plenary of the Global Bioeconomy Summit in Berlin:

1. To establish an international forum for bioeconomy as an informal network to foster strategic dialogue with policy-makers, private sector, civil society and scientists, including foresight and think tank oriented activities. In addition a shared understanding of sustainable bioeconomy, and monitoring and reviewing progress at an international level should be part of its agenda.
2. To explore opportunities for long-term international research and development collaboration to advance biobased technologies, processes and products in selected innovation areas, building on key themes identified at the Global Bioeconomy Summit in Berlin;
3. To initiate a dialogue among stakeholders regarding the knowledge, skills and competencies, which will be crucial for implementing the bioeconomy, and to promote mutual capacity building efforts.
4. To build up dialogue with civil society and the interested publics to render bioeconomy a venture based on a widely shared vision of a sustainable future; innovative ways of communication with the public must be identified and developed, based on principles of transparency, openness and evidence.

5. To include bioeconomy topics into ongoing discussions on how to achieve the Sustainable Development Goals at international and national levels.
6. To exploit synergies from collaboration at regional level, in particular by coordination of smart regional innovation strategies.
7. To hold the next Global Bioeconomy Summit in two years, and to maintain the IAC until then as an informal mechanism for international coordination and cooperation activities, incl. facilitating the above mentioned international forum.