Between Critique of Growth and High-Tech Strategy: The Bioeconomy

Report of the interdisciplinary workshop “It’s the Bioeconomy, stupid! The future of growth and the promise of the bioeconomy” of the BMBF-Junior Research Group “Mentalities in Flux (flumen)” on the 7th and 8th of October 2020 at the Institute for Sociology of the Friedrich-Schiller-University Jena, Germany

by Philip Koch and Martin Fritz

The necessity to abandon the use of fossil fuels in order to limit global warming to a maximum of 1.5°C is mostly consensus in Germany. Other environmental problems, such as the wide spread of plastics, loss of habitat and the continuous decline in biodiversity remind us how destructive our current economic system is for our own basis of living. Many actors from politics and economics promote/demand a switch from a linear, fossil economy to a circular one, which mostly replaces fossil fuels with renewable resources – a bio-based economy.

The dominant narrative in the debates surrounding the bioeconomy is painting a very positive picture of an economy based on renewable resources and energies, that will enable “green growth”, overcome the dependence of fossil fuels and therefore lead us into a sustainable future. While the extraction of fossil resources such as coal and oil is continuously growing in our linear economy, a bioeconomy uses resources whose availability is based on natural cycles of reproduction. Those cycles can be optimized, but there are also limits and it is unlikely that the accumulation of energy and goods as it has been taking place until now, would still be possible in a bio-based economy. Therefore, it is not only necessary to achieve technological innovation in order to make the current system more efficient and “green”, but a social ecological transformation of our way of living, that encompasses a reduction of the use of energy, material and land is also crucial.

A change of the existing capitalist logic of accumulation, extraction and exploitation often leads to new conflicts of distribution, but also offers potentials for a fundamental transformation of society: The social organization of labor and care activities, patterns of consumption and the very mentalities of people could change. Considering the current scope of climate change and destruction of nature, it is clear that all those things *need* to change.

Along this line, new policies already imagine the far-reaching changes that a bioeconomy will bring. The European Union predicts in its strategy „rapid, concerted and sustained changes in lifestyle." However, current policies for the establishment of a bioeconomy are still promoting business-as-usual with increased efficiency and technological innovation. Economic growth is clearly the goal of those measures, a questioning of this fixation on, or at least dependence of growth is practically not taking place.
Is it possible for a bioeconomy to incorporate these contradicting promises and fulfill all the diverse expectations? Can it decouple permanent economic growth and the creation of new jobs from the exploitation of fossil resources? Even if so, would there be enough biomass to sustain current production patterns? Which effects does the bioeconomy have on Germany and on the world already today?

These and other questions were discussed by international researchers at the workshop "*It's the Bioeconomy, stupid! The future of growth and the promise of the bioeconomy*" that took place on the 7th and 8th of October 2020. It was organized by the BMBF-Junior Research group "Mentalities in flux – flumen". Due to the ongoing corona pandemic, the majority of the sessions was conducted online, however, some participants also had the opportunity to be present in Jena in order to present their research.

The contributions were quite varied on both days of the workshop, while many panels discussed topics related to the German bioeconomy strategy and its critique, there were also some international perspectives. All presentations put emphasis on the inherent contradictions and dilemmas concerning the (im-)possibility of infinite economic growth, as it is promised by the bioeconomy.

Dennis Eversberg and Jana Holz from *flumen* started the workshop with a contribution on different reality checks for the bioeconomy. The presentation demonstrated that the bioeconomy and its various national strategies are promising many, often conflicting, things. Further could be shown how many of those promises remain unfulfilled and are only kept alive by permanently repeating them in various strategy papers, like the creation of jobs. It rather seems as if the potentials for job creation within the bioeconomic sector are largely exploited and it is likely that, in the future, we will see a decline of jobs within the bioeconomy, caused by the very digitalization and technification that the strategies promote. Studies on the material and energetic preconditions of a bioeconomy indicate that the global land use won't permit a lot of

additional growth, since production capacities for biomass are, for the most part, already in use. What is currently presented as bioeconomy is partly even directly causing damage to the environment, for example through emissions that occur during the production of bioenergy. In the second part of their contribution, Dennis Eversberg and Jana Holz presented empirical analyses of a survey conducted by the German Ministry for Environment on environmental awareness on the grounds of Pierre Bourdieu's approach. They could identify three broad societal groups in Germany that have very different opinions concerning a social ecological transformation of society, one of which openly and consciously rejects a transformation away from fossil energy in any way. The researchers conclude from these findings that focusing on acceptance issues and information campaigns makes no sense when facing direct opposition. The discussions on transformation are a political struggle where contrarian forces clash.

Anke Schaffartzik (Institute for Social Ecology, University of Natural Resources and Life Sciences Vienna) reviewed global material flows in her contribution, using an environmental justice perspective. She made clear that the lion's share of biotic and abiotic materials is still flowing from the Global South to the Global North. However, biomass, which is constantly being promoted by any bioeconomy strategy, is only playing a minor role in these material flows. The "fossil heritage" of the 20th century was built on the foundation of fossil resources and it will continue to demand those resources for its reproduction. This heritage marks the biggest share of global material flows and raises the question, how environmental justice can be achieved if the very foundation of global societies is constantly reproducing the need for more fossil energy. A bioeconomy which deserves its name has to take this connections and problems into account.

Ralf Döring from the Thünen Institute for Fishing Ecology in Bremerhaven could show the material flows of the German bioeconomy en détail in his contribution. Two findings from his presentation are especially remarkable: First, despite (or because of) the enormous gains in efficiency in the Germany forestry, agricultural and fishing sector, the negative impacts like loss of biodiversity, pollution of ground water and soil depletion outweigh the (generally small) economic gains by far. Secondly, the greatest share of all biomass in Germany is used as feed. After that comes production of bioenergy and only in the third place the use as materials (i.e. timber for furniture and paper). The smallest share is actually used for the production of food, so the frequently heard argument, the bioeconomy would contribute to global food security (not even speaking of food sovereignty) is vastly exaggerated.

In the discussion of the first three contributions a shared consciousness for the limits to growth became apparent among the participants, just as for the inequalities between the global South and North. The North seems to be the only party really benefiting from the bioeconomy and the concept does not mitigate those issues, but rather make them worse in many cases. Further it was noticed that the real impacts of the bioeconomy, together with activist and academic criticism, are often not addressed by politics. Despite scientific evidence, funding is still focused on technological research and growth, all in hope of an everlasting business-as-usual. Fossil infrastructures and fossil mentalities cannot be overcome quickly, because they keep reinforcing each other.

Eva Cudlinova, Nikola Sagapova and Miroslav Lapka from the South Bohemian University of Budweis (Czech Republic) noted in their presentation that the commonly known strategy papers of the USA, the European Union and the OECD emphasize different aspects and are frequently reviewed and changed, like the case of the European strategy. In this case, the new EU bioeconomy strategy focuses more on sustainability. However, the constant repetition of the importance of concepts like sustainability looks, in the face of actual policies, like mere rhetoric. A real transformation accompanies a plethora of different alternatives and variants that need to be applied in many parts of society and economy. The researchers concluded that the biggest potential for a bioeconomy to support a real transformation would be on a local level, with tailored solutions for specific ecologic and cultural demands.

According to the team of researchers around Wibke Crewett and Uwe Demele from the University for Sustainable Development Eberswalde, the actual potential for sustainability within the bioeconomy can be grasped best by looking at its normative and ethical basis. In the older versions of the European bioeconomy strategy, they see an anthropocentric world view, putting economic and industrial interests before aspects of sustainability. However, there would still be a chance for the bioeconomy to contribute to abandoning the growth imperative, if the current trend towards strong sustainability and a circular economy continues. In the eyes of the researchers from Eberswalde, those concepts can go hand in hand with an ecocentric and holistic kind of ethics, which they locate closer to the degrowth movement.

Economic growth is hardly criticized in international bioeconomy strategies, even though, according to Iago Otero from the University of Lausanne (France), it correlates strongly with the

loss of biodiversity. The environmental scientist therefore proposed in his contribution adding another scenario (*shared socioeconomic pathways*, SSP) to the already existing ones of the *Intergovernmental Platform on Biodiversity and Ecosystem Services* (IPBES), which assumes little to no growth while enabling higher biodiversity. However, the bioeconomy in its current state is not fit to be part of such a scenario, since its demand in land for cultivation of biomass is far too big for a postgrowth society.

In her Keynote, Daniela Thrän, scientist in the area of bioenergy at the Helmholtz-Center for Environmental Sciences in Leipzig and from 2012 to 2019 member of the German bioeconomy council, took a more optimistic perspective. She pointed out that certain landmarks, for example in genome editing and more efficient use of arable land, could already be achieved. Further, the topic of sustainability became more and more important in the German public as well as in the discussions on bioeconomy. Daniela Thrän pointed out that the problems surrounding a steady increase in production is also a topic in the bioeconomy council. Her contribution started a discussion on the use of technology and efficiency gains, if they are connected to rebound effects, that end up "eating up" the positive impact those innovations might have on the environment. The problem of rebound effects is, according to Daniala Thrän, the most pressing issue in the debates surrounding the bioeconomy. However, it hasn't been a part of political measures yet. Therefore, the researcher welcomes critical research and discussions on these topics, especially coming from social sciences.

In contrast, the contribution of Mario Giampietro from the Free University of Barcelona (Spain) was far more skeptical. The presentation took place as a public evening event that could be viewed online and was well-received by a broad global audience. Mario Giampietro is researching sustainability issues by using the method of complex systems. He analyzes inputs and outputs of the bioeconomy as a system that refines energy and materials while being embedded in a natural cycle of reproduction. The results of his research confirmed the reality checks of Dennis Eversberg and Jana Holz once more: A full circular economy is not possible, a bioeconomy also needs a lot of energy that today is mostly extracted from fossil resources, there is always waste that cannot be recycled and the global landmass is not enough to substitute everything with bio-based products. A growing number of conflicts about land use is very likely and many conflicts of this nature are already being fought in Latin America today. Mario Giampietro's lecture stated once more that (bio-)technology cannot solve

environmental issues, if social injustice and inequalities of power are not addressed simultaneously.

The insight that political solutions must be found was also the result of the contributions of two teams of the Forschungszentrum Jülich, who presented on the German context: Sophia Dieken and Sandra Venghaus discussed Rhine region, which is known for its large coal mines, but at the same time promotes a strategy for the transformation of the region into a so-called bioeconomy region. They pointed out the importance of participation of all stakeholders in order to democratically discuss political and economic measures. Meike Henseleit and her team further deepened this aspect: they conducted a representative survey on bioeconomy-related attitudes in Germany. The main result portraits the dilemma of the bioeconomy: Even though very few participants even know about the concept, it is widely accepted – probably, because the term itself is connected to positive notions of nature and environmentally friendly behavior. Similar to the bioeconomy being portrayed as the best way into a sustainable future in strategy papers even though it is not translated into politics that actually lead to this future, the overall impression the public has of the very term is one of a bright green future.

This, however, changes if certain parts of the bioeconomy are more closely investigated. Many contributions of the workshop dealt with agriculture and the production of food and here it turns out that there are, indeed, critical voices, from civil society as well as actors within the sectors: Madalena Meinecke and Carolin Küppers from the BMBF-Junior Research Group “Food for Justice: Power, Politics, and Food Inequalities in a Bioeconomy” at the Free University of Berlin could show that the participants of the “Wir haben es satt”-movement (“we are fed up”) are conscious of transnational conflicts of land use and issues of inequality. Kerstin Schopp of the BMBF-Project “BATATA – Bioeconomy as societal change” from the Eberhard-Karls-University Tübingen conducted research on politically underrepresented groups in Tanzania. She showed that there are different visions and imaginaries of a good life and of a sustainable land use and that the visions of national elites differ from both, the visions of marginalized groups and the international versions of a bioeconomy.

Maria Backhouse and Anne Tittor of the BMBF-Junior Research Group “BioInequalities” from that Friedrich-Schiller-University Jena presented the real consequences of a bioeconomy for two cases: The soy cultivation in Brazil and the production of biomass in Argentina. Both countries are playing a central role in the production of agrarian goods for the bioeconomy

and both have national strategies. The conflictive implementation of those lead, in both countries, to a loss of land and occupation of small-scale farmers, while genetically modified organisms (GMOs) are massively subsidized. Maria Backhouse is speaking of a *knowledge-based bioeconomy* (KBB) in the case of Brazil: Technology and innovation surrounding GMOs and the modernization of the agrarian sector are being promoted in order to extract biomass more efficiently. The Argentinian bioeconomy puts more emphasis on the production of biomass for export and follows a path similar to the one in Brazil. Anne Tittor speaks in this case of *agrarian extractivism*, where people and soil are being exploited for a steadily increase in agricultural production.

German agriculture produces a big amount of manure. Jonathan Friedrich and Jana Zscheischler from the Leibniz-Center for Agricultural Landscape Research in Müncheberg discussed how the bioeconomy is using this resource. They presented the results of a number of qualitative interviews in which actors were asked about the economic and environmental impacts of the manure problem. Here it also became clear that there is a difference between bioeconomic firms that look for innovative technological solutions on the one hand and civic and NGO-actors on the other hand that want to see a fundamental change in the way that agriculture works, including more democratic participation.

The last contributions came Sarah Hackfort and Miriam Boyer from the BMBF-Junior Research Group “Biomaterialities - Nature and the Transformation of Production, Reproduction and Politics in the High-Tech Bioeconomy of the Humboldt University in Berlin. In their presentation, they classified the German bioeconomy as a growth-oriented *High-Tech-Bioeconomy*, where large sums are invested into technological innovations, automation and digitalization. Its supposed goal is to commodify all parts of living nature through the means of new technologies.

The many contributions of the workshop can be summarized as follows: There are still a lot of different interpretations of the term bioeconomy. Its definitions range from sustainable concepts to high-tech extractivist practices, like in the case of Argentina. The critical voices on the still-present growth paradigm within the bioeconomy are recognized and heard better than before, but political consequences do not follow. Under the label of bioeconomy, conventional high-tech agriculture, based on fossil resources, is exporting biomass from the Global

South to the Global North and a transition towards a more just system seems unlikely, given the historic development of the global economic system.

If conflicts on land use, distribution and environmental justice will play an even greater role in the future, a critical, broad societal and scientific discussion about the bioeconomy is needed more than ever. This discussion will have to address technological issues as well as problems of acceptance and information. However, from a critical perspective, especially from social sciences, the bioeconomy must be seen for what it is: A contested political program where relations of power and different economic and social interests have to be taken into account, not only to understand the very concept, but also to take part in the discussions surrounding its direction.