Funding Concept of the Bioeconomy Council for the Sector

Food Consumption, Diet & Health
Bioeconomy plays a key role in the innovation policy of the German Federal Government. The Federal Ministry of Education and Research (BMBF) and the Federal Ministry of Food and Agriculture (BMEL) have over the years funded various branches of the bioeconomy sector, but with a particular focus on plant science and white biotechnology. However, within the bioeconomy framework, social science research related to consumption and consumer behaviour has been inadequately represented and funded. The Bioeconomy Council recommends that the bioeconomy should seek and actively engage in and foster the dialogue with consumers and all stakeholder and social groups from the outset. The food and nutrition sector seems particularly suitable for this as it is readily accessible. The foundation for a successful dialogue, however, is social science research which determines the needs, expectations and habits of consumers, provides analyses and develops a wide range of tools in addition to appropriate forms of communication to enable consumers in their decision making for a more sustainable consumption and the healthy choice.

The present funding concept detailing the research challenges and needs was drafted by the working group ‘Nutrition and Health’ by Prof. Hannelore Daniel, Prof. Lucia Reisch and Prof. Ulrich Hamm. It was adopted by the Bioeconomy Council on 26.11.2013.
1. Introduction

Bioeconomy holds promising approaches to resolving the great challenges of the future.1] New biological and technological knowledge and processes for high-quality products, for sustainable production and for sufficient quantities of biomass can bring about a fundamental change in the industrial resource base. In this respect, bioeconomy can make a meaningful contribution to the ‘green economy’ and reduce the burden on the environment and to conserving the earth’s finite resources. It also offers a huge potential for a more sustainable food production, for ensuring the global food supply and for promoting consumer health. These opportunities should be conveyed to the public with an open and comprehensive communication strategy for potentially conflicting goals or even risks. Appreciation of the bioeconomy requires a discourse between politics, civil society, business, science and the public, in which the media plays an important role. It is not and should not be a question of ‘science marketing’ or ‘gaining acceptance’ for a bio-based economy but should rather be an honest discussion about opportunities and risks, about assessing them and weighing them. It is ultimately about the creation of socially robust knowledge. In addition, innovative forms of participation and dialogue developed and tested for example in the fields of energy (infrastructure) and nanotechnology should be analysed to see if they are transferable to the bioeconomy sector. This is a particular challenge in the food sector, since consumers – at least in Germany – demand natural products on the one hand while demonstrating keen price awareness on the other. Like hardly any other area of life, the food sector is highly emotionalised and displays a high degree of alienation from modern food production. However, food and nutrition are central to life and are in the heart of bioeconomy – from
food security to human health –, and can thus act as a go-between to communicate the benefits of bioeconomy to the consumer.

The Bioeconomy Council has identified several topics where political action to support and implement research and development is of high priority. [1] It has already made recommendations for actions in support of research on food production, nutrition and health. [2] These recommendations address topics along the entire food chain: from genesis and optimisation of harvest and the eco-friendlyness of production (foods of plant and animal origin), via technologies and measures to increase sustainable cultivation and processing, to resource optimisation, logistics and marketing. Research approaches to better understand consumers’ behavior and their system of values, as well as approaches on how these can be affected in term of a more sustainable consumption and healthier lifestyles, were previously not addressed or at least not adequately integrated into the various bioeconomy strategic areas.

2. Need for research into consumer behaviour, eating and lifestyle determinants

Consumer behaviour will gain an even greater importance in many branches of the bioeconomy. In the food sector, this applies in equal measures to reducing food losses, improving sustainability in consumption and a diet that can promote health. Foods adapted to the lifestyle and expectations of consumers which are eco-friendly, reasonably pri-

Fig. 1: Consumer self-assessment: Most common bad eating habits
ced and able to promote health could be obtained by using leading-edge technologies on all levels of the value creation chain. However, consumers are particularly skeptical of new technologies in the food sector. Here the consumer’s desire for ‘totally natural’ food from traditional production methods (as frequently shown in a misleading manner by advertising) contrasts sharply with inadequate knowledge of modern processes and techniques in food production. There is barely any awareness that modern methods of food production are certainly of benefit to consumers – for example in respect to food safety. Another example may be the production of lactose-free dairy products that requires lactase manufactured with the help of biotechnology.

Food choices are largely driven by emotional factors as well as social and sensory influences. Rational decision-making processes based on scientifically proven information often play little or no role at all. With regard to information and advice given on food choices and diets, an overwhelming body of mostly semi-scientific information is available, which progressively demotivates even interested and willing consumers in the long term. As a result, one of the greatest challenges is to develop an effective and efficient nutrition policy with proper communication which prompts consumers to adopt more sustainable but also more healthy behaviours.

Never before has the range of foods in Germany been so diverse, safe and affordable. However, the ubiquitous availability of all types of food and drinks in conjunction with lifestyles frequently lacking proper exercise leads to a caloric disbalance resulting in obesity which associates with diseases such as type 2 diabetes, cardiovascular diseases and cancers. In this regard, a healthy lifestyle including a healthy diet has been shown to correlate closely with the level of education. For obtaining a better understanding of consumer decision making in the food, nutrition and health sector, research into consumption and consumer habits using socio-economic and cultural approaches must be intensified and defined a major research priority. Moreover, it needs to bridge different areas of science that are quite frequently confined to their own academic disciplines including the life sciences and the various social sciences.

Fig. 2: Best-selling staple products and foodstuffs in Germany 2012 (green) and 2013 (grey). Percentage = Responding household’s purchases during the 14 days before the date of the survey. Source: IfD Allensbach
This also applies to stakeholders in the scientific field and in the supporting establishments of public research. When working on these key research questions at the heart of the bioeconomy, consortia should dare to forge ‘unusual alliances’ which, with a defined division of labor and responsibility, involve stakeholders of civil society and companies. Moreover, there is an urgent need for existing research institutions to become more closely connected and create networks for interdisciplinary and cross-disciplinary research – this however needs proper support and funding.

This applies also to the engagement of the German national research centers in the ‘food, nutrition and health’ arena, in particular for the social sciences. Furthermore, a close collaboration with the recently created consumer research initiatives in Germany is advisable (cf. in particular the Federal Ministry of Food and Agriculture’s Consumer Research Network [Netzwerk Verbraucherforschung des BMEL] and regional initiatives such as the Consumer Research Network Baden-Württemberg [Netzwerk Verbraucherforschung Baden-Württemberg]; and the Skills Network for Consumer Research NRW [Kompetenznetzwerk Verbraucherforschung NRW] as would a collaboration with the German Agricultural Research Alliance [Deutsche Agrarforschungs-Allianz DAFA], especially the cluster ‘Gesellschaft’ or ‘Society’). Social science sustainability research (Research for Sustainable Development or FONA), and above all Socio-Ecological Research (SÖF), is also relevant.

The last two have in the past mainly been concerned with questions of participation, risk perception, acceptance and commitment – topics which are central to the bioeconomy framework. However, this not only relates to thematic links from the mentioned research programme and initiatives (such as animal welfare - animal protection labeling - animal protection in a sustainability dimension), but also covers proper methodologies. This should also include experimental approaches from behavioral economics and environmental psychology (laboratory and field experiments, natural experiments) as well as innovative measuring approaches from the neurosciences. Participatory methods from acceptance research and ‘user-integrated’ approaches from innovation research appear to be useful, as well. The effects of new applications from information and communication technologies (ICT) such as apps and QR codes; and the influence of social networks on product selection, food choices and dietary habits of consumers are a largely unresearched field. In particular, the questions to be vigorously pursued are if and how ICT applications can support healthy lifestyles and more sustainab-
le diets in the different target groups, in particular in those that are not accessible by traditional forms of conveying information.

Consumers are exposed to a wide range of influences which act specifically on their shopping, diet and health habits. While the commercial sector has developed highly sophisticated and far-reaching research approaches with vast amounts of data, adequate public research into consumption habits has in essence been lacking in Germany. There is an urgent need for quantitative and qualitative increases in public research activities into consumption habits, including performing longitudinal studies on consumer behaviour, regularly evaluating consumer panel data and developing scenarios as to how consumption can be favorably influenced for the benefit of public health and the environment. International comparisons are also particularly useful here, along with the implementation of coordinated cross-border programmes. The effectiveness and efficiency of measures supporting healthy eating are rarely tested. Most lifestyle intervention programmes are only short-time initiatives and quite frequently have only campaign-character. The importance and necessity of a societal change towards healthier eating habits and other lifestyle measures requires a new thinking, new tools and new methods on lifestyle changes and their long-term outcome tested for efficiency with proper scientific proof. This also includes the effectiveness of policies and political instruments that target lifestyle changes. For this purpose, programmes should be established in Germany which utilise the experience from other countries and enable a comparative evaluation.[4]

- nudging concepts and instruments (in particular: defaults, social norms, framing) or promoting environmental friendly and health conscious consumer behaviour including health-promoting ‘choice architecture’. [5, 6] These approaches have been developed and tested in the US and the UK with some promising results, but little is known of whether they can be transferred to other countries and other settings and how successful they are in a long-term perspective.

- political impact assessment research (ex ante, interim and ex post) and measures and methods for assessing their effectiveness and cost-efficiency. For example, the work of the ‘Behavioral Insights Unit’ in the United Kingdom has shown that pre-testing the comprehensibility and attractiveness of a government programme for consumers to increase energy efficiency in their homes allowed...
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a major optimisation of the programme and increased its acceptance. In the US, a similar behavioral insight unit has recently been established at the White House.

• ‘natural experiments’ should be used in addition to focus groups and pilot studies to investigate the effect of overarching events on the individual’s environment. As part of a panel of research activities on consumer behaviour and health research, this could enable the identification and testing of the effectiveness of different tools and settings that can contribute to changes in lifestyles and consumption. The intended and unintended effects of rewards systems (incentives vs. fees) or of state intervention measures (e.g. taxing high-caloric foods; regulating portion sizes; discontinuing products) can be estimated in this context. By analysing ‘good practice examples’ key factors to success can be identified in comparative studies across borders.

In conclusion, the food, diet and health sector is central to bioeconomy and its success. To better understand consumers in their behaviour as market participants, a variety of research and communication needs have been identified that require cross-disciplinary approaches with input from the life sciences, social, cultural and behavioral sciences and economics. When promoting bioeconomy, consumers should be included in all developments in a participative manner, which requires a concerted action from the stakeholders of science, business, politics and civil society. Only when the determinants for consumer choice are known, it is possible to implement successful programmes that change consumer attitudes and behaviours towards more sustainable and more healthy lifestyles.

3. Summary of identified research needs

• Strengthen public research on determinants of consumer choices with respect to environment and health and with an emphasis on ‘bio-based products’

• Improve the data base and analysis instruments on consumer behaviours with emphasis on longitudinal studies with regular surveys and the comparative analysis of consumer panel data (national and international)

• Test the effectiveness/efficiency of measures to promote healthy eating, including political impact research
• Evaluate ‘natural experiments’ and implement and scientifically assess field experiments created to develop healthy and/or environmentally-sustainable consumer behaviour

• Analyse the impact of ICT (information and communication technologies) on consumers’ buying and eating habits regarding health and sustainability

• Develop and scientifically assess the effectiveness of ‘nudging approaches’

• Study the impact of economic incentive systems (health or environmental sustainability) to change consumer behaviour permanently (e.g. incentives vs. taxes/fees)

4. Bibliography


Consumer behavior is an important factor on the way to a biobased economy.