

On the way to a sustainable diet

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Summary

The food sector is responsible for a significant proportion of global environmental damage, and the trend is increasing. Growing prosperity worldwide is transforming global eating habits into Western patterns of consumption, which consume resources and harm the environment. Consumers in Europe are beginning to search for change. Restraint – in the sense of a reduction to the essential – is today definitely perceived as an added value, but the complex daily routine forces compromises, particularly in terms of eating; eating habits must suit the requirements of a hectic everyday life. Recipe-related suggestions for a sustainable diet fail under the constraints of everyday situations. A sustainable diet must relieve the burden on the consumer, and provide enjoyable and sustainable food and space to share the enjoyment of food.

Against a backdrop of growing demand and scarce raw materials, the food industry is prepared to launch sustainable product and service innovations on the saturated markets of Europe and thus to provide the framework for a sustainable diet.

Yet the question of the right direction remains unanswered. What exactly is a sustainable diet, what is its effect and how can it be implemented in everyday life?

Keywords: Sustainable diet, obstacles, framework conditions, food system, sustainability

which severely impact the national economies of the countries concerned [2].

Global challenges in the food system

In Europe, the proportions of greenhouse gas production and resource consumption by the food system are approx. 17 % and approx. 28 % respectively [3]. As the extraction of resources and consumption of products often occur at a geographical distance from each other, the visible effects of food production are usually disconnected from the places of consumption. E. g. the production of 1 kg of meat in the beef sector requires up to 7 times more quantity in feed, depending on how animals are kept [4].¹ The negative ecological effects triggered by the rising demand for specific protein-rich feed like soya, such as water consumption, land clearing and emissions from cultivation, affect the land used for cultivation. However, the refinement and consumption of meat, and therefore the generation and exploitation of added value, takes place elsewhere.

Another example is palm oil: It is the primary plant oil worldwide (approx. 30 % market share). Originally from the rainforests of West Africa,

Introduction

The food sector, one of the most important economic sectors in the world, is facing a number of serious and intensifying ecological, economic and social challenges [1]. The rising world population, coupled with increasing prosperity and the adoption of Western lifestyles, results in a growing demand for food. At the same time, the space available for food production and its quality is decreasing. Production and consumption of food are responsible for a significant proportion of worldwide environmental damage. In addition, Western eating habits around the world lead to health problems,

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¹The situation with meat must be considered differently: Whereas the beef industry has a considerable effect on resources and climate, the grazing of cows and heifers, linked with pasture management, actually contributes to the reduction of harmful greenhouse gases [5].

the plants can only grow in tropical regions. From there, they are exported around the world and used in industrial food production. In the regions where palm oil can be grown, more and more rainforest falls victim to its cultivation. This, as well as its onward transportation to consumer countries, has serious consequences for the environment and the climate [6]. As both soya and palm oil do not reach consumers as primary products, the link between their consumption and the situation at the start of the chain is only revealed to them indirectly.

The adoption of Western eating habits goes hand in hand with an increase in the consumption of food of animal origin, the industrial production of which uses many times the amount of plant raw materials, and at the same time an increase in calorie consumption per person. Together, these effects lead to a disproportionate increase in resource consumption [1, 4, 7]. Pricewaterhouse Coopers estimate a worldwide increase in calorie consumption of 52 % by 2030, although population growth is expected to rise by "only" 40 %. These predicted rises give reason to expect large leaps in demand and consequently considerable pressure on natural resources.

As significant and essential improvements in the efficiency in food production [9, 10] are qualified by the global increase in consumption, the writer takes the position that the negative ecological consequences of food production can only be met by a marked change in the dominant consumption patterns [4, 11, 12]. Whereas efficiency strategies – which follow the economic principle – are comparatively easily understood and accepted, the greater challenge lies in sufficiency, i. e. steering towards relieving the burden, moderation, self-limitation and ultimately the restriction of consump-

tion, basically following the limits of the so-called step-by-step philosophy, as described by BILHARZ [13]. The isolated evaluation of the ecological effects of individual measures can be overshadowed in both approaches by rebound and offset effects.

What is a sustainable diet?

The (normative) term "sustainable diet" is not clearly defined. Concepts differ primarily in the degree of change deemed necessary and in the strategies for kicking off the desired transformation processes.

Focus on the individual – changing eating habits

Within the field of "nutrition ecology"² LEITZMANN, VON KOERBER and MÄNNLE are concerned with the connection between individual diet and ecology. They examine and evaluate the "complex relationships within the entire food system", thus broadening the usual view of the individual in nutrition science into the dimensions of environment, economy and society, which should have equal importance [14]. Based on four fields of action – the preservation of the natural environment, the creation of fair economic relations, social justice and health and quality of life –, the authors derive seven principles, which can be interpreted as guidelines for a sustainable lifestyle. The principles – 1) meat in moderation instead of en masse, 2) organic food at best, 3) regional and seasonal, 4) preferably fresh and minimally processed, 5) unwrapped and with environmentally-friendly packaging, 6) yes to fair trade and 7) tasty and wholesome – are deliberately phrased clearly and should promote concrete action [14]. The recommendations aim for a change in the eating habits of an individual, yet still leaving the consumer with

the question of how to transfer this into their everyday life, mostly alone.

The risks of such recipe-style suggestions are discussed by THIO and GÖLL for the younger generation [15] and by BARTSCH and KÖRNER with a focus on food waste [16]. They show that this manner of address imposes requirements on consumers, which they cannot transfer to their everyday life for a variety of reasons. The result is a guilty conscience rather than a positive, motivating attitude.

Focus on structures – the context of a sustainable diet

The researchers of the SÖF³ joint project "Ernährungswende" [diet transformation] assert, from a social-ecological perspective, precisely this connection between diet recommendations and their transferability to the everyday actions of those concerned as the central starting point for the development of a sustainable diet and lifestyle [17, 18]. And in addition, the excessive demands of consumers in the organisation of everyday life are identified as a major obstacle to a change in diet. The central element must therefore be the reduction of the burden on the consumer (relief) [18]. A sustainable diet should be environmentally-friendly and healthy and should also support the socio-cultural variety of diets. Necessary conditions for this are *relieving and supporting the consumers, the development of sustainable food options and structures and the reinforcement of consumers' nutritional expert-*

²Nutrition ecology is a relatively new field within nutrition (and home) sciences. It was founded in 1986 owing to the initiative of a student working group at the University of Gießen and supported and further developed by Prof. LEITZMANN and his working group.

³Social-ecological research (SÖF), between 2000 and 2012, a transdisciplinary research focus of the BMBF

ise. As a consequence of food being increasingly available outside the home, the acceptance of *diet responsibility* is also required by the various places for collective eating, such as companies or schools. *Attractive diet models* provide a framework that ties in with everyday situations (in the family, at work and in free time). The sustainable organisation of food behaviour therefore primarily requires practical nutritional targets, which can be pursued with the cooperation of individual, social, economic and structural approaches [18].

Focus on policy – supporting individual benefits

JARRE also criticises the transfer of responsibility for sustainable living to the individual alone. The gap between aspirations and actions points to an ethical approach, which, however, obviously requires practical everyday consolidation. From the perspective of an economist, it stimulates the search for additional monetary and non-monetary advantages for people, which make a sustainable diet and lifestyle attractive. Should these user advantages be sufficient to guide action, their strategic importance must be recognised and they must be integrated into political governance processes [19].

Focus on the use of resources – the limits of a sustainable diet

Based on a resource consumption by European national economies that is acceptable from an ecological perspective [20], LETTENMEIER et al. deduce what resource consumption is acceptable in a sustainable diet. By 2050, the global resource consumption will be on average 3 tonnes per inhabitant per year, which corres-

ponds to an approx. consumption of 500 kg of (predominantly plant-based) food with a material intensity of 6 kg/kg. In Germany, this objective would require a reduction of material intensity by a factor of 2 [20]. The major determining factor is seen in alternatives to protein supply from food of animal origin. In a study of Finnish households, KAUPPINENA et al. were able to prove that the targets set with a (predominantly) vegetarian and seasonal diet type are already possible today [21].

This approach provides a fact-based framework to the idea of a sustainable diet, which may be suitable as the basis for developing targets and monitoring change processes. BILHARZ sees the awareness of the limits of resource consumption as a necessary condition to being able to evaluate consumption and lifestyles in global terms [13]. National or even supranational agreements on binding limits on the use of resources for production and on the consumption of food still need to be defined and are not yet in sight.

A first step towards reducing resource consumption in the food system was undertaken by the European Commission with its “timetable for a resource-efficient Europe”. It set a target of halving the disposal of edible food waste in the EU by 2020 [3]. In Germany alone, at least 11.5 million tonnes of food per year are not used for human consumption, by farmers, trade and manufacturing, and consumers, and are used for feed and energy production, etc. [22, 23]. The step towards the ecological evaluation of the use of food is however not complete.

What drives and restricts change?

The outlined approaches show that change takes place in an area between individual action and the

change of structures and framework conditions. A variety of innovations are now emerging in the food system, which are making changes and developments in this area. The following factors are more closely examined below: relieving the burden on consumers, generating new eating models and developing food options in the public space.⁴

Relieving the burden on the consumer – new diet models

The modern lifestyle is characterised by the increasing individualisation of lifestyles, the successive de-structuring of daily routines, the erosion of traditional values and an ever-greater demand for decisions [24]. Time to shop, cook and eat together has become rare; convenience products and eating outside the home are practical alternatives. In recent years, the catering market has gained in importance and lies behind food retail as the second largest sales channel in the food industry [25, 26]. The de-structuring and dismantling of traditional eating culture, of dining and of food preparation continue to advance. Free time windows are increasingly used for snacking, i.e. the classic main meal time is replaced by many small meal times [24]; the available time can then be used more efficiently.

Consumers increasingly feel that this accelerated, materialistic life style is a burden. Analyses of consumer expectations and desires in Germany and Europe show the same basic picture. Owning material goods is increasingly felt as a burden. Material consumption is no guarantee for greater individual happiness and social recognition. People feel alienated from products as a result of the global division of labour and perceive globalisation as a threat emotionally. Overall, the rich societies of Europe are on the road to a so-called “consumer society of longing” [27], as a

⁴Defined as necessary conditions in the SÖF context

counter-reaction to their complex everyday life. LÜDI and HAUSER describe the emotional state of consumers with the terms “reconnection”, (to an idealised origin), and “age of less”. People are looking for integrity, orientation and self-fulfilment; food values such as “regional” and “natural” are gaining in importance. Restraint, as studies suggest, is experienced as a proven means towards self-fulfilment and relief. Today it is no longer the expression of a political position, like in the 1980s; rather it is the expression of individual benefits, self-fulfilment and happiness [27]. These consumer expectations and desires reveal future trends. Even if they are still currently not reflected in concrete consumer behaviour, the high prevalence of the subject of sustainability in the food industry shows that the sector is preparing for distinct changes in demand.

The relief of the burden on consumers, expressed as a necessary condition for a sustainable lifestyle by EBERLE et al. [18], is not yet in sight. Individual willingness to change is prevented from developing by existing structures. The consumer society of longing clearly opens the door to a new diet model, which places enjoyment and appreciation in the foreground, for both arise primarily from the vision of regionality, integrity and community. From the perspective of sensory research, RITTER points to the fact that users speak of enjoyment when eating situations are combined with the above-mentioned values and personal emotions [28].

Development of sustainable diet options in the public space

The food supply today is varied. We can opt to eat a sufficient, balanced and healthy diet. In German supermarkets we can choose from more than 100,000 products, everywhere

and at almost any time, which goes far beyond our basic needs. The food market is one of the most dynamic markets, which presents consumers with a variety of product innovations, most of which however are not adopted (flop rate 65–90 %) [29].

In Germany (as in other economically developed countries), cultivation, processing, storage and increasingly the preparation of food are based on a division of labour and delegated to the food industry by households. The products are transferred to the consumer in a more or less processed condition in the public space, i.e. via retail, the catering market and other sales forms. KIRIG et al. show that this decoupling of households from agricultural production, processing and preparation is accompanied by the delegation of quality testing to the food industry [30].

Against a backdrop of the previously-mentioned complexity of the global value chain, existing market structures and the outlined life situations of people, it can be deduced that consumers must also delegate the evaluation of the “sustainable quality” of food to the food industry. They cannot judge the sustainability of production, manufacturing methods and qualities of processed food themselves. If consumers want to eat sustainably within their given life situations, they are reliant on appropriate options from the food industry and a comprehensive labelling of this food. The bridges between manufacturers and consumers are standards, labels and company communication.

Against a backdrop of ever-increasing competition for land, water and energy, climate change and the rising demand for raw materials worldwide [31], the topics of sustainability and regionality are increasingly gaining strategic relevance

for companies in the food sector; in addition, the European markets for sustainable and regional products are opening up. Producers frequently develop strategies for the sustainable sourcing of raw materials (coffee, palm oil, cocoa, meat, fish) in collaboration with non-governmental organisations (NGOs) [32]; trading companies have a go at sustainable product ranges; the REWE group is the first trading group in Germany to bring the Pro Planet Label for sustainable products to the market [32]. For the marketing of regional products, trading companies collaborate with regional producers, who thus gain new, customer-oriented methods of direct marketing, or bring regional own brands onto the market. Regionality and sustainability are also coming into focus in the public catering industry; e.g. milk products, potatoes and certain vegetables are used from local regions and fish is purchased according to the WWF list [32]. In the catering trade, top-flight restaurants, in particular, are placing emphasis on regionality and are re-inventing traditional, regional recipes in a modern form.

The example of the catering trade shows the complexity of the change. McDonald’s advertises that 90 % of the meat in the burgers sold in Germany is raised, slaughtered and processed in Germany [32]. Although this “regional strategy” facilitates access to local products, this improved offer also consolidates existing structures, which should be fully scrutinised for reasons of health and cultural identity.

How can this development be rated in terms of “sustainability in the food system”?

– *are the offers serious?*

Unlike with organic food there are still no binding definitions for sustainable and regional food. Manufacturers and consumers are con-

fronted with a tide of competing labels. Politicians, manufacturers and NGOs are currently working intensively on stronger liability. Examples are: the pilot project initiated by the German Ministry of Food, Agriculture and Consumer Protection (BMELV) called "Regionalfenster" [regional window] [32] and the "Tierschutzlabel" [animal welfare label] from the German Animal Welfare Federation introduced during "Grüne Woche 2013" [Green Week 2013] [32]. The scientific advisory boards for the BMELV's consumer, food and agricultural policies urgently call for an international food labelling policy strategy [33]; however, this "label strategy from a single source" is still seen as unworkable in the short term on a national and European level.

Food companies who want to safeguard and document the plausibility of their sustainability strategy, currently rely on collaboration with scientific institutes and recognised associations [32].

– are the offers sustainable?

The sustainability of new offers can only be judged subject to the expected results. If the objective is to develop the food mass market step by step towards products that are environmentally-friendly, oriented towards animal welfare and manufactured under fair conditions, the degree of innovation can currently be rated very highly. Industry, politics and associations agree on the minimum standards (e.g. "Tierschutzlabel" [animal welfare label]) and are changing the so-called ecological and social hotspots (e.g. REWE) in the value chain. Although the estimated market share of sustainable products is still markedly less than 5 % of the total food supply, structures and routines in the sector are changing and are producing a relative lasting improvement in the status quo out of sight of the

consumer.

From the perspective of "strong" sustainability [34] and the orientation towards defined limits of resource consumption, the described strategies and products cannot be termed sustainable.

– do they relief the burden on consumers?

Individual sustainably-produced products do not create a sustainable diet and lifestyle, but they broaden the possibilities thereof. Overall, the burden on consumers is relieved by new offers relating to their regional and sustainable preferences, as they are made available at their usual shopping outlets. Manufacturers, retailers, suppliers and consumers of public catering thus take on the responsibility for sustainable options called for by EBERLE et al. The current strong dynamic leads us to expect that the food supply will visibly change.

Conclusion

The food system is responsible for a considerable proportion of worldwide resource consumption; changes are inevitable. In fact, consumers show a marked interest in changing their lifestyle, yet often fail due to external constraints. A sustainable diet requires the concurrence of individual preferences, relieved life situations and attractive, practical models. The burden is currently relieved by the side which is responsible for the current situation: even though the food market has been based on mass and cheap production for many years, the food sector today sees an opportunity for real innovation in more sustainability. Though consumption and production are still far from the concept of strong sustainability that preserves ecological and social capital [34], however, the subject is now strongly rooted in the food system and offers starting points for further developments.

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Conflict of Interest

The author declares no conflict of interest according to the guidelines of the International Committee of Medical Journal Editors.

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