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Food and health research in Europe: Structures, gaps and futures

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ABSTRACT

Background: Food and health research is concerned with production, marketing, choice, regulation and policy for food as it affects health, and the mechanisms and control of diet-related diseases, nutrition and obesity. It covers positive and negative impacts of food on health, as well as issues related to under and over consumption of food. The European Union-funded study FAHRE (Food and Health Research in Europe) has described structures and identified gaps and needs for food and health research across Europe.

Methods: FAHRE was conducted by a consortium of partners in 7 European countries, including private and public research organisations, university-based researchers and civil society organisations. National advisers in 32 European countries made reports on the structures of food and health research, and nine experts made reports on food and health research themes. At the end of this phase, a stakeholder conference was held to review and discuss the findings, and from this a Strategic Document was developed and distributed electronically for wider consultation at national level. This report presents the findings of the Strategic Document.

Results: FAHRE proposed that future research using public funding should address the global issue of unhealthy eating, including obesity, which causes preventable disability and disease, reduced working life and increased healthcare costs. FAHRE suggests a move of the focus of research from healthy food to healthy eating, and to overcome the existing separation between food research and health research through a shift of research towards food *for* health.

EU member states have widely differing national systems for research management, and information is poorly standardised for comparisons. There are many research programmes in both food and health, usually managed by ministries of science, but rarely in collaboration with ministries of health. Industry mainly contributes 'near product' research: few industry small and medium enterprises are engaged with food and health research, nor are civil society organisations. EU food and health research has been focused within the agriculture research theme, and not sufficiently linked to health research.

FAHRE recommends coordination of food and health research through an EU-level Coordinating Agency, with budget and representation from the three EU directorates Agriculture, Health and Research, the member states, and wider stakeholders including civil society and industry. There should be corresponding 'food and health research agencies' in the member states bringing together national policy-makers and stakeholders, and directing research funding. Food safety agencies may provide a model for this joint approach. Further proposals include strengthening social and policy research, accessing Structural Funds for research programmes, and more strategic approaches to determining research programmes and funding.

Conclusion: Food and health research in Europe should move from 'healthy food', which concentrates on food as a product, to research for 'healthy eating' which is concerned with appropriate intake and reducing disease. Coordination of research on this theme, at European level, and between member states, could deliver major economic and social returns.

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Introduction

The European Union (EU) programme for research 2014–2020, entitled 'Horizon 2020' (European Commission, 2011) is based on the argument that research provides knowledge for innovation, competitiveness and economic development (European Commission, 2010). While expanding the funding for investigator-led research, it also proposes more attention to research for industry, and research to address societal 'Grand Challenges' – including both food and health. However, the European Union funds only a small proportion of all European research. In preparation for the new programme, the European Commission made a call for a study to describe the current structures for food and health research in Europe and to make proposals on needs and gaps in support for research. FAHRE (Food and Health Research in Europe, 2011a) was proposed, and selected by peer review in response to the call. We present here findings for knowledge and discussion.

Food and industry

The food and beverage manufacturing industry had a turnover in 2009 of more than €900bn, providing employment for 4.8 million people in more than 300,000 companies, while consumers spent €1028bn on retail and food services in 2003 (Wijnands et al., 2007). Most enterprises are small, but the few large companies are very influential – for example, in the food manufacturing industries they hold roughly half of the market, and in retail the top 5 supermarkets have a combined share of around 70%.

These industries face several challenges simultaneously: to supply safe and affordable food in sufficient quantity; greater demand from growth of world population; increasing competition; environmental sustainability; and concerns for health. Three issues stand out from a health perspective. Food safety, protecting consumers from food chemical or biological contamination, is an important practical issue, especially as food is traded across many jurisdictions, but has been already addressed closely by the European Union and member states. The second issue is environmental: 'organic' food may be preferred by consumers on ethical grounds, but appears to offer few extra benefits for health (Dangour et al., 2009; Smith-Spangler et al., 2012). The third concern, now of greatest public health impact, is the food diets that people eat.

Food and health

The United Nations General Assembly in September 2011 identified food, along with tobacco, alcohol and exercise, as a major global cause of chronic disease. In Europe, poor diet (and lack of exercise) cause up to one third of deaths from cardiovascular diseases, and (with alcohol) of intestinal cancers (Eurodiet, 2000; World Cancer Research International, 2009; European Chronic Disease Alliance, 2011). The main mechanisms are: damage of blood vessels, affecting the heart, the brain, and the peripheral arteries, caused by high intake of saturated fats; strokes and heart disease from high blood pressure due to excess salt intake; adult-onset diabetes due to excess sugar and fat intake; two common cancers – of the bowel and the breast – related to a high fat diet; and obesity, rapidly increasing across the world, raising the risk of all these diseases.

By contrast, the components of balanced diets – including sufficient portions of nuts, fresh fruit and vegetables – are health promoting. The World Health Organisation (2008) and the Food and Agriculture Organisation (2011) have recommended major changes in diets: to reduce saturated fats, salt and sugar; to increase fruits, nuts and vegetables; to eat less red meat and more fish; and to drink less alcohol. And public policy and personal health are linked with commercial interests: as fewer people in Europe now grow and cook their own food, the food industry has increasing impact on eating behaviour. Concern for commercial pressures on children's diets, for example, reflects the larger issue of personal choices by the whole population.

Methods

FAHRE was established as a partnership of research organisations, management companies and civil society organisations in seven EU member states (FAHRE, 2011b). In its first phase, FAHRE (2011c) mapped existing food and health research in 32 European countries. Experts were identified in each country, a questionnaire schedule for collecting information was constructed, and the experts completed the schedule though direct contacts and internet resources within their countries. The country reports are presented at the FAHRE (2011) web page. A summary report was constructed from the individual country reports, describing the strengths and weaknesses of the research systems at national level (FAHRE, 2011c).

Following this, thematic experts in nine fields (food processing, food safety, policy, consumers, regulation, population, diseases, nutrition, and research structures) were appointed, and used the 32 country reports and secondary sources to determine research needs, gaps and overlaps in each field (FAHRE, 2011d), and as a collective report (McCarthy et al., 2011).

In the third phase, FAHRE consulted the stakeholders from research, industry, research governance and civil society organisations identified in the mapping to develop a strategy for food and health research policy and funding. Participants at an international workshop discussed the first phase results and proposed areas of focus and important issues to investigate further. The proceedings (FAHRE, 2011e) were used as input for a 2-week online discussion between food and health research funders, researchers and industry representatives, using a web-based tool. Furthermore, the results of FAHRE were presented and discussed at various multiplier events. An elaborated version of the draft paper was then subject of an e-consultation of stakeholders throughout Europe. The findings from all of these processes are included in this paper.

Results

Food research for health

European research on food related to agriculture was reviewed for the Standing Committee on Agricultural Research (SCAR, 2008) of the European Commission. Bibliometric mapping in 33 countries and a survey of the research capacity in 14 countries showed that agrifood research is strong in Europe overall, although less in the EU new member states. But for this study, only one part (''human nutrition'' – including ''functional food, conventional food, nutrigenomics, food and diet related diseases, food pattern and health, consumer habits'') of 11 agri-food academic fields addressed research on human health. A slightly more positive position was indicated by the report ''Shared Infrastructures'' for the Standing Committee on Agricultural Research (2010). Here, of 69 proposed research initiatives for food, six concerned human health: others were on agriculture, biology and environment.

The European Commission's Research Directorate's programme for Food, Agriculture and Fisheries, and Biotechnology, includes 'Food, health and wellbeing'. Almost 50 collaborative projects have been funded in the past decade that address so-called 'functional foods', with an expenditure by the EU alone of €150 million euros, and involving more than 500 partners from academia and industry

(European Commission, 2010). The EU-funded project FUTUREFOOD6 (2009) proposes "Functional food is considered to be of special importance to improve citizens' health and well-being and to help fighting some of the diseases of new and modern life styles. For this purpose, innovative technologies and improved information mechanisms for the consumer will be needed." In the same vein, the European Commission also describes 'promising technologies such as nutrigenomics, imaging techniques, converging technologies' with 'huge potential ... in the short and medium term' for 'foods for targeted population groups with defined risk factors or diseases such as allergy, diabetes, obesity and cardiovascular disease'.

Food choice has been of interest for study, including individual influences (patterns of 'meals'), demographic characteristics, and social environment (brands, labelling, features of foods that influence food choice; sensory perception, and public engagement in policy). More behavioural research on consumption patterns has also been recommended by the European Medical Research Councils of the European Science Foundation (2009).

Information measures that require research include bans on advertising unhealthy foods to children, social marketing campaigns (as yet there is no strong evidence of effectiveness in changing behaviour, or on health measures), nutrition education, nutrition labelling and information on menus. Information can also spur food industry competition to introduce healthier products, but this may not result in healthier diets (Golan and Unnevehr, 2008; Hawkes and Buse, 2011).

Health research on food

Health research in relation to food addresses nutrition and the causes of disease. Prospective epidemiology, especially the longitudinal European multi-country EPIC study (International Association for Research on Cancer, 2011) has linked nutrition to heart disease and cancers. There is a need to understand the role of industrial food processing in modulating (perhaps increasing) the allergenic properties of foods, as well as studying the indirect effect of diet overall on allergic disease risk (Food Standards Agency, 2010). And of growing significance is the major and growing health threat of obesity, with direct impacts on disease co-morbidities (diabetes, osteoarthritis) as well as mortality (cardiovascular disease and cancer). Studies must address how food and nutrition insecurity and obesity may coexist within the same groups in society, the needs of minorities including food in immigrant communities, the scope and limitations of health education as a means of creating behaviour change, the need for population-wide food access, the impact of welfare and taxation policies, and controls on marketing (Robertson et al., 2007).

European micronutrient recommendations have been agreed (Pijls et al., 2006; EURRECA, 2011), while the European Nutrition and Health Reports (Elmadfa, 2009) indicate an excess rather than lack of nutrients. (The survey describes trends in food supply, food availability at household level, individual food consumption and energy and nutrient intake, diet-related health indicators and status, and food and nutrition policies in countries of the EU.) However, the European Food Safety Authority has rejected 'general function' health claims for the majority of food products submitted (EFSA, 2011).

Interventions

Major research questions about reformulation of food to healthier standards cover issues of technology, consumer perceptions, costs and policy (Webster, 2009). The European Commission Directorate for Health (2008) has collated country information and published the EU Framework for National Salt Reduction Initiatives. EU funded Food Pro-Fit (2011) is engaging SMEs in improving the nutritional quality of prepared or processed food at regional and local levels.

The Chronic Disease Alliance, which brings together ten European disease-related organisations, has recommended a 'unified prevention approach' including both taxation, agriculture and food labelling, and also urban planning, education, sport and recreation. Cost-effectiveness analyses demonstrate major savings to health care systems through disease prevention in whole populations (Barton et al., 2011).

Reports on health promotion interventions for obesity have been concerned with implementation projects rather than formal research. Kuipers (2010) described 97 projects, all with a focus on healthy lifestyle activities (rather than the prevention and reduction of unhealthy products or environments), and comments that "only a few of them have been properly evaluated. This will not be acceptable if scaling up on international levels is to be achieved." Controlled intervention programmes are needed, and European level comparisons of the impact of support from local health services. [The projects] "have improved the processes of care, but a definite proof of improved disease outcomes is still lacking." (Kuipers, 2010: 227) Similarly, a study of 119 relevant policy interventions in Scandinavian countries, the UK and France (Eatwell, 2011) found that the majority were public information campaigns (such as 5-a-day) and education measures in schools. Few measures had been formally evaluated.

Private and public interests

The EU Platform for Action on Diet, Physical Activity & Health (2011a) has sought to record both social and commercial innovations in food and health. For example, its November 2011 meeting (EU Platform, 2011b) reviewed industry commitments in marketing and advertising, especially to children, while previous meetings have discussed the European Healthy School Canteen Programme, Healthy Children in Sound Communities, eating preferences in ethnic minorities, and prevention research bringing industry, civil society organisations and the governmental sector together.

The balance of private and public interests on food and health is an area of academic concern. Martin (2006) stated that "... Europe's food and drinks industries have repeatedly shown their commitment to product reformulation; responsible advertising and marketing, taking into account the specific needs of target audiences and in particular children; research; consumer information; public education; and the promotion of physical activity." More recently, a former medical director of the World Health Organisation who now works for PepsiCo, has described with colleagues the actions towards health of several international companies, and the limitations imposed by global markets for primary products. However, the authors also note that "Greater R&D intensity is one route to the disruptive innovation critically needed in the food industry." (Yach et al., 2010: 4).

But the role of the food industry and 'partnership' with the health sector is contested, both in research and practice (Hawkes and Buse, 2011). Healthier products do not always lead to healthier diets (Unnevehr and Jagmanaite, 2008). And Brownell and Warner (2009: 260) describe "a half-century-long campaign to mislead Americans about the catastrophic effects of smoking and to avoid public policy that might damage sales. ... Food is obviously different from tobacco, and the food industry differs from tobacco companies in important ways, but there also are significant similarities in the actions of these industries ... The world cannot afford a repeat of the tobacco history, in which industry talks about the moral high ground but does not occupy it."

National structures for food and health research

Drawing together reports from 32 countries, FAHRE estimated that up to 90,000 researchers are involved in food and health research in 32 countries, and more than 450 research organizations. Research is mostly undertaken at universities and public research institutes and there appear to be few private organisations working in food and health research. FAHRE identified 361 research programmes across the fields of food and health research (Fig. 1).

FAHRE found that 20 of 32 countries reported implementing food and health research programmes (Fig. 2), and there are more programmes in the North-Western European countries than in more South-Eastern countries.

There was a strong emphasis on biomedical research in Europe: 67% of food and health research programmes cover this research area, compared with 46% population research, 32% food production research and 25% policy research (Fig. 3). (Note, however, that these categories were overlapping, and full classification for food and health research needs to be developed.)

FAHRE identified many potential contributors across European countries to research in food and health (FAHRE, 2011f). Most funding comes through national public stems: but while all member states support research on both food and on health respectively, there is little coordination between the two fields.

National strategies

There are some descriptions in English of national systems and structures for food and health research. The Academy of Finland (2011) research programme 'Nutrition, Food and Health' covers five areas – consumer behaviour, genetic factors and metabolism, food and immunity, food safety, and food processing and health. The Food Standards Agency (UK) (2009) expressed concern at the lack of coordination and leadership, and recommended the 'urgent need' for 'a coherent research strategy covering all aspects of nutrition policy and advice'. The Danish Ministry of Food, Agriculture and Fisheries proposes a European Collaborative Working Group on 'Sustainable food production for wealth, welfare and health'. There is little evidence of coordination of national food and health research strategies between member states.

Research themes

A framework for analysis of research themes developed by FAHRE is shown in Fig. 4 (McCarthy et al., 2011). FAHRE found more research in the separate themes of food and health research on either side of the model than for themes in the central area. Food research focused on processing and safety, with some research on consumers, while health research focused on biomedicine, including genomics, with some research on epidemiology and clinical fields. Research for the 'life sciences' formed the background for these research fields. The least research was found in the central areas of food policy and regulation – themes which require broader social rather than laboratory sciences.

The traditional categories of 'agricultural' and 'medical' sciences have given little room to social, economic and policy research. Food policy and regulation are based primarily in the social sciences. To address the Grand Challenge a trans-disciplinary and also inclusive approach is needed. The WHO European Action Plan for Food and Nutrition Policy (WHO, 2008) and the European Charter on Coun-

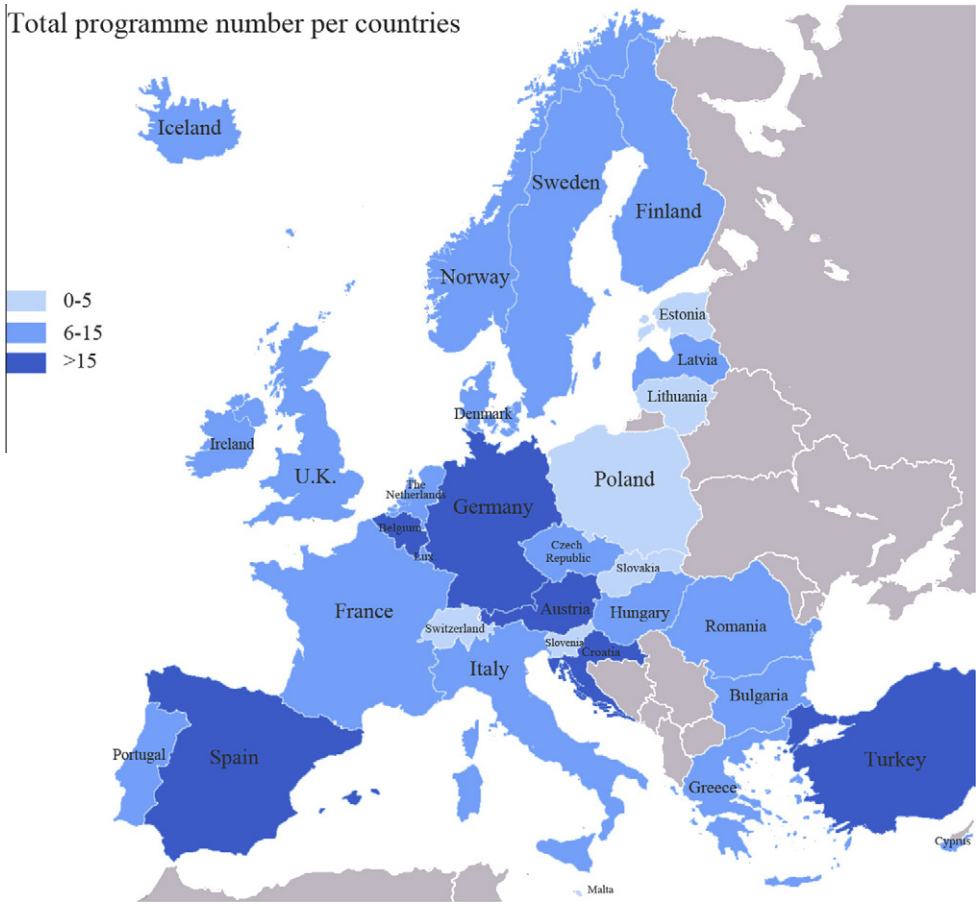

Fig. 1. Number of food and health research programmes identified in European countries.

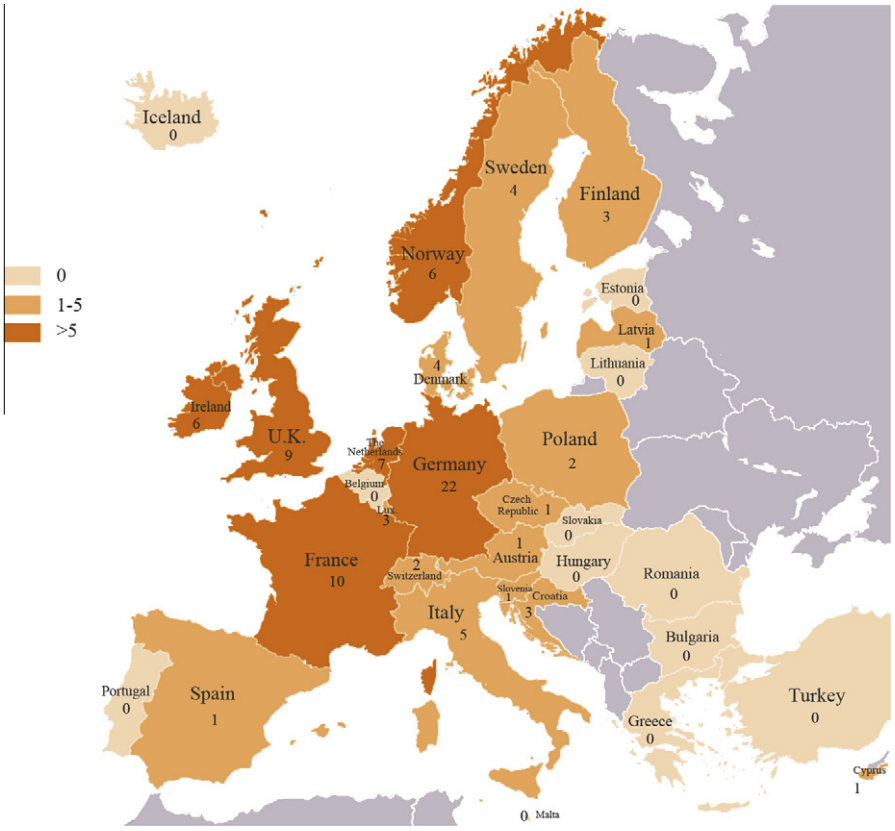

Fig. 2. Dedicated food and health programmes reported in 32 European countries.

teracting Obesity (WHO, 2006) identified member state ministries of health to be the leading institutional mechanism, in collaboration with civil society and professional networks. But there are too few researchers in these fields in some countries, and the health impacts of policies such as education, regulation and economic incentives have been least researched. In addition, there is a strong need for a systematic and ongoing evaluation of existing programmes and intervention measurements.

Supporting innovation

Another concern is the research results/practice gap, especially as most food and health research is publicly funded. Communication between research and innovation – in practice, between universities, businesses and CSOs – could be improved: there are, for example, SME communication units or task forces in some member states. The European Commission supports SMEs engaging in research separately in both the food and health fields, and new ways of increasing the participation of SMEs in food *for* health research should be identified. SMEs are also users of research knowledge for innovation, and new ways of disseminating research results could help to increase the chances of SMEs becoming a partner within a research consortium.

There are also important alliances to be developed with civil society. While civil society organisations (CSOs) do not themselves undertake research, they play significant roles in forming and changing social behaviours, through advocacy, education, interventions and services. They are also users, and disseminators, of the outputs of research that can be applied in their service settings. FAHRE found few civil society organisations working at national or European level with a primary interest in food and health, in contrast for example with the greater number of environmental CSOs concerned with health. Nevertheless, disease-based organisations, such as for cardiovascular diseases, cancer and obesity, have included food as important dimensions of their work, and form an important balance to industry in the debate on food for health.

Scenarios for food and health research

FAHRE suggested three possible scenarios for the next phase of food and health research in Europe – 'Business as usual', 'Soft coordination', and 'Strong coordination'.

Business as usual

The EU's 'Knowledge-based bio-economy' programme has supported research in food processing, animal and plant 'safety', and food and health. A European Technology Platform, organised for the food industry, has been influential in identifying topics for research calls. The European Commission's Directorate for Agriculture takes broad public health concerns into consideration, although with little impact on policy. The (much smaller) Directorate for Health and Consumers supports projects *inter alia* on healthy eating through its annual Health Programmes, and the EU Platform on Diet, Physical Activity and Health brings together EU and national officials, industry and civil society organisations.

The decentralised system allows rapid uptake of emerging issues in the research agenda. However, structures for dialogue between actors at EU level are weak; there is the likelihood of duplication of research; and priorities are unbalanced, since industry has the European Technology Platform to advise on research, while nutrition research has been weak in the EU's health research programme.

Soft coordination

Under this scenario, research in member states on the 'Grand Challenge' of food and health is coordinated through joint

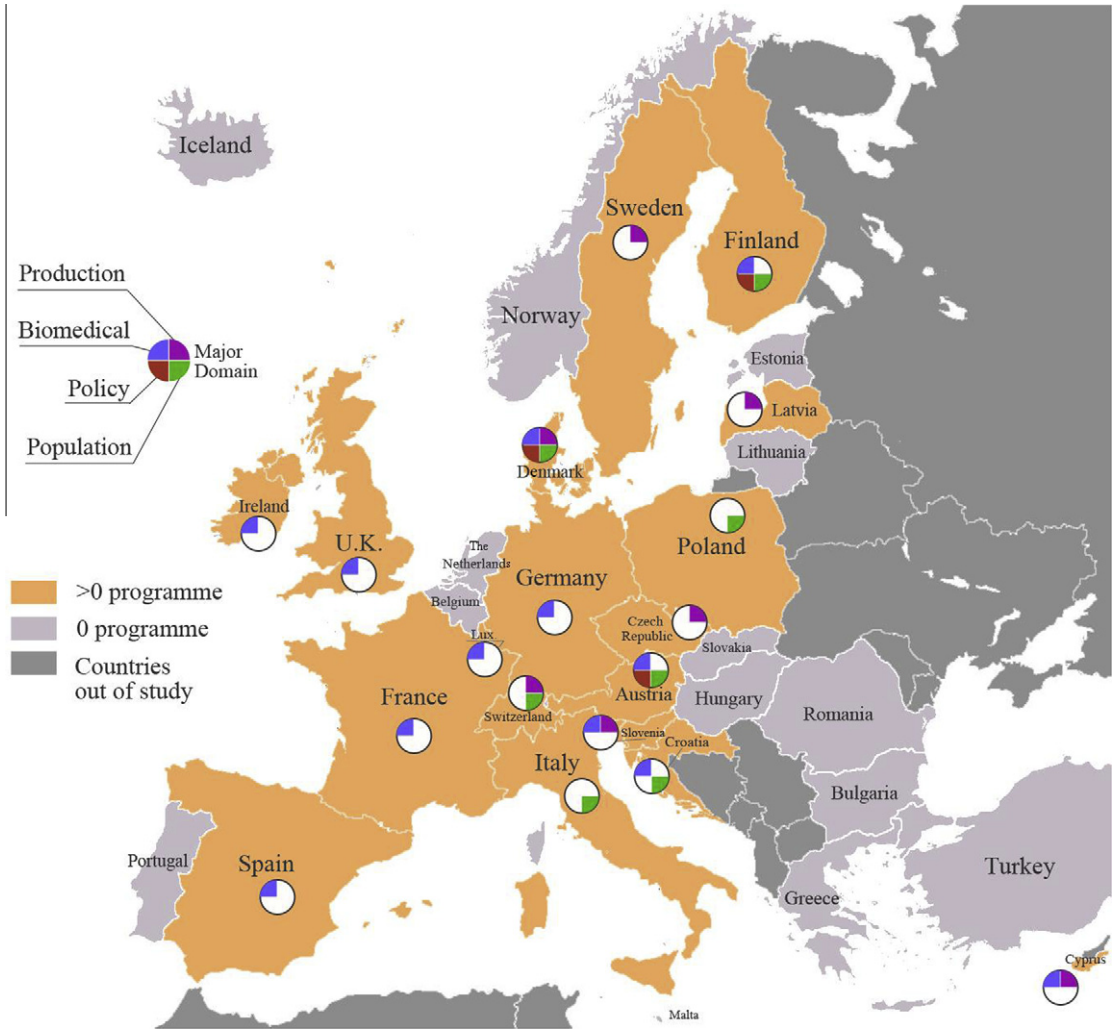

Fig. 3. Programmes for food and health research by country.

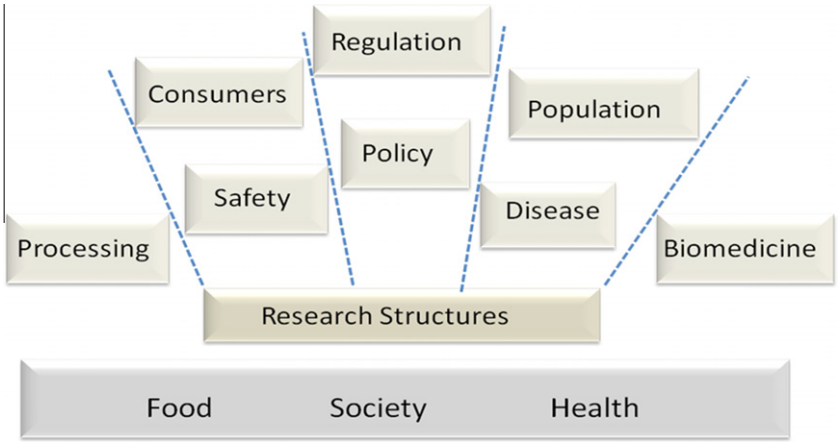

Fig. 4. Model for research themes in food and health.

programming in Horizon 2020, and other initiatives such as the Platform for Nutrition, Diet of Physical activity of DG Health and Consumers take an interest in research. A cross-directorate committee is created between the Commission Services and the Joint Programming Initiative board, and holds meetings with Member State Permanent Representatives in Brussels: this committee sets the broad research agenda for the joint programming.

In this proposal, research priorities are balanced across different views (agriculture, food and public health). However, not all EU member states are yet part of the Joint Programming Initiative. There are few structures for wider dialogue between stakeholders, including civil society and industry, and there remains a risk of duplication of research efforts between national and European levels.

Strong coordination

In this policy option, research and innovation activities are supported both by the EU and by member states. There is a Coordinating Research Agency, with budget and representation from the three EU directorates Agriculture, Health and Research, the member states and non-governmental stakeholders including civil society and industry. Member states design their own agendas for 'food *for* health' research in relation to the European agenda, and there is regular and detailed communication (via the Agency) between the European and national research commissioning organisations, the creators of innovation and the users of research. Member states have similar coordinating organisations linking their ministries of science (or research councils), agriculture and health respectively, the stakeholders – researchers, civil society organisations, health organisations and the food retail and catering industries.

This proposal provides a structure for dialogue between all actors. There can be a common strategic vision. Coordination between national and EU-wide activities improves the efficiency – and therefore competitiveness. A possible hazard is that the common research agenda may become a ''compromise'' between countries, or one that emphasises the interests of some countries – a challenge of political as well as scientific vision. Nevertheless, the 'strong coordination' option would be the most efficient use of scarce research resources, and maximise the potential for food and health research across Europe.

Discussion

Food is a major industry in Europe, and a major concern for all European citizens, who want policies that will promote their welfare and protect them from harm. While food and health research currently focuses on food safety, including chemical and biological contaminants, future research should address a wider range of policy issues and the nutritional determinants of health. This transdisciplinary research, with scholars linking food studies and medicine with the social and policy sciences, including psychology, education and economics, will support the social framework of decisions and services to promote the EU economy and public wellbeing. It is important to have continued evaluation of programmes to allow, if necessary, prompt modification of programmes and/or interventions.

The main weaknesses of food and health research at present include fragmented research capacities, lack of national strategies, and low resource allocation to combined 'food and health' research. The European Commission established the European Technology Platform (2011) 'Food for Life' under the management of the European Confederation for the food and drinks industry (now called FoodDrinkEurope), and the research programme presented was taken up into the European Commission Directorate for Research's 'Knowledge-based Bio-Economy' programme. However, there was not an equivalent development for public-interest sectors, nor discussion on European research programmes at national level between ministries of food and ministries of health. The lack of mechanisms to involve civil society in the research agendas has resulted in an imbalance, where the food industry presents the perspective of citizens as just 'consumers'.

FAHRE revealed a lack of cooperation and coordination between the different ministries in member states, and between the Directorates-General in the European Commission concerning food, health and research. Food is considered to be the domain of the agricultural departments, nutrition to be the domain of the health departments and research to be the domain of science and education departments. The responsible national and regional ministries, and European Directorates-General, need to develop new structures. This could be the creation of a ''trio committee'' with representatives of each of the three responsible domains. Another option could be the creation of a dedicated new entity (like EFSA was established for food safety matters) or at least a dedicated unit within an existing agency such as EFSA. The European Food Safety Authority (EFSA) was established after the European BSE crisis to improve food security in all EU member states. FAHRE proposes a new agency for food for health research, to improve coordination and create 'economies of scale' between the member states, at European level, and indeed provide competitive advantage in research in other global regions.

FAHRE's surveys of civil society organisationss in food and health working at European level also indicated a strong wish for greater engagement with research ('inclusive approach') than currently. Including more CSOs concerned with food and health within research consortia would both bring new perspectives to research and increase research for public benefits beyond those of industry. However, at present there are few CSOs concerned with the broader issues of food and health. An example in the United States is the Centre for Science in the Public Interest (2011), a consumer-based science advocacy organisation which, with a million subscribers to its Nutrition Action Health Letter, is 'changing the way America eats'.

FAHRE recommends that research should move from a focus on 'healthy food', which concentrates on food as a product, to research for 'healthy eating' which is concerned with appropriate intake and increasing benefits. Prevention can reduce the costs of treatment, and the larger impact of population-based interventions compared with individualised clinical medicine should encourage member states to strengthen areas of public health research.

The challenge for industry should be how to create products and value in healthy rather than unhealthy foods, and to make these changes through markets, in cooperation with governments, rather than by regulation. Policy proposals that need the evidence base in relation to different cultural settings and jurisdictions across Europe include: use of the Common Agricultural Policy to promote a healthy diet across Europe; legislation on industrial production of unhealthy fatty acids; controlling marketing aimed at children; improving information about nutritional quality; education to increase demand for healthy foods; economic tools (taxes and subsidies) to make healthier foods more affordable; greater control on health 'claims' of foods; and improving the quality of food served and/or sold in both public institutions and when people eat out ('catering industry').

European research and innovation policy across all sectors has sought to increase funding from or within industry. The food industry has focused on 'near-market' research. For example, so-called 'functional' foods have been developed, creating a large market, but there is little evidence that these products are more beneficial than a normal, balanced diet. By contrast, efforts for reformulation of food products to reduce the salt, saturated fat, and added sugar content of foods and diminish portion size, are now growing and give a good lead towards healthier eating.

In the medical sector, links have been explored with molecular biology and pharmaceuticals (nutrigenomics), but the results so far have been of limited application. Although 'personalised' nutrition has been proposed beyond direct medical uses, human genes are complex and heterogeneous, and this research is likely to show that changes are needed in diets for large groups of the population rather than for individuals. For example, the rising epidemic of obesity, causing damaging chronic diseases, over short periods without genetic change, demonstrates the primary importance of the food environment. Obesity is a problem across the whole of Europe, and globally, and presents a major opportunity for sharing research programmes through both European and national joint programming with the inclusion of small and medium size enterprises and civil society organisations.

Conclusions

Food and health research should embrace a health promotion and preventive paradigm. Dialogue is needed for the 'knowledge triangle' that links education (not just higher education), research and innovation. The new paradigm requires the food industry to promote innovation for healthy diets – less fat, less sugar, less salt, less 'empty calories', lower energy density – for healthy lives and ageing. This will require less processed (and more 'whole') food, but could also have opportunities for wider distribution of higher quality food. Moreover, reduction of total food eaten (to reduce obesity), and of meat and dairy foods, will link with global policies for sustainable agriculture.

European Union policy continues to prioritise research and innovation. Following the proposals for the next EU Framework Research Programme, "Horizon 2020", published in November 2011, during 2012 there are twin processes of discussion by the EU member states and by the European Parliament. In a context of national economic challenges, the funding to be available for research and innovation will be argued closely. Investment in food *for* health research, at European level and between member states, could give major economic and social returns. Research commissioners and decision-makers can prioritise food *for* health research, and create the structures needed for global competitiveness.

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