



Promoting stakeholder engagement and public awareness
for a participative governance of the European bioeconomy



Case studies of national bioeconomy strategies in Finland and Germany

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EXECUTIVE SUMMARY

This report assesses how organisational stakeholders and individual citizens have participated in the development, implementation and review of national policy-led bioeconomy strategies in Finland and Germany. It also explores the benefits and challenges of different approaches to participation, and draws out issues to inform the rest of WP3 and the BioSTEP project as a whole.

National government strategies play important roles in regulating, funding and facilitating information exchange and cooperation in relation to the bioeconomy. Participation can be categorised in terms of Ribeiro and Millar, 2015):

- Public education, whereby 'experts' provide others with information on the bioeconomy;
- Public dialogue, whereby 'experts' consult and set up forums for debate with others;
- Public co-production of knowledge, based on cooperation between a range of experts, citizens and interest groups.

Studies suggest that there are three main types of rationale for participatory approaches to governance, namely (Marries and Rose, 2010; Pallett, 2012; Ribeiro and Millar, 2015):

- Instrumental rationales (Rowe and Frewer, 2004), which see participation as a 'tool' for raising public awareness, strengthening public trust and reducing conflict, with a view to smoothing the way for emerging technologies or policies;
- Substantive rationales, based on a recognition of the limitations of expert knowledge (Rowe and Frewer, 2000), and the need to take account of lay knowledge and opinions in decision-making in order to ensure that new developments are accepted and embedded in society;
- Normative rationales, where broad-based participation is rooted in perceptions of what makes a 'good society' (Rowe and Frewer, 2000), which emphasises that people who are likely to be affected by decisions should have the freedom to define whether these decisions are in compliance or in conflict with their own perception of well-being (Sen, 1999).

The methodology included desk research, semi-structured interviews, data analysis and report writing. The following criteria were used to select the two national case studies:

- A strategy (a set of ideas and actions) was in place and was being implemented;
- There were indications that a range of stakeholders participated in strategy design and implementation, representing at least the worlds of policy, business and research and also with some participation from NGOs/CSOs and individual citizens;
- The case studies covered different aspects of the bioeconomy e.g. not only the 'older' bioeconomy (notably biofuels) but also the 'newer' bioeconomy i.e. refined biomaterials with a high(er) degree of added value (e.g. bio-plastics, lubricants, and personal care).

The Finnish case study focuses on the National Bioeconomy Strategy published in 2014. The strategy design process included consultation with a range of stakeholders and (particularly via social media and websites) also information for individual citizens. Implementation is led by national public bodies, but other stakeholders (especially from the fields of business and research) implement specific projects. Similarly, the Bioeconomy Panel (with participation from business, research and civil society) is consulted on the strategy's implementation. Various activities aim to raise awareness of the bioeconomy among individual citizens and consumers. The strategy's review is led by national public bodies, with input from the Bioeconomy Panel, as well as support from external evaluators.

The German case study examines participation in relation to the National Bioeconomy Research Strategy (2010) and the National Bioeconomy Policy Strategy (2014). The Research Strategy was developed by the national ministries, in consultation with the Bioeconomy Council representing business and research interests. National ministries and associated public bodies have also led on implementation, while researchers, businesses and, to a lesser extent, CSOs/NGOs have been consulted on implementation, and researchers and businesses have received funding for projects. The strategy's review is led by national ministries, with inputs from external evaluators, and in consultation with the Bioeconomy Council.

Participation has been more broadly-based in relation to Germany's National Policy Strategy for the Bioeconomy. The design and implementation phases have involved consultation with CSOs/NGOs as well as with business and research interests, although CSOs/NGOs are still not represented on the Bioeconomy Council and so their participation is less active. Project funding has been allocated to researchers, businesses and, to a lesser extent, CSOs/NGOs. Individual citizens have been targeted by information campaigns and consumer-oriented activities funded by the strategy. As the Policy Strategy was adopted only in 2013, its review is in its early stages and is government-led, although there are plans to involve external evaluators and the Bioeconomy Council.

Interviewees in Finland and Germany noted the following rationales for participatory approaches to the bioeconomy:

- Instrumental: increasing public support for the bioeconomy; encouraging shifts in consumer behaviour; reducing implementation costs by resolving problems at an early stage; generating new ideas for businesses and researchers;
- Substantive: mobilising society-wide capacities to support structural change; building a better strategy by addressing blind spots and asking neglected questions;
- Normative: ensuring that various societal interests are taken into account and enabling a new consensus to be built; taking account of different views in relation to new technologies, which can have redistributive effects.

Interviewees in Finland and Germany also identified challenges associated with the participation of a range of organisational stakeholders in national bioeconomy strategies:

- Slower and more complicated decision-making;
- Difficulties in reaching consensus between different viewpoints and goals;
- Multiple policy strategies and processes can lead to overload for stakeholders;
- Participation can mean that new ideas are blocked;
- Concerns over the legitimacy of non-elected representatives;
- Co-funding requirements can limit the scope of some entities (e.g. SMEs and CSOs/NGOs) to obtain public funding;
- CSOs/NGOs feel that their views are not heard sufficiently and that their influence is limited.

Last, interviewees noted that more active citizen participation was hindered, in particular, by:

- The complex, abstract and controversial character of debates on the bioeconomy;
- The lack of knowledge and interest among citizens on the broad theme of the bioeconomy, despite interest in specific related issues.

Among the possible suggestions of ways for encouraging more active citizen participation were:

- A stronger focus on specific issues which directly affect citizens;
- Long-term communication campaigns (including use of social media) to engage with citizens about the range and complexity of the bioeconomy;
- Funding for projects which encourage public awareness;
- More discussion of sustainable development in the education system;
- Emphasis on the potential environmental benefits of the bioeconomy; and
- Genuine dialogue with citizens, aimed not only at informing but also at listening to and engaging with people's concerns.

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Abbreviations

AA	Germany's Foreign Office
AKAVA	Finland's Trade Union Confederation for highly educated people
ARENE	Finland's Rectors' Conference of Universities of Applied Sciences
BMBF	Germany's Federal Ministry of Education and Research
BMEL	Germany's Federal Ministry of Food and Agriculture
BMI	Germany's Federal Ministry of the Interior
BMUB	Germany's Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety
BMVI	Germany's Federal Ministry of Transport and Digital Infrastructure
BMWi	Germany's Federal Ministry for Economic Affairs and Energy
BMZ	Germany's Federal Ministry for Economic Cooperation and Development
CLIC	Germany's Bioeconomy, Energy and Clean-tech Cluster
CSO	Civil Society Organisation
EEG	Erneuerbare-Energien-Gesetz (Germany's Renewable Energies Law)
EK	Finland's Confederation of Industries
ELY-Centre	Finland's Centre for Economic Development, Transport and the Environment
EU	European Union
FIBS	Finland's Corporate Responsibility Network
FINPRO	Export Finland, Visit Finland and Invest in Finland
FONA	Germany's Research for Sustainable Development programme
GVA	Gross Value Added
ICS	Intelligent Cooking and Storage
INKA	Finland's Innovative Cities programme
INRO	Germany's Initiative for the Sustainable Supply of Raw Materials for the Industrial Use of Biomass
LUKE	Finland's Natural Resources Institute
Mara	Finland's Hospitality Association
METLA	Finland's Forest Research Institute
MTT	Finland's Agri-food Research Centre
NABU	Germany's Nature and Biodiversity Conservation Union
NGO	Non-governmental Organisation
NordBio	Nordic Bioeconomy
OECD	Organisation for Economic Co-operation and Development
R&D	Research and Development
R&D&I	Research, Development and Innovation
SAK	Finland's Central Organisation of Trade Unions

SciFest	Finland's Science and Technology Festival
SHOK	Finland's Strategic Centre for Science, Technology and Innovation
SINAL	Bioeconomy event in France
SITRA	Finnish Innovation Fund
SMEs	Small and Medium-sized Enterprises
STTK	Finland's Confederation of Professionals
SYKE	Finland's Environment Institute
TRAFI	Finland's Transport Safety Agency
Tekes	Finland's Funding Agency for Innovation
UN	United Nations
UNIFI ry	Finnish Universities
VTT	Finland's Technical Research Centre
WP	Work Package
WWF	World Wildlife Fund
ZEF	Germany's Centre for Development Research

1 Introduction

The overall goal of the BioSTEP project is to develop a set of recommendations for the participatory design of bioeconomy strategies at different levels. This paper is the first deliverable under WP3 and focuses on two national case studies. WP3 aims:

- To identify and collate information on national and regional strategies relating to the bioeconomy, which are examples of good practice in terms of the participation of a broad range of stakeholders and citizens in the design, implementation and monitoring/review of the strategies,
- To analyse these strategies and the mechanisms used to ensure the participation of stakeholders and citizens, and to synthesise findings, with a view to drawing out insights on participative ways of governing the bioeconomy, and
- To make this knowledge available to a wider audience, with a view to raising awareness and encouraging dialogue.

This report documents the first steps towards addressing these aims, which involve an assessment of how different publics have participated in the development, implementation and review of national policy-led bioeconomy strategies in Finland and in Germany. It also explores the benefits and challenges of different approaches to participation in these policy strategies, and draws out issues for discussion and lessons to inform the rest of WP3 and the BioSTEP project as a whole.

The work undertaken in Task 3.1 will inform the next steps of WP3, namely four case studies of regional bioeconomy strategies (D3.2) and the development of good practice guidelines on participatory approaches to the design, implementation and review of bioeconomy strategies (D3.3). These guidelines will be presented at validation meetings with key participants in the Finnish and German bioeconomy strategies (as well as to participants in the regional case studies), with a view to gaining feedback, improving the guidelines and fostering dialogue on participatory approaches to bioeconomy strategies.

The next section of this report develops a conceptual framework for understanding and analysing participatory approaches to strategy design, implementation and review. The third section then sets out the research methodology and the approach used for selecting case studies. The fourth and fifth sections cover the Finnish and German national case studies, examining how stakeholders and citizens have participated in the different dimensions of the national bioeconomy strategies, and exploring different views of the benefits and challenges of participatory approaches. The final section draws conclusions and identifies issues and research findings of interest for the BioSTEP project as a whole.

2 Participatory approaches to national strategies

The aim of this report is to identify who has participated in the design, implementation and monitoring/review of national bioeconomy strategies in Finland and Germany; to explore how different people and organisations have participated in these strategies; and to provide an overview of actors' perceptions of the benefits and challenges associated with participation.

This section explains the rationale for focusing on national policy strategies, sets out what we mean by participatory approaches, and explores why participatory approaches to policy-led bioeconomy strategies matter.

2.1 Governance of the bioeconomy

This report focuses on national government strategies due to their importance in the governance of the emerging bioeconomy field. Although some tasks are located at sub-national level in some countries, or shared between national and EU level, national governments play the following important roles in relation to the bioeconomy:

- National governments are an important source of regulatory frameworks which shape and facilitate the evolution and growth of new scientific, technological and economic fields, for example in terms of their impact on the regulation of scientific methods and materials, land use planning, and the standardisation and certification for consumer products;
- Government is a major source of finance, via (i) direct funding for research and development (R&D), education and training institutions and systems; (ii) grants for R&D, innovation, education, training, enterprise, and pilot projects that experiment with changes in household behaviour; and (iii) the potential use of public procurement systems to favour more sustainable products and services;
- Governments also fund planning and information gathering activities and systems, which can support the growth of new activities (e.g. foresight planning, and the development and collection of statistics);
- Governments can also support the bioeconomy by disseminating information e.g. on the benefits of bio-based consumer products, on the need for changes in individual and household behaviour, and of new opportunities for education and employment;
- Government can also facilitate broad-based participation by setting up mechanisms for consultation, dialogue and co-decision-making that involve a range of stakeholders and publics (e.g. panels and forums, public consultations, public surveys, focus groups, events and conferences, and advisory committees).

Further, national bioeconomy strategies are in themselves a means of disseminating information both domestically and internationally about what can be done to support the bioeconomy, and of facilitating international cooperation.

2.2 Participatory approaches to bioeconomy governance

This report draws on the following broad classification of participatory approaches (Felt et al, 2007; Ribeiro and Millar, 2015), while recognising that the three categories may at times become blurred in practice:

- Public education, whereby 'experts' in the public or private sectors provide other individuals and organisations with information on the bioeconomy;
- Public dialogue, whereby 'experts' in the public or private sectors consult and set up forums for debate with other individuals and organisations;
- Public co-production of knowledge, based on cooperation between a range of experts, citizens and interest groups.

The broader literature on participation in the fields of science and technology and socio-economic development suggest three types of rationales for participatory approaches to governance, namely instrumental, substantive and normative (Marries and Rose, 2010; Pallett, 2012; Ribeiro and Millar, 2015).

2.2.1 Instrumental rationales

Participatory approaches may be adopted on pragmatic or instrumental grounds (Rowe and Frewer, 2004), as a 'tool' for raising public awareness, strengthening public trust and reducing conflict, with a view to smoothing the way for emerging technologies or policies. In this sense, the participation of wider organisations and publics can be seen as 'a technical device' or as a 'political instrument' (Bache, 2010).

This approach is often adopted in fields, such as science and technology, which are seen to be characterised by complexity, controversy and uncertainty (technical, regulatory, consumer responses etc.), which may hamper societal acceptance and business activity and innovation (Goven, 2006). Thus public opposition is seen to stem from a lack of knowledge or understanding, so that education and communication are viewed as needed to increase the acceptance and support of new developments.

In addition, open dialogue is seen as a means of strengthening public trust in science and its regulation, as well as the legitimacy and credibility of the policy process, and could therefore facilitate acceptance and implementation of new regulations (OECD, 2001). Consultation activities are also likely to increase the public's sense of ownership, encouraging longer-term commitment and compliance.

Providing opportunities for public participation can also serve the purpose of reducing societal tension, preventing conflict and damping potential protest (Rowe and Frewer, 2000, 2004).

2.2.2 Substantive rationales

A second set of rationales for public participation stems from a recognition of the limitations of expert knowledge and viewpoints (Rowe and Frewer, 2000), and the need to take account of lay knowledge and opinions in decision-making processes in order to ensure that new developments are accepted and embedded in society.

The complexity of issues relating to scientific and technological developments is seen to stimulate governments to seek new sources of information and different points of view, experiences and expertise from a wide range of actors in order to make sure that decisions are well-informed, comprehensive and well-adjusted to societal needs and concerns. Technological developments may have a variety of impacts upon the society and there is therefore a need to discuss the social, economic, environmental, and especially ethical dimensions of these impacts with different groups of people, preferably early in the decision-making process.

Similarly, in the fields of development economics and regional studies, there is an emphasis on the value of providing conditions, which allow local actors to express their (often tacit and locally embedded) knowledge and preferences to inform and enrich decision-making (Hirschman, 1970; Barca, 2009a, 2009b; Morgan, 1997). If people do not have opportunities to 'voice' their views, they are likely to 'exit' from decision-making and participation, so that their ideas and capacities are wasted (Hirschman, 1970). There is therefore a need for participatory political institutions which facilitate societal engagement and so ensure the inflow of new ideas, thus stimulating innovation and economic activity (European Commission, 2012a; McCann and Ortega-Argilés, 2015). However, such forms of participation may be blocked by local elites because there is a risk of challenges to the status quo upheld by traditional interest groups.

2.2.3 Normative rationales

A final set of rationales for public participation is rooted in perceptions of what makes a 'good society', founded on 'a recognition of basic human rights regarding democracy and procedural justice' (Rowe and Frewer, 2000). In this sense, it is argued that people who are likely to be affected

by decisions should have the freedom to define whether these decisions are in compliance or in conflict with their own perception of well-being (Sen, 1999).

One perspective on this debate, rooted in development economics, is the 'capability' approach, which emphasises the primary moral importance of the freedom to achieve well-being, which is defined by each individual and so depends on what he or she has reason to value' (Sen, 1999). This approach suggests that a 'good' society would seek to provide individuals with the opportunities to achieve well-being by realising their capabilities. Moreover, although the elements of well-being would be defined by individuals themselves, the State would play a role in facilitating the dialogue with a variety of publics, in order to allow the articulation of a collective 'well-being', which would be valued by a wide range of individuals.

At the same time, participation in political processes and the ability to shape political decisions may be considered as an important capability in itself, an element of perceived well-being and an essential right to be exercised by an individual. This is in line, for example, with Sen's (1999) view on individuals as holding 'process freedoms' such as involvement in democratic practices and public debate, and with Nussbaum's (2003, 2011) view on political participation as one of 'central human capabilities' (closely associated with the concept of 'human rights').

From this perspective, participative practices may be seen as inherently democratic and characteristic of a 'good society' (Drèze and Sen, 2002; cf. Batory and Cartwright, 2011) and so as an appropriate focus of government support.

3 Research methodology, analysis and case study selection

3.1 Methodology and analytical approach

The methodology included desk research, semi-structured interviews, data analysis and report writing. Each of these stages is examined further below. A copy of the research guidance and interview checklist is provided in Annex 1.

Research under WP3 was undertaken in accordance with the University of Strathclyde's Code of Practice on Investigations involving Human Beings, which is designed to ensure that all research undertaken by University staff and students is carried out in an ethical manner. The Code of Practice aims to ensure: that research is designed, reviewed and undertaken to ensure integrity and quality; that research subjects are informed fully about the purpose, methods and possible uses of the research and what their participation involves; that the confidentiality of information and participant anonymity is respected; that involvement of research participants is voluntary; research is independent, free of conflicts of interest or partiality; and that data management and storage procedures ensure data protection. Annex 2 of this report includes EPRC's Ethics Guidance for Researchers and Ethics Information for Interviewees. The full Code of Practice is available here: <http://www.strath.ac.uk/ethics/>

3.1.1 Desk research

BIOCOM (Germany) and EPRC (Finland) undertook desk research, which involved the collection and processing of information on the content and rationale of the bioeconomy strategy to be analysed. It drew on policy documents at strategy level; information at the level of measures/instruments and projects from various organisations; and policy-maker, organisational and citizen-oriented websites. In particular, it focused on:

- the aims of the strategy,
- what the strategy says about the strategy's benefits and beneficiaries,
- whether the strategy discusses potential harms or dis-benefits,
- the actors responsible for developing, deciding on and implementing the strategy,
- the main drivers for developing the strategy, and
- the content, actions or instruments set out in the strategy.

3.1.2 Interviews

BIOCOM (Germany) and EPRC (Finland) each undertook 15 semi-structured interviews with representatives of organisations which have participated in the development, implementation and monitoring/review of the national bioeconomy strategies in Finland and Germany (see Table 1).

Interviewees were selected to represent the main organisations which have participated in the development, funding, implementation and monitoring/evaluation/review of the strategy, including:

- Governmental or policy organisations,
- Business chambers and business/sectoral associations,
- Scientific or research organisations,
- Non-governmental organisations (NGO) and civil society organisations (CSO),
- Individual academics, consultants or other experts.

Table 1: Interviews undertaken in Finland and Germany

	Finland	Germany
National policy-makers	2	4
Regional/local policy-makers	2	1
Business associations	4	3
Science/research organisations	2	3
CSOs/NGOs	2	3
Experts/consultants	3	1
Total	15	15

Source: BIOCOM and EPRC

The interviews were either undertaken face-to-face, by telephone or by skype. The interviewers recorded and transcribed the interviews for their respective case studies. The interviews focused on the following questions:

- How did organisational stakeholders and the general public participate in the design, implementation and review of the strategy?
- What did interviewees see as the benefits and the challenges related to the participation of organisational stakeholders and the general public in the strategy?

3.1.3 Analysis and report-writing

EPRC undertook the data analysis and wrote the final report for both case studies, drawing on interview transcripts and desk research. The analysis was structured around the interview checklist, i.e.

- the participation of organisational stakeholders on the one hand and the general public on the other,
- the different phases of participation (strategy development, implementation and review), and
- the range of benefits and challenges/difficulties associated with participation, as identified by the interviewees.

A draft report was circulated for feedback from other BioSTEP partners (including BIOCOM, with specific feedback on the German case study) and the text was then revised, before being circulated a second time, and then finalised and submitted to the European Commission.

3.2 Case study selection

Numerous governmental and policy organisations at international, national and regional levels have developed bioeconomy strategies in the past decade (<http://bio-step.eu/background/bioeconomy-strategies.html>). For example, the OECD (2009) and European Commission (2012b, 2013) have produced key strategy documents, and a number of individual European countries (including Austria, Denmark, France and the Netherlands) have developed national policy strategies for the bioeconomy. Recent summaries of national bioeconomy strategies have been published by Germany's Bioeconomy Council (Bioökonomierat, 2015a, 2015b).

The following criteria were used to select the two national case studies covered in this report:

- A strategy (a set of ideas and actions) was in place and was being implemented;

- There were indications that a range of stakeholders participated in strategy design and implementation, representing at least the worlds of policy, business and research and also with some participation from CSOs/NGOs and individual citizens;
- The case studies covered different aspects of the bioeconomy e.g. not only the 'older' bioeconomy (notably biofuels) but also the 'newer' bioeconomy i.e. refined biomaterials with a high(er) degree of added value (e.g. bio-plastics, lubricants or applications in the domain of personal care).

The BioSTEP project proposal identified Germany as one of the two national case studies because the project consortium was aware that bioeconomy policy was already well-developed in Germany, which is seen to be “among the world leaders when it comes to bioeconomy policy” (Bioökonomierat, 2015a, p.24). Moreover, various stakeholders (policy organisations, individual businesses and business associations, universities and research institutes, non-governmental organisations and civil society organisations) have participated in the design and implementation of Germany's national bioeconomy strategies. Similarly, policy-makers and other stakeholders are concerned to engage with the general public about these strategies.

A desk assessment of other national bioeconomy strategies in Europe suggested that Finland was another international leader in bioeconomy policy-making, with a senior Finnish civil servant blogging that “other European countries see Finland as one of bioeconomy's winning countries, although we have yet to notice it ourselves” (Sundbacka, 2014). The desk assessment also indicated that there was strong participation from a range of organisational stakeholders in the Finnish strategy, as well as clear concern with engaging with citizens on the bioeconomy

Further, both Finland and Germany can be seen as good practice examples of countries with formal mechanisms for enabling a range of different interests to participate in policy-making. On the one hand, both countries have neo-corporatist traditions, often referred to as the social market economy or Rhine model in Germany, and the Nordic model in Finland (Hall and Soskice, 2001; Scharpf, 1987). Strong formal institutions ensure that organisations representing different societal groups (e.g. businesses, trade unions, civil society organisations) engage actively with national, regional and local governments to inform and shape policy decision-making and implementation. On the other hand, both countries have developed forms of participatory policy-making (e.g. citizen juries and forums) involving a wide range of individual citizens since at least the 1990s (Best, Augustyn and Lambermont, 2011).

4 Case study 1: Finland's National Bioeconomy Strategy

The first case study focuses on participatory approaches relating to the Finnish Bioeconomy Strategy (Ministry of Employment and the Economy, 2014). Bio-products and bio-activities play an important part in Finland's economy (see Infobox 1) and Finland's bioeconomy sector is distinctive, due to the importance of domestic forestry as a source of biomass (Bioökonomierat, 2015b).

Moreover, the bioeconomy has developed in a national context where the natural environment and, especially, forests are significant, not only economically but also in societal and individual terms (Irjala, 2013; Raivo, 2002). Access and connection to nature is linked to traditional cultural norms of egalitarianism and individual rights, for example through the Finnish 'Everyman's Right' (*jokamiehenoikeus*) which is a traditional legal concept that ensures universal free access to nature and the countryside. This cultural/individual connection with nature contributes to the relative importance of environmental concerns on the national political/policy agenda. Policy-makers are endeavouring to facilitate the transition to a bioeconomy by emphasising its contribution to the natural environment and sustainability and by engaging with stakeholders and citizens with a view to stimulating changes in perceptions and behaviour (Rissanen, 2013).

This section begins by examining how and why the Finnish National Bioeconomy Strategy was developed and its content, before examining how different stakeholders have participated in the design, implementation and review of the strategy, and the benefits and challenges associated with participatory approaches.

Infobox 1: Finland's Bioeconomy Sector

The bioeconomy in Finland is characterised by the abundance of natural resources and the dominance of the forest sector. However, the definition and measurement of bioeconomy activities is not clear-cut, as it cuts across traditional sectoral boundaries linking wood processing, chemistry, energy, construction, technology, food and wellbeing solutions.

The Finnish National Strategy estimates that the bioeconomy accounted for 12.3 percent of Finland's gross value added (GVA) in 2011, employed more than 300,000 people (12.7 percent of total national employment), and made up 26.3 percent of total national exports).

Key sectors of the bioeconomy include:

- Food and agriculture: 2.7% of GVA, 5.1% of employment
- Forestry: 1.8% of GVA, 1.0% of employment
- Wood products, pulp and paper: 2.8% of GVA, 2.4% of employment
- Construction: 2.0% of GVA, 2.3% of employment
- Chemicals and pharmaceuticals: 0.8% of GVA, 0.2% of employment
- Renewable energies: 1.2% of GVA, 0.2% of employment
- Nature tourism: 0.8% of GVA, 1.3% of employment

Source: Ministry of Employment and the Economy (2014) *Kestävää kasvua biotaloudesta, Suomen biotalousstrategia* (Finland's Bioeconomy Strategy), Helsinki, p.9

4.1 The background of the strategy

4.1.1 How and why was the strategy developed?

The process of building the National Bioeconomy Strategy, which was launched in early 2014, was initiated by the Ministry of Employment and the Economy in autumn 2012, in close cooperation with the Ministry of Agriculture and Forestry and the Ministry of the Environment. Other key partners included: the Prime Minister's Office, the Ministry of Education and Culture, the Ministry of Social Affairs and Health, the Ministry of Finance, the administrative entities under the relevant ministries,

the Technical Research Centre (VTT), and the Finnish Innovation Fund (SITRA) (Ministry of Employment and the Economy, 2015a). Other stakeholders and individual citizens were also invited to express their views, largely through open events, as well as via a bioeconomy website (www.biotalous.fi); via a government website which aims to encourage citizen participation across a range of policy fields (www.otakantaa.fi);¹ and via social media.

The National Strategy built on earlier work undertaken in 2009-12 (see Infobox 2). The first formal discussions on the use of natural resources to promote competitiveness, well-being and environmental responsibility had occurred within the public-private Luodin project which was led by the Finnish Forest Association. SITRA developed this thinking further and initiated the Natural Resource Strategy (*kansallinen luonnonvarastrategia*), which was submitted to the Government in April 2009 (Ministry of Employment and the Economy, 2011).

At the end of 2009, a ministerial group on climate and energy policy decided to develop the Government's Natural Resource Strategy further. This led the Ministry of Employment and the Economy to set up two working groups in spring 2010, one on the bioeconomy and the other on the minerals sector. The bioeconomy working group assessed the need for a bioeconomy strategy, explored the concept of the bioeconomy, and examined possible developments up to 2050. The working group did not cover bioenergy production, as the Government had already taken a long-term decision on these issues. Nor did it cover issues relating to the aquatic ecosystem, or nature recreation and tourism.

The working group submitted a report to Parliament in September 2010, which proposed the development of a national bioeconomy strategy, that would define how the bioeconomy could contribute to economic growth and welfare (Prime Minister's Office, 2010). The bioeconomy summit organised by VTT in 2012 also urged the development of a national bioeconomy strategy.

¹ The website www.otakantaa.fi is part of a service entity which develops electronic services to provide interaction between civil society, the public administration and political decision-makers. The service entity is part of the SADe programme (eServices and eDemocracy acceleration programme) coordinated by the Ministry of Finance.

Infobox 2: Other relevant strategies in Finland

There are c. 120 ongoing programmes and strategies in Finland with a direct link to bioeconomy e.g.

- Rural Development Programme for Mainland Finland (2014-20)
- The Strategic Programme for the Forest Sector 2015
- National Aquaculture Strategy 2022
- Finland's National Food Strategy 2020
- Cleantech Strategic Programme
- Finland's National Forest Programme 2015
- European Maritime and Fisheries Fund, National Programme 2014-20
- Energy and Climate Strategy 2016
- The Forest Biodiversity Programme METSO 2008-2025
- The National Strategy and Action Plan for the Conservation and Sustainable Use of Biodiversity 'Saving Nature for People'
- Finland's National Strategy for Adaptation to Climate Change 2022
- National Material Efficiency Programme 'Sustainable Growth through Material Efficiency'
- National Resource Strategy 2009
- National Strategy for Sustainable Development

Source: European Commission (2014) Joint Survey on National Bioeconomy Strategies, Country: Finland, <https://biobs.jrc.ec.europa.eu/sites/default/files/generated/files/jrc/JRC-SCAR%20MS%20Bioeconomy%20Survey%202014%20FINLAND%20.pdf>

Other factors which drove the decision to develop the bioeconomy strategy include:

- Increased awareness of the potential of the bioeconomy to address national and international economic and environmental challenges;
- Increased understanding of Finland's strength and opportunities in the bioeconomy (notably forest resources, as well as manufacturing and energy sectors); and
- The development of bioeconomy policy guidelines and strategies by the UN, OECD and EU, as well as by countries such as Germany, the Netherlands, Sweden and Norway.

4.1.2 The content of the strategy

The National Bioeconomy Strategy sets out a vision for 2050 whereby sustainable and competitive bioeconomy solutions for global problems will be created in Finland, and new business will be generated, boosting the country's welfare and also supporting natural ecosystems. Finland's bioeconomy output is expected to grow to €100 billion by 2025 and to generate of 100,000 new jobs. Alongside the emergence of new sectors, the diversification of existing industries is seen as likely, with the strongest potential in the forestry, chemical and energy industries and related services.

The strategy sets out a detailed list of actions and measures (see Infobox 3), and identifies the bodies responsible for implementing each of these, with most foreseen to start by the end of 2014. Further, the strategy outlines the indicators and data sources to be used for monitoring the strategy.

Infobox 3: The Finnish Bioeconomy Strategy: Actions

1. A competitive operating environment for the bioeconomy
 - Setting up a foresight system to anticipate demand for bioeconomy solutions
 - Using policy and regulation to support new bioeconomy solutions
 - Providing incentives for using renewable resources in public procurement
 - Promoting consumer demand for bioeconomy products and services
 - Promoting the standardisation and certification of bioeconomy solutions
 - Experimenting with bioeconomy solutions in urban areas
 - Incorporating the bioeconomy in marketing of Finland as a country
2. Generating new business from the bioeconomy
 - Increasing equity financing and public funding for bioeconomy innovation
 - Funding piloting and demonstration projects of new bioeconomy solutions
 - Developing bioeconomy cooperation platforms across sectoral boundaries
 - Promoting non-material value creation (e.g. branding and design, as well as nature-related including culture)
3. Creating a strong skills base for the bioeconomy
 - Developing education content to train bioeconomy experts
 - Supporting research, including cooperation across sectors and internationally
4. Accessibility and sustainability of biomasses
 - Ensuring the availability and use of biomass
 - Making more efficient use of knowledge related to biomass resources

Source: Ministry of Employment and the Economy (2014) *Kestävää kasvua biotaloudesta, Suomen biotalousstrategia* (Finland's Bioeconomy Strategy), Helsinki

4.2 Participation during the design of the strategy

The strategy design process was led by national government politicians and civil servants, but various other organisational stakeholders were invited to contribute to the strategy's design. National policy-makers placed a strong emphasis on ensuring the participation of a range of actors in the strategy-building process because they believed that the successful development of a bioeconomy would depend on the active contribution and commitment of a wide range of other individuals and organisations.

4.2.1 Governmental stakeholders

In 2012, the Ministry of Employment and the Economy set up an Executive Group and a Working Group tasked with developing a strategy in support of the Government programme's growth objectives based on green economy; putting forward a proposal for the Government Resolution; setting out an operational programme for its implementation; and carrying out the process in partnership with stakeholders and citizens (<http://www.slideshare.net/Biotalous/pohjoiskarjalan-biotalousfoorumi-liisa-saarenmaa>). Thus, these two groups were responsible for writing the strategy document and taking the final decision on the content of the strategy:

- The Executive Group was chaired by the Minister of Economic Affairs and was composed of national political representatives (Ministers and undersecretaries);
- The Working Group was chaired by the Ministry of Agriculture and Forestry and included representatives of the Forest Research Institute, METLA (now part of the Natural Resources

Institute); the Technical Research Centre (VTT); the Ministry of Employment and the Economy; the Ministry of Finance; the Funding Agency for Innovation (TEKES); the Agrifood Research Centre, MTT (now part of the Natural Resources Institute); and the Ministry of the Environment. In addition, VTT and METLA provided secretarial support for the Working Group.

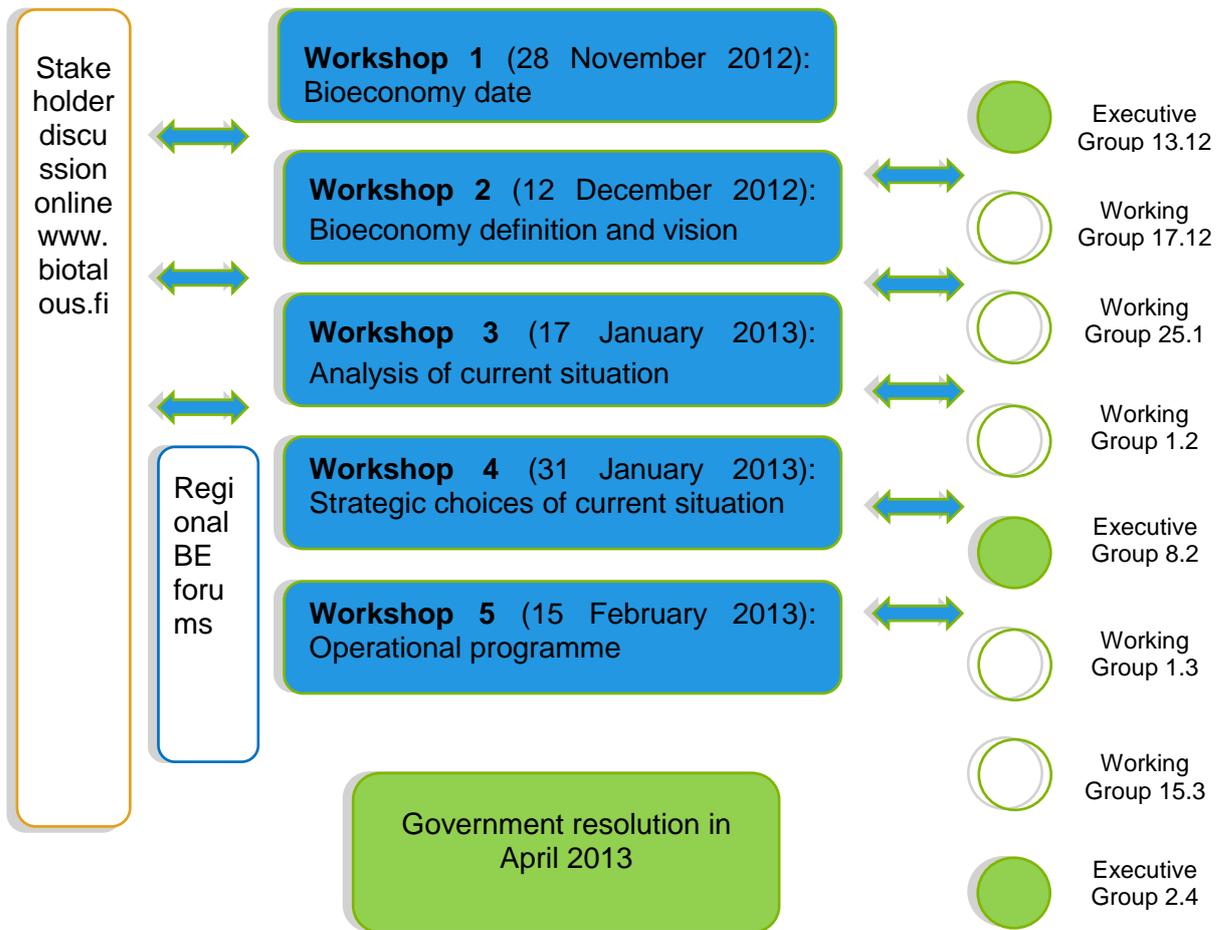
The Working Group approved the strategy and the proposed measures in its meetings on 1 March and 15 March 2013, while the Executive Group finalised the strategy at its meeting on 2 April 2013.

4.2.2 Business, research, sub-national authorities and CSOs/NGOs

Policy-makers invited other organisational stakeholders to provide their views as inputs to the strategy-writing process. The consultation process included five Workshops, which were facilitated by Gaia Consulting and were open to everyone, including individual citizens. Circa 500-600 representatives from research, business, industry confederations, CSOs/NGOs and the public administration were invited to attend (see Figure 1).

Following the Workshops, the Working Group and Executive Group started writing the strategy paper. Later in the strategy-building process, further information sessions and consultations were carried out because policy-makers realised that the Workshops had not generated sufficient responses to the questions they were asking. These further consultations included:

- Around 10 industry hearings, where industry representatives had the opportunity to provide inputs to the strategy process;
- Three regional forums (in Sodankylä, Joensuu and Kokkola), where the key national ministries provided information to stakeholders and citizens, who were also invited to give their views, for instance through World Café sessions;
- Direct consultations on the draft strategy with some organisational stakeholders, notably the industry federations (e.g. the Chemical Industry Federation, and the Forest Industry), as well as SITRA;
- Interaction with regional and local authorities. Some of the regions took a very proactive approach, as they were developing their own regional bioeconomy strategies, and invited the central level to hold regional discussion forums and to engage in two-way dialogue.
- One-to-one discussions between some individual stakeholders, including CSOs/NGOs, and the political/policy decision-makers on specific issues.

Figure 1: The Process of Designing the National Bioeconomy Strategy

Source: <http://www.slideshare.net/Biotalous/pohjoiskarjalan-biotalousfoorumi-liisa-saarenmaa>

4.2.3 Individual citizens

Citizen participation is embedded throughout Finnish policy-making (e.g. through the www.otakantaa.fi website). Policy-makers have also been keen to facilitate the active engagement of individual citizens in the bioeconomy because they believe that the transition to a bioeconomy depends on the actions and choices of all citizens, and especially on citizens-as-consumers. Therefore, policy-makers worked with Gaia Consulting (which facilitated the broader consultation process and Workshops) to develop additional tools for engaging with citizens.

Although the Workshops were also open to individual citizens, the main forms of participation explicitly targeted on citizens during the strategy design phase involved the provision of information. When the Government decided to develop a National Bioeconomy Strategy, it set up a communication support group consisting of the Ministry of Employment and the Economy, the Ministry of Agriculture and Forestry, and the Ministry of the Environment. A representative of TAPIO (a State-owned forestry and bioeconomy consultancy) also participated in the group as the electronic communications expert with responsibility for websites (www.biotalous.fi and www.otakantaa.fi) and social media (all of which are available in Finnish, English and Swedish).

Policy-makers see the launch of the [bitalous.fi](http://www.bitalous.fi) website and the use of social media as particularly important and to have shifted the policy approach towards general public:

- The website (www.biotalous.fi) was launched after the first Workshop (the “Bioeconomy date”) on 28 November 2012. The website contained a blog with information on the Bioeconomy Strategy, as well as material from the Workshops (including the outcomes of the Workshop discussions). Essentially, the website provided a discussion opportunity for those who had been at the Workshops, but also for the wider public.
- Social media were also used, notably a twitter account (@biotalous), which aims to provide information on various aspects of the bioeconomy in Finland (not just on the strategy). The twitter account now has just over 2,000 followers.

4.3 Participation during the implementation of the strategy

4.3.1 Business, research, sub-national authorities and NGOs/CSOs

For each of its measures (see Infobox 3), the Finnish Bioeconomy Strategy identifies which ministries and other public bodies (e.g. TEKES, SITRA, the Academy of Finland, and Team Finland) are responsible for leading on implementation. The Strategy is largely policy-led and some measures are implemented solely by national public bodies (e.g. mapping policy steering instruments, developing criteria for sustainable public procurement).

Other measures involve a broader range of stakeholders in implementation. Nevertheless, it is often the case that organisational stakeholders are primarily implementing their own strategies or projects, which are linked to the Government’s strategy. Examples of stakeholder participation in implementing the national policy strategy include:

- The Government’s bioeconomy regulatory project, which identifies changes in legislation and administrative practices. It is led by Linnunmaa Ltd² and is carried out under the supervision of the Ministry of Environment, Agriculture and Forestry. The Steering Group of the project also includes representatives of the Ministry for Employment and the Economy, the Ministry for Social and Health Affairs, other public authorities (e.g. an ELY-Centre and a Regional State Administrative Agency), and business associations (e.g. the Finnish Forest Industries, the Chemical Industry Federation, and Metsähallitus). The project also involves a Working Group with representatives of the universities, the Environment Institute, and the Natural Resources Institute (<http://www.linnunmaa.fi/sitenews/view/-/nid/161/ngid/1>).
- The introduction of sustainable public procurement procedures by municipalities.
- Experimental projects in urban regions, aimed at developing, testing and demonstrating new ideas, involving national public authorities, cities, businesses and researchers, and partly delivered through the Innovative Cities (INKA) programme (which focuses on 12 cities and five themes, including the bioeconomy, and sustainable energy)³, and the Strategic Centres for Science, Technology and Innovation (SHOK) (which include Clic Innovation Ltd on bioeconomy, energy and cleantech); Funding to businesses and universities/research institutes, with a particular emphasis on cross-sectoral and collaborative approaches;
- Inputs from the higher education institutions and some of the industry federations into measures (including teaching plans) aimed at improving education and training to supply expertise for the bioeconomy.

The most important role of many organisational stakeholders in the strategy’s implementation involves their engagement in voicing opinions and ensuring that their concerns are included in the strategy. The National Bioeconomy Strategy foresees the creation of two bodies to ensure ongoing

² Linnunmaa provides expert services related to regulatory compliance and environmental management. <http://www.linnunmaa.fi/en/about+us/>

³ Although the Government has taken a decision to discontinue the programme, projects will continue in the future in the bioeconomy sector which is one of the Government’s key priorities.

discussions between the various stakeholders (<http://www.biotalous.fi/biotalouspaneeli-edistaa-strategian-toteutusta-ja-biotalousalan-vuorovaikutusta/>):

- The Bioeconomy Panel was set up on 11 November 2015 by the Ministry of Employment and the Economy to promote the implementation of the National Strategy; to facilitate dialogue between the public administration, research, industry and non-governmental organisations; to interact with programmes with same aims and with the EU's Bioeconomy Panel; and to act as an advisory body to central government. The Panel's term of office lasts until 30 April 2019 (see Infobox 4).
- The Bioeconomy Forum is the operational arm of the Bioeconomy Panel. It prepares presentations for the Bioeconomy Panel on needs relating to R&D and innovation, and implements the Panel's proposals. The Forum was set up by the VTT, and includes representatives from the Association for the Chemical Industry, the Finnish Bioeconomy Cluster (FIBIC), the Natural Resources Institute (LUKE), the Environment Institute, the Ministry of Agriculture and Forestry and the Ministry of Employment and the Economy.

Infobox 4: Members of Finland's Bioeconomy Panel

The Panel is chaired by the Minister of Economic Affairs and the Minister of Agriculture and the Environment.

Public bodies: the Ministry for Foreign Affairs, the Ministry of Finance, the Ministry of Education and Culture, and the Ministry of Social Affairs and Health; FINPRO (Export Finland, Visit Finland and Invest in Finland), the Funding Agency for Innovation (TEKES), TAPIO consulting services, the Transport Safety Agency (TRAFI), the Natural Resources Institute (LUKE), the Environment Institute (SYKE), Metsähallitus (a State-owned enterprise that administers over 12 million hectares of land and water), the National Board of Education, the Regional Councils, and the Centres for Economic Development, Transport and the Environment (ELY Centres).

Business and employee organisations: the Confederation of Industries (EK), the Food and Drink Industries' Federation, the Energy Industries, the Federation of Technology Industries, the Association for the Chemical Industry, the Forest Industries, the Sawmills Association, the Federation of Enterprises, the Central Union of Agricultural Producers and Forest Owners, the Confederation of Health Food, the Hospitality Association (MaRa), the Central Organisation of Trade Unions (SAK), the Trade Union Confederation for highly educated people (AKAVA), and the Confederation of Professionals (STTK).

Research and education: the Technical Research Centre (VTT), SITRA, the Academy of Finland, the Finnish Universities (UNIFI ry), the Rectors' Conference of Universities of Applied Sciences (ARENE), CLIC Innovation, and Motiva (a specialist in energy and material efficiency).

Non-governmental organisations: the World Wildlife Fund (WWF), and the Association of Nature Conservation.

Source: Ministry of Employment and the Economy (2015b) *Kansallisen biotalouspaneelin asettaminen, Asettamispäätös*, 3 November 2015

Moreover, various business-led events have taken place in 2014-15, aimed at furthering interaction between different stakeholders:

- Business associations have led the regional Bioeconomy Dates (*biotaloustreffit*), which aim to encourage business activity and innovation. The first event took place in Helsinki in autumn 2014 and others followed elsewhere in 2015. The dates aim to stimulate discussion (e.g. on: what types of partnerships and expertise are businesses looking for? How could the use of raw materials and technologies be made more efficient? What methods could be used to accelerate innovation in the bioeconomy and circular economy?). The events are organised with local actors, the Food and Drink Industries Federation, the Association for the Chemical Industry, the Forest Industries, the Federation of Technology Industries, Finnish Bioindustries, the Energy Industries, the Ministry of Agriculture and Forestry, the Ministry of Employment and the Economy, VTT, and TEKES (<http://www.biotalous.fi/biotalousstreffit-jatkuvat-maakuntakierros-alkaa-syyskuussa/>).

- Other business technology events have also focused on the bioeconomy. For example, during the Slush technology event, the Slush Evening for Circular and Clean Solutions provided opportunities for large businesses to seek out water, energy, bioeconomy and circular economy solutions from start-up businesses (<http://www.kauppalehti.fi/uutiset/slushiin-uusia-bio-ja-kiertotalouden-kilpailuja/a7bduqTL?ref=twitter:68ac%3Fref>).

4.3.2 Individual citizens as target groups

Some of the measures outlined in the National Strategy directly target the wider public, notably:

- Communication campaigns relating to bioeconomy and sustainable products and services;
- Support for (international) standardisation and certification of bioeconomy products and services;
- Efforts to increase young people's awareness of education and employment opportunities relating to the bioeconomy; and
- Investment in education and training.

Policy-makers' efforts to engage the general public on the bioeconomy have focussed on the provision of information and have included:

- Demonstration and discussion events linked to roadshows and fairs, including the Forest Fair, which was held in Helsinki on 6-8 November 2015 and targeted the general public (<http://www.expodatabase.com/tradeshows/metsae-helsinki-forest-fair-49098.html>). This is a major national event, which reaches a wide audience, with over 400 exhibitors of forest-related products and services (including mechanical engineering, banking, publishing and tourism) and over 45,000 visitors. The national ministries and business stakeholders made presentations at the fair on bioeconomy innovations and practical applications, and also ran sessions for school children (with c. 9,000 pupils invited to attend) (<http://www.messukeskus.com/Sites4/Meidanviikonloppu15/Kavijat/tapahtumat/Sivut/Metsa.a.spx>).
- Information channelled through the media, including articles in newspapers and magazines. In addition, a television documentary series on the future of Finland (*Suomen tulevaisuus*) in early 2016 will dedicate three programmes in the first series to the bioeconomy (channel MTV3).

Beyond the scope of the Strategy, some organisational stakeholders are actively informing and consulting citizens on specific issues that relate to the bioeconomy:

- Environmental NGOs/CSOs are particularly strongly focused on communicating with citizens, both via traditional channels and via social media (e.g. on sustainable consumption and production, and international/local environmental responsibility) and aim to encourage the citizens to adopt more responsible ways of living;
- Some individual businesses have also aimed to engage with citizens (especially those in consumer-oriented sectors such as food, forestry and energy).

4.4 Monitoring, review and evaluation

The strategy will be monitored by the national Ministry of Employment and the Economy and other responsible national ministries, as well as by the Bioeconomy Panel. The National Strategy sets out the indicators and data sources to will be used for monitoring the strategy (see Table 2).

The Strategy is due to be evaluated and updated in 2016 (<http://valtioneuvosto.fi/hallitusohjelman-toteutus/biotalous/karkihanke2>). A call for tender will be issued for the evaluation and the policy makers anticipate that the evaluation will involve a wide range of stakeholders.

Table 2: Data used for monitoring the Finnish Bioeconomy Strategy

Key measurement	Indicators	Data sources
Growth of bioeconomy and its significance in the national economy	Bioeconomy output Value added Number of people employed	Statistics Finland
Added value produced for natural resource use	Raw material input Value added to raw material streams	Finnish Environment Institute, Thule Institute, Statistics Finland
Environmental benefits from the bioeconomy	Raw material inputs used Greenhouse gas emissions avoided	Finnish Environment Institute Centre, Thule Institute, Statistics Finland
Sustainability of the bioeconomy	Total use of natural resources Growth and harvested volumes of standing timber, cereal crops, fish, endangered species, urban waste Indicators to be developed for: Ecosystem services Environmental and resource efficiency Wealth and environmental assets	Statistics Finland, Luonnontila.fi

Source: Ministry of Employment and the Economy (2014) *Kestävää kasvua biotaloudesta, Suomen biotalousstrategia* (Finland's Bioeconomy Strategy), Helsinki, p.31

4.5 The benefits of participation

4.5.1 Business, research and civil society organisations

The participation of business research and civil society stakeholders in the National Strategy is generally seen to have been broad, open and interactive. Active involvement has been facilitated by Finland's relatively small population and by the open culture of the public administration (including the availability of civil servants to engage in discussions and respond to questions). However, as presented below, opinions vary on the extent to which the views of the various stakeholders actually influenced the strategy or whether discussions served primarily as one-way information channels. Indeed, although policy-makers provided organisational stakeholders (including business, research and civil society organisations) with information and invited them to provide their views as inputs to the strategy-writing process, the writing process was undertaken exclusively by governmental stakeholders (namely the Executive Group and the Working Group).

Most stakeholders interviewed saw the main benefit of the broad stakeholder participation in terms of the generation of different viewpoints and the mobilisation of varied types of expertise covering a wide range of sectors. This is seen to have increased the satisfaction of some stakeholders with the final strategy, compared to what would have been the case if the strategy document had been prepared solely by the national ministries. Key inputs to the strategy from broader stakeholders include:

- The view of businesses that there was a need to address cumbersome legislation and licensing practices, which led to the following text being included in the strategy document

“...we must ensure that no unnecessary administrative burdens or regulation is imposed on the industry exploiting biomasses compared to our competitors. Creation of new business is promoted through smooth and flexible permit procedures” (Ministry of Employment and the Economy, 2014, p.21).

- An exchange of ideas between the National Strategy and a regional biovalley strategy project (<http://www.biolaakso.fi/en/biovalley-info>), which was developed at the same time in Central Ostrobothnia. The regional stakeholders' input to the National Strategy included lessons on how cross-sectoral and cross-disciplinary cooperation (e.g. between different research institutes and between different teaching and training organisations) could be carried out in Finland as a whole, as well as ideas for linking expertise on linking the organic and inorganic chemicals sectors in the bioeconomy.

Interviewees also noted that a further benefit of the participatory nature of the strategy-building process was that it encouraged a range of stakeholders to develop their own views on the bioeconomy and, for example, stimulated the establishment of a regional bioeconomy forum to provide practical inputs into the implementation of the national strategy.

4.5.2 Individual citizens

The national-level policy makers argue that the development of the National Strategy has increased public awareness of the bioeconomy and what it involves, although they recognise that the impact on individual citizens has been very limited. Communication activities for individual citizens have encompassed a number of different tools including open events, websites (www.biotalous.fi and www.otakantaa.fi), social media and newspaper articles. In many instances, information dissemination has focussed on specific themes and case studies of the bioeconomy (e.g. relating to energy, food, forests, and chemistry) in order to capture the attention and interest of the general public.

It is difficult to identify any specific groups of citizens that have benefited, as the direct involvement of citizens in the strategy-building and implementation process has been limited. Although bioeconomy events have been open, they have primarily attracted organisational stakeholders or those with a specific interest in themes such as forestry. This is also the case for the various online discussion platforms (i.e. websites and social media), although their capacity to reach to the general public has been broader. Some information awareness campaigns have included specific targeting at school pupils (e.g. the forest fair, and the science centre's bioeconomy night).

4.6 The challenges and difficulties of participation

4.6.1 Business, research and civil society organisations

The interviewees suggested that a first set of challenges of broad-based participatory processes relates to the difficulties of consulting a wide range of organisations during the strategy design phase, notably:

- Most stakeholders agree that one challenge is the time and multiple discussions needed to reach agreement on a common approach, even though the final document is seen as brief and rather general. For instance, according to one interviewee representing the business sector, “The strategy document appeared to be always in some sort of consultation phase and it took months to get an update on progress...Even the finalisation of the strategy document took at least a year, and we thought ‘does this really need to be so difficult?...and what is it that we are waiting for and how can the process be made more efficient?’;”
- Interviewees also agreed that the need to find a balance between different viewpoints is a major challenge, with business actors tending to emphasise economic opportunities, and environmental organisations focusing on sustainability and nature protection;

- Another difficulty noted is that many stakeholders are participating in the development and implementation of multiple policy strategies. The simultaneous development of strategies such as the Cleantech Strategy has led to questions over the added value of the Bioeconomy Strategy.

A second set of issues identified by interviewees relates to the extent to which different stakeholders were represented in participatory processes and to which they feel that their views were taken into account. Key issues raised include:

- Research and CSO, as well as one interviewed regional organisation, felt that the final text of the strategy was agreed by the Executive and Working Groups and mainly took account of the views of the leading national ministries;
- NGOs/CSOs argued that industry views had a stronger influence than did the views of environmental or societal groups, partly because the Bioeconomy Strategy was seen largely as an economic strategy. One civil society sector opinion is that other “views may be listened to, but are not heard” nor reflected in the final strategy document. A key example concerns the issue of sustainable felling, to which the strategy’s commitment became diluted over time, with the final document including only a general phrase, namely: “in addition to securing felling opportunities and growth, protecting forest biodiversity and natural values must also be part of exploiting the forests” (Ministry of Employment and the Economy, 2014 p.14).
- Similarly, NGOs/CSOs noted that the strategy design process lacked a mechanism for ensuring the balanced representation and influence of social, environmental and economic actors. One civil society interviewee stated that “there are strong lobbying organisations in the bioeconomy, which are driven by economic interests....therefore it is difficult to bring in more critical or opposing views, particularly now that Finland is not doing so well economically”. Furthermore, they noted that, although the Bioeconomy Panel has broad participation on paper, this is not necessarily respected in practice. NGOs/CSOs voiced concerns that governmental bodies saw the representation of environmental organisations on the panel as a ‘tick-a-box exercise’, rather than a genuine commitment to ensuring that these organisations have an equal voice alongside other stakeholders.

A third group of challenges noted by interviewees related to the implementation of the strategy, including:

- The regional and research stakeholders for instance noted the need for further action to ensure the active engagement of all relevant stakeholders and especially to build linkages between different actors (e.g. including those involved in the regional bioeconomy strategies);
- The need to recognise that some business stakeholders are direct competitors, which can limit prospects for cooperation in some specific fields.

A last set of issues concerns the strategy’s rationale and goals, which focus primarily on economic growth and jobs, although it also notes the need to secure the natural ecosystem:

- Civil society stakeholders argue that the strategy’s emphasis on business and economic development dominates over the limited environmental dimensions, which in turn means that it will not contribute significantly to major environmental challenges such as loss of biodiversity and ongoing climate change;
- Civil society stakeholders also question the term “bioeconomy” and noted examples used in other countries such as the phrase, “circular economy”. They argued that an alternative term is needed which could better capture the more fundamental societal and organisational changes and a deeper concern for the availability of natural resources, rather than a primary focus on technological and business innovations.

4.6.2 Individual citizens

Stakeholders agree that the active influence of individual citizens on the strategy has been very limited, with the main focus of activity instead seen in terms of providing information to the general public via the internet, social media and events.

Interviewees also noted that interest from individual citizens in the bioeconomy is limited. Even though various events have been open and have been advertised in the media, it appears that the general public needs some level of personal interest in the topic to attend events, access the website, or engage in social media discussions.

A key challenge is that, although policy-makers state that awareness of the bioeconomy has increased, the theme remains broad and vague, so that it is difficult to provide meaningful information and for citizens to take part in discussions. Most interviewees agreed with the view of one governmental stakeholder that “policy-makers have relied on the fact that information is sufficiently available and that individuals will find this information”. Furthermore, they noted that “to inform the public about what the bioeconomy means in practice has been a constant challenge...and so strategic discussion has been very limited at the level of the citizens”.

In contrast, there are more active discussions on specific issues that relate to the bioeconomy (e.g. energy, food, forests and chemistry) and which have a more practical impact on people’s lives. There is also strong interest in environmental issues in Finland, such as how the forest nature will cope with the increased demand for tree-felling to supply the bioeconomy. This theme is of particular importance because forests are a key source of biomass for the bioeconomy in Finland, and are also familiar and important to the overwhelming majority of individual citizens.

4.7 Next steps

The strategy is due to be updated in 2016. A number of events are listed on the website www.biotalous.fi, including the following:

Table 3: Events under Finland's Bioeconomy Strategy in 2016

Date	Event
12-15 January 2016	Finpro's 'Waste-to-Energy and Biomass sector visit Chile'
14 January 2016	Seminar on the utilisation of horse manure, which is targeted at all equine practitioners, policy makers, public authorities and researchers. The seminar is organised by the Natural Resources Institute Finland, the Ministry of Agriculture and Forestry, and the Ministry of Employment and the Economy, Helsinki
19-20 January 2016	Game Days 2016, Tampere, with a focus on game and hunting in the Finnish bioeconomy
27 January 2016	Companies and biodiversity – annual seminar of the Corporate Responsibility Network (FIBS) 2016, Helsinki
2 February 2016	Wetlands in the world of bioeconomy, Helsinki
3-4 February 2016	Networking days of bioeconomy, Levi
10 February 2016	Circular and bioeconomy as a business, Jyväskylä
16 February 2016	Biogas in south-west Finland – seminar, Turku
19 February 2016	Key indicators supporting the green growth in Finland – links to current strategies and key projects, Helsinki
10-11 March 2016	Fish week 2016 – 'blue bioeconomy – opportunity for growth', Helsinki
7-8 April 2016	Symposium on wood product industries in future bio-economy business, Lahti
9 April 2016	Find wellbeing in nature – seminar, Helsinki
12-14 April 2016	Business from nature – idea bakery, Kokkola
14-14 May 2016	SciFest for school pupils on the theme of bioeconomy, Joensuu
24-25 May 2016	Bioeconomy event (SINAL) in France targeted at businesses and research institutes to find partnerships for the production and commercialisation of their bioeconomy products.
24-26 May 2016	International Wood Biorefining Week, Stockholm
15-17 June 2016	Forum Wood Nordic 16, Espoo
15 September 2016	Growing in forests-seminar, Anjala
19-23 September 2016	European Ecosystem Services 2016 conference, Antwerpen
5-6 October 2016	NordBio Conference, Reykjavik

Source: <http://www.biotalous.fi/suomi-kehittaa/biotalousden-tapahtumakalenteri/>

5 Case study 2: Germany's National Bioeconomy Strategies

The second case study focuses on two related bioeconomy strategies developed by the German federal government: first, the National Research Strategy for the Bioeconomy 2030, published in 2010 by the Federal Ministry of Education and Research (BMBF, 2010) and, second, the National Policy Strategy for the Bioeconomy, approved by the federal government on 17 July 2013 and published by the Federal Ministry of Food and Agriculture in March 2014 (BMEL, 2014).

Various factors help to explain the policy emphasis on the bioeconomy in Germany. First, the bioeconomy plays an important part in Germany's national economy (see Infobox 5) and the country's manufacturing strengths, based on technological innovation and a highly skilled workforce (BMWi, 2016), suggests that there is also considerable scope for the sector's development. Second, a significant percentage of the German population has strong environmental concerns (Goodbody, 2002; Uekötter, 2014), as exemplified by the well-established role of the Green Party in Germany's electoral system (Jachnow, 2013). This concerned populace forms the basis for potential domestic markets for bioeconomy products and also contributes to debates over potentially problematic aspects of the bioeconomy (e.g. the impact of biomass sourced from developing countries international food security and deforestation).

The broad-based participatory approach to Germany's bioeconomy strategies is rooted in the country's governmental system which is characterised by neo-corporatist stakeholder participation and also, to a degree, by citizen-participatory approaches.

Infobox 5: Germany's Bioeconomy Sector

The German National Policy Strategy estimates that, in 2007, the bioeconomy accounted for 12.5 percent of total national employment and 8 percent of gross value added. Key sectors are the food and feed industries, as well as forestry and wood (including related services), which together accounted for 97 percent of bioeconomy employment and 96 percent of gross value added in 2007.

Source: BMEL (2014) Nationale Politikstrategie Bioökonomie: Nachhaltige Ressourcen und biotechnologische Verfahren als Basis für Ernährung, Industrie und Energie, Berlin, p.15

This section begins by outlining how and why the two federal bioeconomy strategies were developed and their content, before examining how different stakeholders participated in the design, implementation and review of the strategies. It then considers the benefits and challenges of participation, from the viewpoint of the people interviewed for this report, and notes the next steps for participation in Germany's bioeconomy strategies.

5.1 The background of the strategies

5.1.1 How and why the strategies were developed

The federal government's coalition agreement for 2009-13 stated that R&D and the application of biotechnologies represented an important economic and scientific opportunity for Germany, and included a commitment to develop a strategy for a knowledge-based bioeconomy (BMI, 2009). This led to the 2010 'National Research Strategy for the Bioeconomy 2030 – Our Way to a Bio-based Economy', with a €2.4 billion research budget in 2011-16 (see also Bioökonomierat, 2010).⁴

In 2011-12, there were discussions about the need for a broader policy strategy on the bioeconomy, to complement the research focus of the first strategy but taking account of the wider range of policy fields and instruments that relate to the bioeconomy. This approach was influenced by the publication of broad strategies by the USA and Russia, as well as by the programmes and projects being funded by industry and by Germany's Research Strategy. In 2012-13, the Federal Agriculture Ministry took

⁴ In the following, referred to as the 'National Research Strategy'.

on responsibility for developing the National Policy Strategy for the Bioeconomy in 2013, which brings together a range of interventions across diverse policy fields, including industry and energy; agriculture, forestry and fisheries; climate and environment; and research and development.

Infobox 6: Bioeconomy forums in Germany

The **Bioeconomy Council** is an independent committee that was set up by the BMBF and BMEL in 2009 to advise the federal government on the implementation of the National Bioeconomy Research Strategy and the National Bioeconomy Policy Strategy, and which aims to ensure good economic and business conditions for the development of a bio-based economy and to promote dialogue with stakeholders. The second phase of the Council started in 2012, and the Council now has 17 members from the fields of scientific research and business. It does not include representatives of NGOs or CSOs (e.g. consumer protection groups). Similarly, there are no members from agricultural businesses, although these were represented in the first Council.

The federal authorities' **Inter-ministerial Working Group on the Bioeconomy** is made up of civil servants from different federal ministries. The Group meets four times a year and acts as a forum for sharing information and ensuring coherence across different federal ministry activities relating to the federal Bioeconomy Policy Strategy and the Research Strategy.

The federal-Länder **Working Group on Sustainable Raw Materials** is composed of civil servants from different federal and Land ministries, and discusses a range of themes including the bioeconomy.

Source: <http://www.biooekonomierat.de/>

5.1.2 The content of the strategies

The National Research Strategy examines global challenges, provides an overview of bioeconomy research in Germany, sets out a vision of a sustainable bio-based economy which ensures the global supply of food and also generates high-value products from renewable raw materials. Its strategic goals are (i) for Germany to become a dynamic location for research and innovation in bio-based products, energies, processes and services and (ii) for this research to take a responsible approach to global food supply and to the protection of the climate, resources and environment.

The National Research Strategy emphasises that the bioeconomy covers a wide range of activities, economic sectors and research fields and institutes, and that it depends on integration across disciplinary, institutional and national boundaries. Further, it is seen to require dialogue with society in relation to research findings, and so to involve the active participation of 'the interested public' as well as science and business. The strategy also identifies a series of measures (see Infobox 7) and outlines how the strategy is to be implemented - via public funding for research institutes and projects; steps for monitoring and evaluating the strategy; and framework conditions, such as the availability of capital and skills, and a favourable regulatory context for innovation.

Infobox 7: Germany's National Research Strategy for the Bioeconomy 2030

The strategy sets out measures relating to research questions, methods, organisation, cooperation, and potential applications on the following themes:

- Safeguarding worldwide food
- Making agricultural production sustainable
- Producing healthy and safe food
- Using sustainable raw materials in industry
- Developing biomass-based fuels

It also outlines horizontal activities relating to:

- Ensuring an interdisciplinary approach to skills development
- Accelerating the transfer of scientific knowledge into practice
- Exploiting potential for international cooperation and knowledge sharing
- Intensifying social dialogue

Source: BMBF (2010)

The National Policy Strategy has three horizontal fields of action and five thematic fields of action, each of which includes a series of concrete measures (see Infobox 8). It also sets out a number of goals; describes the challenges and drivers of the bioeconomy; and assesses the economic and technological focus of Germany's bioeconomy (i.e. industrial biotechnology; bio-based products and bioenergy; and food and feedstuffs). It emphasises that the growth of the bioeconomy depends on cooperation between business and research, between partners from different countries, and between disciplines and institutions.

In addition, some individual Länder (i.e. elected sub-national policy authorities with significant decision-making, spending and implementation powers in fields specified in the federal constitution) have developed or are in the process of developing their own bioeconomy strategies and measures (BMBF & BMEL, 2014). An individual Land ministry is generally responsible for developing these strategies, which may however be designed or overseen by working groups or committees at Land level, and may be approved by the individual Land government. These entities may have contact with the federal Bioeconomy Council and federal ministries responsible for national bioeconomy strategies. The role of Länder is important in e.g. education about the need to develop more sustainable products and ways of living because it is the Länder, rather than the federal ministries, which are responsible for the education system.

Infobox 8: Germany's National Policy Strategy for the Bioeconomy

Three horizontal fields of action

A: A coherent policy framework for a sustainable bioeconomy e.g.

- Creation of an Inter-ministerial Working Group on the bioeconomy
- Closer links between federal advisory committees

B: Information and social dialogue e.g.

- Information campaigns for the public/consumers
- A sustainability trademark for products and services
- Federal dialogue with business, science and civil society

C: Education and training e.g.

- Framework for professional training in sustainable development

Five thematic fields of action

D: Sustainable production and provision of renewable resources e.g.

- Measures relating to agriculture, forestry & fishing

E: Growth markets, innovative technologies and products e.g.

- Funding for R&D&I, including business/science cooperation
- Support for loan and venture capital funds for new innovative firms

F: Processes and value added networks e.g.

- Funding for innovation relating to processes and value chains

G: Competition for land use e.g.

- Measures to reduce demand for using agricultural land for other uses
- Orienting biomass funding towards climate change reduction

H: International context

- Measures for the bioeconomy and sustainability internationally

Source: BMEL (2014)

Infobox 9: Related German federal policy strategies

The 2013/14 strategy builds on a number of other federal strategies e.g.

- Sustainability Strategy (2002), setting goals for all federal policy fields
- Bioeconomy Research Strategy (2010), part of the 2010 federal High Tech Strategy 2020
- Strategy for Environmentally Friendly and Affordable Energy Supply (2010)
- Raw Materials Strategy (2010)
- German Resource Efficiency Programme (2012)
- Bio-refineries Roadmap (2012)
- National Strategy for Biodiversity (2007) and Strategy for Agricultural Biodiversity
- Action Plans for the Use of Sustainable Raw Materials (2009/2010)
- National Action Plan for Renewable Energies (2010)
- Strategy Paper on Bio-energy materials: Opportunities and Risks for Developing Countries (2011)
- Forest Strategy 2020 (2011)
- Federal Mobility and Fuel Strategy (2013)

Source: BMBF (2010), BMEL (2014)

5.2 National Bioeconomy Research Strategy

5.2.1 Participation during strategy design

Work on the National Bioeconomy Research Strategy was initiated by the Federal Ministry of Education and Research in 2009 in the context of the federal government's High-Tech Strategy, with the aim of providing policy certainty and increasing the theme's political profile. Other federal ministries were consulted on the strategy, particularly the Federal Ministry for Food and Agriculture, as well as the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, and the Federal Ministry of Economic Affairs and Energy.

The strategy was developed over a period of 18 months, and involved an ongoing dialogue between the BMBF and the Bioeconomy Council, which is made up of representatives from the fields of business and research and advises the federal government (see Infobox 6). The Council provided comments on an early draft of the strategy, drawing on its working groups, which developed position papers on particular themes (animals, plants, industrial use, white biotechnology, and land). The strategy was approved by the federal government, with the support of the Federal Ministry of Education and Research, the Federal Ministry of Food and Agriculture and the members of the Bioeconomy Council.

However, other stakeholders (e.g. the Länder, local authorities and CSOs/NGOs) did not participate in the design of the Research Strategy. Similarly, there was no engagement with the wider public, and there was no public website or provision of information via social media.

5.2.2 Participation during strategy implementation

The Research Strategy includes two main sets of activities. First, it sets out research questions, methods, organisation, cooperation, and potential applications on five research themes (see Infobox 7). Second, the strategy includes a series of 'horizontal activities', which aim:

- To ensure an interdisciplinary approach to skills development e.g. via support for research cooperation between disciplines and between institutions;

- To accelerate the transfer of scientific knowledge into practice, via measures focused on business, especially SMEs, such as support for start-ups, exchange of personnel, and research cooperation;
- To exploit potential for international cooperation and knowledge sharing e.g. via participation in international research funding programmes; and
- To intensify social dialogue via public education; action by researchers and businesses to engage in participatory dialogue with the public; the provision of information in accessible formats through various communication channels; and funding for research into e.g. the ethical, legal and social aspects of new technologies, and environmental and animal protection. These include, for example, brochures and other information material.

Funding is mainly allocated by the unit in the BMBF which is responsible for the bioeconomy, but also via other units in the BMBF and by other federal ministries, notably the Federal Ministry of Food and Agriculture and the Federal Ministry of the Environment. Measures are implemented via thematic funding calls, which are either published and administered by the individual federal ministries or by agencies which are subordinate to the ministries (notably Projektträger Jülich (<https://www.ptj.de/biooekonomie>) which implements research and innovation funding programmes on behalf of the BMBF).

The process of selecting research themes and designing funding calls or programmes is led by the ministries but includes regular consultations with other stakeholders, particularly research organisations and businesses but sometimes also NGOs/CSOs (such as the Nature and Biodiversity Conservation Union, NABU).

As the focus of the strategy is on research, programmes have predominantly allocated funding for research and innovation projects undertaken either individually or in cooperation between universities, research institutes and businesses.

Policy interviewees noted that, since 2012, when the second phase of the Bioeconomy Council started, there has been a move towards more frequent dialogue with a wider range of stakeholders, including NGOs/CSOs. The new Bioeconomy Council (set up after the Policy Strategy was finalised, see Section 5.3) has aimed to engage more proactively in dialogue with consumers, citizens and NGOs/CSOs (e.g. by organising and participating in events), specifically in order to address concerns that the Council represented a relatively narrow set of business and research interests. Similarly, the BMBF states that it endeavours to meet and draw on the views of organisations with different viewpoints, including those critical of certain aspects of the bioeconomy (e.g. genetic plant technologies). Policy-makers feel that the main outcome to date of these dialogue processes is that a wider range of organisations are able to voice their views on the strategies, and this is seen to occur in a constructive way. However, it is not yet the case that policy-makers or businesses are developing concrete solutions in cooperation with CSOs/NGOs, as all participants are still testing out what is possible.

NGOs/CSOs welcome the increased engagement of the Bioeconomy Council with a range of different stakeholders and with the general public, and see its role as increasingly transparent, open for public debate and inclusive. They also see the Council as an appropriate actor for organising dialogue and information events with the wider public.

The BMBF has set up a website (biooekonomie.de) for stakeholders and citizens with information on the bioeconomy in Germany and other countries; research undertaken; publicly-funded research projects; and funding opportunities. It also includes videos, targeted at school- and university students, on a range of bioeconomy activities.

5.2.3 Participation during strategy review

A review of the Research Strategy is currently being led by the BMBF, which has monitored progress and has, in August 2015, published a call for an external evaluation of the strategy, which is due to report in 2016 (http://ausschreibungen-deutschland.de/234021_Evaluation_der_Nationalen_Forschungsstrategie_BioOEkonmie_2030_2015_Berlin). The evaluation will focus on whether the strategy's 30 funding programmes and 1700

projects have met the strategy's goals, and on the strategy's effectiveness and efficiency in meeting societal challenges. It will also develop recommendations for a follow-on federal research strategy on the bioeconomy.

Some participatory activities have taken place in relation to the review of the Research Strategy, notably a mid-term conference, organised by the BMBF, to assess the progress of the Research Strategy, to which a range of stakeholders, particularly from the fields of research and business, were invited. In addition, the Bioeconomy Council provides feedback to the BMBF on progress, and will be consulted on the evaluation of the strategy.

CSOs/NGOs have not been involved in the monitoring or review of the Research Strategy. Similarly, although the impact of measures on the general public is monitored, the BMBF and other actors do not currently take steps to engage the public during the monitoring/review/evaluation of the strategy.

5.3 National Bioeconomy Policy Strategy

5.3.1 Participation during strategy design

There was wider and more active participation from different federal ministries during preparation of the Policy Strategy than in the design of the Research Strategy. In particular, the following federal ministries were active: the Federal Ministry of Food and Agriculture (BMEL), the BMBF, the Federal Ministry of Economic Affairs and Energy (BMWFi), the Federal Ministry for Economic Cooperation and Development (BMZ), the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB), the Federal Ministry of Transport and Digital Infrastructure (BMVI) and, to a lesser extent, the Federal Ministry of the Interior (BMI) and the Foreign Office (AA) (Bioökonomierat, 2015a).

The Bioeconomy Council also discussed the Policy Strategy during the design phase. In addition, the BMEL organised workshops to discuss a draft of the strategy, and invited a range of stakeholders, including agricultural and business sector associations, universities, NGOs dealing with environmental issues and with food security, and selected representatives of the Länder. Some CSOs/NGOs, however, noted that they did not participate in a structured way in decision-making processes, but instead were invited to informal events and also participated in official meetings where the strategy was presented and discussed.

However, membership of the Council was relatively narrow at this time although, after the Policy Strategy was agreed, the Council's membership was broadened, although it still does not include CSOs/NGOs.

Citizens did not participate in the design of the strategy, and no information or communication activities focused on citizens at this stage.

5.3.2 Participation during strategy implementation

The Policy Strategy covers three horizontal fields of action and five thematic fields of action (see Infobox 8) and its implementation draws on contributions from different organisations. There are varied views on the extent of cooperation. One policy interviewee stated: "The dialogue has been very positive, even when people have very different views. I feel that communication always involves dialogue which means not simply providing information but also listening and getting into discussion with people.... I think that open participation is what is needed. There are sometimes concerns if there is an individual or an NGO with a fixed viewpoint but that is rarely the case ie people want to get into dialogue. Some people think it is all about genetic engineering but it is possible to talk about that too."

In contrast, some CSOs/NGOs argue that their participation has been limited, and call for policy-makers to be more open towards more critical voices and to be more willing to cooperate with CSOs/NGOs in developing common instruments.

At the level of the strategy as a whole, the Bioeconomy Council is active in advising and providing views on the implementation of particular measures, often in response to requests from individual

federal ministries. Information flows are described as good; however, they occur on an ad hoc basis and there may be scope for more structured use of the Council.

At a more detailed level, the degree of stakeholder participation in implementation varies across the strategy's horizontal and thematic fields. Examples of specific projects with broad-based participation are provided in Infobox 10.

The first horizontal field focuses on policy frameworks. In addition to measures to ensure closer links between federal government advisory committees, it involves the creation of a Federal Inter-ministerial Working Group which meets 4 to 5 times per year and serves as a platform for exchange for both the Policy Strategy and the Research Strategy.

The second horizontal field targets information and social dialogue, including public information campaigns; a sustainability trademark for products and services; and dialogue between the federal government, business, science and civil society. Activities include:

- Large-scale events, in particular a conference organised by the BMEL in 2014 on the opportunities and perspectives of the bioeconomy, and the Global Bioeconomy Summit organised by the Bioeconomy Council in 2015;
- The Programme on Renewable Materials, which started in May 2015 and now includes "Information and social dialogue on the bioeconomy and sustainability" as one of its funding themes (whereas it previously only funded science and technology projects). The programme is funded by the BMEL and is managed by the Agency for Renewable Materials (fnr.de); it allocates resources mainly to applied research projects. Stakeholders, including CSOs/NGOs, have been consulted on the themes to be funded, which include: increasing familiarity, acceptance and use of bio-based processes, products and energies; dialogue leading to changes in consumer behaviour; knowledge exchange leading to greater production and use of renewable industrial materials and intermediate/end products; development of educational material and innovative pilot education measures; identifying societal expectations and opportunities especially for rural areas; studies, dialogue processes and the publication of results on moves to a bioeconomy; discussion of quality- and sustainability concepts and criteria; dialogue processes on stronger international cooperation; and the development of pilot projects involving network building and citizen participation.
- An initiative funded by the Programme on Renewable Materials, namely an expert committee of researchers, set up in summer 2015, to advise BMEL on best-practice strategies on citizen participation. Their input has led to plans for two events aimed at two-way dialogue: a) one focused on citizens (e.g. on what the bioeconomy is, and issues relating to food security and climate change); and b) one targeting businesses (e.g. on consumer expectations, and on production processes and product labelling);

The third horizontal field focuses on the development of a framework for professional training in sustainable development. The Bioeconomy Council has been consulted on this framework for the different aspects of initial and further training relating to the bioeconomy.

The five thematic fields of action target different policy areas, notably agriculture, forestry and fishing; R&D and innovation (including business/science cooperation, loan and venture capital funds for innovative start-up firms, funding for innovation relating to processes and value chains; measures aimed at reducing competition for land use; and international measures.

Infobox 10: Projects with CSO/NGO participation

The **Initiative for the Sustainable Supply of Raw Materials for the Industrial Use of Biomass (INRO, intro-biomasse.de)** was funded by BMEL and the Agency for Sustainable Raw Materials (FNR) and involved e.g. environmental and development NGOs, business associations, certification bodies, researchers and policy-makers. INRO aimed to identify methods (not including legislation or funding) to ensure that ecological and social aspects could be taken into account in the supply of biomass, focusing in particular on the certification of raw materials.

The **Research for Sustainable Development programme (FONA, fona.de)** is funded by BMBF and was revised in 2015, drawing on contributions from representatives from the fields of science, business, policy and civil society (including CSOs/NGOs). The central elements of the new programme are on the themes of the Green Economy, the City of the Future, and the Energy Change. Outcomes are channelled into government decision-making at federal and Land levels. The aim is to support processes of implementing change and so projects are based on applied work, involving cooperation between different stakeholders (e.g. businesses and local authorities, or a number of different CSO).

The **Centre for Development Research (ZEF, zef.de)** at the University of Bonn undertook a project, in cooperation with CSO/NGO, that aimed to develop a tool for certifying biomass imports from a food security viewpoint. It identified suitable criteria, operational indicators and verifiers for measuring the impact of biomass production on local food security, with a view to providing guidance for regional and national standard setting as well as for private certification systems.

5.3.3 Participation during the review of the strategies

The federal Inter-ministerial Working Group on the Bioeconomy is currently preparing a progress report on the Policy Strategy's implementation, to be led by BMBF, in cooperation with BMWi and BMEL. Moreover, a number of calls for studies will be launched in 2016, for a pilot period of 3 years. They will include a critical review of the measures already undertaken and an assessment of what remains to be done. As the strategy includes measures relating to information and dialogue, the progress report and studies will also cover this theme.

Stakeholders, including businesses, universities and CSOs/NGOs, have not been involved in the monitoring or review of the strategy. Although one policy-maker interviewee was keen to explore options for enabling CSOs/NGOs to participate in the review of bioeconomy strategies (e.g. by collecting views on what the goals of the strategy should be, and on which indicators should be used to measure effects), one CSO/NGO interviewee questioned whether they and other similar organisation would have the time and human resources to contribute effectively to these goals.

Similarly, although the impact of measures on the general public is monitored, there are no steps to allow the participation of citizens in monitoring/review.

Policy-makers state that it is too soon to evaluate the Policy Strategy, given that it was approved only in July 2013. However, policy-makers plan to consult the Bioeconomy Council on future evaluations.

5.4 The benefits of participation

5.4.1 Participation of business, research and civil society organisations

Interviewees from a range of different organisations see stakeholder participation as a means of potentially building more balanced strategies whose priorities better address the needs of a wider range of stakeholders. In particular, broader and more frequent participation can help:

- To address blind spots and to ask questions which would otherwise be neglected;
- To enable different opinions, assessments, weightings and interests to be taken into account and allow a new consensus to be built;
- To facilitate discussion on difficult issues (e.g. conflict over land use), which can help to build public acceptance of the bioeconomy and support the structural socio-economic changes needed for a more sustainable economy;

- To reduce implementation costs because it allows issues to be discussed and resolved at an earlier stage.

A representative of the Bioeconomy Council also argued that participation is important because new technologies can have redistributive effects among social and economic groups, and so it is necessary to enable representatives from different interest groups to voice their views.

A representative from a business association reflected on the structure of participation, arguing that it was helpful that the Policy Strategy, as designed by the federal ministries, provided a framework for stakeholder participation. They also felt that it was easier for the Bioeconomy Council, rather than the federal ministries, to initiate a dialogue with NGOs/CSOs and individual citizens.

5.4.2 Participation of individual citizens

Interviewees saw citizen participation as necessary for building public acceptance of the bioeconomy and in particular argued that:

- An active dialogue, education and the provision of information are a means of increasing citizens' awareness of the advantages and disadvantages of the bioeconomy and e.g. of convincing consumers that bio-based products may be worth buying, even if they are more expensive;
- Interaction with non-experts benefits businesses and researchers because it can also generate innovative ideas;
- Although there is a lack of public knowledge about the bioeconomy as a whole, people are aware of specific themes e.g. relating to agricultural land use.

Infobox 11: Citizen dialogue on the bioeconomy in Berlin

On Sunday 1 September 2013, the Bioeconomy Council organised an open forum for citizen dialogue on the bioeconomy in Berlin's Natural History Museum. It was attended by 80 people, including 54 members of the general public (with the remainder made up of Council members, organisers and moderators).

The forum aimed to encourage a non-technical discussion on social issues relating to the bioeconomy, via groups on four themes:

- Cities: What would tomorrow's liveable towns and cities look like?
- Consumption: How could we live without damaging the climate and environment?
- Food: How could 10 billion people have enough food in the future?
- Industry: How can industrial development become ecologically friendly?

The organisers took account of previous experience with citizen dialogue in other fields, which showed that it was difficult to attract a representative group of citizens who would be willing to discuss a complex and as-yet largely unknown theme. In order to reach a range of different people, the following methods were used:

- Letters to over 150 organisations in Berlin, with a likely wide range of interests and age groups (e.g. gardening, nature protection, various religions, car drivers, sports);
- The distribution of flyers in busy shopping streets and to local homes, and advertisements in local newspapers, magazines and newsletters;
- Participants were asked to register for the event online.

Sources: <http://www.biooekonomierat.de/aktuelles/dialogveranstaltung-neue-perspektive-fuer-die-ratsarbeit/>, and Bioökonomierat (2013) Auswertung Dialog zur Bioökonomie, 1. September 2013, Museum für Naturkunde in Berlin

5.5 The challenges and difficulties of participation

5.5.1 Participation of business, research and civil society organisations

Interviewees from different types of organisation noted the following challenges:

- Stakeholders have a range of different and sometimes conflicting interests, ideas and goals (e.g. businesses, researchers, policy-makers and CSOs/NGOs) and it is sometimes difficult to reach a consensus (e.g. one possibility is that NGOs may want a stronger emphasis on sustainability but that this raises costs for businesses and potentially reduces market demand for new products);
- The participation of many actors slows down and complicates decision-making processes.

Policy-makers identified further difficulties, namely:

- The wide range of viewpoints means that it is difficult to design a strategy that satisfies all stakeholders, and that takes account of opportunities as well as risks and finds the best possible compromise;
- If a broader range of stakeholders has a stronger voice in decision-making, this could mean that new ideas or change would be blocked;
- Concerns over the legitimacy of organisations with non-elected representatives, especially if their influence has an impact on the allocation of public funding.

CSOs/NGOs were more critical of the approach to participation. One noted: "I feel that we and other NGOs... always have to push to get our views heard... Organisations that are more critical are simply not invited to events... It would be good to sit with all the different stakeholders, including those who are very critical, and discuss more fully to see what positive could emerge. I see a risk that there is a divided approach – with one strand led by supporters, the other by opponents, and no dialogue between them." Key issues are as follows:

- A concern that policy-makers engage more strongly with businesses and researchers on bioeconomy strategies than they do with CSOs/NGOs; that CSOs/NGOs have to push to get their views heard; and that more critically-minded CSOs/NGOs are not invited to participate in events;
- CSOs/NGOs are not represented on the Bioeconomy Council;
- A lack of policy attention to issues of importance to CSOs/NGOs; for example, although the Policy Strategy covers aspects related to food security, there are concerns that this theme has not been strongly developed in practice (e.g. via a policy impact analysis);
- The predominant orientation of public funding towards scientific and technological projects, with only very small amounts of funding for projects emphasising social dimensions;
- The limited human and financial resources of CSOs/NGOs, which constrains their capacity to participate effectively and fully to the design, implementation and review of strategies, and which policy-makers could help to address by providing more funding to help NGOs develop their expertise and capacities;
- The requirement on CSO/NGO to co-fund projects, which has meant drawing on own resources collected via charitable donations. One CSO argued that some of the themes covered (e.g. food security; biomass and sustainability) are so important that they should be fully funded by the federal government;
- The number of different initiatives relating to the bioeconomy and sustainability and the lack of clarity over who is ultimately responsible for taking decisions on the bioeconomy strategies (e.g. the BMEL, the BMBF or the Bioeconomy Council) – which creates challenges for CSOs/NGOs to channel their participation efforts most effectively, given their limited resources;

- The varied interests and views of different CSOs/NGOs, which do not necessarily speak with one voice in relation to policy strategies and certainly have a range of different priorities; policy funding could potentially help CSOs/NGOs to engage in discussion between themselves in order to reach agreement on priorities and methods of cooperation.

From the viewpoint of research and cluster organisations, key concerns are that:

- Efforts to ensure the participation of a wide range of stakeholders (including NGOs, trade unions and individual citizens) from the very beginning would help to build public acceptance of the bioeconomy;
- Policy-makers could have taken more proactive steps to encourage different stakeholders to propose fields of action for the strategies;
- Scope for researchers to participate in implementing strategies partly depends on the willingness of businesses to cooperate with research institutes and this can be difficult, given that research projects have medium- to long-term goals, whereas businesses tend to focus on a short- to medium-term financial perspective;
- At the level of the EU as a whole, policy strategies and funding programmes for the bioeconomy may be orienting towards certain technologies which are developed by those firms that seem to be dominating, so that there is less focus on other promising technologies.

From the point of view of business organisations, the main issue is seen in terms of:

- The requirement of most funding programmes (e.g. for R&D and innovation) that recipients must provide 50 percent co-funding, which limits the participation of smaller firms in the implementation of these measures.

5.5.2 Participation of individual citizens

Interviewees from a range of different organisations felt that the participation of individual citizens was difficult because of:

- The complexity of themes associated with the bioeconomy;
- The abstract character of the national bioeconomy strategies which means that there is no real discussion of more concrete issues which are more interesting and relevant to citizens;
- Controversies surrounding topics such as genetic technology or conflicts over land use;
- A lack of knowledge among the general public so that individual citizens often do not feel secure enough to be able to voice their opinions and/or may reflect back 'expert' knowledge, rather than substantially different viewpoints;
- Possible negative experiences of everyday objects made of bio-materials, if these do not work well in practice or have negative side effects;

One policy-maker interviewee noted that there is more participation of individual citizens in relation to some other policy strategies, such as the Federal Strategy on Mobility and Fuels, which addresses more specific and concrete issues.

Interviewees felt that there was a need for:

- A shift away from an abstract, expert-based strategy towards a focus on specific practical issues which directly affect citizens in their localities, as this would facilitate more political and public discussion;
- Greater engagement by the media, including more critical journalism;
- Better communication and information campaigns which engage with citizens about the range and complexity of the bioeconomy, through channels which meet people in their everyday lives (e.g. exhibitions in places accessible to the general public, and local events);
- Funding for projects (e.g. run by stakeholder groups) which encourage public awareness;

- A long-term approach which sees citizen participation as a priority, including people with little knowledge at present;
- Use of social media, especially in order to reach younger citizens;
- Education on sustainable development at all levels with a view to encouraging greater participation in the longer term;
- A stronger emphasis on the potential environmental benefits of the bioeconomy, as some stakeholders who are in favour of shifts towards greater ecological sustainability are not aware of the opportunities presented by the bioeconomy;
- Genuine dialogue with citizens, aimed not only at informing but also at listening to and engaging with people's concerns (e.g. over genetic engineering and land use conflicts).

5.6 Next steps

A number of major activities are planned in Germany in 2016-17:

- The BMBF is planning to launch a call for tender for communication projects with civil society organisations in 2016, with individual projects starting in 2017. Further, the BMBF supports the information platform, www.biooekonomie.de;
- The BMBF will publish the results of an evaluation of the National Bioeconomy Research Strategy in 2016,
- The BMBF is also undertaking an evaluation of the federal research strategy on the bioeconomy and e.g. aims to organise a number of workshops in 2016, with broad stakeholder participation. This process may lead to an updating of the existing strategy or to the development of a completely new strategy. In either case, any new or revised document is likely to be published in 2017 and to include a range of research themes such as biology, information technology, engineering, agriculture, and chemicals.
- Several federal ministries are also developing a national monitoring system for the bioeconomy, drawing on economic and business data, as well as information on raw materials (sources, production methods, sustainability), and systemic aspects related to societal goals. The federal authorities are currently assessing what information can be collected and what aspects can be measured in practice, and then plan to commission research projects to develop the monitoring system.
- The BMEL has allocated €61 million to the Renewable Resources funding programme (*Förderprogramm Nachwachsende Rohstoffe*) in 2016 to promote innovative processes and technologies in the bioeconomy (<http://www.biooekonomie.de/BIOOEKO/Navigation/DE/Service/suche,did=185722.html?listBlId=161058&searchText=bmel>).
- On behalf of the BMEL and under the auspices of the FNR, an expert panel composed of researchers dealing with communications was created to advise on how to improve societal dialogue on bioeconomy.
- The Länder are increasing their engagement in bioeconomy topics e.g. in Greifswald (Land Mecklenburg-Vorpommern) €18 million is being invested in a new Life Sciences Centre that has a research focus on plasma technology and the bioeconomy.

6 Conclusions

6.1 Participatory approaches in Finland and Germany

In both Finland and Germany, a range of stakeholders has participated in various ways in national bioeconomy strategies. Table 4 and Table 5 provide an overview of three dimensions, namely:

- The participants (i.e. public bodies, businesses, researchers, NGOs/CSO, and citizens),
- The phase in which participation has occurred (i.e. strategy design, implementation, review),
- The ways in which stakeholders and citizens have participated, based on the three-way categories set out in Section 2 (Education, Dialogue, and Co-production of knowledge) but further sub-divided to provide a more accurate portrayal of the ways in which stakeholders and citizens participate in the strategies i.e.:
 - The provision of information by ‘experts’ to other individuals and organisations on the bioeconomy (e.g. communication campaigns about the bioeconomy);
 - The provision of information by ‘experts’ to others on the strategy (e.g. conferences to inform stakeholders about the design/implementation of the bioeconomy strategy);
 - Dialogue/consultation, whereby ‘experts’ consult and set up forums for debate on the strategy with other individuals and organisations (e.g. forums and panels which have the possibility to influence the design/implementation of the bioeconomy strategy);
 - Co-production of knowledge, based on cooperation between experts and interest groups in relation to elements of the strategy (e.g. funding to stakeholders to implement projects that they design and that contribute to the overall strategy);
 - Co-production of knowledge, based on cooperation between a range of experts, citizens and interest groups in relation to the entire strategy (e.g. responsibility for designing or implementing the whole strategy is shared between different stakeholders).

Table 4: Participation in Finland’s National Bioeconomy Strategy

	Information on the bioeconomy	Information on the strategy	Dialogue/consultation	Co-production of elements of the strategy	Co-production of the whole strategy
Government & Public bodies					Design Implement Review
Firms & Business associations			Design Implement Review	Design Implement	
Research institutes & Universities			Design Implement Review	Design Implement	
NGOs & CSOs			Design Implement Review		
Individual	Design	Design			

citizens	Implement				
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Table 5: Participation in Germany's National Bioeconomy Research and Policy Strategies

	Information on the bioeconomy	Information on the strategy	Dialogue/consultation	Co-production of elements of the strategy	Co-production of the whole strategy
Government & Public bodies					Design (P, R) Implement (P, R) Review (P, R)
Firms & Business associations			Design (P, R) Implement (P, R) Review (R)	Implement (P)	
Research institutes & Universities			Design (P, R) Implement (P, R) Review (R)	Implement (P)	
NGOs & CSOs		Design (P), Review (R)	Implement (R)	Implement (P)	
Individual citizens	Implement (P, R)				

Note: P = National Bioeconomy Policy Strategy, R = National Bioeconomy Research Strategy

Table 4 and Table 5 show a similar pattern in both Finland and Germany, whereby:

- Responsibility for decision-making and implementation of the strategies (co-production) as a whole lies mainly with governmental and public bodies;
- Other stakeholders, especially from the fields of business and research, but also CSOs/NGOs in Germany, are responsible for implementing elements of the strategies (project design and implementation);
- Business and research stakeholders have been consulted on, and have had the opportunity to influence, the design, implementation and review of the overall strategies;
- CSOs/NGOs' participation has been more limited although, at least in Germany, has expanded over time. In the design phase, CSOs/NGOs have been informed about the strategies and have only had opportunities to shape the strategies during the implementation and review stages;
- The main form of citizen participation has been through measures aimed at raising awareness of the bioeconomy; although citizens were also able to attend strategy-building workshops in Finland, their participation was very modest in practice.

6.2 Rationales for participation in Finland and Germany

There is a range of reasons why participatory approaches to public policy-making may be adopted or supported. The two case studies from Finland and Germany found that the policy-makers and other

stakeholders interviewed cited a range of different rationales in favour of participation (see Table 6). Section 3 examined three broad rationales for participatory approaches, namely:

- Instrumental or pragmatic rationales (Rowe and Frewer, 2004), which see participation as a 'tool' for raising public awareness, strengthening public trust and reducing conflict, with a view to smoothing the way for emerging technologies or policies;
- Substantive rationales, based on a recognition of the limitations of expert knowledge and viewpoints (Rowe and Frewer, 2000), and the need to take account of lay knowledge and opinions in decision-making processes in order to ensure that new developments are accepted and embedded in society;
- Normative rationales, where broad-based participation is rooted in perceptions of what makes a 'good society' (Rowe and Frewer, 2000), which emphasises that people who are likely to be affected by decisions should have the freedom to define whether these decisions are in compliance or in conflict with their own perception of well-being (Sen, 1999).

Table 6 illustrates that the interviewed stakeholders in both Finland and Germany cited a number of different rationales in favour of participatory approaches in national bioeconomy strategies and that these rationales did not simply fall into the 'instrumental' category of rationales, but also included more 'substantive' and 'normative' understandings of the need for participation. This is not altogether surprising, given that (as noted in Section 3) policy-making processes in both Finland and Germany incorporate participatory mechanisms across a range of policy fields, particularly involving formal institutions representing different societal groups (e.g. businesses, trade unions, civil society organisations), but also include a degree of citizen-based participation (Best, Augustyn and Lambermont, 2011).

Table 6: Rationales for participatory approaches

	Finland	Germany
Instrumental	To increase public support for activities with scope for growth - and characterised by innovation, skills & domestic biomass To encourage a shift in consumer behaviour	To increase public support for activities with scope for growth - and characterised by innovation & skills To increase awareness of bio-based products & encourage a shift in consumer behaviour To reduce implementation costs because issues can be resolved at an earlier stage To generate new ideas for businesses & researchers
Substantive	To mobilise the capacities and active support of the whole of society to enable a transition to a bio-based economy	To build a better strategy by addressing blind spots & asking questions which would otherwise be neglected To facilitate discussion on difficult issues, which can help build public acceptance of the bioeconomy & support the structural socio-economic changes needed for a more sustainable economy
Normative	To ensure that the views of different societal interests are taken into account in policy-making To take account of views on issues affecting nature & forests	To enable different opinions, assessments, weightings & interests to be taken into account & to allow a new consensus to be built To enable different interest groups to voice their views about the redistributive effects of new technologies

6.3 Challenges of participation

Table 7 provides an overview of interviewees' views of the challenges and difficulties associated with the broad participation of a range of different organisational stakeholders in national bioeconomy strategies in Finland and Germany, while Table 8 outlines both challenges and possible solutions noted by interviewees in relation to the participation of individual citizens in these strategies.

Table 7: Challenges related to the participation of organisational stakeholders

	Finland	Germany
All	<p>Time & discussions needed to reach agreement</p> <p>Difficult to find a balance between views & between economic / ecological goals</p> <p>Multiple policy strategies can overload stakeholders in terms of participation</p>	<p>Decision-making becomes slower & more complicated</p> <p>Stakeholders have different interests & goals so it can be difficult to reach consensus (e.g. economic vs. ecological goals)</p>
National policy-makers	<p>Difficult to reach a compromise that satisfies all stakeholders</p>	<p>Difficult to reach a compromise that satisfies all stakeholders</p> <p>Stronger participation can mean that new ideas or changes are blocked</p> <p>Concerns over the legitimacy of views of non-elected representatives</p>
Regional policy-makers	<p>Uncertainty about the impact of participation</p> <p>Need to do more to ensure the active engagement of all relevant stakeholders</p>	
Business	<p>Some businesses are direct competitors which can limit scope for cooperation</p>	<p>Co-funding requirement constrains scope for SMEs to get public funding</p>
Research organisations	<p>Strategy was mainly shaped by national ministries</p> <p>Need to do more to ensure the active engagement of all relevant stakeholders</p>	<p>Need to build-in broad participation from an earlier stage & more systematically</p> <p>Businesses not always willing to cooperate with researchers</p>
CSOs/NGOs	<p>Strategy was mainly shaped by national ministries and industry</p> <p>No mechanism for ensuring balanced influence of social, environmental and economic stakeholders</p> <p>Concern that policy sees CSO/NGO participation as a tick box exercise</p> <p>The word 'bioeconomy' does not reflect the scale of the change needed</p>	<p>Need to push to get views heard - critical voices are excluded</p> <p>Policy engages more strongly with business/research than CSOs/NGOs</p> <p>Lack of CSO/NGO representation on Bioeconomy Council</p> <p>Public funding mainly goes to technological not social projects</p> <p>Limited human & financial capacities constrain capacity to participate</p> <p>Co-funding requirement constrains scope for CSOs/NGOs to get public funding</p> <p>Varied views of CSOs/NGOs – inability</p>

		to speak with one voice
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Table 8: Challenges related to the participation of individual citizens

	Finland	Germany
Challenges	<p>Limited interest from citizens in the bioeconomy</p> <p>Discussion of the bioeconomy remain broad and vague</p>	<p>Complexity of themes linked to the bioeconomy</p> <p>The strategies are abstract and not linked to concrete issues</p> <p>Controversies (e.g. genetic technology, land use)</p> <p>Lack of knowledge among citizens so unwillingness to voice views</p> <p>Negative experiences with products made from bio-materials</p>
Possible solutions	<p>Link discussion of the bioeconomy to specific issues which are of interest & importance to citizens (e.g. forest nature, sustainability)</p> <p>Better communication to make citizens aware of the importance of their choices as consumers</p>	<p>Stronger focus on specific issues which directly affect citizens</p> <p>Greater engagement by the media</p> <p>Better communication campaigns which engage with citizens about the range and complexity of the bioeconomy</p> <p>Funding for projects which encourage public awareness</p> <p>A long-term approach which sees citizen participation as a priority</p> <p>Use of social media</p> <p>More discussion of sustainable development in the education system</p> <p>Emphasis on the potential environmental benefits of the bioeconomy</p> <p>Genuine dialogue with citizens, aimed not only at informing but also at listening to and engaging with people's concerns</p>

Most interviewees for both case studies demonstrated an understanding of both the benefits and challenges of participation and also voiced a clear commitment to finding new ways of broadening public participation in national bioeconomy strategies. The focus on participatory approaches to these strategies also seems to be increasing, with both Finland and, especially, Germany showing a growing emphasis on broad-based participation since in the past five years.

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Annex 1: List of Interviewees in Finland

Organisation	Type of stakeholder
Ministry of Employment and the Economy	Policy (national)
Ministry of Agriculture and Forestry	Policy (national)
Kokkolan seuden kehitys Oy	Policy (regional)
The municipality of Sodankylä	Policy (regional)
VTT Technical Research Centre of Finland Ltd	Research
University of Helsinki	Research
Finnish Innovation Fund, Sitra	Expert
Gaia Consulting	Expert consultancy
Tapio	Expert consultancy
Motiva	Business
Finnish Forest Industries	Business
The Chemical Industry Federation of Finland	Business
Confederation of Finnish Industries	Business
World Wide Fund for Nature (WWF)	Civil society
The Finnish Association for Nature Conservation	Civil society

Annex 2: List of Interviewees in Germany

Organisation	Type of stakeholder
Bioeconomy Council	Policy
European Commission, DG Research and Innovation (interviewee now retired)	Policy
Federal Ministry for Food and Agriculture	Policy
Federal Ministry for Education and Research	Policy
Bioeconomy Council of Bavaria	Policy
Cluster for Industrial Biotechnology	Business
Organobalance GmbH	Business
Helmholtz Centre for Environmental Research	Research
Fraunhofer Centre for Chemical-Biotechnological Processes	Research
evocatal GmbH	Business
Nature And Biodiversity Conservation Union	Civil society
World Wildlife Fund	Civil society
World Hunger Aid	Civil society
DUH: Bioenergy Network, INRO	Policy advice (Civil society)



Annex 3: Code of Ethics - Guidance for Researchers

Research undertaken by the European Policies Research Centre must comply with the University of Strathclyde's *Code of Practice on Investigations on Human Beings*. This Code is designed to ensure that all research undertaken by University staff and students is carried out in an ethical manner. The Code of Practice is intended to ensure that:

- research is designed and undertaken to ensure integrity and quality;
- research subjects (e.g. interviewees) are informed fully about the purpose, methods and possible uses of the research and what their participation involves;
- the confidentiality of information and participant anonymity is respected;
- involvement of research participants is voluntary; and
- research is independent, free of conflicts of interest or partiality.

In practice, research experts (i.e. EPRC researchers and any experts sub-contracted to EPRC) must ensure that the following general requirements (and any project-specific requirements specified by the Department/University Ethics Committee) are met.

- (a) When interviewees are approached to take part in the research, they must be informed about the **nature and objectives of the research**. Where available, a copy of the research commissioning letter - explaining the purpose and organisation of the evaluation - should be given/sent to interviewees. Where a project website has been established, the interviewees should be given the web address. They should be advised that they are welcome to contact EPRC if they would like further information.
- (b) It is important that interviewees agree to participate in the interview on a **voluntary and informed basis**. This consent should be recorded – whether given by email, letter, phone or in person. If the interviewee wishes to withdraw from the interview at any point, this wish must be respected. The EPRC project manager must be notified if this occurs.
- (c) In advance of an interview, interviewees should be given **appropriate information on the nature of the interview** as follows (see also below):
 - (i) the name(s) of the person(s) conducting the interview;
 - (ii) the key questions/issues to be covered in the interview;
 - (iii) that confidentiality and anonymity of the interviewee will be maintained (they will not be quoted or otherwise identified in reports);
 - (iv) how information will be used for the study;

- (v) that records may be kept for further or follow-up research, but that they can decide not to allow this; and
 - (vi) that they will be informed of the outcomes of the research by being notified when the Interim, Draft Final and/or Final Reports are published.
- (d) While it is important for the evaluation to obtain accurate and detailed information, individual participants must not be pressured to answer any question. They have a **right not to answer any question(s)** during the interview, and – where relevant – be advised that by not answering a particular question the interview/questionnaire will not be considered in the study.
- (e) Experts should **maintain a secure record** of all aspects of the fieldwork process, from the first approach made to an interviewee to the writing up the results. In practice, this means keeping copies of relevant correspondence, notes of phone calls, records of interviews etc. securely so that if the interviewee raises any questions at a later date, experts can demonstrate (for example) that they obtained informed consent or that they have a record of the interview.
- (f) Experts should **maintain confidentiality and anonymity** by ensuring that the record of the interview is not given to anyone outside the EPRC research team. The record of the interview should also make a clear distinction between the factual information/opinions expressed by the interviewee and any interpretation of the interviewer. The record should also highlight any information provided by the interviewee as background or personal information which is not to be used in writing reports.
- (g) Experts should **ensure data security**. In practice, this means: retaining records only for the period for which they are required for research purposes; utilising Strathclyde University (or other organisational) email accounts which have adequate virus protection (and avoiding use of home PCs / email accounts); ensuring storage in a safe place (password-protected in the case of electronic storage), with appropriate back-ups; taking care with the transport of data (especially on laptops and memory sticks, where data should be anonymised wherever possible); ensuring that data is not shared with another organisation unless approved by the EPRC project manager (and in accordance with the terms of Ethics Committee approval of the study); and disposing of data and equipment in ways that the data cannot be recovered.

Research experts must comply with the study according to these conditions. Failure to comply with the protocol will mean that data can not be used in the study.

EPRC has prepared a separate information sheet for interviewees, summarising the above principles, which can be sent/given to interviewees in advance of the interview. This is available on the EPRC website at: www.eprc.strath.ac.uk. In case of any questions on the above, please feel free to contact the EPRC project leader or EPRC Centre Manager, Lynn Ogilvie (lynn.ogilvie@strath.ac.uk or +44 141 548 3908).

Further information on the University of Strathclyde policy on ethics, including the Code of Practice, is available here: <http://www.strath.ac.uk/ethics/>



Annex 4: Code of Ethics – Information for Interviewees

Research undertaken by the European Policies Research Centre must comply with the University of Strathclyde's *Code of Practice on Investigations on Human Beings*. This Code is designed to ensure that all research undertaken by University staff and students is carried out in an ethical manner. The Code of Practice is intended to ensure that:

- research is designed and undertaken to ensure integrity and quality;
- research subjects (e.g. interviewees) are informed fully about the purpose, methods and possible uses of the research and what their participation involves;
- the confidentiality of information and participant anonymity is respected;
- involvement of research participants is voluntary; and
- research is independent, free of conflicts of interest or partiality.

Under this code, interviewees participating in the study must:

- be clear about the nature, objectives and outputs of the study, and must consent to take part in the research and be aware that the consent is voluntary (and that participation/data may be withdrawn at any time);
- have appropriate information on the name(s) of the person(s) conducting the interview, and the key questions/issues to be covered in the interview;
- be assured that confidentiality and anonymity of the interviewee will be maintained (they will not be quoted or otherwise identified in evaluation reports unless they consent to be identified), and that data will be processed and stored securely;
- be aware: of how the information will be used for the study and its outputs; that records may be maintained for further or follow-up research, but that they can decide not to allow this; and that they will be informed of the outcomes of the research by being notified when reports are published.

In case of any questions on the above, interviewees are welcome to contact EPRC (email: lynn.ogilvie@strath.ac.uk; tel: +44 141 548 3908) at any time. Further information on the University of Strathclyde's policy on ethics, including a copy of the Code of Practice, is available here: <http://www.strath.ac.uk/ethics/>.

EPRC, Glasgow, May 2013