



# Great Britain

## Unleashing High-Value Potential

Yes

No

**1** Is this a specific bioeconomy strategy?

**X**

**2** If No, what are the key points? How are they being addressed within the bioeconomy?

The UK does not have a specific bioeconomy strategy and the explicit naming of it is rather rare, mostly in the Parliament. However, important aspects of the bioeconomy are addressed in various other strategy papers. As far as agriculture is concerned, the Natural Environment White Paper (NEWP), published in 2011, laid down a sustainable vision for the next 50 years. This gave rise to the “green food” project, for example, dedicated to sustainable intensification in agriculture and the food supply chain.

With its Science and Innovation Strategy for Forestry in Great Britain, the UK published its own innovation strategy for forestry in 2014. The aim of the strategy is to strengthen the ecosystems and resilience of the forests and contribute to a sustainable, low-carbon timber industry. Similar key aims for marine research are defined in the Marine Science Strategy 2010–2015.

Following a biomass strategy in 2007, a specific bioenergy strategy was adopted in 2012, emphasizing the use of various waste materials and perennial

energy crops. The first strategy for agricultural technologies (Agri-tech Industrial Strategy) was agreed in 2013, specifically aiming at the transfer of technology and the commercialization of agricultural and forestry research.

The High-value Manufacturing Strategy adopted in 2012 is a re-industrialization strategy aimed particularly at the commercialization of innovative technologies. Among others, it fosters industrial projects associated with the development of biofuels, biobased plastics and materials and industrial

biotechnology. Accordingly, the 2014–2015 strategic plan of the UK innovation agency (Technology Strategy Board, or InnovateUK since 2014) explicitly names the agricultural sciences, biosciences and advanced material sciences as key areas for a high-value industry, for the food supply chain and for resource efficiency. The Biotechnology and Biological Science Research Council (BBSRC) is also concentrating on the promotion of biosciences with its latest strategic plan named “The Age of Bioscience”.

### 3

#### Who is the author of the strategy?

The 2012 Bioenergy Strategy was developed and published by the Department of Energy & Climate Change (DECC), the Department for Environment, Food and Rural Affairs (Defra) and the Department for Transport (DfT). The 2013 Agri-tech Strategy was devised by the Department for Business, Innovation

& Skills, the Department for Environment, Food & Rural Affairs and the Department for International Development. In parallel, parliamentary committees published reports of enquiries into the potential of the bioeconomy in 2012 and 2013. These discussions seem to exert major political influence.

### 4

#### What measures are used to promote the strategy?

Public research funding primarily takes the form of project calls, competitions and catalyst programmes. Private participation is encouraged, particularly for the technology transfer programmes. For example, in the area of agricultural research, yearly state expenditure is around Pound 225 million and business expenditure is expected to contribute at least Pound 100 million.

A large number of bioeconomic R&D activities, especially in the field of biosciences, are funded by the Ministry for Universities and Science. With regard to industrial biotechnology, the government agreed to fund a demonstration fermentation plant based on the recommendations of the “Industrial Biotechnology Innovation and Growth Teams” in 2009.

In addition to agriculture (sustainable intensification, food security and industrial raw materials), bioenergy and industrial biotechnology are listed as key themes of the bioeconomy in the BBSRC’s 2013/14 strategic

plan. For example, the BBSRC is funding the Sustainable Bioenergy Centre, which is a partnership between leading academic research institutions, up to Pound 25 million over five years. “Research clubs” addressing integrated biorefineries and biobased processing have also been supported since 2008. Together with the Innovation Agency, research and development has been funded in the fields of renewable energies and the industrial use of biobased raw materials along the entire value chain. In the agricultural sector, work is being supported to gain a better understanding of the potential and consequences of “sustainable intensification”. Investments in veterinary immunology, livestock research and especially plant genomics and phenotyping, are increasing.

The UK’s main food-related research funds are working together through the Global Food Security programme, which aims at contributing to a sustainable, healthy and safe supply of food for a growing world popula-

tion. The programme is interdisciplinary and focuses on food security throughout the UK food supply chain. The programme thereby also addresses global issues of hunger and poverty. Global bioeconomy issues are also addressed by the Science and Innovation Fund (Newton Fund) recently set up by the UK Treasury for collaboration with developing countries. This has produced the first examples of bioeconomic collaboration e.g. with Brazil.

The measures supported by the Agri-tech Strategy should help better translate agricultural research into

practice (e.g. via the Biotechnology Catalyst and Agri-tech Catalyst programmes). Supportive measures (coaching, networks, partner programmes, etc.) are promoted to help innovative businesses with funding and business development.

With regard to market development, bioenergy suppliers benefit from tax reliefs and feed-in tariffs. State grants are provided for the establishment of anaerobic digestion plants converting organic waste to energy (e.g. WRAP programme).

**5 Is there a time limit on the initiatives?**

Typically, the strategies cover the period up to 2020 or even 2050.

**6 Are there any identifiable key funding areas within the bioeconomic value chain?**

So far, policy measures have focused primarily on bioenergy and agricultural research, also with a strong emphasis on livestock research and veteri-

nary medicine. It was only in the 2013 Agri-tech strategy and the 2014 BBSRC plan that greater emphasis was placed on industrial products.

**7 What are the implicit effects/side-effects of the strategy?**

As a future centre for innovation and global services, the UK sees an opportunity to further develop, offer and package its skills in life-sciences, agricultural sciences, information technologies, trade and finance. The aim is to stimulate industrial

regeneration and to develop a competitive, «high-value» industry. Specifically, Bioenergy should help to achieve these goals in the area of new energies and also promoting rural development.

**8 Are any quantitative targets specified?**

The Bioenergy Strategy defines that by 2020, 15% of the energy consumption should be supplied by

renewable sources. Bioenergy should contribute to this and create 50,000 new jobs.

Tab. 6: Important Measures for Promoting the Bioeconomy in Great Britain

Key Points	Policy Measures	Concrete Implementation	Budget in GBP	Timetable	Sources
<b>a) Promoting innovation</b>	Basic and applied research	BBSRC R&D relating to biotechnology and biobased chemistry	6 m	2008–2013	BBSRC (website)
		Bioprocessing Research Industry Club	23 m	since 2005	BBSRC (website)
		BBSRC Sustainable Bioenergy Centre	24 m	2009–2014	BBSRC (website)
		UK Global Food Security Programme	410 m p.a.	2011–2016	Global Food Security Strategic Plan
		Centres for Agricultural Innovation to promote sustainable intensification	90 m	2014–2018	Agri-tech Strategy
	Pilot and demonstration plants	Anaerobic Digestion Loan Fund: state grants for building anaerobic digestion plants	10 m	2011–2015	Wrap programme (website)
<b>b) Infrastructure</b>	Key enabling technologies	Centre for Agricultural Informatics and Metrics of Sustainability: bioinformatics and Big Data			Agri-tech Strategy
	Rural development	On Farm AD Fund: business plan advice and loans to farmers to build small anaerobic digestion plants		since 2013	Wrap programme (website)
	Education	Academic courses and doctoral programmes in the context of the BBSRC Research Clubs and the Bioenergy Centre			BBSRC (website)
<b>c) Commercialization</b>	Feasibility studies	“Agri-tech Catalyst”: project funding for feasibility studies for near-market agricultural innovations	70 m p.a.	2014–2018	Agri-tech Strategy
		“Industrial Biotechnology Catalyst”: commercialization of process and product developments	45 m	2014–2015	Technology Strategy Board (website)
		“High-value Manufacturing Catapult”: commercialization of production technologies			Technology Strategy Board (website)
	Advice to businesses	Coaching, networks, partner programmes, etc. should help life-science companies to raise capital and to globalize.			Agri-tech Strategy
<b>d) Demand-side instruments</b>	Support for producers	Grants for biomass producers			Biomass Energy Centre, Grants and Support
		Funding of tax relief and feed-in tariffs for bioenergy producers			
<b>e) Political Framework conditions</b>	Green taxes	Climate Change Levy: tax on commercial energy consumption, tax exemptions for renewable energy.			Biomass Energy Centre, Grants and Support
		Renewables Obligation: energy providers must buy a certain percentage of renewable energies			