



Department for  
Business, Energy  
& Industrial Strategy

# UK BIOECONOMY

Call for evidence

December 2016

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## Overview

This call for evidence seeks your input to help shape a UK bioeconomy strategy. Our aim is to produce a strategy that is appropriate to the UK's industrial structure and availability of natural resources. This strategy will engage with many different sectors across the economy and will need to take account of other objectives, such as on decarbonisation, broader sustainability and food security

The survey is a series of questions which will help us scope out the opportunities, challenges, barriers and enablers of the bioeconomy. We would welcome your views on where there is room for growth and what needs to be done to achieve the promise of the bioeconomy.

The call for evidence closes on **29 January 2017**.

You can respond online at <https://beisgovuk.citizenspace.com/im/uk-bioeconomy-call-for-evidence/> or email [ukbioeconomystrategy@beis.gov.uk](mailto:ukbioeconomystrategy@beis.gov.uk).

## Introduction

The UK government, working with five industry sector leadership councils, would like your input to help shape a UK bioeconomy strategy. Our aim is to produce a strategy which will foster a world leading bioeconomy in the UK, which takes into account objectives in related sectors across the economy.

## What is the bioeconomy?

The bioeconomy is the economic opportunity of using biology to help solve challenges we face in agriculture, energy, health and more, which has the potential to deliver economic, environmental and social benefits to the UK.

The bioeconomy includes all economic activity derived from bio-based products and processes. These have the potential to contribute to sustainable and resource efficient solutions to the challenges we face in food, chemicals, materials, energy production, health and environmental protection.

The bioeconomy comprises all economic activities that are either:

- i. Feedstocks which could be biomass based (including domestic, commercial, agricultural or industrial waste) or fossil fuel based (including industrial and metropolitan wastes) which are treated by a combination of physical, chemical and biotechnological processes;
- ii. 'bio-transformative activities' – Those which add value through the inclusion of a physically or chemically transformative process that involves either as outputs or as processors, biological resources (the tissues, cells, genes or enzymes of living or formerly living things);
- iii. 'bio-based upstream activities' – Those that add economic value as upstream suppliers of bio-transformative activities; or
- iv. 'bio-based downstream activities' – Those which add economic value as downstream users of the outputs of bio-transformative activities.

## Completing the survey

This call for evidence is open to all who have an interest in the bioeconomy – both individuals and organisations.

The data you supply will provide us with valuable evidence to support the development of the strategy and allow us to understand the full range of issues and opportunities facing the bioeconomy.

You will find the questions in the call divided into the following headings:

- Bioeconomy definition
- Economic growth
- Sustainability
- Investment
- Research and development
- Sectoral cooperation
- Supply chain cooperation
- Government and policies
- European issues
- International issues
- Standards
- Other questions

Apart from the questions which provide us with important details about the person completing this call for evidence, you can:

- Answer whichever questions you want to
- Leave questions blank where you have no comments

## What happens next

Responses will provide vital supporting evidence to the development of a UK bioeconomy strategy which we aim to publish in spring 2017. However, it is important to note that responses will be part of a wider initiative to develop the strategy and they will have to be assessed on this basis, as well as in relation to each other. They will also need to be assessed in relation to government priorities, such as on the industrial strategy and in the context of changing circumstances.

## Confidentiality and data protection

Information provided in response to this consultation, including personal information, may be subject to publication or release to other parties or to disclosure in accordance with the access to information regimes (these are primarily the Freedom of Information Act 2000 (FOIA), the Data Protection Act 1998 (DPA) and the Environmental Information Regulations 2004). There is also a statutory Code of Practice issued under section 45 of the FOIA with which public authorities must comply and which deals, amongst other things, with obligations of confidence.

If you want information, including personal data, that you provide to be treated in confidence, please explain to us what information you would like to be treated as confidential and why you regard the information as confidential. If we receive a request for disclosure of the information we will take full account of your explanation, but we cannot give an assurance that confidentiality can be maintained in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not, of itself, be regarded as binding on the department.

# Survey

## Introductory questions

1. What is your name?
  
2. What is your organisation or business
  
3. Which best describes you? (Tick boxes)

	<b>Respondent type</b>
<input type="checkbox"/>	Business representative organisation/trade body
<input type="checkbox"/>	Central government
<input type="checkbox"/>	Local government
<input type="checkbox"/>	Charity or social enterprise
<input type="checkbox"/>	Trade union or staff association
<input type="checkbox"/>	Legal representative
<input type="checkbox"/>	Large business (over 250 staff)
<input type="checkbox"/>	Medium business (50 to 250 staff)
<input type="checkbox"/>	Small business (10 to 49 staff)
<input type="checkbox"/>	Micro business (up to 9 staff)
<input type="checkbox"/>	Start-up
<input type="checkbox"/>	Academic
<input type="checkbox"/>	Individual
<input type="checkbox"/>	Other (please describe)

4. What is your email address?
  
5. Please describe the sector you operate in and provide any further information about your business and activities that you think might help us put your answers in context.

## Bioeconomy definition

6. Does our definition of the bioeconomy (see overview above) include within its scope all of the relevant bio-based products and processes? If not, please explain.

## Economic growth

**Through the various types of bio-based activities, the bioeconomy makes a significant contribution to output and employment in the British economy. The whole bioeconomy, comprising transformative, upstream and downstream elements, generated approximately £220 billion in gross value added and supported 5.2 million jobs in 2014.**

7. Within your sector or organisation, what are the prospects for economic growth that are related to the bioeconomy?
8. Given your expectations, do you think there are potential issues are holding back further economic growth in the sector? For example:
  - feedstock availability
  - demand or ability of downstream users to adapt to the new products
  - demand or ability of end users to adapt to the new products
  - workforce skills
  - input/output price uncertainty
  - confidence in future of the sector
9. Do you think that growth in a particular sector of the bioeconomy impacts growth in other sectors in a way that should affect our priorities?
10. What do you think the UK's bioeconomy goals should be in the long term i.e. 15 years or more? You could add to your reply by telling us what actions we should be taking to get there. This could include actions by government, biotechnology developers/providers, UK user sectors and consumers.
11. What do you think the UK's bioeconomy goals should be in the short term i.e. the next 5 years?
12. Can you tell us about any "quick wins" to increase the growth of the bioeconomy?
13. Do you think the UK is likely to miss any of these "quick wins"? If so, why is that?
14. Can you tell us about any other issues in the broader environment that are holding back economic growth in the bioeconomy?

## Sustainability

**As demand for bio-based resources increases, there can be concerns regarding feedstock sustainability, including the direct and indirect impacts of changes in land use, soil quality and carbon stocks. However, there are also opportunities to increase resource efficiency by using residues from agriculture, forestry, and industry.**

15. How sustainable is your sector of the bioeconomy in respect of infrastructure issues? Eg roads, planning issues, telecommunications, energy and water supply.
  
16. How does your sector contribute to or impact on sustainability in respect of environmental issues including concerns about high energy use, water, greenhouse gas emissions, air and land pollution and destruction of animal habitats?
  
17. How should the strategy take into account UN sustainable development goals?  
These include: ending hunger and poverty, improving food security and nutrition, cleaner water and improved sanitation, affordable and clean energy, sustainable industrialization with responsible production and consumption, reducing climate change, and protecting ecosystems on land and in water?
  
18. How sustainable is your sector of the bioeconomy with respect to workforce skills?

## Investment

**Investment in the UK bioeconomy has seen an increase since 2010, above the trend in the economy overall. However, the level of gross fixed capital formation in these sectors has yet to regain its 2008 peak in real terms. In this section we explore issues around obtaining finance for your organisation.**

19. Has your organisation or businesses received finance from one (or more) of these sources in relation to its bioeconomy activities? Tick all that apply:

<input type="checkbox"/>	Venture capital
<input type="checkbox"/>	Equity crowdfunding
<input type="checkbox"/>	Corporate venture capital
<input type="checkbox"/>	Private equity
<input type="checkbox"/>	IPO/public offering
<input type="checkbox"/>	Angel finance
<input type="checkbox"/>	Seed finance
<input type="checkbox"/>	Peer-to-peer lending
<input type="checkbox"/>	Start up Loan
<input type="checkbox"/>	Growth finance
<input type="checkbox"/>	Bank loan/bond
<input type="checkbox"/>	Export or trade finance
<input type="checkbox"/>	Asset-based finance
<input type="checkbox"/>	Leasing and hire purchase (asset finance)
<input type="checkbox"/>	Overdraft
<input type="checkbox"/>	Inward investment
<input type="checkbox"/>	Other

20. Has your organisation or business had difficulty in obtaining finance from one (or more) of these sources in relation to its bioeconomy activities? Tick all that apply and please provide additional details about the issue. You may use the examples provided to show amounts, but this is entirely voluntary

<input type="checkbox"/>	Venture capital	
<input type="checkbox"/>	Equity crowdfunding	
<input type="checkbox"/>	Corporate venture capital	
<input type="checkbox"/>	Private equity	
<input type="checkbox"/>	IPO/public offering	
<input type="checkbox"/>	Angel finance	
<input type="checkbox"/>	Seed finance	
<input type="checkbox"/>	Peer-to-peer lending	
<input type="checkbox"/>	Start up Loan	
<input type="checkbox"/>	Growth finance	
<input type="checkbox"/>	Bank loan/bond	
<input type="checkbox"/>	Export or trade finance	
<input type="checkbox"/>	Asset-based finance	
<input type="checkbox"/>	Leasing and hire purchase (asset finance)	
<input type="checkbox"/>	Overdraft	
<input type="checkbox"/>	Inward investment	
<input type="checkbox"/>	Other	

- Below £1m
- £1m-£4.9m
- £5m-£9.9m
- £10m-£100m
- Over £100m

21. More generally, does your sector, or sub-sectors within it experience difficulties in attracting investment? If so, why?

22. What sort of challenges does your sector face in terms of financial sustainability?

## Research and innovation

**The United Kingdom is particularly strong in the research and development aspect of the bioeconomy, ranking second on the 2015 Global Innovation Index. We would like to build on this and create an environment where our world-class research is fully exploited by industry and society, and different sectors of the bioeconomy collaborate and tackle untapped opportunities, leading to the bioeconomy becoming ‘greater than the sum of its parts’.**

23. What are the key areas for investment in research and development in your area of the bioeconomy?
24. Where do you see gaps in investment in research and development in your area of the bioeconomy?
25. What are the most notable types of new products or technologies that can be expected in your sector in the next few years that are related to the bioeconomy?
26. What are the barriers and opportunities for bioeconomy related research? Examples might include:
  - Collaboration
  - Technical/scientific challenges
  - Gaps in research knowledge
  - Lack of early stage research funding
  - Lack of translational research funding
  - Skills
27. Are you aware of difficulties in commercialisation or translating R&D outputs into the marketplace in your area of the bioeconomy?

## Sectoral cooperation

**Collaboration and integration of individual sectors brings with it substantial opportunities to create additional value. Opportunities can include use of by-products or waste and implementing best practice from other sectors.**

28. What strong links does your sector have with the other sectors of the bioeconomy?
29. To what extent is your sector reliant on links to other sectors?
30. Are there potential ways in which your sector would benefit from more cooperation with other bioeconomy sectors?
31. Is there anything we could learn on sectoral cooperation from other sectors of the economy?
32. Are there any barriers to collaboration with other bioeconomy sectors? If so, what are they?
33. How can government ensure that bio-resource is used in the best way across the different sectors, taking into account the objectives and impacts of use in these sectors?

## Supply chain cooperation

**In addition to different sectors collaborating more efficiently, improving how the supply chain work together could also bring substantial benefits both to the individual organisation and the bioeconomy more broadly. Added complexity might come through geographical barriers.**

34. What strong links does your business have with others in the supply chain, including links to overseas companies?
  
35. Are there potential ways in which your business would benefit from more cooperation with others in the supply chain?
  
36. Are there any barriers to collaboration with other businesses in your supply chain? If so, what are they?

## Government and policies

**In this section we'd like to hear about issues where the government could remove obstructions to growth for the bioeconomy. But we would also like to hear about things that are already done, but could be done better or be more widely used. These could be things that stimulate innovation or new ways of doing things.**

37. Please tell us about any programmes, policies, regulations, laws or taxes which are helping the growth of the bioeconomy?
38. Please tell us about any new programmes, policies, regulations, laws or taxes that you would like to see introduced in order to help the growth of the bioeconomy. Please describe why growth in this sector would be positive and what impacts it might have on other sectors?
39. Please tell us about any programmes, policies, regulations, laws or taxes which are holding back growth of the bioeconomy?
40. How could the government further assist collaboration or research cooperation between the public and private sectors?
41. How could the government further assist the growth of the bioeconomy in a way that accounts for any impacts on other objectives?

## European issues

**Whilst the UK's relationship with the EU is in the process of changing, we would still like to learn from our European neighbours, make best use of opportunities that exist and will continue to exist and grasp the new opportunities that will exist outside the EU.**

42. Can you tell us about and European Union initiatives or programmes that affect your sector of the bioeconomy? Examples might include the Circular Economy package, the Horizon2020 Programme for Research and Innovation or other areas of EU funding.
43. Are there European Union laws or regulations which affect your sector in a positive way? If so, what are these laws or regulations, what is their impact, and would you like them to be kept for the UK after we leave the EU?
44. Are there European Union laws or regulations which affect the bioeconomy in a negative way unnecessarily? If so, what are these laws or regulations, what is their impact, and how could they be improved?
45. Where do you see the greatest UK bioeconomy opportunities that will arise outside of the European Union?

## International issues

**We aim to make the UK the most welcoming country for those researching or investing in the bioeconomy in a sustainable way; the ‘go-to’ nation for developing, implementing, and exporting sustainable solutions. In doing this we would like to learn from other countries around the world (as well as transnational bodies such as the European Union and the Organisation for Economic Cooperation and Development) where they have put in place specific strategies or other initiatives that support the bio-based industries.**

46. Are you aware of any government policies or regulations in other countries that are more or less supportive to growth in the bioeconomy? If so, please outline:
  - The countries;
  - The policies; and
  - Their impact or why they are particularly useful or beneficial.
  
47. Are there any barriers to collaboration with organisations in other countries? If so, what are they?
  
48. How does UK policy and funding environment compare with other countries?
  
49. What is the degree of reliance on overseas supply chains (for example raw materials) in UK companies?
  
50. Please describe any trade problems you are aware of that are causing obstructions for imports or exports?
  
51. Are there global pressures such as changes in demand or supply that affect your sector?

## Standards

**National and supranational standards have been proven to catalyse innovation and fuel GDP growth (<http://www.bsigroup.com/en-GB/standards/benefits-of-using-standards/research-reports/>). A number of standards have been developed, or are currently in development, that address specific aspects of the bioeconomy, e.g. bio-based energy, bio-based products, bio plastics, circularity and resource management standards.**

52. How do you think standards could be used to help promote growth in the bio-economy?

53. What types of standards are best suited to support the bioeconomy?

For instance, these could be:

Standards that define the concept and explain its relevance to individual organisations, sectors or product groups; standards establishing technical criteria for bio-based products; sustainability schemes and criteria for bio-based products.

## Other questions

54. Are there any relevant work studies, case studies or reports that you would like us to be aware of? Please provide a link if you can.
  
55. Are there any other points on the subject of the bioeconomy that you would like to make?

Please email your responses to: [ukbioeconomystategy@beis.gov.uk](mailto:ukbioeconomystategy@beis.gov.uk)



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