



# **BBSRC Delivery Plan**

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**2015/16**

# BBSRC Delivery Plan for 2015/16

## 1. Summary of planned activity for 2015/16

BBSRC's vision is for a thriving UK knowledge-based Bioeconomy, powered by the outstanding bioscience research base that is also addressing some of the most significant challenges facing society such as food security, infectious disease, sustainable energy/chemicals and how to live longer, healthier lives. The Bioeconomy encompasses major UK industrial sectors including agriculture, renewable energy, chemicals, food and drink, pharmaceuticals, healthcare and biotechnology. Together these contribute more than £75 billion (GVA) to the economy and employ directly 1.5 million people<sup>1</sup>. Investment in excellent research, skills and infrastructure to support the Bioeconomy is essential to ensure the UK can compete internationally and seize high-value opportunities in growing global markets already worth €1.5 trillion in Europe alone<sup>2</sup>.

BBSRC's 2015/16 Delivery Plan builds on BBSRC's outstanding track record of delivery and existing strategy for world-class bioscience supporting bio-based business and economic growth. It also provides a critical springboard for the Council's plans in the next CSR up to 2020/21.

**BBSRC's high-level plans for 2015/16 will:** (detail below, in the body of this document)

### **i. Maintain the excellence of the UK bioscience and technology research base to drive innovation and make the UK one of the best places to do bioscience research.**

BBSRC's plans provide sustained support for world-class training and investigator-led research as the lifeblood of innovation and discovery.

- [BBSRC will protect levels of responsive funding](#) for 'excellent research', balancing investigator-led ideas with focusing of research priorities to address key societal and economic needs.
- BBSRC will sustain support for strategically funded institutes and associated campuses as centres of excellence, e.g. Babraham, Norwich and IBERS, which will continue to attract inward investment and bring regional employment.
- BBSRC's [international strategy](#) (see 3.4) will enable UK researchers to collaborate with the best in the world and leverage BBSRC's investment to boost excellence and research volume.
- Excellent bioscience is underpinned by high-quality **research infrastructure**. BBSRC funds vital national capability in HEIs and Institutes and in 15/16 key current infrastructure projects will be complete (e.g. Pirbright).

### **ii. Ensure the supply of skilled people into the economy and public sector, meeting user needs**

- The second round of [Doctoral Training Partnerships](#) will commence. These balance excellence in broad-based bioscience with a strategic focus in the grand challenge areas, boosting vulnerable skills and professional internships for students to foster greater understanding of Knowledge Exchange.
- Through its industrial training strategy BBSRC will ensure that the skills industry needs are funded.
- BBSRC will improve [mentoring for postdocs](#) to develop their research careers and to promote an understanding of the many career paths open to highly-skilled people in the wider economy.

### **iii. Support growth in key industrial sectors and emerging technologies** by funding research, skills and infrastructure supporting bio-industries. Priorities are:

- **[Agriculture and Food Security](#)**: BBSRC will support implementation of the agri-technology sector strategy; fund the agri-tech Catalyst with TSB; start two new industry clubs with NERC and develop agri-tech campuses to support growth and new jobs.
- **[Industrial biotechnology and bioenergy \(IBBE\)](#)**: this area promises enormous growth and new market opportunities based on enhanced bio-based feedstocks, high-value and platform

chemicals and bioenergy. BBSRC will grow UK research capacity and provide the skills needed by business. With TSB, BBSRC will support translation via an IBBE Catalyst and ensure companies have access to demonstration and bioprocessing facilities.

- **Bioscience for Health:** BBSRC's plans address the dual opportunity of reducing the economic burden of an ageing population whilst underpinning Life Science sector industries. BBSRC will increase its focus on nutrition and health across the life-course. MRC will be a key partner in the drive to develop new vaccines and novel antimicrobial agents.
- **Emerging technologies:** BBSRC has long recognised the importance of technologies to generate new knowledge, markets and revenue streams. BBSRC's plans to 2015/16 prioritise emerging technologies in three areas: **Agri-tech**, **Data-rich bioscience** ('big data') and **Synthetic Biology**.
- **'Quick wins' for economic growth:** the lead time for impact from basic research is often >10 years. But BBSRC will take decisive actions to spur growth and jobs in the shorter term. Actions include more funding to the Follow-on-Fund to derive impact rapidly from existing research, and Translation Fellows alongside BBSRC's industry clubs to accelerate translation of the research.

#### **iv. Further development of Research and Innovation Campuses to accelerate translation of excellent bioscience and help grow new and existing companies.**

BBSRC's £100M+ campus investment brings researchers and business together in the right environment to nurture new and existing companies. Up to and including 2015/16, campus developments include:

- **Edinburgh:** a *new incubator building* as part of the Easter Bush innovation hub.
- **Norwich Research Park (NRP):** a '*Molecular Pharming Pilot Facility*' and *short-term accommodation for visiting workers*.
- **Aberystwyth:** a '*Plant Breeding Hotel*' and development of the '*Pwllpeiran Upland Research Centre*' for sustainable agriculture.
- **Rothamsted:** *shared lab space* for industry at Rothamsted and a *new Conference Centre*.
- **Pirbright:** by 15/16 BBSRC will have a clear plan of Pirbright as a campus / hub supporting bio-based businesses in animal and human infectious disease. The Pirbright Institute is part of a national and international network of high-containment microbiology facilities and a key lab supporting Defra and DH in mitigating risks associated with new and emerging infectious diseases.

#### **v. Work in partnership and seek leverage to deliver BBSRC's strategy with greater impact, effectiveness and efficiency.**

BBSRC's plans for 15/16 build on its excellent track record in partnership working and realising leverage opportunities. BBSRC will focus on:

- Significant leverage opportunities through major **international partnerships** with priority countries such as USA, Brazil, India and China.
- Leverage and collaboration in major international programmes on **wheat yield** and **reducing Nitrogen fertiliser use**.
- **Increased private sector leverage** e.g. via two new Catalyst funds, new industry clubs, campus developments, and new industry-led priorities around next generation vaccines, antimicrobial agents and diet and health research.
- Further **enhance partnership working with the TSB** to enable impact e.g. the new Catalysts. The main areas of interest with TSB are Agri-technology, IBBE and the Life Science sector.
- **Enhanced partnership within RCUK across BBSRC's business functions and co-funding research.** BBSRC recognises particular collaborative opportunities with NERC (sustainable land use), MRC (vaccines, antimicrobials) and MRC/ESRC (nutrition, health across the life-course).

- o Enhanced partnership with Government Departments and devolved Governments as key funding partners but also to recognise BBSRC's role in supporting National Capability, such as Pirbright, in the Civil response to threats from major infectious diseases.

## 2. Approximate division of costing across the main areas of activity\*

### Anticipated Programme Resource Expenditure 2014/15 - 2015/15

£M	2014/15	2015/16
Research Grants	203	203
Institute Strategic Programme Grants	54	54
Studentships	46	46
Fellowships	9	9
Multi-User National Facilities	22	22
National Infrastructure e.g. Pirbright	6	6
International Subscriptions	1	1
Knowledge Exchange Activities	30	30
<b>Resource Total**</b>	<b>371</b>	<b>371</b>

### Anticipated Capital Expenditure 2014/15 - 2015/16

£M	2014/15	2015/16
<b>Capital investment</b>	<b>134</b>	<b>71</b>

\* Excludes administration and non-cash expenditure

\*\*Resource Total comprises BBSRC's resource allocation from BIS of £351M and forecast income of £20M.

## 3. The positive consequences of BBSRC's plans

### 3.1 Research excellence

The UK is number one in bioscience<sup>3</sup>. BBSRC's plans provide sustained support for world-class training and investigator-led research as the lifeblood of innovation and discovery. BBSRC will protect levels of responsive funding for 'excellence' across a broad range of bioscience and balance this with an appropriate degree of focus on priorities where research will have the most impact on major economic and societal challenges. BBSRC's **international strategy** (see 3.4) will enable UK researchers to collaborate with the best in the world and very significantly leverages BBSRC's investments, further boosting excellence and volume of research.

The UK's scientific excellence is underpinned by high quality **research infrastructure**. BBSRC has provided strategic support for vital national capability, e.g. globally unique experimental farm platforms, high containment facilities for livestock disease research, and bioinformatics and sequencing facilities for modern genomics. In 15/16 key infrastructure projects will be complete (e.g. Pirbright DP 1 and 2) and further Campus investment on-going (see 3.3c) alongside further investment of the £75M allocated to ELIXIR. BBSRC will also work closely with BIS to ensure that the Government's long-term plans for investment in science infrastructure reflect the needs of the bioscience research community.

## 3.2 Skills: ensuring the flow of trained people into the economy

Highly skilled people are vital to support knowledge-intensive industries and attract inward investment to the UK. Creating postdocs not only has economic benefit but also, in itself, creates employment (1 postdoc = 1 job). BBSRC's plans continue to prioritise high-quality PhD training to ensure new researchers have a breadth of skills, including leadership and management, the ability to communicate results, and ethical awareness. BBSRC will promote understanding of Knowledge Exchange in its students through placements in industry or with other research users in the form of Professional Internships for Students (PIPS). In addition, BBSRC's industrial training strategy will, in partnership with the private sector, supply the skilled people industry needs and address key skills shortages.

### **Top-level plans 15/16:**

- Second round of Doctoral Training Partnerships with a strategic focus in the grand challenges, balanced with broad-based excellent bioscience, industrially relevant vulnerable skills and PIPs.
- Through BBSRC's industrial training strategy, and ongoing commitment to CASE studentships in partnership with industry, ensure BBSRC continues to fund the skills industry needs.
- Support, including mentoring, for postdocs to develop their research careers but also to promote an understanding of very many career paths open for high-skilled people in the wider economy.
- Providing more informatics skills (e.g. Masters-level) through BBSRC's industrial training schemes that are needed by all bioscience-using sectors and which can be absorbed rapidly into the economy.

## 3.3 Growth in the UK economy: *creating and capturing value from the research base*

Multiple analyses have shown a return on public investment in research of around 30%<sup>4</sup>. In key sectors such as agriculture the return is even higher; each public dollar invested in agri-food research yields \$10 to the US economy<sup>5</sup>. By that calculation BBSRC's spend of £100 million on agriculture research potentially returns £1bn annually to the UK economy. Lead times for economic return on basic research are often >10 years so BBSRC is taking steps to accelerate translation (e.g. campus strategy 3.3c) and drive economic benefit in the shorter term (e.g. 'quick wins', 3.3e).

**BBSRC's plans will have positive consequences for economic growth in the Bioeconomy in many ways as follows:**

### **3.3a Supporting key Industrial Sectors**

Excellent bioscience underpins key industrial sectors highlighted as part of the Industrial Strategy<sup>6</sup>. To support growth in major areas BBSRC will continue to focus on global grand challenges, such as food security, replacing fossil fuels and healthy ageing<sup>7</sup>, where the societal and economic impact is greatest.

#### ***Agriculture and Food Security***

*Main sector relevance: Agriculture, Food and Drink, Renewable Energy, Chemicals*

The sector opportunity here is significant, with the UK's food supply chain worth £80bn and employing more than 3.7 million people. In addition, agriculture is strongly linked to the health and energy (and chemicals) sectors that contribute £30bn to UK GVA<sup>8</sup>.

### **Top-level plans 2015/16**

- BBSRC will take a significant role, with others, in implementing the Government's Agri-technology strategy<sup>9</sup> to support UK growth, employment and productivity via Agri-science and technologies.
- With TSB (and others) BBSRC will fund more business-led translational and applied Agri-food research in public:private partnership through the new Catalyst, thus addressing a key market failure.

- BBSRC will establish two new industry clubs for research that meets user needs in sustainable agriculture (with NERC) and microbial food safety (with FSA and others).
- With NERC BBSRC will establish an initiative for collaborative research in aquaculture - addressing industry needs and translating existing research into practice
- BBSRC will further develop key agri-technology Research and Innovation Campuses (3.3c).

***Industrial Biotechnology and Bioenergy (IBBE): replacing fossil fuels and creating new markets***

*Main sector relevance: Renewable Energy, Chemicals, Life Science - healthcare and pharmaceuticals*

IBBE offers enormous potential for growth as well as helping the Government meet emissions and renewables targets. The nations that are best able to exploit bioscience for renewable energy, chemicals, industrial raw materials, and high value biomolecules will dominate in the future global Bioeconomy. IBBE is forecast to add between £4bn and £12bn to the UK economy by 2025<sup>10</sup>.

***Top-level plans 2015/16***

- Continue BBSRC's current strategy to grow the UK research capability in IBBE, to maximise market opportunities (i.e. fund more research and train more people in areas business needs).
- Support for company development in the IBBE space – establish process demonstration and ensure company access to bioprocessing facilities.
- Establish the 2nd call of IBBE Catalyst with TSB to fund industry-led research closer to application.
- Work in partnership with the new National Biologics Industry Innovation Centre (NBIC) and TSB to enable the translation of fundamental cell and protein research into biopharmaceutical processes, reflecting the strategic needs of the UK Biopharmaceutical Industry

***Bioscience for Health***

*Main sector relevance: Life Science - healthcare and pharmaceuticals, Food and Drink, Agriculture*

Bioscience offers a dual opportunity to tackle the economic burden of a steadily ageing population (a third of UK health spending is on those over 65<sup>11</sup>), whilst also supporting key industrial sectors. The UK pharmaceutical industry has a positive trade position of £7bn and is one of the UK's top exporters. It is the 4th largest pharmaceutical sector in the world with a strong R&D base (spending £4.6bn in 2010<sup>12</sup>).

***Top-level plans 2015/16 addressing the grand challenge of living healthier lives for longer***

- Prioritise Nutrition and Health to better understand gut health, the role of the microbiome and nutrition over the life-course; linking underpinning mechanisms to population-based studies. Collaboration with MRC and ESRC, with benefits to the food industry and DH.
- Build knowledge and biological understanding of why and how people age, with increased focus on maintaining health over the life-course, linking with the cross-Council LLHW theme.
- Under the concept of One Health<sup>13</sup>, BBSRC will establish a network of excellence in vaccinology. It will build on animal and human vaccine research to drive new vaccine development for economically important and emerging diseases.
- Increase emphasis on research to generate novel anti-microbial agents, using new approaches, including synthetic biology, combatting the challenge of increasing microbial resistance in both animals and humans.
- Implement plans for a new Centre for Food, Health and Gut with the Norwich Research Park as the hub for a wider network of national and international links

**3.3b Supporting growth through emerging Great Technologies**

BBSRC's strategy<sup>14</sup> has long recognised that new knowledge, new markets and new revenue streams spring from new technologies. BBSRC's 15/16 Delivery Plan further strengthens investment in emerging technologies to generate growth.

### **Top-level plans 2015/16**

- **Agri-science and technologies:** (see 3.3a Agriculture and Food Security).
- **Data-rich bioscience**<sup>15</sup>: Bioscience discovery is at the forefront of the 'big data revolution' as the use of high-throughput, data-rich technologies become increasingly pervasive. This development combined with data mining of expanding, integrated, open-access datasets offers new approaches to answering biological questions with potential to stimulate business and increase research efficiency. **During 2015/16 BBSRC will build upon the work of the e-Infrastructure Leadership Council and recent big data capital investments to stimulate growth through the deployment of these new ways of working.**
- **Synthetic biology:** SynBio is a key platform technology where the UK can lead with new approaches to sectors such as pharma, energy and chemicals to compete in a new \$100bn global market. Up to and including 2015/16 BBSRC will **address the recommendations of the UK SynBio roadmap**, creating up to six multidisciplinary research centres, five centres for DNA synthesis and, with EPSRC, two centres for doctoral training as well as growing new and existing companies via a £10M investment in the Rainbow Seed Fund.

### **3.3c Research and Innovation Campuses: growing businesses and accelerating translation**

BBSRC's ongoing £100M+ programme of investment in campus infrastructure brings researchers and business together, enables access for business to key research-led facilities and provides low risk environments to grow existing businesses, nurture new ones and to create jobs. The research and innovation campuses are important vehicles for building positive regional relationships between Universities, local businesses and LEPs. For example there is already considerable interest in the Norwich Research Park (NRP) from Greater Norwich under 'City Deals'.

#### ***In the period up to and including 15/16 BBSRC will focus on:***

- **Edinburgh:** £5M to develop an incubator building as part of the Easter Bush innovation hub (up to £45M leverage from Scottish Government, University of Edinburgh and local authority).
- **Aberystwyth:** £12M for a '*Plant Breeding Hotel*' at the Gogerddan Innovation Campus plus £2.5M to develop the '*Pwllpeiran Research Centre*' for sustainable agriculture (anticipated £25M leverage from Welsh Government and the University).
- **Rothamsted:** £8.2M for a *Shared Resources Hub (giving business access to Rothamsted Research)* and £2.7M for a *Communications and (business-led) Conference Centre* as part of the Rothamsted campus.
- **Norwich Research Park:** Up to £2.5M for a '*Molecular Pharming Pilot Facility*' (site infrastructure and phase I) and £1M for short term accommodation for visiting workers.
- **Pirbright:** A priority for BBSRC is to complete the current considerable capital investment in high containment facilities which need additional investment as part of the support to the wider impact (commercial and international) of the research investment at Pirbright. BBSRC is currently exploring various partnerships around the Pirbright facility to maximise impact (e.g. Surrey University, AHVLA and the EnterpriseM3 LEP). By 15/16 BBSRC will have a clearer plan for the Pirbright research and innovation campus (or hub) supporting bio-based businesses in animal and human infectious disease. There is an opportunity for the site as part of the UK cluster of expertise in high-containment microbiology facilities (including Health England and DSTL (Porton Down)) contributing to national and international capability. It will be an important laboratory in mitigating risks associated with new and emerging infectious diseases (human and animal) as set out in the UK National Risk Register of Civil Emergencies.

### **3.3d Quick wins for growth and job creation**

Lead time for economic growth and job creation from basic research is often long. But there are actions that BBSRC can, and will, take to stimulate the economy in the short term.

#### ***Leading up to and including 2015/16 BBSRC will seek quick economic wins by:***

- Increased funding for the Rainbow Seed Funds (£1-2M pa) to provide immediate support for projects and companies arising from BBSRC's world-class research campuses.
- Increased funding for the Follow-on-Fund to enable and accelerate translation of existing research.
- Rapid and easy flow of people, skills and knowledge between industry and academia through raising the profile and funding for FLIP<sup>16</sup> and identifying new contexts in which it can be used.
- Up to a further £5M for continued professional development via BBSRC's ATP approach to ensure workers are 'upskilled' and to encourage translation of research as rapidly as possible into impact. Exploring opportunities to extend cover to NVQ3 or 4 levels.
- Placing Translation Fellows alongside BBSRC's Industry Clubs to help drive the 'greatest and earliest' possible impact from the research outputs.
- Leveraged investment in two major new Catalysts (see 3.4) (£25M in 15/16) driving industry-led research to application (target of matching investment via TSB).
- Continuing 'Sparking Impact' institutional awards (£100K) to HEIs for quick, flexible and diverse KT and commercialisation activities to accelerate impact.

### **3.4 Leveraging investment**

BBSRC has a strong track record in leveraging funds, particularly through **international partnerships** and research with the **private and the third sectors**. Recent examples included £3M from BBSRC to a £16M research programme<sup>17</sup> with India, Gates Foundation and DFID on sustainable agriculture, and BBSRC:NSF collaborations on 'enhancing photosynthetic efficiency' and 'reducing the use of nitrogen fertilisers' where over £6M from BBSRC was matched by US funds<sup>18</sup>. The Council is also achieving significant leverage on campuses investments (see 3.3c), where the £100M+ programme will generate an additional £100M from HEIs, local and regional authorities (LEPs), devolved governments and the private sector.

#### ***BBSRC's top-level plans for 15/16 will generate significant leverage through:***

##### *International (main programmes only)*

- Engaging strongly in Europe to leverage funding via ERA-Nets and FACCE JPI<sup>19</sup> co-led by BBSRC.
- Increased focus on engaging with the EU on Industrial Biotechnology and bioenergy programmes as part of the Horizon 2020 Bioeconomy theme
- Further collaborative programmes (TBC) with India, Brazil and USA. All are making large investments in bioscience and want to work with the UK's strong research base.
- Establishing a new research collaboration between BBSRC (RCUK), DFID, Defra and China on sustainable intensification of agriculture in Africa.
- BBSRC leadership of programmes to tackle 'grand challenges' through co-ordinated international collaboration and the combined funding power of a large international consortia; thus increasing impact, spreading risk and improving value for money. Significant leverage opportunities exist in the following activities:
  - **The Wheat Yield Network**, through which 22 organisations across 16 countries will establish competitive calls for research to raise wheat yield potential by 50% in the next 20 years.
  - The G20-backed **Wheat Initiative** to better coordinate global research, share resources and develop minimum data standards.
  - The **Global Nitrogen Programme** which aims to reduce reliance on expensive and polluting

Nitrogen fertilisers in agriculture via coordinated multi-agency international funding. BBSRC is leading initial coordination and developing a work programme.

#### *Private sector*

BBSRC has an excellent relationship with the main bio-based businesses and is seen as a partner of choice for many. Since 1994 BBSRC has interacted with around 900 companies; 160 companies are partners on current grants and 250 are partners in CASE studentships. The totality of BBSRC's plans for 15/16 will further increase private sector leverage but with particular new opportunities around:

- An initial BBSRC commitment of £50M to the new IBBE and Agri-tech Catalysts with TSB, with the aim of significant further investment over subsequent years, and equivalent private sector contributions.
- Two new industry clubs / initiatives with NERC in sustainable agriculture and aquaculture (3.3a).
- On-going substantial BBSRC investment in Research and Innovation Campuses (3.3c).
- New strategic areas of industrial collaboration such as antimicrobial agents, new vaccines, food safety and nutrition and health.
- Potential new commercial partnerships as part of the above international programme

### **3.5 Greater efficiencies (new and existing efficiency programmes)**

BBSRC is an effective and efficient organisation. It consistently meets spend targets within 0.1% of budget whilst retaining budget flexibility to seize emerging opportunities. A recent review<sup>20</sup> by Deloitte rated BBSRC's financial management 'exceptionally highly', and identified several areas of best practice within BBSRC that could be implemented across other BIS Partner Organisations to improve efficiency.

Through RCUK BBSRC has worked hard to identify and implement efficiency savings through the RCUK Efficiency Programme 2011-15. Councils are also working together to harmonise processes, encouraging efficiencies in their funded resources, for example, collective approaches to asset sharing in the HEI sector, and identifying synergies for closer working and greater efficiency, allowing the Councils to continue to deliver 'excellence with impact' in the face of increasing pressure on budgets.

**Through its plans up to and including 2015/16** BBSRC will continue to improve where there are genuine benefits. BBSRC's main focus will be a **specific programme exploring new means of working** to seize opportunities offered by, e.g. modern IT and office environment, to achieve greater efficiency (more for less) without compromising effectiveness

Recognising the continued need for efficiencies, the Research Councils will **extend the RCUK Efficiency Programme into the 15/16 SR period**, building on projected savings of over £400M. Based on draft projections, extending Wakeham savings into 2015/16 will generate over £100M.

## **4. Supporting multidisciplinary approaches to research**

Multidisciplinary partnership mechanisms are built into all of BBSRC's funding streams. At grant level, RCUK's cross-council funding agreement provides a mechanism for reviewing and funding excellent research proposals that span the remits of more than one Research Council. At programme level, Research Councils and other funders frequently work together to fund multidisciplinary strategic research – from bilateral initiatives to large-scale multi-funder programmes (including cross-Council themes) where joint strategy, investment and decision-making is needed. In the period up to and including 2015/16 BBSRC and RCUK will strengthen the way BBSRC supports multidisciplinary research and communicate it more clearly.

**During 2015/16 BBSRC's plans to support multidisciplinary research include:**

- Continuing to lead the multi-funder, multi-disciplinary Global Food Security (GFS) programme drawing together the main public funders for greater coordination and impact.; new

multidisciplinary research on soils, waste and diet/nutrition

- Joint programmes with NERC, supporting collaborative, multidisciplinary research in sustainable agriculture and aquaculture that addresses industry needs
- Working more closely with MRC in 'One health' - multidisciplinary collaboration between experts in human and animal health research to gain mutual insight and benefit
- Increased funding for the NC3Rs<sup>21</sup> (rising to £1.65M by 2015/16), which BBSRC supports in collaboration with MRC, to help deliver the government's pledge to reduce animal usage in research. BBSRC's contribution will rise by £300k pa up to and including 2015/16

## 5. Enhancing partnership working

BBSRC's strategic plan stresses the importance of partnerships. BBSRC works with many partners ranging from SMEs to multinationals, foreign governments/ funders, world-leading charities such as the Gates Foundation and Wellcome Trust, the UK Higher Education Funding Councils, key Universities, the Technology Strategy Board, devolved governments and many UK departments. Through a continued emphasis on partnership working BBSRC is better able to tackle multidisciplinary research and large complex challenges, ensure that it meets user needs, and improve efficiency and effectiveness.

***BBSRC's plans for 2015/16 will further enhance partnership working as follows*** (main partners only)

### **Private sector**

BBSRC has strong links with all industrial sectors underpinned by bioscience, and are pro-active in helping to support the growth of new bio-based industries. This will be further enhanced by:

- Two new Catalysts with TSB that will increase BBSRC's partnership with a range of private sector businesses facing IBBE and agri-technology (3.4)
- BBSRC has mapped the key private sector 'strategic partners' in each of its grand challenge areas and will develop stronger links with the key players – particularly for the sectors emerging from the Industrial Strategy. Actions will vary depending on sector and company

### **TSB**

The TSB is a crucial strategic partner for delivering impact and BBSRC has an excellent record of collaboration. BBSRC aims to work more than ever with TSB:

- BBSRC's current Delivery Plan (2011-15) earmarks £50M of collaborative and complementary funding with the TSB. This will continue but an extra £25M will be available to commit in 15/16 alone.
- Priority areas of activity with TSB in 15/16 will be agriculture and food, IBBE (e.g. the new Catalysts, 3.4) and the Life Science sector

### **Devolved Governments and UK Departments**

For BBSRC, policy Departments and the devolved Governments are not only key 'users' but also important partners and co-funders. BBSRC's plans focus on:

- Working with the Scottish and Welsh Governments around campuses to maximise leverage
- Increasing work with Defra as funding partner in the GFS programme (multiple joint interests) and to co-deliver the recommendations from the agri-technology strategy.
- Supporting Defra in the Department's role in civil response and protection from infectious diseases of livestock and plants (see 3.3c) (regarding Pirbright in particular)
- Further enhancing BBSRC's working with DFID as a crucial funding partner for collaborative international programmes (3.4) that draw on BBSRC's strong bioscience research base
- Enhancing partnership working with the BIS sector teams where bioscience can have the greatest impact. Agri-tech and Life Science are the obvious examples but bioscience can also make an impact in aerospace, Oil and Gas, Automotive and Construction.

**International** - See 3.4 for top-level plans for enhancing partnership working

### **RCUK**

BBSRC is committed to working fully with all of its partners in the RCUK family across business and cross-Council themes. However BBSRC sees particular opportunities up to 15/16 for enhancing partnership working with:

- NERC on 'sustainability' via a new industry club, joint funded research initiative on soils, and joint activities such as seminars with mutual industry partners.
- NERC, ESRC, EPSRC and MRC as co-funding partners in the GFS programme. New multidisciplinary research on soils, waste and diet/nutrition
- MRC as a partner in 'One health', linking human and animal health research to gain mutual insight and benefit e.g. joint work on next generation vaccines and new antibiotics.
- MRC and ESRC as partners for research in food, nutrition and health.
- Using BBSRC's knowledge and experience to support other Councils in changes to their Institutes.

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- <sup>7</sup> BBSRC Strategic Plan 2010-2015: The Age of Bioscience, [www.bbsrc.ac.uk/strategy](http://www.bbsrc.ac.uk/strategy)
- <sup>8</sup> BIS internal document - business case for agri-tech strategy, April 2013
- <sup>9</sup> Detailed actions TBC pending publication of the final strategy and associated funding
- <sup>10</sup> IB 2025: Maximising UK opportunities from Industrial Biotechnology in a Low Carbon Economy; a report to government by the Industrial Biotechnology Innovation and Growth Team, May 2009
- <sup>11</sup> Department of Health, A Recipe for Care – Not a Single Ingredient (2007)
- <sup>12</sup> BIS, Industrial Strategy: UK Sector Analysis Economics Paper No. 18 (2012), as above.
- <sup>13</sup> Multidisciplinary research involving collaboration between experts in veterinary and human medicine to combat infectious diseases of zoonotic origin and improve the health and wellbeing of animals and humans.
- <sup>14</sup> BBSRC Strategic Plan 2010-2015: The Age of Bioscience, as above.
- <sup>15</sup> Encompassing areas such as Big Data and Genomics.
- <sup>16</sup> The BBSRC Flexible Interchange Programme (FLIP) supports the movement of people from one environment to a different one to exchange knowledge, technology and skills. [www.bbsrc.ac.uk/FLIP](http://www.bbsrc.ac.uk/FLIP)
- <sup>17</sup> Sustainable Crops Production for International Development <http://www.bbsrc.ac.uk/SCPRID>
- <sup>18</sup> Ideas labs on Nitrogen <http://www.bbsrc.ac.uk/funding/opportunities/2012/ideaslab-nitrogen-improving-on-nature.aspx> and Photosynthesis <http://www.bbsrc.ac.uk/funding/opportunities/2010/photosynthesis-ideas-lab-of-2010.aspx>
- <sup>19</sup> Joint Programming Initiative on Agriculture, Food Security and Climate Change (FACCE JPI) [www.faccejpi.com](http://www.faccejpi.com)
- <sup>20</sup> The review report can be found at: [www.bbsrc.ac.uk/financial-management](http://www.bbsrc.ac.uk/financial-management)
- <sup>21</sup> National Centre for the Replacement, Refinement and Reduction of Animals in Research [www.nc3rs.org.uk](http://www.nc3rs.org.uk)