Shaping a UK strategy for agri-tech: response form

The Department may, in accordance with the Code of Practice on Access to Government Information, make available, on public request, individual responses.

All comments are welcome but we particularly encourage submission of evidence from institutions, organisations and representative bodies with an interest in this topic.

The closing date for this call for evidence is Thursday 22 November 2012 by 14.00 hours.

Please return this completed form to:

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1. The aims and objectives of the Agri-Tech strategy are outlined above in the introduction to this call. Please give your views on:

a. The need for and potential benefits of having such a strategy.

The need for such a strategy is paramount due to increasing pressure on the world's resources for food production. The global nature of our food supply chains mean that the effects on production of food in one area of the world are felt elsewhere. Recent Defra statistics show that the UK food production to supply ratio (sometimes used as a measure of self

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as broad a topic as HealthTech and Medicines. The technology areas relevant to agriculture are split between the priorities of the Environmental Sciences KTN and the Biosciences KTN. Synergy between these initiatives will be important in supporting a future agri-tech strategy.
Alongside this, as mentioned in 1b), the government can help to support the growth of this sector by ensuring that there is sufficient review of regulatory frameworks to take account of new developments in environmental science and technology.

Another desired outcome should be to improve the perception of agricultural sciences as a desirable career option, leading to an increase in the number of researchers who apply their skills to this area. The skills pipeline is critical to the aim of *'increased UK exports of knowledge, products, systems services and technology*'. In some areas, such as soil science, the UK is in danger of losing our leading position due to the lack of graduate researchers entering the field. The government needs to help to promote agricultural sciences as a viable and rewarding career choice. There is a need for scientists to have a good fundamental understanding of particular disciplines, but extended support to initiatives that promote interdisciplinary learning and research is needed to ensure that solutions to problems in agriculture are realised.

d. Any potential drawbacks / unintended consequences associated with second

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market in this area is occupied by large multinationals. The numbers of small and medium-sized businesses in the UK agricultural sciences sector are very low in comparison to sectors such as pharmaceuticals. A comparison of numbers of businesses with 249 employees or fewer using the Standard Industrial Classification (SIC) system, indicates that there are more than four times as many SMEs in the pharmaceutical sector in the UK than in agricultural sciences. Whilst larger pharmaceutical companies can explore models such as procuring advanced projects from SMEs, similar opportunities are almost entirely absent in the crop protection industry.

The 'valley of death' between research outputs and technological application in the UK is seen as a weakness that affects the agricultural technology sector amongst others. Like pharmaceuticals, the development of an agritech product can take 10 years or more, meaning that it is extremely difficult to encourage investment in potential new technology at the early stage under the current risk-averse financial climate.

There is also a perceived paucity in te

agricultural technology is an important area where the government can work with scientists to ensure that testing and monitoring procedures maintain currency with on-going developments as a result of research.

The creation of centres of excellence in the area of agricultural sciences through coordinated action across the research councils and the Technology Strategy Board could help to create a favourable environment for SMEs to be established and flourish. This could help to bridge the gap between academia and industry further by encouraging an environment where joint working as well as joint funding is facilitated, encouraging SMEs to carry out their own research and development. Creating a favourable environment that encourages the sector to innovate could then attract inward investment from overseas.

The potential value of EU-level funding for scientific research and development should not be underestimated; in the past the UK has received a generous share of money for research from European funding initiatives. In the Framework Programme 6, which ran from 2002 to 2006, the UK received 14.2 % of the total budget, second only to Germany which received 18.1 %. The Horizon 2020 programme, the successor to the EU Framework Programmes, proposes to include around €32,000 million of funding, dedicated to addressing 'grand challenges' including food security. Mechanisms need to be in place to ensure that through

as opposed to the use of a remediative measure. The need for such crop enhancement chemicals will become increasingly important, due to likely future changes in climate and weather patterns.

Another key area is crop nutrition. Identifying the chemistry that controls the communication between crop species and soil organisms is important in developing ways to improve nutrient supply to plants. Understanding these mechanisms mean that sensors to monitor minute changes could be developed. Using nutrients in an efficient and sustainable way could lead to a reduction in nutrient leaching. Farmers would thus be able to use nutrient inputs more efficiently.

Phosphorus and nitrogen are essential to plant growth and are key nutrients in fertilisers. Even in livestock farming, one of the largest single synthetic inputs in bulk terms is fertiliser for application to grasslands and forages. Phosphorus is a finite resource and current production of nitrogen containing fertilisers is energy-intensive. One possible way to obtain nutrients for fertiliser more sustainably is to recycle these from waste streams. Research into developing technology to recover nutrients from e.g. human urine would need to be based upon fundamental understanding of how these elements interact with potential recovery agents to ensure that efficient and cost-effective technologies could be developed.[5]

Technology for effective monitoring and fundamental research into minimising the impacts of agricultural activity are important to ensure that natural systems can be sustained as part of the process. Research in fundamental areas such as the transport and fate of farm inputs will help to develop novel and innovative ways to assess and alleviate possible environmental impacts associated with agriculture.

As well as crop health, veterinary health is also an important issue, again with respect to developing new drugs that can combat resistance. There are also opportunities relating to niche areas of technology in relation to animal health, for example the formulation of dairy sanitizers and teat dips for cows that could present opportunities for innovative SMEs.

Development of accurate, reproducible analytical methods to measure the composition and quality of animal feed could have a real impact in terms of efficiency gains on-farm. There is