

decade, the total remains far from enough to meet the needs of the industrial and education sectors.

1.1 The size and importance

economy; this growth would be threatened by an undersupply of well-trained mathematical science graduates.

Subject	First degree	Postgraduate (excl. PGCE)
Biological sciences	£16,500	£22,500
Physical sciences	£19,000	£24,000
Computer science	£21,000	£24,000
Engineering & technology	£23,000	£25,500

3. *What effect will higher education reforms have on the quality of teaching, the quality of degrees and the supply of STEM courses in higher education institutions?*

- **High undergraduate fees pose a serious risk to the future viability of Integrated Masters degrees.**
- **The 'AAB+' proposals threaten to reduce the numbers taking mathematics A-level.**

3.1 One potential risk is to the **continued viability of valuable Integrated Masters and MSc degree programmes** – if students have incurred a large debt up to BSc

for applied mathematics and 46 to 30 for statistics and operational research). The UCAS database included single honours first degrees in statistics from only 10 UK universities for 2011 entry. The Steele Report¹¹ has highlighted the problem of lack of provision in certain areas caused by the closure of departments. Two of the main findings of the EPSRC's International Review of Mathematical Sciences¹² are that (with our emphasis): “Overall, mathematical sciences research in the UK is , and “the high quality of UK mathematical sciences research , where `diverse' includes research area, group size and institution size, and `distributed' refers to geographical location.

6.2 There are risks in excessive concentration of research funding, as this may threaten the current geographical spread of institutions offering mathematical sciences degrees. In the era of Full Economic Costing, research-intensive HE institutions are likely to focus investment in fields where substantial grant income is more likely. At the same time students are more likely to choose to study close to home when the cost of a degree is rising fast, so that **there is a severe risk of reducing the number of highly-skilled mathematical science graduates** produced in the UK.

7. What is being done and what ought to be done to increase the diversity of STEM graduates in terms of gender, ethnic origin and socio-economic background?

7.1 Most universities select on A-level results, or their equivalent, and attaining the right qualifications remains the highest hurdle for those from low-participation backgrounds, something which clearly affects the mathematical sciences as well as other subjects. Mathematical sciences have a slightly lower proportion of students from low-participation neighbourhoods (15.2%) than the overall figure (16.4%) (HESA data). Conversely, HESA data show that in 2009/10 21.6% of students in the mathematical sciences were from black and minority ethnic backgrounds, compared with 18.3% for the student population overall. While this gives no grounds for complacency, it is not evidence that the mathematical sciences have a greater than average need for action. The HEFCE-funded More Maths Grads project¹³ which ran from 2007 to 2010 was focused on increasing the number of students studying mathematics, in particular encouraging participation from groups of learners who have not traditionally been well represented in higher education.

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be seen from the fact that in 2006, six months afte

11. *Should state funding be used to promote masters degrees and is the balance right between the number of masters degree students and PhD students?*

- **State funding should be used to support masters degrees in areas of key national need, such as in the mathematical sciences.**

11.1 At present the main "state funding" at masters level in mathematical sciences is for Integrated Masters degrees, with some RCUK funding for a few c