

Costing the BioSciences

Report of the Annual Meeting of HUBS,

at the Institute of Physics, November 14th 2007

In collaboration with the Biochemical Society¹, the Biosciences Federation², and the Institute of Biology³

Programme

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|----|--|---|
| 1. | Nigel Brown: Costing the Biosciences | 1 |
| 2. | Adam Afriyie MP | 1 |
| | a. Questions | 3 |
| 3. | Sir Keith O’Nions, Director General of Science and Innovation | 3 |
| | a. Questions | 4 |
| 4. | The new Science Diploma: Department for Schools, Children and Families | 6 |
| | a. Questions | 6 |

Nigel Brown from Nigel Brown Associates:

Report: [CostingTheBiosciences.pdf](#)

Presentation: [CostingTheBiosciences.pps](#)

The preliminary report on the “Costing the Biosciences” initiative suggests that the biosciences are not significantly different from the analysis of physics departments, which showed an average underresourcing of 25-30%. Technical support and space *per* academic, seen as key issues for the physical sciences, are not grossly different and, as for chemistry and physics, the number of overseas students is relatively low, and falling in comparison to postgraduate students, for instance. Overall there is no real cost differences between physics and bioscience. A member of the audience queried the “space per academic” metric, asking whether the analysis took into account recharging style for each institution. In answer, Nigel Brown suggested that these were just comparative metrics, not budget metrics, though there seems to be a move for institutions to look at differentiating costs for different kinds of space, and that had been taken into account. Further work will now be done to fill in the gaps, and produce a more robust analysis.

Adam Afriyie MP,

Adam introduced himself as an Agricultural economist (Wye/Imperial), and an entrepreneur by training, who is looking for how to develop policy in the future. Originally a member of the Select Committee on Science and Technology, he has

¹ The Biochemical Society: <http://www.biochemistry.org>

² The Biosciences Federation: <http://www.bsf.ac.uk>

³ The Institute of Biology: <http://www.iob.org>

been reappointed to Department of Universities, Innovation and Skills Committee. Has been visiting high-tech companies and Universities, which has convinced him that the long standing reputation for scientific discovery and excellence in research is matched by reality; amidst the many challenges, bioscience industry has risen to these challenges. These commercial and entrepreneurial strengths don't exist in a vacuum, and some good has come from the current Government in supporting science in university: while fEC is not perfect, it is useful.

He sees two major challenges

- i. Increasing competition for UG places in rapidly developing nations
- ii. Declining number of school students capable of taking bioscience courses

While the Government has a role in supporting research, Vice Chancellors have the major role in doing the business itself. The overall national economic interest may not always be aligned with local needs, which is where Adam believes in trusting universities to respond and react to the environment: there is a need for academic and institutional freedom as far as is possible within the national interest.

How should Government help? Perhaps by looking at the innovation landscape. There have been incredible advances in the biosciences, and it is amazing how quickly a commercial industry has developed around (for instance) genetics and oncology. Speed of change & deployment for biosciences, and the challenge of spinout is very successfully done: but how risky is this for the academic context.

- i. many HoDs worried about future of departments, education, and industry relocations abroad.
- ii. The recent report from the ABPA suggesting we are losing skills
- iii. per capita R&D funding is falling in relation to other countries

Adam suggested some ideas which could make a very big difference, including making sure the Sainsbury Review is implemented, including within Government Departments; putting better incentives for research into the tax system; loosen the strings on HE Institutions, rather than having more central controls;

The flow of students is also critical: we need a steady stream of able students. It can't be right that first year is often remedial, and it should not be the responsibility of HE to ensure standards are maintained for A level/diploma. This undermines efforts to raise the level of science, and impacts resource (we're funded as universities, not as Schools). The Knowledge gap is opening up, with school Physics showing the most alarming decline, a potential threat to the UK economy overall. Science education should be entrenched and embedded very early on, with the stigma around science removed. Choice is important for pupils and students: one way we can achieve better applications to science is about giving better advice, and showing that science degrees are the right foundation for all sorts of careers. There's much which could be done about career paths, especially as the Government is a major purchaser and commissioner of HE science graduates. Universities also have strong alliances with businesses, led by

universities: recent successes mean we can achieve the challenges, but the system needs loosening up.

Questions from the floor:

1. you mentioned tax and tax incentives: one of the significant problems for Universities are the rules for VAT on buildings – we can raise significant amounts of money for putting up research buildings, but as soon as we put students in, or use it for anything else, the VAT man calls: the system is not joined up. There seems to be a blind patch on this issue.
 - a. In answer, Adam talked about the tension between treasury and DIUS, and about ensuring incentives are in the right place. This is one the discussions going on in various committees, and not just for HE.
2. what would you do about 30% deficit (from Nigel Brown’s presentation), and is it sustainable in the long term?
 - a. In answer Adam suggested that, if there was a 30% deficit on products and services, there may be different ways such a deficit could be made up, including the national benefit argument, in which case country should pay: there is no advantage in educational establishments becoming businesses.

In closing, Adam asked for feedback on his views, and for any further suggestions.

Sir Keith O’Nions, Director General of Science and Innovation

Presentation: [Sir Keith O Nions.pps](#)

Reactions to the preliminary report on Costing the Biosciences:

- i. It is absolutely right to dig in and get the evidence & facts: most of the changes that take place are evidence-based. Remember that, in making the arguments for underfunding, differentiate between Universities not being able to run their own affairs, and the structure and support that exists from Government.
- ii. However, it is unlikely that there would be any more special initiatives: that working with Government is the best way forward. The present Government is very supportive of science: the opposition is very supportive – this is a good place to be, with no fundamental differences between the sides, and a willingness to move forward.
- iii. Funding: need to make sure that deficits are not structural, but are real. HEFCE process is slower than wanted, but getting the info is difficult. If there is a 30% deficit for Departments, with the University not in deficit, there is therefore a University management problem. *(From the floor: But there is a price guide,*

the result of which is to devolve directly from those bands: disingenuous to say not in control.)

Keith then covered a very wide range of topics in his presentation, making a series of statements.

1. Key messages from the Spending Review
 - a. The allocations are good, but fEC has affected this. While there may well be questions over the implementation of the approach, the largest part of the monetary increase goes into addressing fEC, nonetheless the concept of fEC is right. A lot of money is now going into Universities through fEC, and the Universities have the responsibility for spending it. While there is no base increase in the 80%, the Capital Infrastructure Fund raises the fEC from 80% to 90% (given as aggregated research income ratio).
 - b. The MRC allocation fully protects basic research, it does include money for translational research, but basic research is still the game, and the level of support will be maintained. There is no money moving around, each bit (MRC or NIHR) does what it does, with OSCHR giving oversight and communications
 - c. Priorities in biological research:
 - i. integrative systems biology, with EPSRC – want to up the game in this area
 - ii. lots of ‘other’ initiatives in which biosciences can fish, and do fish successfully
 - iii. Technology Strategy Board – an area to watch
 - d. OSCHR covers three main areas
 - a. translational medicine
 - b. public health
 - c. E-health

Questions:

1. Is there an agreed split of funding between Institutes and Universities?
 - a. There is no prescription on the balance of funding to institutes and universities, although clearly some activities are better in one or the other. Strive to keep a minimum in institutes, but balance is a decision by councils of Research Councils. Institutes can be quite problematic for RCs: change is challenging and costly.
2. TRAC – based on 37.5 hr, whereas people work more than this, which implies cross-funding?
 - a. This is one of the areas that needs tidying up. A bit of fEC we didn’t get right – it would perhaps be better to operate at a coarser granularity
3. With 80% overheads, Universities need to show where the missing 20% comes from, but do the institutes?

- a. No. Institutes had to be 100%, because they were owned by the Councils. For Universities, we are still on the path towards it: remember where we have been coming from. Institutes will always be different, because they are unitary-type bodies, whereas Universities are much more financially multifaceted
4. Should we therefore set a minimum funding to Universities?
 - a. No, is always going to be arbitrary. Allows for swings one way or another, needs rational arguments for any kind. Key is to get fEC to 100% and iron out the wrinkles
5. At what point would HEFCE review banding, and how could we influence it?
 - a. This comes back to the original UGC rationalisation, which works at a very coarse granularity – there was no rational justification for the bands as produced: the expected result is that, for a well-rounded University, the funding block is appropriate, even if the detail may not be exact. It's not about treating universities like businesses, but they need to invest in review of their curricula &c to generate a surplus – you should generate the surplus from the totality of your work, not from each individual subject, because only some make a profit.
6. TRAC-T gives costs for what we are doing at the moment, not what we should be providing: how do we address this?
 - a. Need to do both, costing now and costing what you want to deliver (*that's why the current exercise is the first step only*), then build the argument from that.
7. The UK very good producer of science papers, but underfunded (overtrading). How does the government work this out: we don't know the cost of running a modern lab. How does the Government do it?
 - a. Some of the evidence base is the lack of maintenance – SRIF funded underinvestment, now reasonably sustainable using a capital fund to sustain the capital asset base. There is a lot of work going on to assess costs of science internally, but it is very difficult to dissect it out: a key question is what is the minimum detail needed to manage an institution effectively?
8. How do we feed the information in? Chemistry, Bioscience, Physics and Engineering need to be in there together. There is some concern that putting money in to some areas means the urgency has gone. How do we up our game?
 - a. What HUBS is doing is good – get strongest evidence base possible, but don't expect another finger in the dyke. We are moving toward boundaries being a bit more diffused, extrapolating into the future means we won't be fixing individual subjects, but addressing a global problem There is going to be a political issue, because there will be a bill... we need a more general solution, not a biosciences solution. Work in TRAC-T is a once-in-a-lifetime opportunity. If we are in a position to support this, we can have an effect (but don't underestimate how difficult it is)

The New Diplomas: DCFS

Presentation: [Science Diplomas.pps](#)

Projecting 40-50% taking diplomas by 2013, coupled with recruiting from a receding pool. Strong focus on mix of practical and theoretical learning. Need to be very clear about progression through and past the diplomas and which ones might be relevant for the biosciences:

1. Engineering
2. Health
3. Science

Questions:

1. How much practical learning?
 - a. Core principal that 50% of principal learning in a workplace context
2. Will there be more teaching/facilities resource to support this?
 - a. Probably needs consortia: no single institution could offer whole thing, so there is real opportunity for HE to get directly involved in the teaching, possibly resourced through Widening Participation.
3. The proposals are far more resource intensive than current systems, so there must be enormous cost implications; if HE gets involved, where does the funding come from?
 - a. There will be more resources going in for diploma students than for GCSE/A level – announcement going out next month. There are economies of scale in terms of capital investment through consortia
4. Couldn't expect one provider to provide all 14 diplomas: what happens if only 1 public sector provider exists in a particular place?
 - a. Already some good practice in rural areas: convinced it can work.
5. Science diploma: require students to do Biology + another science: does biology fit within the diploma, or do they do a biology qualification + diploma?
 - a. This is one of the key things that needs to be right, to produce the same depth of knowledge as A level – may be specifying particular units in the 'specialist' learning area. Need to question whether there is a core set of skills which would go into the 'principal learning', and specialist information into specialist areas. Also need to question whether the requirement is a proxy, or an accurate reflection of the skills & knowledge given by the A level in Biology, and therefore exactly what is needed.
6. We agree that GCSE and A level not what we want, in the main because of the lack of practical and observational teaching, and the TV style of excitement overcoming basic knowledge. Students arrive at University with no experience

of learning by experiment. Practicals are about engaging students; teaching it theoretically puts them off, and the engagement is the important part. This is a significant challenge for universities, so how can schools and colleges can do it

- a. Hands on is an important part of diplomas. It's a question of the level of theoretical knowledge required, and is one of the questions that needs to be answered for the new science diploma. It is summed up in the principle behind diplomas
7. Is the diploma going to be graded?
- a. Yes, same grading as A levels – may get gradings for each part (principal/project/specialist), with overall grade, and underlying grades shown on a transcript. It is up to us in the HE sector to make sure the science diploma genuinely prepares students for a traditional science degree at university.

David Coates

Friday, 21 December 2007

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