

Funding changes defy the workings of physics

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Cuts in the STFC delivery plan threaten core subjects and diminish the UK's international impact, says Ken Pounds.

The bad news started to leak out in the weeks after the latest science budget allocations. Astronomers were shocked to hear that the Science and Technology Facilities Council planned to cancel UK membership of the twin Gemini telescopes, a world-class international facility that only recently achieved full operational capability and in which its predecessor, the Particle Physics and Astronomy Research Council, invested more than £60 million. Particle physicists were similarly dismayed to hear that the UK was to withdraw from the International Linear Collider. To top it all, rumours circulated that research grants were facing substantial cuts.

The secrecy surrounding the decisions encouraged rumours, which nevertheless seemed at odds with an STFC allocation that continued, but at a reduced rate, to increase the science funding that is one of the Government's major achievements. Hitting university physics also did not square with the 2006 Science and Innovation Next Steps White Paper, which highlighted the need to boost the subject.

The formation of the STFC by merging Pparc for the Central Laboratory of the Research Councils was the second major element of Next Steps directly affecting the UK physics community, in a change intended to strengthen Britain's international science impact.

Last week the STFC published its first delivery plan, for 2008-09 to 2011-12, confirming that substantial cuts will hit research and training across many top departments. It was also confirmed that the UK is to withdraw unilaterally from high-profile international projects in astronomy and particle physics.

The immediate cause of the new council's problems appear to be increased costs of operating Diamond and Isis, major science facilities inherited from the CCLRC. Ring-fencing those costs within its allocation made the emerging damage to the council's core science inevitable, with scientists' frustrations increased by the knowledge that their own disciplines make little use of Diamond or Isis. If the operational costs of these facilities remain ring-fenced, and with the exchange-rate protection for the UK subscriptions to Cern, the European Space Agency and the European Southern Observatory set to be lost from next year, the longer-term threat to UK research in astronomy, particle physics, nuclear physics and space science is all too clear.

Further concerns surround the creation of the new Harwell and Daresbury science facilities, which aim to improve performance in knowledge transfer and graduate training. These will absorb substantial STFC resources. Yet experience tells us that the discoveries on which knowledge transfer is based come mainly from university groups benefiting from a flow of ideas and new talent. The limitations of focusing publicly funded innovation in just two centres must be a further concern.

Apparently at odds with its early actions, the STFC plan states that "investment in university departments is of strategic importance to a competitive science and engineering base", acknowledging that "with the introduction of full economic cost many of these departments, particularly in physics, will be increasingly dependent on Research Council funding".

The concerns widely expressed by the Royal Society, Universities UK and others suggest that the forthcoming Wakeham review on UK physics could be crucial. The financial straitjacket affecting the STFC is threatening disproportionate damage to the physics-based community and to our international reputation. Critically, it is also reducing the flexibility vital for a new research council to take up new opportunities.

I have four suggestions for the STFC. First, it should produce a revised plan in which science priorities are determined in a more open way than to date and the balance of capital investment (including that from the Large Facilities Capital Fund) and associated operations and exploitation costs are optimised.

Second, seek to recover the protection against exchange rate changes in the subscriptions to Cern, the ESA and the ESO and central cover of gross domestic product-related changes will remove a major funding uncertainty. Third, development of Harwell and Daresbury should be subject to a wider appraisal involving international peer review and should take account of the research and training focus of departments.

Finally, increases in the running costs of major facilities should be paid for by users who, in the case of

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Diamond and Isis, are largely outside the STFC science community. Those changes would at least give pause to those who doubted the case for merging Pparc and the CLRC.

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