

Global Challenge Programme

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Harnessing STFC science to provide solutions to Global Challenges

www.stfc.ac.uk/globalchallenges

- Brief background to Global Challenge Programme
- Changing landscapes
- Other Global Challenge Networks



Aim

To ensure that innovative science, technology, applications and expertise developed through the STFC core Science programme (nuclear physics, particle physics, astronomy, space science) and the STFC national facilities and laboratories are harnessed to provide solutions to Global Challenges in Energy, Environment, Healthcare and Security.



	Exploration and interdisciplinary community building	Research & early stage innovation	Consolidation	Commercialisation
Network Awards (Targeted or responsive)	Standard Network 2 – 3 years, up to £80k per year Interdisciplinary activities at the STFC-Global Challenge interface e.g. workshops, short training courses, travel awards, case studies, fact sheets, position papers, market research			
	Network+ 3 – 4 years, up to £300k per year As for Standard Network plus funding for proof of concept projects, scoping studies, discipline hopping activities, studentships, sandpits			
			Extended Network + 1 – 2 years, up to £200k per year Targeted projects to maximise the impact of earlier Standard Network or Network+ activities	
Responsive Awards	Global Challenge Exploration Up to £20k Exploration of STFC-Global Challenge interface e.g. workshops, scoping studies, reviews, interdisciplinary visits			
			Global Challenge Concepts Up to 12 months & £50k Interdisciplinary proof of concept projects	
			CLASP Timescale and resources necessary for the work Development of technology demonstrators and industry-ready prototype systems	
RCUK Programmes	Global Challenge Partnerships			
	Focus, funding and duration according to individual programmes			



STFC IMPACT REPORT

2015



New scanner could revolutionise breast cancer screenings

Researchers from Surrey and Manchester universities have shown that STFC's state-of-the-art imaging technology could be combined with new advances in X-ray technology to develop a new type of breast scanner, which could reduce the number of false findings in cancer detection⁷⁷. This technology is still being developed but, as more than 50,000 women are diagnosed with breast cancer each year in the UK, improvements in detection could bring enormous benefits⁷⁸.

Advanced radiotherapy

With support from STFC and the National Physical Laboratory, University College London (UCL) researchers are developing an instrument to improve proton beam radiotherapy⁷⁹. This type of radiotherapy is effective in treating a number of cancers, as normal tissues near the tumour receive little radiation, leading to fewer side-effects, including secondary tumours, which is particularly important for children. In the UK, this type of therapy is currently used only for eye tumours, but two new NHS centres are due to open for patients in 2018 at University College London Hospitals NHS Foundation Trust and the Christie NHS Foundation Trust in Manchester.

Cosmic rays and carbon storage

Carbon storage could play a major part of UK and global environmental policies to tackle global warming but would still allow us to generate clean, affordable energy. With funding from an STFC Global Challenge Concepts award, a team from the universities of Sheffield and Durham and STFC's Boulby Underground Laboratory have demonstrated that cosmic ray detectors, originally developed for physics research, are suitable for monitoring underground carbon capture and storage chambers. Further development of these detectors is being funded by the Department of Energy and Climate Change and Premier Oil plc.



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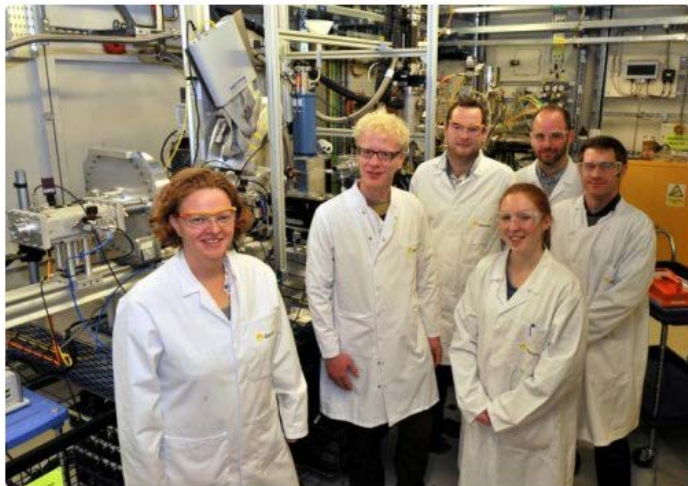
Environmental Radioactivity Network

Each year £3.3 billion is spent on decommissioning nuclear sites in the UK⁸⁰. STFC facilities are playing a critical role in developing a clear understanding of disposing of waste in a safe, secure, and cost-effective way. Over the last three years, the STFC-funded Environmental Radioactivity Network⁸¹ has catalysed the rapid development of environmental radioactivity research by engaging with industry and Government agencies, including the Environment Agency, the Nuclear Decommissioning Authority, DECC, Sellafield and the National Nuclear Laboratory. The network has supported the training of over 100 researchers and helped bring international best practice to the UK.

Manchester Uni News
@UoMNews

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Researchers discover new way of 'locking up' radioactive material bit.ly/1Rt7wuV



RETWEETS 6
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GHOST's maiden voyage

By the end of this century, sea-level rise could affect 70 million people in Europe and put at risk between £370-£740 billion of economic assets located within 500 metres of the sea⁸². A combined STFC/NERC/NASA⁸³ programme aims to improve our understanding of global warming. The GHOST (Greenhouse Observations of the Stratosphere and Troposphere) instrument, built at STFC's UK Astronomy Technology Centre⁸⁴, successfully completed its first science flight aboard the NASA Global Hawk aircraft this year and the results are currently being analysed. As a result of the success of the instrument, GHOST has been flying on an aircraft over the UK, including city centres and power stations, as part of UKSA's Bilateral Carbon Mission Study⁸⁵. There is now interest from the aerospace and space sectors in developing the instrument commercially.



Ghost being fitted to the Global Hawk. (Credit: STFC)

Changing Landscape

Nurse Review

Official Development Assistance

Operational Cost Reduction
Programme

Review of STFC Support for
Innovation Activities

CSR



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Nurse Review

Proposal to bring the Research Councils together under the banner of **Research UK**

To support cross-cutting activity across the Research Councils, a **common research fund** should be established:

- (i) multi-disciplinary and inter-disciplinary research, receiving bids for activities that cross boundaries between the Research Councils, or between the Research Councils and Innovate UK or Government Departments;
- (ii) proposals for research to address cross-cutting societal needs, including grand challenges, and responses to emergency situations;
- (iii) to support the adjustment of individual Research Council portfolios in response to scientific developments which open up new opportunities



Official Development Assistance (ODA)

*Promotion of the **economic development and welfare of developing countries** as its main objective*

-  **Newton Fund** - £435m over spending review period – doubled in size
 - To develop science and innovation partnerships to promote economic development and welfare in collaborating countries
- **Global Challenge Research Fund** - £1.5bn over 5 years
 - To ensure UK research takes a leading role in addressing the problems faced by developing countries



Official Development Assistance

Global Challenges Research Fund

- STFC allocated £3.5m a year from 2017/18 onwards
- Involved in cross-Council discussion on how the overall programme will be developed but not yet clear what the opportunities will be

Newton Fund

- Will double in size over the spending review period
- Looking at opportunities for STFC community
- Main avenue appears to be STEM skills for economic development



OCRCP & Review of STFC Innovation Activities

- Operational Cost Reduction Programme
 - collective efficiency savings and transformational change
- Review of STFC Support for Innovation Activities – requested by Innovation Advisory Board (IAB)
 - identify gaps and overlaps in our support
 - look at the complexity and efficiency of the portfolio
 - recommendations have been considered by IAB



Spending Review

STFC is working on the numbers

“I’ll be updating the community on the implications once we understand in detail what they are likely to be.”

John Womersley, 4th March



Global Challenge Networks



Global Challenge Networks

- Extended networks

STFCBatteries.org 



- New networks

Nuclear Security Science

Nuclear Data

Advanced Radiotherapy



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Advanced Radiotherapy Network+

To build a multidisciplinary community by bringing together cancer clinicians with scientists and engineers from the STFC community, to share expertise and develop new active research synergies and collaborations.

Launch meetings

22nd April - London

27th April - Cockcroft Institute

Book through Eventbrite



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STFC Global Challenge Network + in Advanced Radiotherapy Town Meeting

By: STFC Global Challenge Network+ in Advanced Radiotherapy

- Vision of the Network+ will be explained, along with invited talks on potential areas for collaboration
- Opportunity for the community to decide on the subjects for the subsequent 'Global Challenge Sandpit' events
- Sandpits will be designed to pump-prime collaborations between the STFC and the clinical community
- Collaborative projects from the Sandpits will be supported by a small amount of funding (each Sandpit will have about £100k to distribute)
- Those wishing to suggest a topic for a Sandpit are invited to give a 2 minute elevator pitch

