

# Oxford Sino – UK Innovation & Development Forum

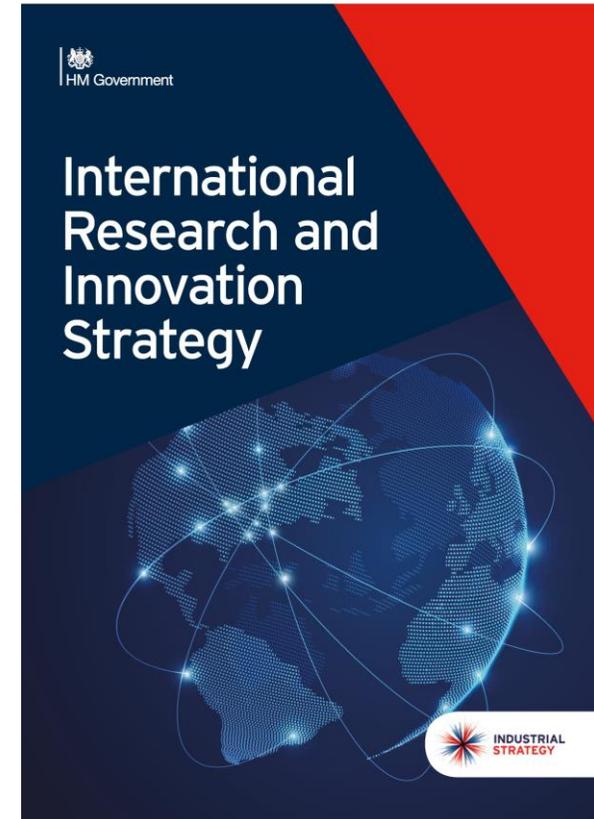
Keynote – Prof. John Loughhead

BEIS Chief Scientific Adviser



# UK International R&I Strategy

- The UK's research and innovation is globally connected and world-leading.
- UK is and will remain an outward-facing and open to international partnerships and collaboration.



# BEIS Strategy Pillars

UK research and innovation is **world-leading** and **globally connected**.

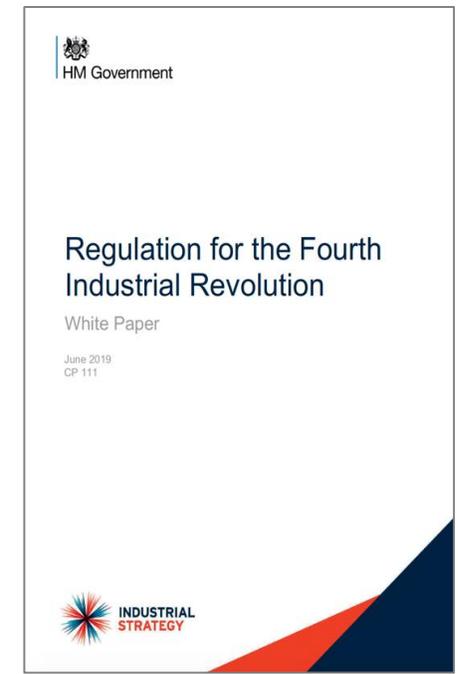
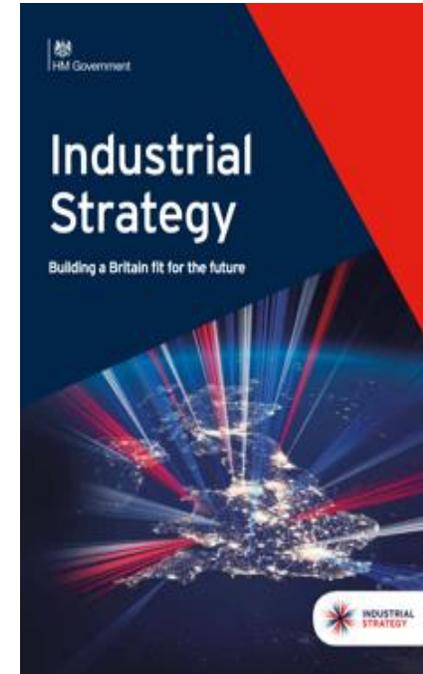


# The world is changing

Technological innovations are transforming how we live and work.



A more agile approach to regulation is needed.



We are **developing an agile approach to regulation that promotes innovation** – while ensuring effective protections for citizens and the environment.

# UK – China Collaboration

- UK – China joint Strategy for Science, Technology and Innovation Cooperation launched in 2017.
- Setting out mutual commitment to drive growth and tackle global challenges through science and innovation.
- The Flagship Challenges:-
  - 1<sup>st</sup> focussed on Agriculture Technology and has delivering strong results;
  - Healthy Ageing is the second Flagship Challenge.



# UK- China Collaboration

- The UK and China are natural partners in Research and innovation we have complementary strengths, common goals and face shared challenges. Our science and innovation relationship spans over 40 years.
- Both countries are investing in science and innovation more than ever before. Playing a leading role in reducing poverty worldwide and use science to tackle the biggest challenges mankind faces.
- Three UK – China collaboration case studies. What will be the emerging technologies needed to address global challenges.

# Case Study – Solar Heat and Power System

New generation of efficient, low cost, solar panel systems.

55% higher heat transport capacity, 20% higher solar efficiency than in similar systems, improved quality, and a better control system.

The solar panels have been installed in 150 rural houses in China as well as a number of businesses.

New product will be included in International Energy Agency guides.

**A High Performance Solar Heat and Power System Employing the Innovative Photovoltaic/Thermal Technology.**



Project leads: Professor Xudong Zhao, University of Hull and Professor Jie Ji, University of Science and Technology of China

# Case Study - Crop Monitoring

Combining previously incompatible data sets using new data assimilation techniques to significantly improve agricultural productivity estimates.

Improved accuracy of crop monitoring by 10% and produced crop yield estimates over large areas at an unprecedented 10-metre resolution.

Among the first to make use of data from the new Sentinel and the Chinese GF satellites and has fed directly into agricultural production planning in China.



Project leads: Professor Philip Lewis, University College London and Professor Zhongxin Chen, Chinese Academy of Agricultural Sciences (CAAS)

# Case Study – LIVEQuest: A self-contained wearable Internet-of-Things System for Precision Livestock Agriculture.

An innovative and user-friendly ‘internet of things’ platform, could significantly improve and intensify livestock farming for more sustainable food production.

The affordable device uses artificial intelligence to monitor animal welfare and barn environment so farmers can quickly detect problems and prevent losses.

The project has led to 30 new jobs and trained 10 young researchers and more than 30 farmers in smart farming technologies, helping Chinese smallholders compete against larger operations.



Project leads: Dr Yue Gao, Queen Mary University of London and Professor Zhixun Xie, Guangxi Veterinary Research Institute, China

# UK – Net Zero by 2050

In October 2018 the Intergovernmental Panel on Climate Change (IPCC) provided their landmark report. Understanding pathways towards and impacts of warming of 2°C, compared to 1.5°C.

This year Committee on Climate Change (CCC) published their report.

Report detailed whether the UK should increase current target to reduce emissions by at least 80% on 1990 levels by 2050 to a “net zero” target.

**On 27 June 2019, the UK government legislated a legally binding target to achieve net zero greenhouse gas emissions from across the UK economy by 2050.**



# Transformation of Global Economy

- Transitioning to net zero requires utilisation of new technologies
- What will be the global platforms for innovation and future technologies.





- Announced at COP21 on November 30, 2015.
- Double clean energy innovation funding over 5 years.



Source  
*Mission Innovation.net*



Eight innovation challenges, including:

- IC1 – Smart Grids (China co-leads with India and Italy).
- IC3 – CCUS – (UK co-leads with Saudi Arabia and Mexico).
- IC4 – Sustainable Biofuels (China co-leads with Brazil, Canada and India).
- IC7 – Affordable heating and cooling for buildings (UK co-leads with the EC and UAE).
- New challenge IC8 – Hydrogen.

# The future is bright

- Both the UK and China have a shared vision of impact for future technologies.
- Strong structure in place to facilitate collaboration.
- Case studies have highlighted the range of high quality projects underway.
- Multilaterals working with global initiatives such as Mission Innovation.

Thank you

[CSA@beis.gov.uk](mailto:CSA@beis.gov.uk)

[@JohnLoughhead1](#)