Why it matters
The economy and the environment – indispensable, invaluable, inseparable. Whether providing materials, producing energy or disposing of waste, natural resources deliver a multitude of benefits shared by every business and every consumer across the country. Environmental damage, deterioration and degradation, meanwhile, come at a very real economic cost ultimately borne by us all.

What we did
• Extending the reach of science beyond scientists has always been a guiding principle for NERC and our community, helping to define our objectives and shape our operations.
• A key priority is to ensure that environmental science generates ideas and understanding that catalyse creation of completely new businesses, while boosting the resilience, productivity and profitability of existing ones.
• We encourage partnerships, foster collaboration and nurture understanding between our stakeholders in business and academia – a powerful process that relentlessly drives business innovation.

Overleaf, we present a selection of positive economic impacts that our investment in cutting-edge environmental science has delivered for a range of UK sectors.
NERC science: impacts and benefits

**Agriculture, farming and fishing**

Agenda-setting research led to a ban on marine use of the chemical TBT, triggering a surge in shellfish production that gave a £331m boost to the UK industry and £718m in wider environmental benefits between 1987 and 2014.

**Manufacturing**

Major manufacturers are among 4,500 UK businesses cutting costs, reducing their environmental impact and meeting regulatory targets using CCaLC (Carbon Calculations over the Life Cycle of Industrial Activities) software.

**Energy**

Driving growth of UK renewables by enabling government licensing and reducing operating costs. Research has been key to assessing the safety of wave energy turbines, the effects of wind turbines on coastal erosion and the feasibility of a tidal barrage.

**Technical services**

Up to £30m/year in benefits for the 300+ organisations which use the Flood Estimation Handbook on a daily basis to aid design and assessment of structures that flooding could affect.

**Transport and storage**

A science-based computer model providing accurate warning of severe winds helps airports and airlines avoid the huge costs of disruption that can result from airspace closures and flight diversions.

**Water and waste**

Smarter regulation is cutting £7bn worth of costs for the water industry between 2015 and 2051 and set the UK to benefit by £5.5bn through improved water quality standards that balance compliance burdens with environmental considerations.

**Finance**

A £62m-£130m/year reduction in losses to the insurance industry resulted from improvements in catastrophe modelling used to estimate the potential impacts of events such as storms and floods.

**Wholesale and retail**

Pioneering research has enabled top supermarkets and telecoms companies to adopt carbon benchmarks that provide clear targets and standards, driving efforts to cut carbon emissions.

**Public administration and defence**

Supporting government impact series instalment coming soon.

**Investing for the future**

Listening carefully to our stakeholders’ needs, we help businesses access the best scientists, data and skills, translate existing knowledge into new solutions and co-design research and innovation focused on real-world challenges. Current investments include:

- The Regional Impact from Science of the Environment (RISE) is a £1.2m programme driving regional economic development by bringing together research organisations, businesses and policy bodies.
- Centres for Doctoral Training are fostering a new generation of experts to deliver solutions in priority areas identified by NERC and our partners, for instance renewable energy (£11.9m with EPSRC), soil science (£2.3m with BBSRC), risk and mitigation (£2.5m with ESRC) and smart observation (£2.5m with EPSRC).
- Tackling plastic waste. On behalf of UKRI, NERC and Innovate UK have led a coalition which spans industry, government and the research base to develop a £60m investment, subject to business case, through the third wave of the Industrial Strategy Challenge Fund that aims to make the UK a leader in sustainable plastic packing and reducing its environmental impact.