

## THE ENVIRONMENT AND SUSTAINABILITY INSTITUTE : STRATEGY (2020 - ongoing)



### OUR RATIONALE

Since its official launch in April 2013, the Environment and Sustainability Institute (ESI) has grown significantly in scale and impact. Up to 30 academics and their research groups focus on understanding the role of ecosystems, energy and engagement in the transition to sustainable futures. Initially funded by the European Regional Development Fund Convergence Programme and the South West Regional Development Agency, with significant support from the Higher Education Funding Council for England, the ESI provides “an inspirational driving force for innovation and economic growth in Cornwall and the Isles of Scilly.”<sup>i</sup> Working in partnership with knowledge-oriented businesses and organisations in the region, the ESI has led internationally-recognised research to find out how to work with natural systems to create sustainable futures. Flagship examples of this activity include Cornwall Council’s [Environmental Growth Strategy](#), the [Tevi project](#) which develops new models for sustainable business and [Making Space for Nature](#) which increases biodiversity in public spaces. The ESI has also had an important transformational impact on the wider university, advocating for the development of a more sustainable university campus.<sup>ii</sup>

After almost a decade, the ESI’s mission is more important than ever. Given the impacts of COVID-19 as well as the pressing challenges of climate change and biodiversity loss, there is an urgent need to rethink and remake established models of socio-political-economy to become more sustainable. Our knowledge of socio-ecological systems and sustainable energy production can be used to engage people in transformative change to **work with natural systems for sustainable futures**.

The ESI academic team comprises members of eight departments (Biosciences, Business School, Camborne School of Mines, Engineering, Geography, Maths, the Medical School and Politics) and all are fully embedded within their departmental structures as well as the ESI. However, our community extends well beyond the confines of those in the building and we value a culture of collaboration and partnership working with colleagues across the Cornwall and Exeter campuses around areas of shared vision. The ESI conducts internationally-recognised blue-skies and applied research at the frontiers of knowledge about socio-ecological systems and technological developments, as well as inter-disciplinary problem-oriented research that is driven by a quest for solutions. Although there are many overlaps between the academics leading this work, there are three main foci for activity:

- (i) **Ecosystems:** Researchers are exploring fundamental questions about the relationships between humans, other organisms and their changing environments. This involves research into evolution and environmental interactions in marine and terrestrial ecosystems above and below ground as well as exploring the bio-chemical impact of these relationships for sustaining life on earth.
- (ii) **Energy:** Engineers and scientists are developing renewable energy technologies with a particular focus on solar energy, and the integration of renewable energy generation technologies in the built environment and future landscapes. They are also developing new tools to discover, extract and manage the resources embedded in products and services, proposing more sustainable methods of production and consumption.
- (iii) **Engagement:** Researchers are developing new citizen-science applications; working with partners to embed ecological and adaptive thinking in organisational practices; exploring ways of valuing natural capital in public policy and landscape management; and supporting participation in the transition to sustainable systems of resource use and governance.

## OUR ACTIVITY

- (i) **Conducting internationally-recognised, high-impact research** in an environment that nurtures innovation by breaking-down traditional disciplinary boundaries. We work locally, but our research also makes a difference globally. We attract researchers from around the world and are continually seeking new ways to work with partners to tackle the biggest problems facing the planet. We aim to maximise and increase our space in order to host more of this activity in future. A key focus remains on securing large, inter-disciplinary grants to pursue our research and its impact. To foster further innovation in research and impact we are launching monthly **'state of the art'** talks with associated communication activity, and continuing our series of **'think tanks'**.
- (ii) **Generating research questions and finding solutions by working in partnership** with key institutions and organisations in Cornwall, Isles of Scilly and the wider region. Through collaboration, co-production and experiment with our partners, we want the region to show-case sustainable alternatives in land use, marine management, economic practices, energy generation and socio-political organisation. We work closely with the University's **Innovation, Impact and Business (IIB)** team and can use the **lagas** platform to visualise this activity and its impact. Our goal is also to identify new commercial opportunities as pioneered by the ESI's **Build Solar**.
- (iii) **Training the next generation of researchers** through contributing to a range of undergraduate programmes and leading **MSc degrees** in **Sustainable Development**; **Renewable Energy Engineering**; **Conservation Science and Policy**; and **Mining Environmental Management**; with ambitions for additional programme development in future. Providing a home for outstanding **PhD students** and early career researchers (ECRs) to pursue cutting edge interdisciplinary research and launch their careers. We are launching a self-organised **ECR network** that will hold a monthly workshop to share research challenges and best practice.
- (iv) **Exchanging ideas creatively** through the successful **Creative Exchange** programme that links researchers and artists to create new work in collaboration with local partners and the University Arts and Culture programme, aiding the development of transdisciplinary research and impact techniques.
- (v) **Reaching out to schools and colleges** in Cornwall to engage students in imagining sustainable futures and developing their own capacity for research and leadership.
- (vi) **Demonstrating leadership** to ensure that Exeter becomes a more **sustainable university**.

The ESI provides important infrastructure to underpin this activity, including:

**Research support:** convening inter-disciplinary networks and teams to share and generate ideas, facilitate funding applications and support new awards.

**Facilities:** including laboratories, research equipment, vehicles and technical support.

**Operations:** including administration, logistics, reception and events.

**Communications:** widening the impact of research activity and findings via the [website](#), newsletter, [Facebook](#), [Twitter](#) and [Instagram](#) accounts, as well as the interactive mapping provided via [lagas](#).

**Hospitality and social space:** in the ground floor café.

*If you have any thoughts about how to augment this work and/or do it more effectively, please tell us.*

## APPENDIX: Centres/ Institutes/ Networks at the University of Exeter

Many of our academic staff belong to and collaborate with colleagues in: [Camborne School of Mines \(CSM\)](#); the [Centre for Ecology and Conservation \(CEC\)](#); the [Centre for Geography and Environmental Science \(CGES\)](#); [Exeter Centre for Circular Economy \(ECCE\)](#); [Exeter Marine](#); [Exeter Energy](#); and [Antimicrobial Resistance Research network](#).

[The European Centre for Environment & Human Health \(ECEHH\)](#) conducts world-class research into the complex links between the environment and human health. Part of the University of Exeter Medical School and supported by funding from the European Union, we're analysing the risks and benefits the environment poses to health, and ensuring our findings have relevance to the UK's business community. The microbiology research group from ECEHH share laboratory space in the ESI and collaborate widely with ESI staff.

[The Wellcome Centre for Cultures and Environments of Health](#) focuses particularly on the cultural and environmental factors that shape our lives, members of the Centre are aiming to develop new engaged research methods and translational pathways for enabling health and well-being across the life course.

[The Institute of Cornish Studies \(ICS\)](#) brings together academic research in and about Cornwall. We want to understand better the histories that make up this place, what Cornwall is like right now, and what kind of futures we can move towards.

[The Global Systems Institute \(GSI\)](#) will be thought-leading in understanding global changes, solving global challenges, and helping create a flourishing future world together, through transformative research, education and engagement.

The GSI and ESI work in collaboration to support research into sustainability. The GSI conducts a top-down approach to understanding global systems and providing solutions to global change (i.e. starting at the global scale and working downwards). The ESI adopts a more bottom-up approach focusing on environmentally oriented solutions (i.e. starting from the smaller scale such as communities or ecosystems and working upwards). This gives the two institutes a natural complementarity and synergy, as any attempt to understanding complex systems must combine top-down and bottom-up approaches.

[The Living Systems Institute \(LSI\)](#) pioneers transformative science to engineer control of complex biological systems. LSI merges research in biology and medicine with ground breaking physical sciences technologies and powerful mathematical modelling capabilities. The cross-fertilisation between disciplines enables LSI investigators to decode biological complexity on all scales, from the molecular to the whole organism and populations. This integrated approach is aimed both at fundamental knowledge and at generating new tools for improving health and treating disease.

The University of Exeter [Institute for Data Science and Artificial Intelligence \(IDSAI\)](#) provides a hub for data-intensive science and artificial intelligence (AI) activity within the University and the wider region. Our vision for data science is to innovate new means of interrogating and understanding data and then to innovate and apply cutting-edge data analytical methodologies to diverse questions. We are a truly interdisciplinary research institute with data scientists, mathematicians, and computer specialists across many of our Colleges, Research Institutes, and Departments.

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<sup>i</sup> Taken from the University's application to the ERDF submitted in 2009. This application declared an ambition to conduct: "innovative interdisciplinary research of the highest quality into the causes and consequences of environmental change and how to manage its effects" with a focus on three themes: "clean technology, natural environment and socio-economy."

<sup>ii</sup> For the University's climate emergency plan and policy see: <https://www.exeter.ac.uk/sustainability/newsandevents/climate/>