



# Conserve and sustainably use the oceans, seas and marine resources for sustainable development

## TEACHING AND STUDENTS

### Biodiversity and Ecology GSD

The Biodiversity and Ecology module, taught within Global Sustainable Development courses, provides basic knowledge surrounding ecological principles, theories and applications to help students interpret and make connections between humans and the environment.



## RESEARCH

### Harnessing the power of biomass (GCRF)

Once in the ocean, plastic decomposes very slowly and is incredibly damaging to sea life. While the UK is working to improve waste management through recycling and the creation of bioplastics, such efforts are eclipsed by relentless plastic usage in developing nations. Indonesia, with its growing population and rapid urbanisation, is the world's second biggest contributor to plastic waste in oceans. The United Nations Environment Programme predicts that plastic waste in oceans causes \$13 billion of damage each year.

Indonesia possesses a rich and untapped biomass resource, which is often disposed of by burning, in turn leading to greater pollution. In fact, the country generates the highest waste biomass in the world. However, using biomass to make biofuels and bioplastics has incredible

potential. Indonesia's climate provides a perfect environment for year-round plant growth, resulting in the production of large quantities of biomass.

A research project has been undertaken in the School of Engineering to help produce solutions to convert organic biomass (waste material from plants or animals that is not used for food) into biodegradable plastics and renewable fuels. The project could also have other benefits, as new resources could decrease the need for imported chemicals, contributing to welfare and economic development.

### Removing plastics from India's freshwater systems (GCRF)

Microplastics are very small pieces of plastic that are increasingly contaminating the world's rivers, lakes and seas. They come from a variety of sources, including larger plastic debris that degrades into smaller pieces. A project in the School of Engineering has examined microplastics in water systems to help develop effective waste management strategies.

Working in in Thane, East India, with the Indian Institute of Technology, the project produced up-to-date data on microplastic water pollution in the region and shared knowledge of microplastics in local communities. Part of this involved a digital communications hub where people can share live information about water quality hazards, and through which support agencies and service providers were able to communicate with each other.



### Protecting marine environments must start with the community (GCRF)

Public awareness is growing of the damaging effects of overfishing. One way it is being addressed is through marine protected areas (MPAs). MPAs are protected areas of seas, oceans, estuaries or lakes designed to limit fishing. In developing countries, there is still little understanding of MPAs' impact on local communities. Global targets for MPAs prioritise quantity over quality, they are often established without consultation or consideration of how humans interact with their environment, and can negatively impact attitudes towards future conservation projects.

A team at Warwick investigated the impact of MPAs and community support in three Cambodian coastal communities. By conducting interviews, questionnaires and workshops with communities, NGOs and policy makers, the project identified key themes to help design and create MPAs that support sustainable use of marine resources.



## OPERATIONS

### Sustainable Urban Drainage Systems (SuDS)

The University's Campus Masterplan was approved by Council in February 2019. The associated drainage strategy sets out to enhance the landscape and ecological value of the estate. All developments are required to use SuDS unless there are practical reasons for not doing so. The aim is to reduce runoff rates and where possible, deal with surface water as close to its source as possible. It will be achieved through green/blue/brown roofs, rainwater harvesting systems and permeable surfaces.

## PUBLIC ENGAGEMENT

### Leamington Canal Clean-Up

Student volunteers help the Inland Waterways Association in the bi-annual clean up of the canal in Leamington Spa, a popular area for students. Items removed from the canal in the past have included shopping trolleys, mattresses, bicycles, signs and even a golf buggy.

