

What does Education for Sustainability have to do with Mathematics?

“Through our research, spanning a range of topics from the optimum delivery of healthcare, to the stability of electricity networks, we aim to contribute to solutions for some of today's key challenges.” (<http://www.southampton.ac.uk/maths/about/index.page?>)

Innovating solutions to the world's challenges requires understanding. Mathematics provides the insight necessary to understand systems, and create solutions. Topic areas of relevance to sustainability already in the Mathematics curriculum include:

- **Predicting behaviour:** understanding the behaviour of people and the impacts of their choices e.g. prisoner's dilemma; behavioural ecology – understanding the behaviour of organisms, and the ecological consequences.
- **Future thinking:** modelling and projecting future changes and patterns.
- **Health:** simulation and optimisation in public health planning; application of probability and statistics to understand the possible effectiveness of a new drug.
- **Demography:** population accounting, growth and distribution; diversity of demographic trends across the globe; mortality, fertility and migration; future population prospects.
- **Economics:**
 - Microeconomics: resource distribution; inclusions of all externalities e.g. pollution; economic modelling and resource scarcity; cost-benefit analysis.
 - Macroeconomics: elimination of poverty; economic growth; alternative measures to GDP e.g. Index of Sustainable Economic Welfare; national and international policy; international trade.

Key skills for mathematicians which sustainability teaching cultivates: interdisciplinarity; informed decision-making; synthesis of different opinions, theory and data; debate and reasoning; teamwork; leadership; problem-solving; oral and written communication; self-management; time-management; critical thinking; future thinking.

Find out more: Contact Julia Kendal (j.kendal@soton.ac.uk) for more information including case studies on teaching sustainability in this area.