

Engineering Tripos Part IIA, 3E11: Environmental Sustainability & Business, 2025-26

Module Leader

[Prof Lucia Reisch](#) [1]

Lectures

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Lab Leader

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Timing and Structure

Mondays, 14:00 - 16:00

Content

[\[Full syllabus document on moodle\]](#) [2]

Sustainable markets require a fundamental realignment of business practices and system-wide innovation. Planetary boundaries are being transgressed. Climate change, biodiversity loss, plastic and chemical pollution, freshwater scarcity, and inequality in access to safe and healthy workplaces demand immediate attention. This course will explore the challenges and opportunities for businesses to develop, integrate, and promote more environmentally and socially sustainable practices, processes, and policies.

The course will concentrate on three primary strategies of sustainable business practices, each vital for businesses to function both socially and environmentally responsibly.

1. First, businesses must reduce the negative ecological impact of their activities to remain within planetary boundaries. Innovations that mitigate and adapt to climate change are essential, and engineering for sustainability is one approach.
2. Second, ensure that the social impact (S) of the business is positive and enhances welfare for employees, customers, and society as a whole; no one in the supply chain should be deprived of life's essentials; providing fair and safe working conditions boosts workers' motivation and trust, while also strengthening the resilience of supply chains.
3. Third, design and ensure effective governance (G) and due diligence in all business processes; sustainability strategies should align with the business model and tackle the challenges faced by the respective industry.

These dimensions are discussed within the ESG (Environmental, Social, Governance) framework, which is now widely adopted and assists companies in achieving their sustainability and economic objectives. Additionally, investors are interested in how a company mitigates ecological and social risks and how it capitalizes on opportunities arising from the transition to more sustainable markets and lifestyles. While the 'E' has long dominated the corporate sustainability agenda, many businesses today strive to deliver on the 'S' and the 'G' equally, expanding their focus from planet to people, politics, profits, governance, and ethical issues.

The current "poly-crisis" – comprising climate change, biodiversity loss, rising geopolitical conflicts, energy and

food insecurity, recession fears, and political instability – disrupts markets and value chains. These global issues have concrete impacts at the local level and present significant challenges for businesses. As the scientific evidence becomes increasingly compelling (for example, the reports of the Intergovernmental Panel for Climate Change, IPCC, and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, IPBES), attempts to mitigate and manage these risks through regulation (for instance, the European Green Industrial Deal), economic incentives, and agreements at national and multinational levels (such as the 2015 UN Sustainable Development Goals) become ever more ambitious. This, in turn, results in a more demanding regulatory framework for both small and large businesses. The business world responds with green and social innovations in products and processes, higher sustainability standards and goals, and various initiatives aimed at promoting market sustainability. However, there is also “greenwashing” and political lobbying against transformation to secure vested interests. More recently, ESG has faced mounting pressure, and there has been a rollback of green regulations alongside a decline in sustainable business activity.

This serves as the backdrop for the course. Over eight sessions, we will explore the concepts, frameworks, and models available to the corporate world for developing managerial solutions that promote more sustainable markets and businesses. We will examine strategies, approaches, and tools for managing environmental and social sustainability, expanding our scope beyond what the course title suggests. We will learn about the positive and negative, intended and unintended impacts that businesses have on the sustainability of markets, societies, and stakeholders, including employees, consumers, and individuals along global supply chains. We will assess opportunities for change within a business's operations, from improved products (innovation) to enhanced processes (circular economy) and more effective policies. We will investigate sustainable investment decisions.

After completing this course, you will be able to understand the framework of systems and stakeholders within which business operations are embedded. You will be equipped to assist organisations in integrating environmental and social sustainability into their operations and in designing more sustainable business processes and product-service bundles (‘ecological engineering’). Additionally, you will learn to utilise ‘behavioural insights’ to initiate and sustain behaviour change in organisations, businesses, and markets.

Overview of Course Sessions

Session 1 (13/10/25): What is at stake – and why sustainable business conduct matters. Lucia A. Reisch

Session 2 (20/10/25): Sustainability as a system condition: Doing business in times of climate change within planetary boundaries. Lucia A. Reisch

Session 3 (27/10/25): How to manage, measure, and monitor corporate sustainability: ESG and beyond. Speaker: Leonie Decrinis

Session 4 (03/11/25): Can commerce mimic nature? The promises of a circular economy. Lucia A. Reisch

Session 5 (10/11/25): From ESG Metrics to Market Impact – Aligning Capital with Sustainability. Speaker: Atiyeh Yeganloo

Session 6 (17/11/25): Entrepreneurship for Sustainability: Building Sustainable Ventures for Lasting Impact. Speaker: Mark Khater

Session 7 (24/11/25): How to promote greener markets with behavioural insights? Nudging for Good. Speaker: Malte Dewies

Session 8 (01/12/25): Sustainable Engineering and digitisation: Do the benefits outweigh the costs? Speaker: Billy Shi

Aims

Students will gain an understanding of the following key areas:

- The role of corporations as participants in the systemic view of planetary boundaries and the ‘Doughnut Economy’.

- The motivation of corporations to transcend 'The business of business is business' and the implications of Sustainable Engineering.
- The dimensions of 'Environment-Social-Governance' (ESG) and methods for selecting, measuring, and monitoring respective sustainability goals.
- The tools and strategies that corporations can employ to develop sustainable business practices and processes, such as the circular economy.
- The practical challenges and opportunities businesses encounter when integrating sustainability into their operations and value chains.
- The policies that governments and the regulatory environment can implement to promote more sustainable business practices.

The skills gained in this course include (but are not limited to) fostering the ability to

- know and apply different approaches to measure ecological footprint and handprint,
- understand and evaluate tools of ESG management,
- assess critically sustainability metrics, business reporting and information, and the sustainability strategies of corporations; detect Greenwashing,
- apply a 'behavioural lens' to promote behaviour change in organisations,
- learn how to use scientific literature and write academic essays.

Further notes

Teaching Methods

Pre-class assignments are discussed in class, including online games and simulations; interactive lectures, and guest talks from experts.

Coursework

Your grade will be determined *solely by the exam*. The university exam will take place at the end of May 2026 and will last for 1.5 hours. There will be three questions, of which two must be answered. You will receive further guidance on the exam during class and supervision.

Additionally, you may submit one piece of coursework by 01 *December 2025*. The coursework consists of an academic essay of up to 2,000 words. The topics will be provided at the beginning of the course. This coursework offers you the opportunity to receive personalised feedback and enhance your essay-writing skills. Please check Moodle for an information sheet on Coursework.

Booklists

Please refer to the Syllabus PDF and Moodle.

Examination Guidelines

Please refer to [Form & conduct of the examinations](#) [3].

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Links

[1] <mailto:lr540@cam.ac.uk>

[2] <https://www.vle.cam.ac.uk/course/view.php?id=139721>

[3] <https://teaching.eng.cam.ac.uk/content/form-conduct-examinations>