

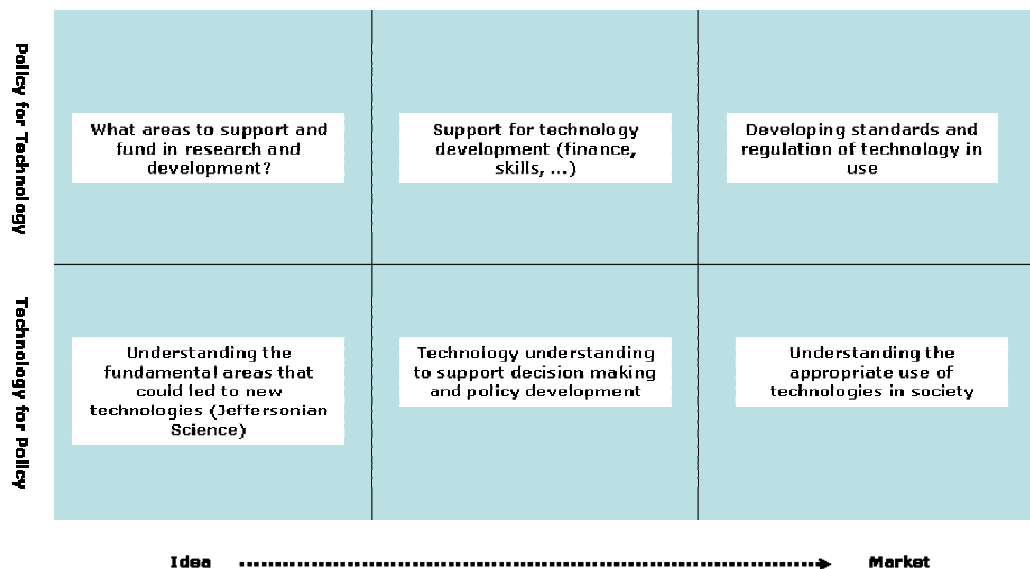
TPE10 Advanced Technology Policy

Michaelmas Term 2006

Overview

The development of new technologies is seen as key to economic growth around the world. Technology policy has a key role to play in the development and growth of modern societies, from its impact on their level of economic well-being to the structure of the technological world itself.

As technology policy is such a broad subject, this course takes an inclusive approach to dealing with technology policy issues. We define ourselves against a number of other policy areas and issues and show how these have developed in the UK and other countries. In doing this we make a similar distinction to that of Harvey Brooks, by thinking of two approaches - policy for technology and technology for policy.¹ By aligning those two approaches with the development cycle that begins with new ideas and ends with technologies in the market, we can see a number of broad areas of investigation emerge, as outlined with some examples in the diagram below.



For example, within the course we will discuss support for the development of new technologies, which has a significant component of innovation policy and some input from entrepreneurship policy. When looking at specific cases, such as the use of embryonic stem cells, we will be touching on the regulation of technologies at the same time as having a position on how to support such technologies in their development.

¹ Harvey Brooks (2001) "Autonomous science and socially responsible science: A search for resolution" *Annu. Rev. Energy Environ.*, vol. 26, pp. 29–48.

It is hoped by the end of the course students have a broader understanding of technology policy and how its various aspects can be discussed and analysed.

Aims of the course

This module is intended to provide students with a framework for thinking about technology policy as well as giving case examples of current areas of concern for technology policy.

The core aims of the course are to

- Provide students with a framework for understanding technology policy issues
- Engage students in considering how technology policy interacts with other policy areas, such as innovation, entrepreneurship etc.
- Allow students to discuss current technology policy issues
- Encourage students to investigate a technology policy issue of concern to them in greater depth

Course Coordinators and Lecturers:

Mr. Finbarr Livesey
Dr. Tim Minshall

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thwm100@eng.cam.ac.uk

Guest Speakers:

Please note speakers who are marked TBC are yet to be confirmed.

Ms. Laure Dodin, Institute for Manufacturing, University of Cambridge

Dr. Bill Nuttall, Judge School of Business, University of Cambridge

Mr. David Gill, ET Capital **TBC**

Dr. Richard Mason, Cambridge Antibody Technology (CAT) **TBC**

Dr. Eoin O' Sullivan, Special Science Adviser to the Director-General, Science Foundation Ireland (SFI)

Designation

This module is a postgraduate module of the Department of Engineering. It is an elective course of the MPhil in Technology Policy and the MPhil in Engineering for Sustainable Development, and is available to CUED MPhil and PhD students (with agreement of their course administrator).

The module is of the standard size adopted in the Engineering Department and the Judge Institute of Management, i.e. a nominal 16 hours. The course is to be delivered via one two-hour lecture each week for eight weeks.

Auditors are welcome if they keep up with the readings and undertake to attend the classes regularly.

Course Outline

Please note that this is a provisional outline. The order of the lectures may change and some may change depending on speaker availability

All lectures are 2:00 – 4:00 in Seminar Rooms A/B, Institute for Manufacturing

Lecture 1 (Mr. Finbarr Livesey) October 5th **Technology policy – what it is, what it is not**

What is technology policy? Is it different from science and innovation policy? How do they link together?

Why are we interested in technology policy?

Policy for technology, technology for policy

Why and when should a government intervene?

Key issues for the course

Readings:

Lundvall, B., and Borrás, S. (2005) “Science, technology, and innovation policy” in *The Oxford Handbook of Innovation*, Fagerberg, J., et al (eds), Oxford University Press.

Lecture 2 (Dr. Tim Minshall) October 12th **From technologies to markets – supporting technology based entrepreneurship**

Taking the step from a technology to a product in the market

What are the links between innovation and entrepreneurship policy in the UK?

Case of university spin-outs

Large companies, and the impact of open innovation

Readings:

Minshall, T., and Herriot, W.J., (Eds.), 2003, Cambridge Technopole Report: An overview of the UK's leading high-technology cluster, St. John's Innovation Centre Ltd.

Chesbrough, H. (2003), “The era of open innovation”, *MIT Sloan Management Review*, Spring 2003, pp. 35 – 41.

Chapters 1 and 2 from: Rosenberg, D. (2002). Cloning 'Silicon Valley': The next generation of high tech hot spots, Reuters/Pearson Education.

Lecture 3 (Mr. Finbarr Livesey) October 19th **From ideas to technologies – innovation and technology policy at the national level**

The economic case for the government to be interested in R&D and innovation in the UK

What specific aspects are of interest for technology development?

What are the challenges facing the UK government on R&D and innovation?

What is the Technology Strategy, how did it come about?

Issues since its inception

Readings:

First Annual Report of the Technology Strategy Board, 2005

Abramovsky, L., R. Harrison and H. Simpson, "Increasing innovative activity in the UK? Where now for government support for innovation and technology transfer", Institute for Fiscal Studies Briefing Note No. 53, November 2004, <http://www.ifs.org.uk/bns/bn53.pdf>

The DTI Innovation Report, December 2003, <http://www.dti.gov.uk/innovationreport/> (executive summary and skim read only)

Lecture 4 (Dr. William Nuttall) October 26th

Case example – developing new energy technologies in the UK

The problem of power generation for the UK
Options to meet the needs of consumers and industry
Current energy policy and the specific question of investing in nuclear
Future issues

Lecture 5 (Ms. Laure Brevignon) November 2nd

Case – the development of regulation for tissue engineered products in the EU and the US

What are tissue engineered products?
Why do they need to be regulated?
The evolution of regulation in the US and the UK
Ongoing issues for the government and the companies

Readings:

TBC

Lecture 6 (Finbarr Livesey, David Gill) November 9th

Funding of technology development in the UK

What is the structure of public and private funding for technology development in the UK?
What are the issues for technology-based companies (established and start-ups)?
What could the government do to improve funding availability?

Readings:

TBC

**Lecture 7 (Dr. Eoin O’Sullivan, SFI) November 16th
Case example – Science Foundation Ireland**

The Irish approach to developing research groups – the aims of SFI
Outline of the model
Successes since its inception? What have we learned?
Moving forward

Readings:

TBC

**Lecture 8 (Dr. Richard Mason, CAT) November 23rd
Business perspectives – the development of CAT and industry positions**

Case example of a local technology based firm - the background to their technology and the issues in developing the technology
Did the government help or hinder?
What else could the government do to support a company like CAT?

Course Books and Readings:

All readings will be made available either online or in class, there will be no need for a reserve copy in the library.

Summary of Assessment

The assessment of the course will be in three parts:

Part 1: 500 words, response to question set in lecture three (15%)

Part 2: 500 words, response to question set in lecture five (15%)

Part 3: 4,000 – 6,000 words, briefing and options paper in response to a question to be set by class six (70%)

Assignment hand in requirements:

Part 1 to be handed in by 4:00 PM 26th October 2006, no late submissions accepted.

Part 2 to be handed in by 4:00 PM 9th November 2006, no late submissions accepted.

Due date for Part 3 will be confirmed later in the course.

All assignments are to be handed in to Paula Sparling, Room A1.07 in the Judge Business School.

Please note – deadlines will be strictly enforced for this module – lateness penalties will apply without further warning. Formal requests for any extension should be made to the Course Coordinator in advance.

**August 2006
TFL**