Summary of Analytical Findings

A major political/ideological shift gained momentum in the UK in the late 1970s under the government of Margaret Thatcher. At that time, the British government embarked on a broad program of deregulation and privatization of key industries (including the gas and electricity industries) as part of an effort to reduce the role of government in the economy. While many economic benefits (e.g., lower taxes and lower consumer prices for a variety of products including energy) have resulted, deregulation and the introduction of competition in formerly-regulated industries have introduced a high degree of turmoil into the UK's overall research and development enterprise. For example, government support for R&D has declined by more than 15% since the mid-1980s, while private sector R&D has fallen by as much as 80% in some industries, and by approximately 10% overall. The United Kingdom currently spends approximately 1.9% of GDP on R&D.

More so than most other leading industrialized countries, the United Kingdom now relies on mechanisms other than direct research funding as a means of promoting R&D. Tax credits, public-private partnerships, and government-sponsored industry working groups now figure as prominently as direct R&D funding as a means of promoting the development and adoption of new technology. The British government believes that decisions regarding energy R&D are largely the concern of the private sector energy industries.

The shift away from public R&D funding also reflects the fact that commercial return on technology investments is a primary focus of British technology policy which strongly emphasizes economic competitiveness. Private and public sector investments aim to move technologies to market, in the UK and abroad, and to realize relatively near-term economic returns. Given this focus, some basic research and long-term, high risk projects have fared especially poorly compared with technology improvement, demonstration, and deployment initiatives.

R&D in selected socioeconomic areas has received increasing public investments. Health research rose by 278% (to $1.2 billion) between 1987 and 1996, while basic science has recently grown by 20% (to $2.5 billion). Among the top ten industrial R&D sponsors, only the pharmaceutical industry has increased its R&D investments—by 49% (to $2.7 billion).

University-based science in the UK has suffered severely over the past two decades of declining investment in support for research and scientific equipment and facilities. In an effort to revive university science, the British government, in an atypical partnership with a private, non-profit organization, the Wellcome Trust, will invest $2.3 billion over the next three years to rebuild the academic science base. $665 million (29%) of the funds will be furnished by the Wellcome Trust.

Energy R&D investments in the UK have declined sharply. The UK's Department of Energy, which housed the majority of the government's energy R&D activities, was

abolished in 1992, and its functions were largely dismantled. Government investments in energy R&D fell by 90% (to a level of $48 million) in real terms between 1987 and 1999. As a percentage of total government R&D investment, energy has fallen from approximately 4.4% in 1987 to 0.7% in 1997. Remaining energy R&D-related activities now fall largely under the auspices of the Department of Trade and Industry and focus on the further development and improvement of existing technologies and on their commercial deployment. The Non-Fossil Fuel Obligation, a policy that requires electricity producers to use non carbon-based primary energy sources for a portion of their generation, has become a major vehicle for the promotion of R&D and clean energy development in the absence of direct government research funding. Private sector energy R&D has also declined significantly over the same period—falling by approximately 40% (to $214 million) in the gas and electricity industries and by 55% (to $93 million) in the oil and coal industries.