

SUMMARY OF ANALYTICAL FINDINGS

The 1990s have seen robust growth in US investments in R&D; combined public and private sector expenditures for R&D have increased 13% in real terms from 1990 to 1997. In 1997, the US public and private sectors invested \$205.7 billion in R&D. However, this growth in investments in R&D is present only in the private sector. Private sector investments in R&D increased 34% between 1990 and 1997; over the same period the federal government decreased its expenditures by 15% in real terms. Projections of outyear federal budgets indicate the federal government will continue to reduce its investments in R&D for the foreseeable future.

A significant trend that has emerged in the 1990s in industry's R&D effort has been the dramatic increase in the portion of industrial R&D supported by non-manufacturing (i.e., service) industries. The non-manufacturing sector now accounts for more than 25% of all industrially supported R&D in the United States.

Defense R&D continues to be the largest area of concentration for federal government's R&D investments. Since 1986, the proportion of all federal R&D funds going to defense R&D has been in steady decline, dropping from its peak of 69% in 1986 to 54% of all federal R&D outlays in 1998. Despite this decline in defense R&D and the rapid rise in health R&D since the early 1990s, defense R&D will still be funded at a level which is three times higher than health R&D. Health R&D (mainly carried out by the National Institutes of Health) has experienced the largest inflation-adjusted increases, up 21% in real terms since 1990, of any federal R&D program. AIDS-related research and cancer-related research now account for nearly 30% of all US health R&D investments. The US government's investments in energy R&D have experienced the largest reductions in the 1990s. Federal support for energy R&D has declined 22% in real terms between 1990 and 1996.

The two most significant energy policy issues facing the United States at this time are the movement towards a deregulated electric utility industry and the question of what should be done to control US emissions of greenhouse gases. To a large extent, these two issues are being debated separately although there appear to be many interconnections between the two.

US national (i.e., public and private) investments in energy R&D currently stand at a 23-year low of \$4.4 billion in 1996. The peak year for energy R&D investments was 1980, when investments in energy R&D reached \$11.6 billion. The ongoing deregulation of the electric and natural gas utility industry in the United States is responsible, along with lower energy prices, for a significant downturn in the private sector's support for energy R&D.

Federal investments in energy R&D have declined 22% in real terms between 1990 and 1996. Federal energy R&D investments are also undergoing changes in priority. Fossil energy R&D programs are at the beginning of a potentially significant change away from "clean coal" technology development programs and towards more fundamental research on ways to decarbonize fossil fuels and sequester carbon dioxide. The federal nuclear energy R&D program has restarted (at a modest level) research to develop new reactor concepts after many years of no federal research in this area. The United States has withdrawn from the ITER project, calling into question the viability of this international fusion energy program. Renewable energy and energy efficiency R&D programs continue to be the only consistent areas of growth in the federal energy R&D budget.