

GTSP



Global Energy Technology
Strategy Program

Energy R&D Investments: Past and Future

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Battelle

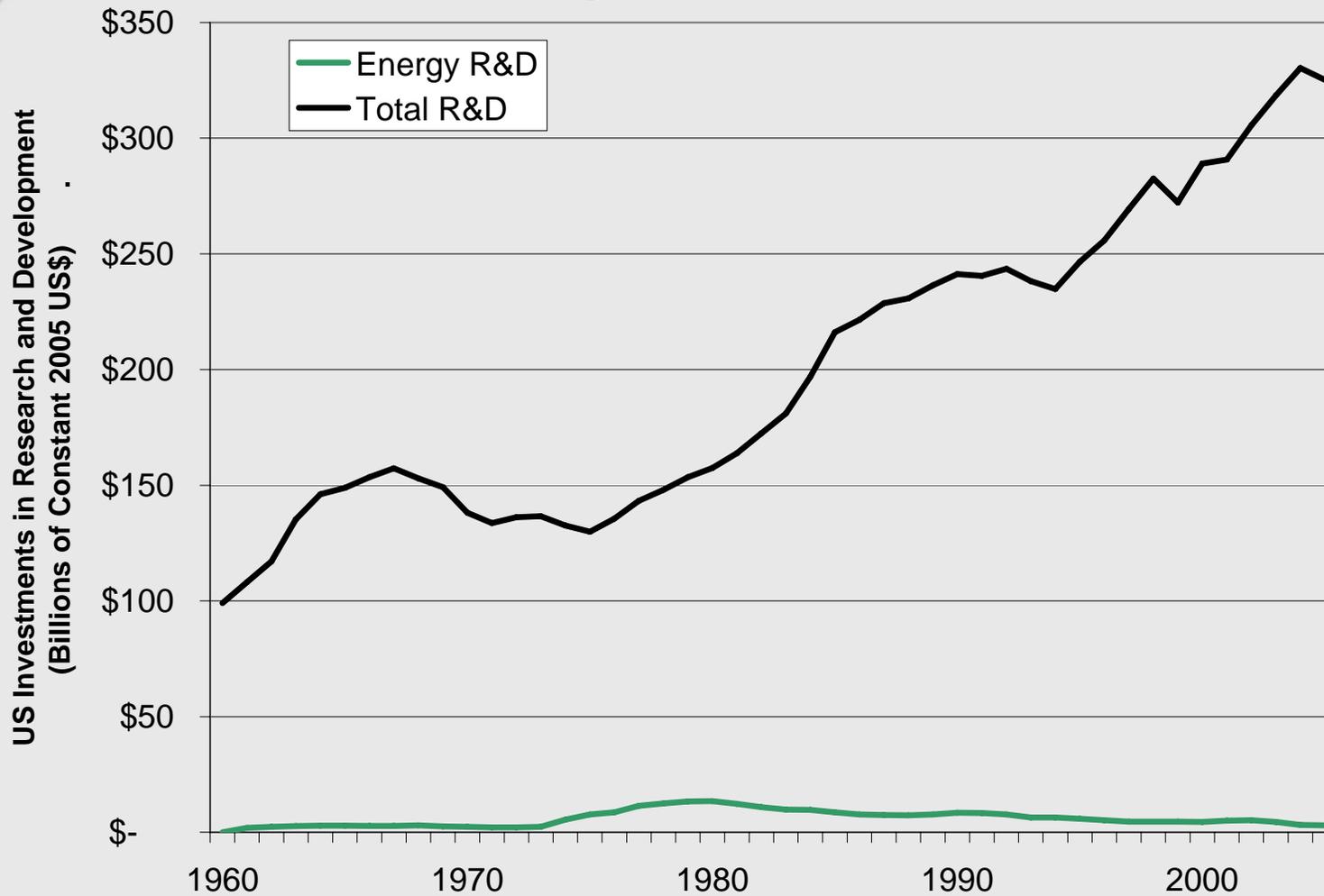


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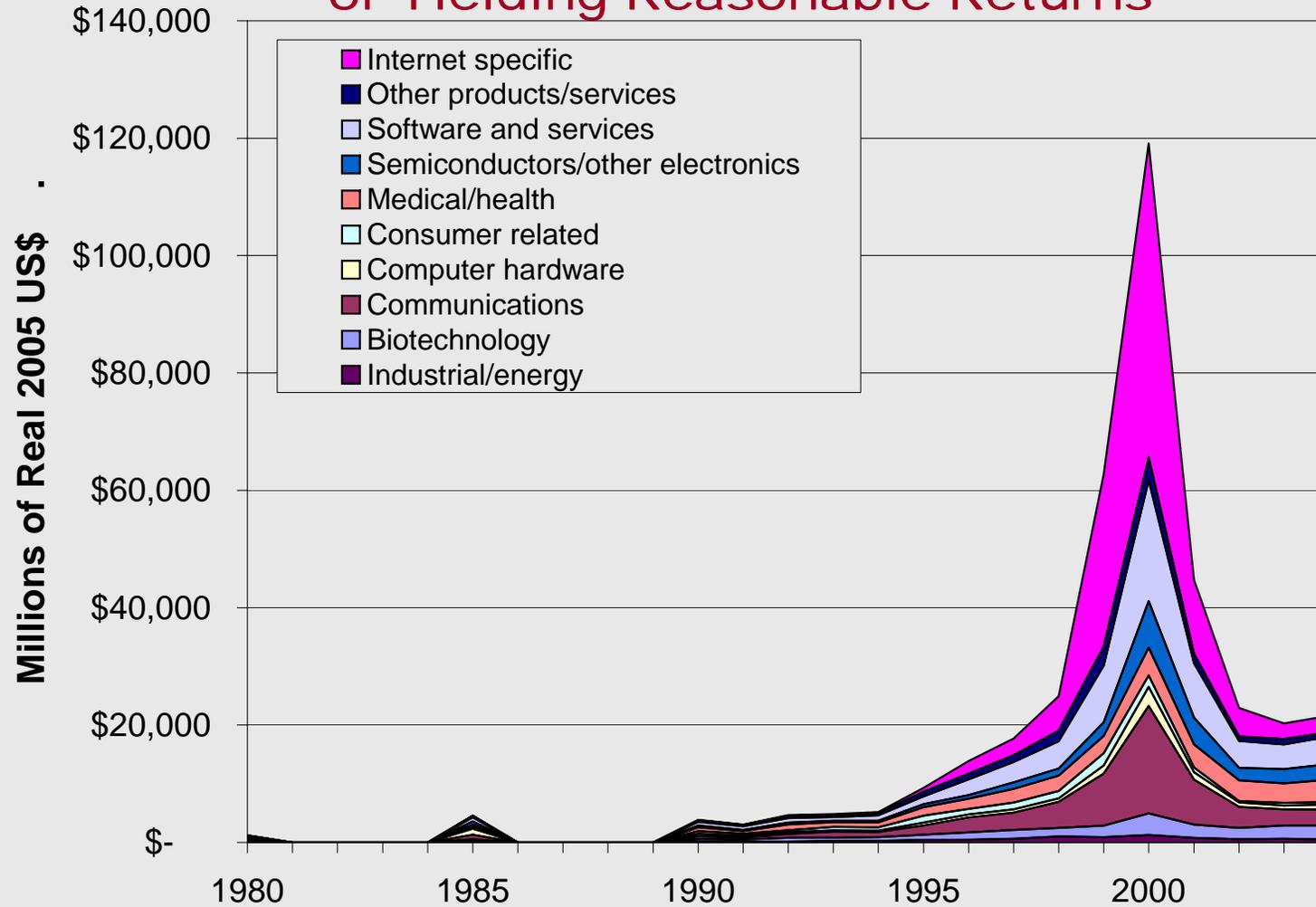
Presentation Organization

- ▶ Historical “Epochs” and Drivers of Energy R&D Investment 1973-present:
- ▶ Observations and Implications for Future Energy R&D Investments to Address Climate Change

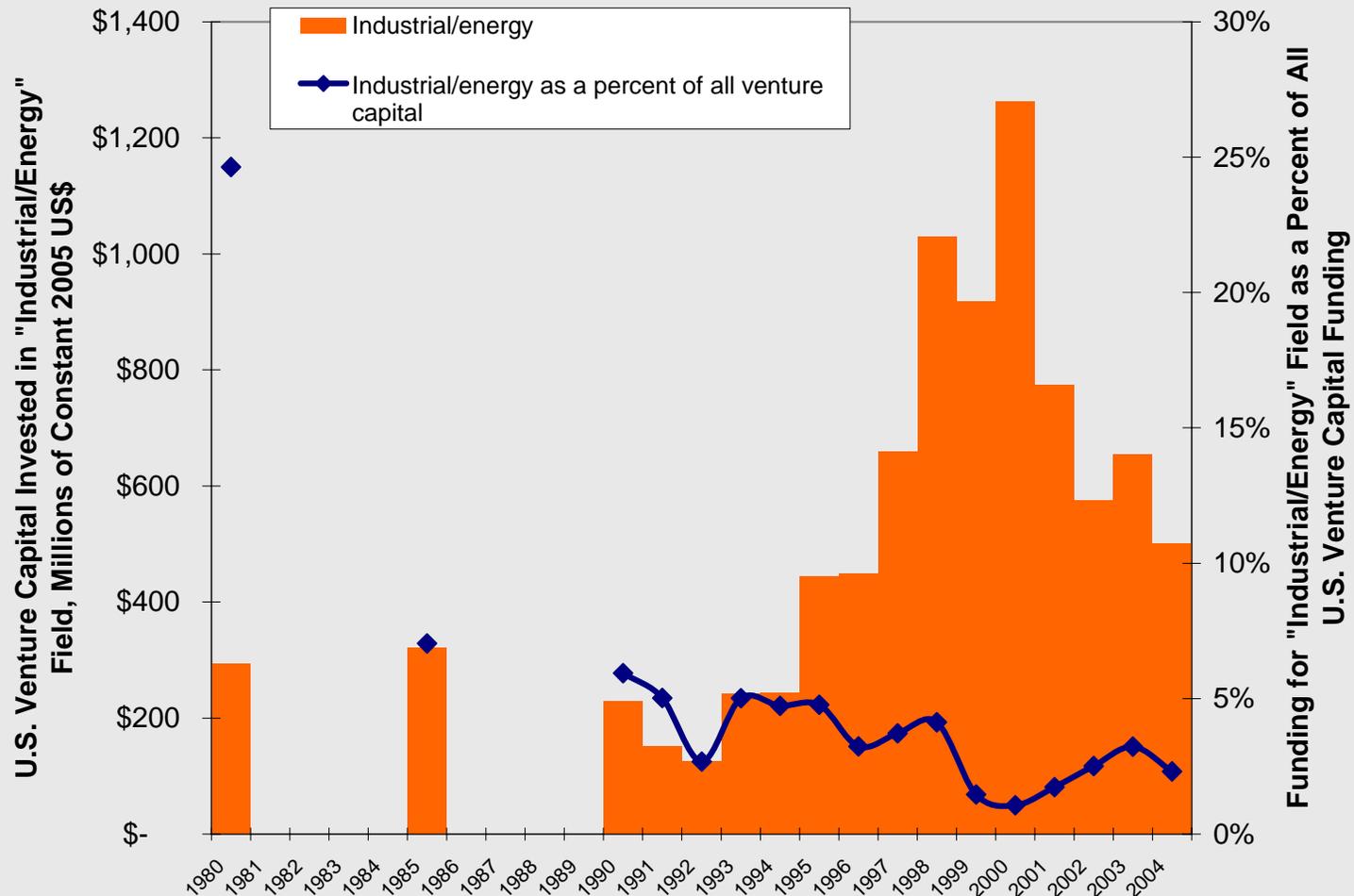
For More than 40 Years, Investments in Research and Development Have Been Seen As a Good Investment Capable of Generating a Reasonable Return



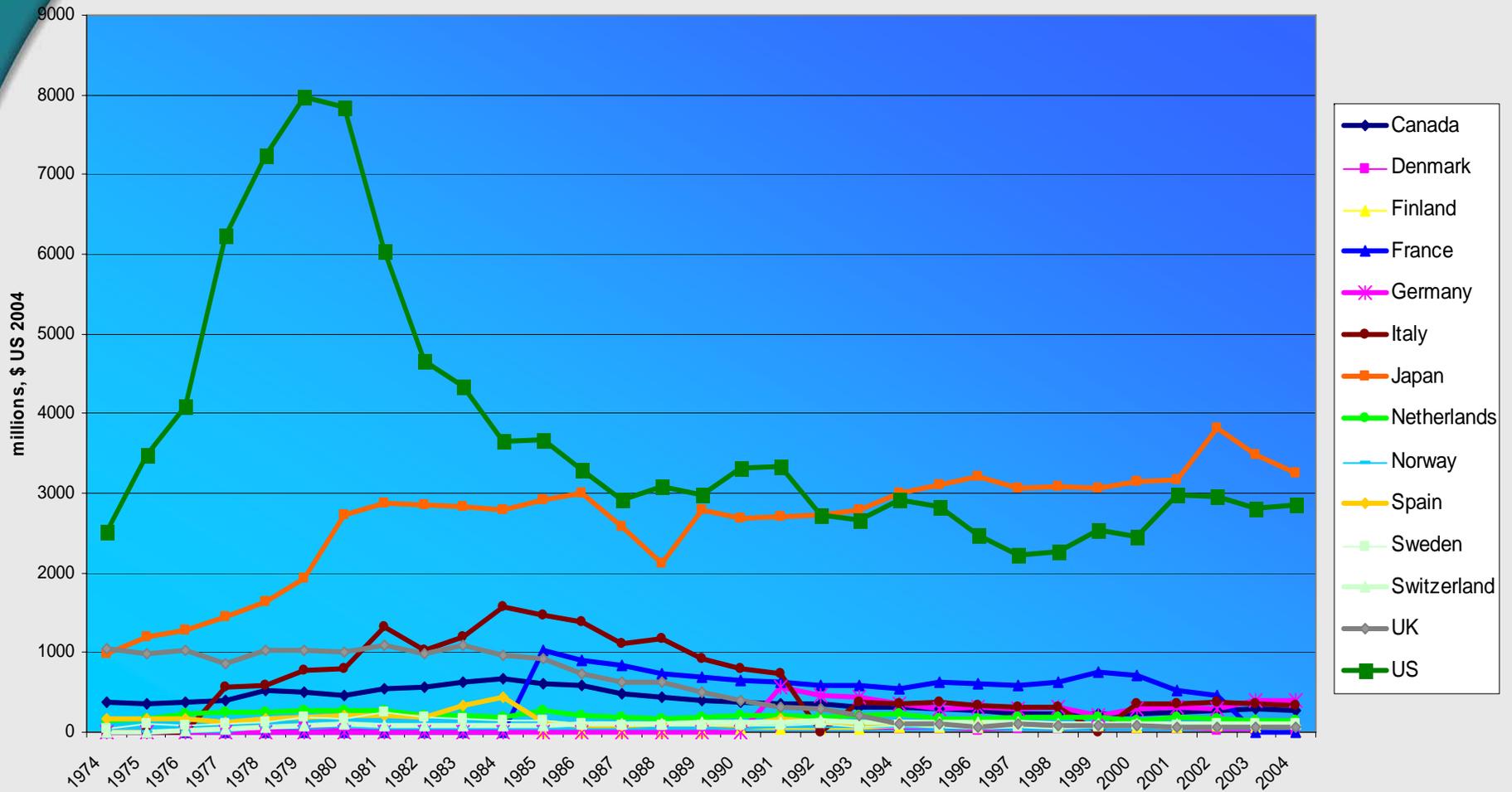
The Venture Capital Community Also Appears to Believe that High Technology Is an Investment Capable of Yielding Reasonable Returns



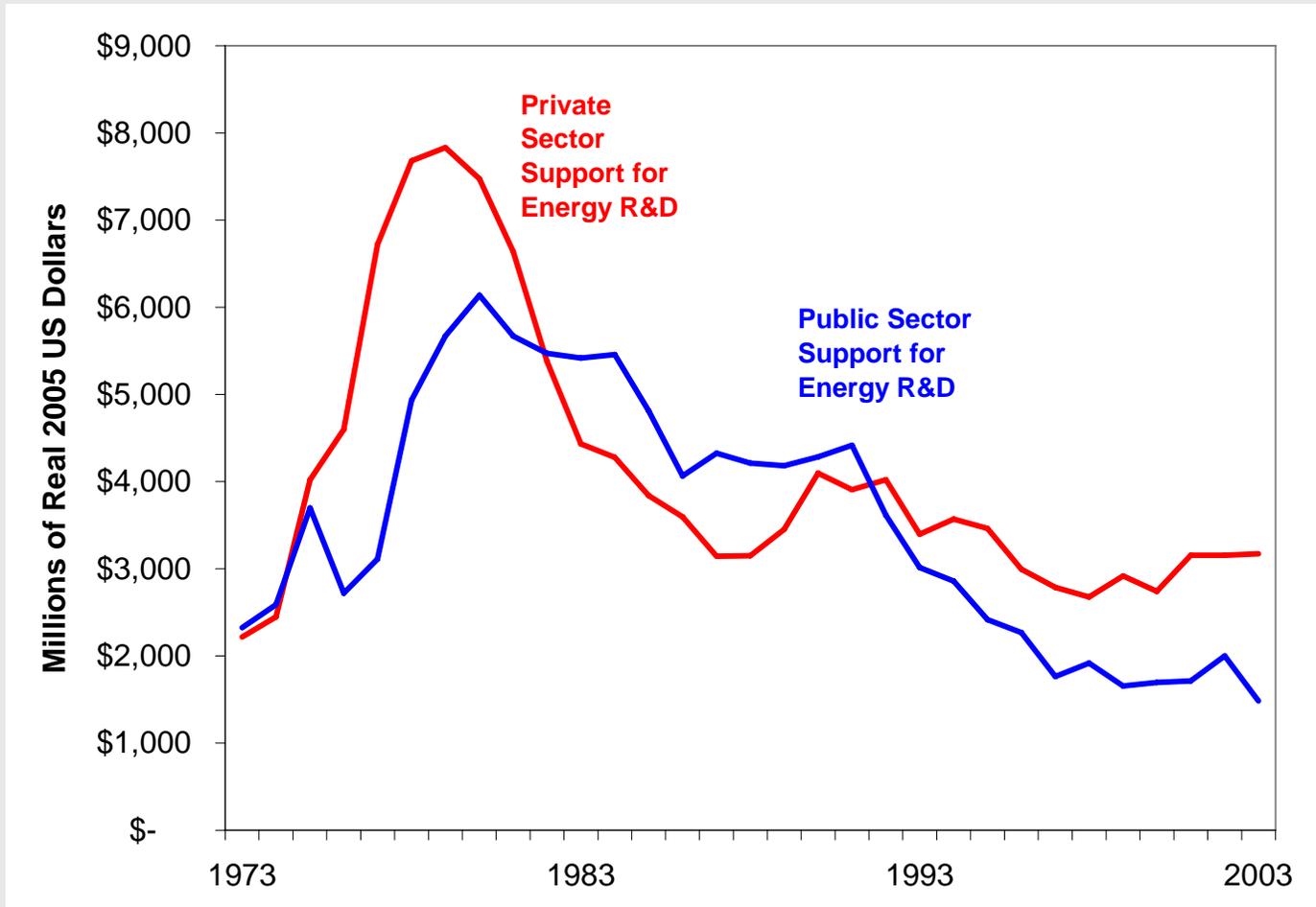
U.S. Venture Capital Investments in Energy 1980-2004



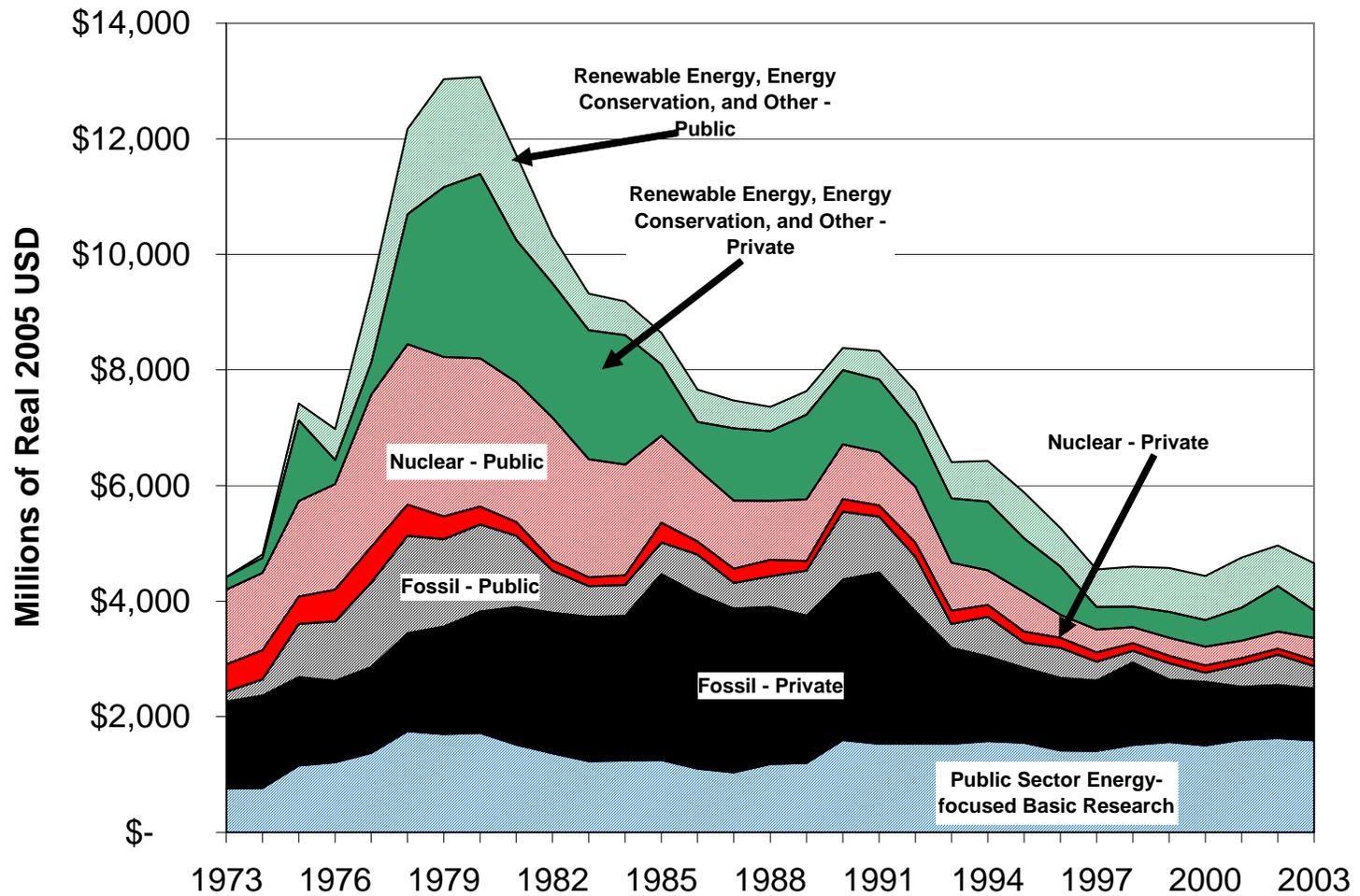
Energy R&D in Selected Industrialized Countries, 1974-2004



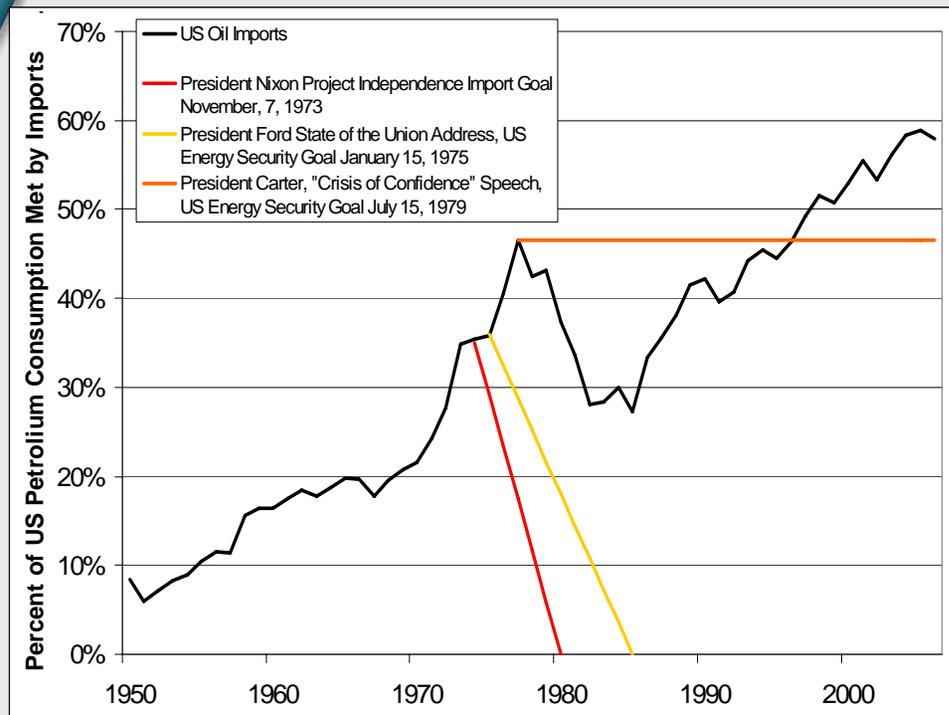
U.S. Public and Private Energy R&D Since 1974



U.S. Public and Private Energy R&D Since 1974



Presidential "Crisis Declarations" on U.S. Energy Security



▶ **President Richard Nixon, November 7, 1973**

- *"Let us set as our national goal, in the spirit of Apollo with the determination of the Manhattan Project, that by the end of this decade we will have developed the potential to meet our own energy needs without depending on any foreign energy sources."*

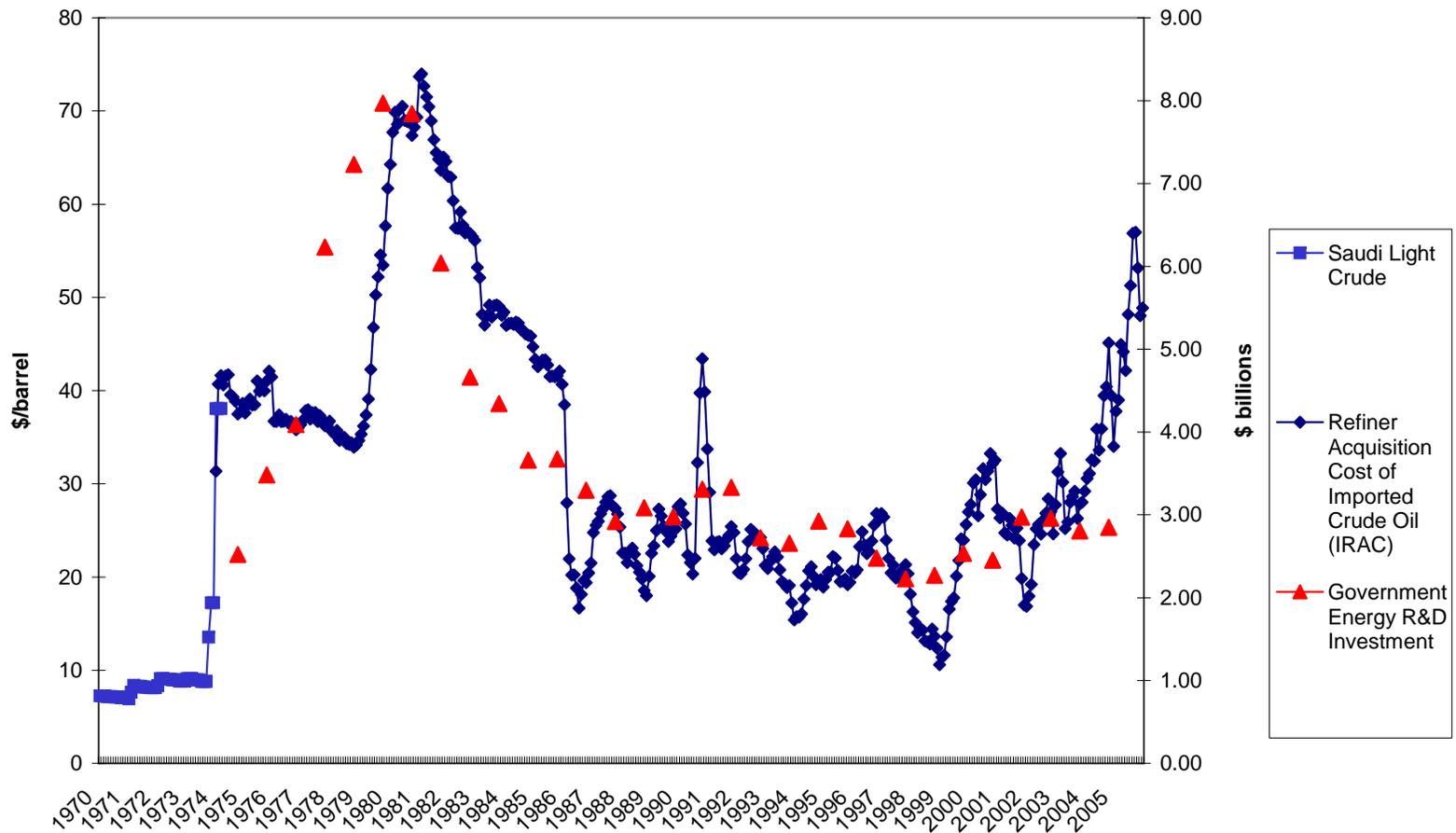
▶ **President Gerald Ford, State of the Union Address January 15, 1975**

- *"I am recommending a plan to make us invulnerable to cutoffs of foreign oil. It will require sacrifices, but it--and this is most important--it will work. I have set the following national energy goals to assure that our future is as secure and as productive as our past:*
 - *First, we must reduce oil imports by 1 million barrels per day by the end of this year and by 2 million barrels per day by the end of 1977.*
 - *Second, we must end vulnerability to economic disruption by foreign suppliers by 1985."*

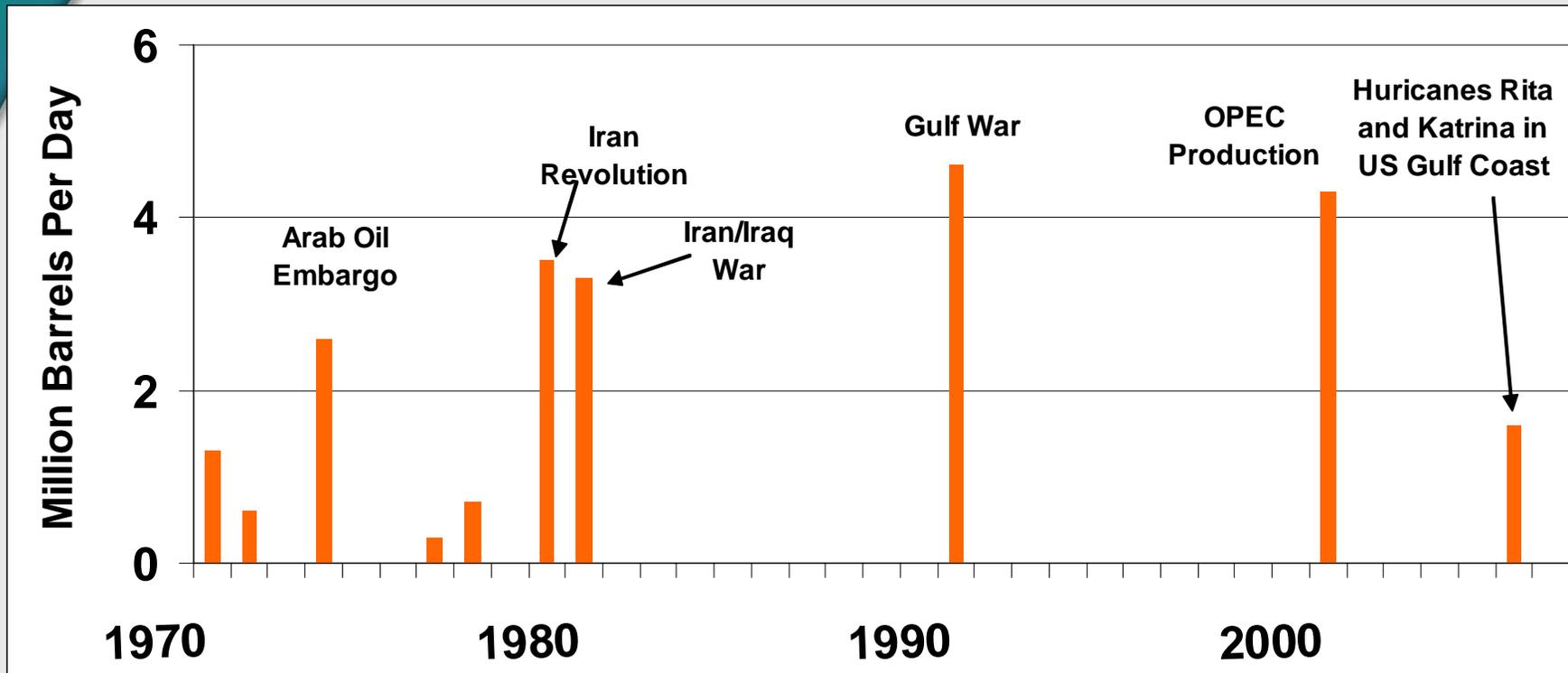
▶ **President Jimmy Carter, "Crisis of Confidence" speech, July 15, 1979**

- *"Beginning this moment, this Nation will never again use more foreign oil than we did in 1977 -- never. From now on, every new addition to our demand for energy will be met from our own production and our own conservation."*

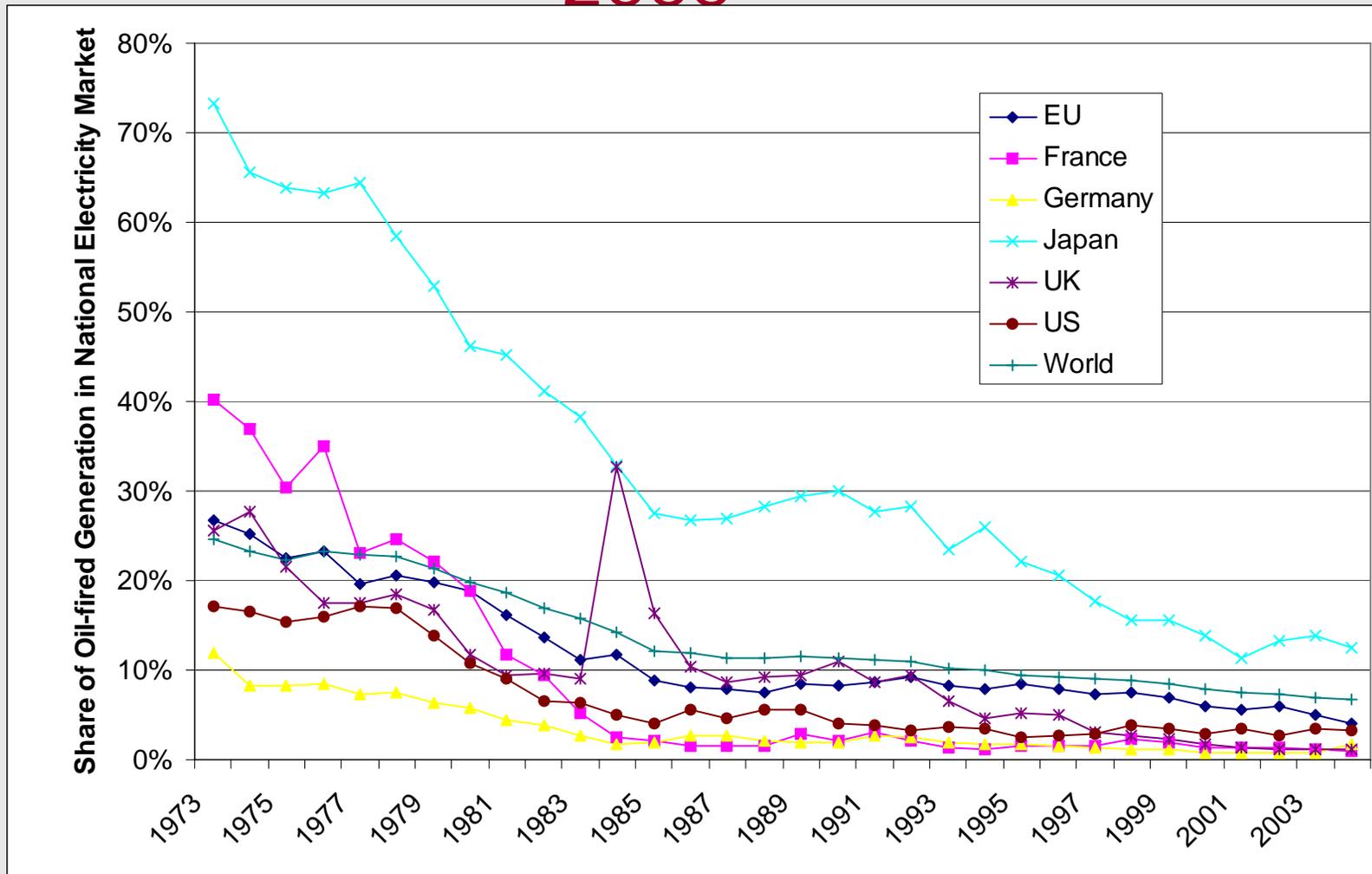
Real Oil Prices and U.S. Government Energy R&D Investment



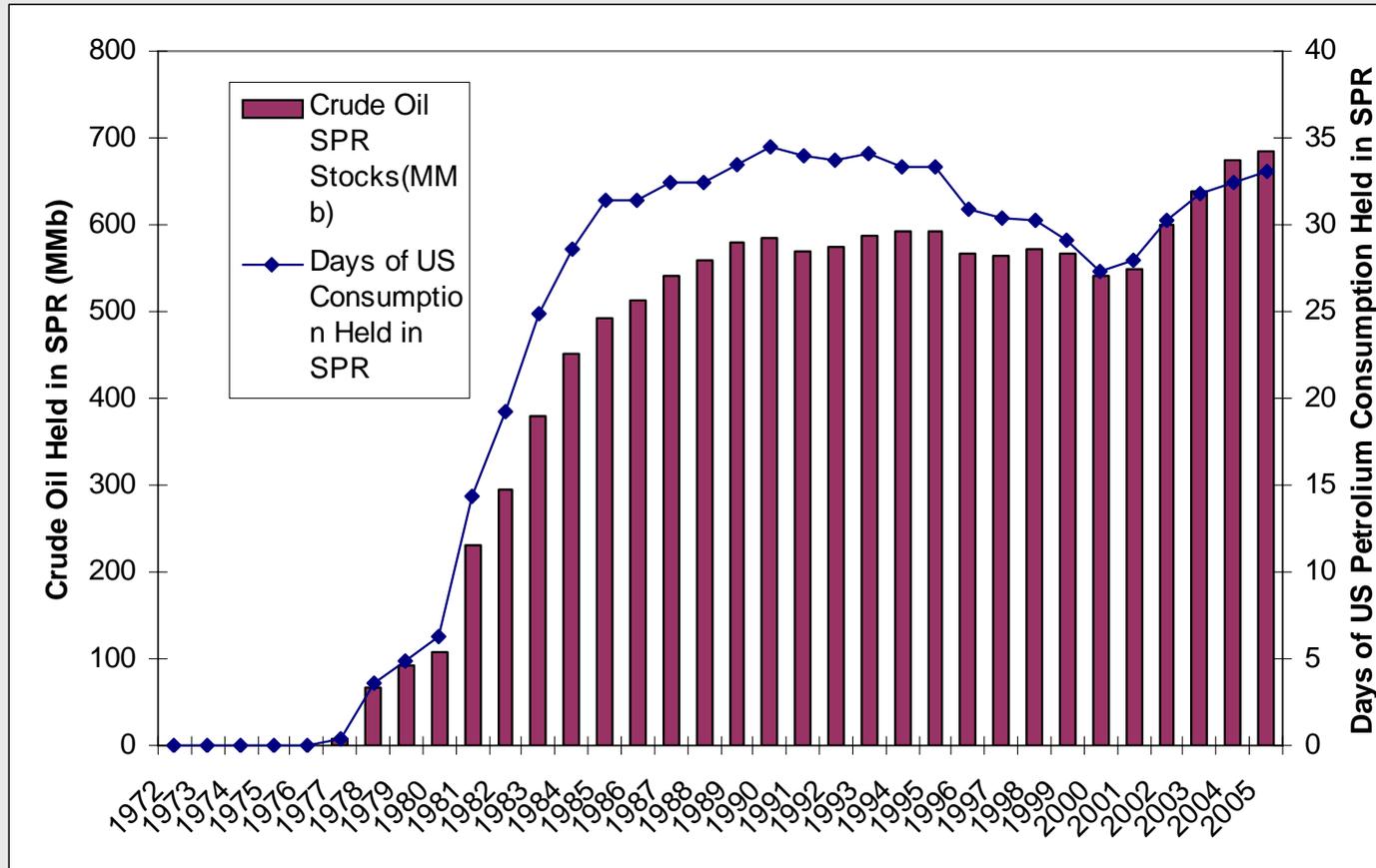
Major Disruptions to Global Oil Supplies: 1970-2005



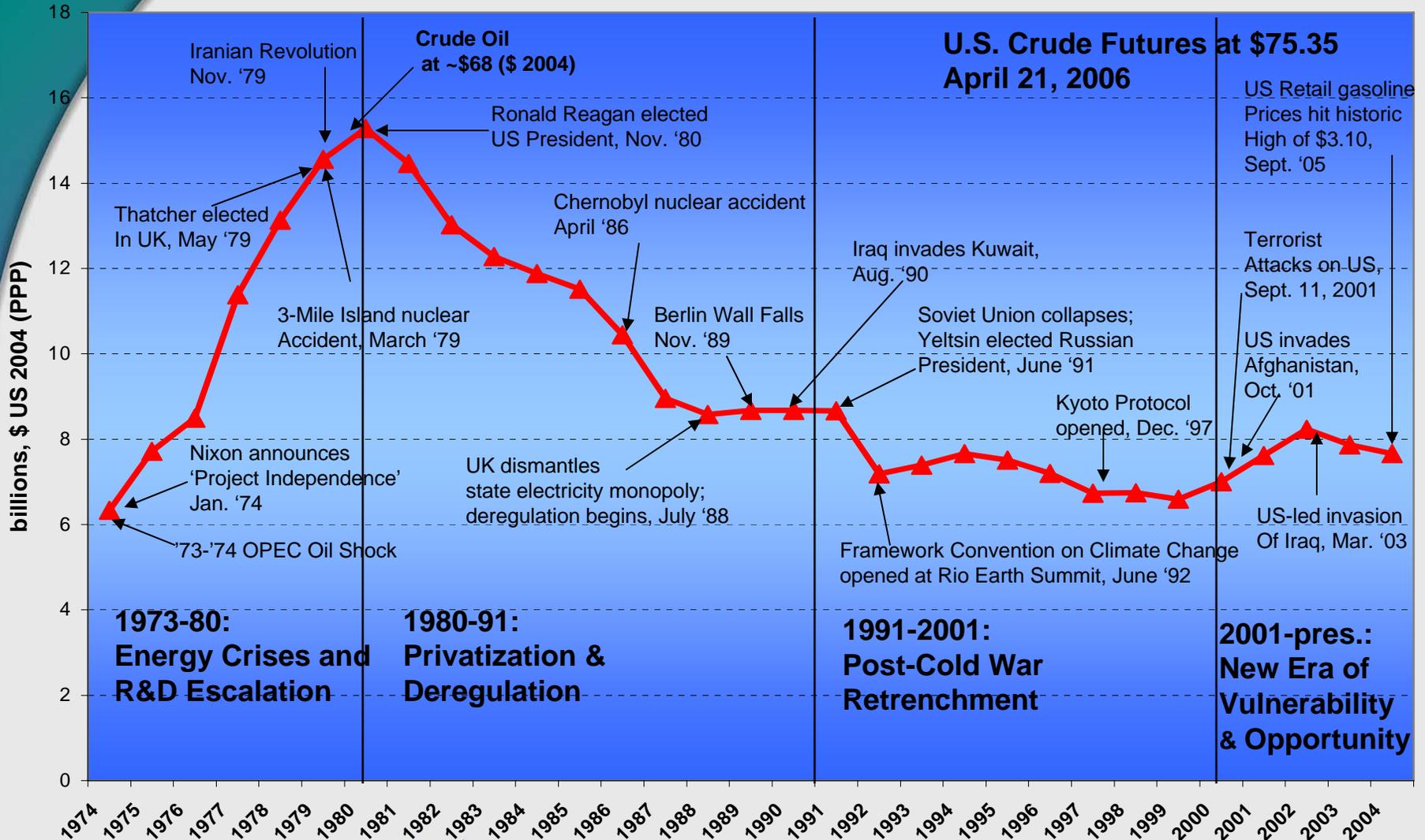
Petroleum's Share of Electricity Production: 1972-2005



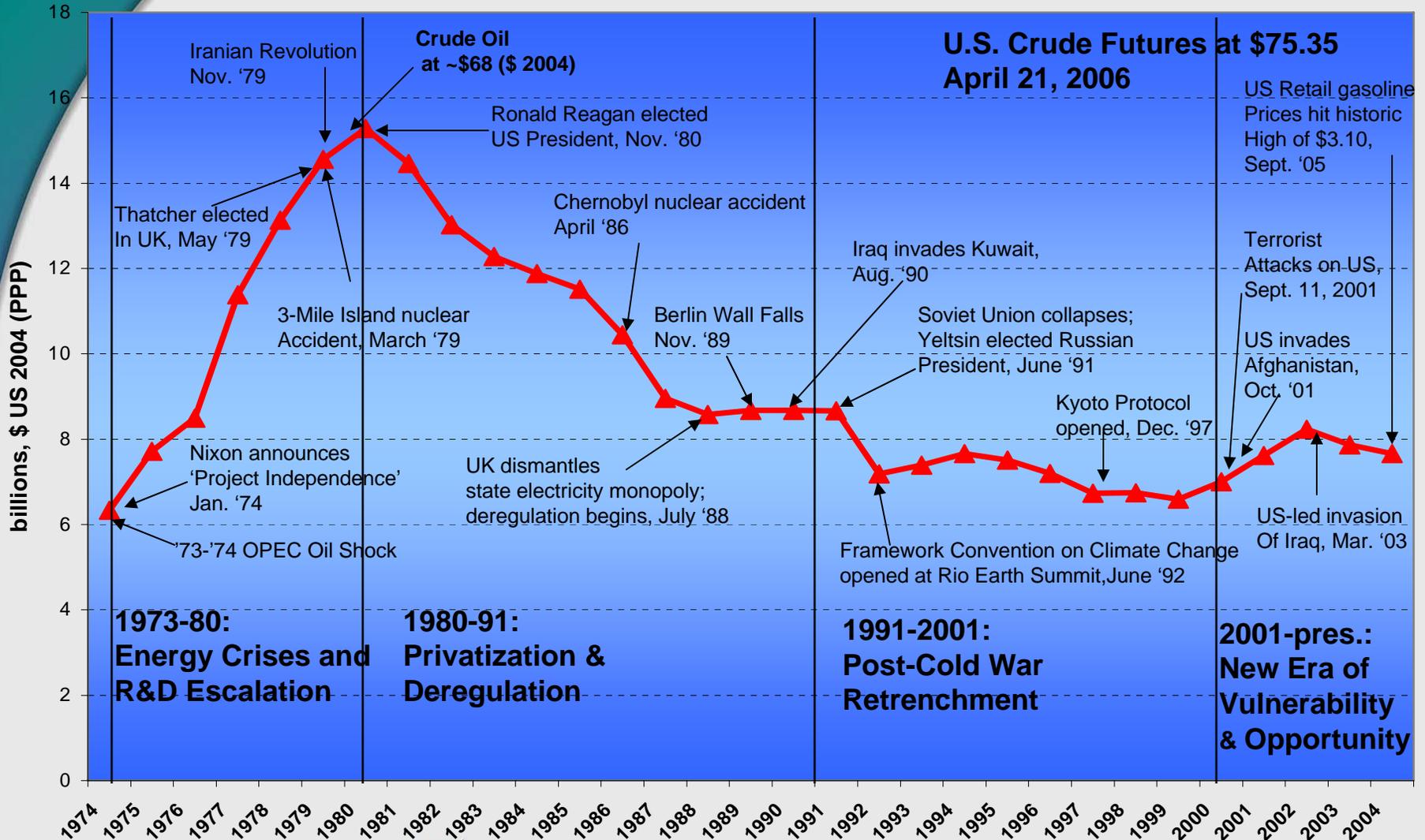
Growth of the SPR



"Epochs" of Public Energy R&D Investment since 1974



"Epochs" of Public Energy R&D Investment since 1974



Observations re: Energy R&D Investment History

- ▶ Energy R&D investments have evolved significantly over the past thirty years. Initial investment upswing was motivated by crisis environment of 1970s.
- ▶ The development of a broader portfolio of response options (e.g., strategic reserves, futures markets) played a role in reducing the attractiveness of energy R&D as a policy tool and investment vehicle.
- ▶ Energy R&D investment levels have been strongly correlated with energy prices.
- ▶ Will climate change provide an impetus for a new era of energy R&D investment?

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Thank you!

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