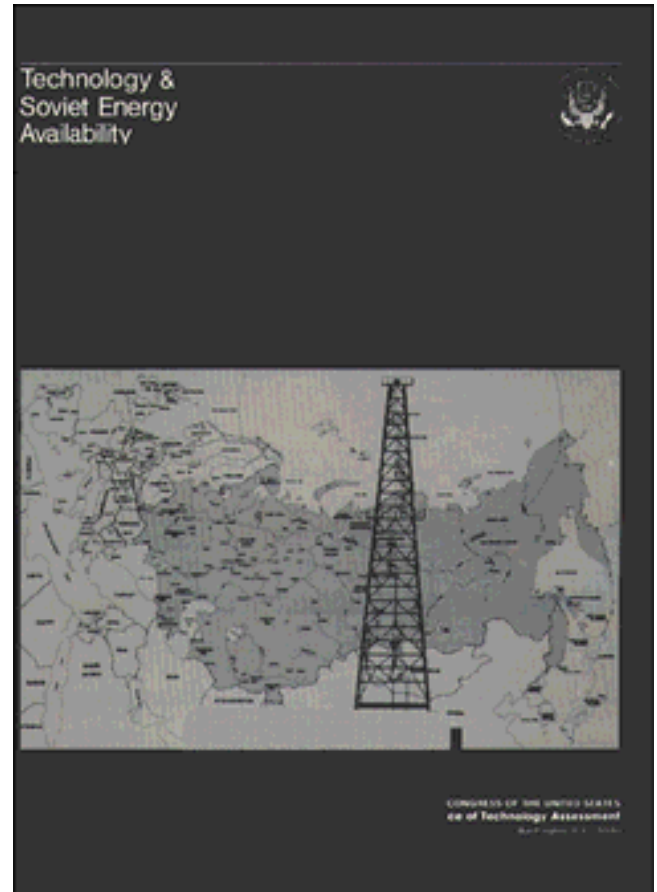


# *Technology and Soviet Energy Availability*

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# Foreword

This assessment was undertaken in response to requests from the House Committee on Foreign Affairs; the Senate Committee on Banking, Housing, and Urban Affairs; and the House Committee on Science and Technology to examine the contribution of American and other Western technology and equipment to Soviet energy availability in the present decade.

In November 1979, OTA published an assessment of *Technology and East-West Trade*. Among the conclusions of that work was the suggestion that the United States enjoys significant technological advantages over the U.S.S.R. in petroleum equipment and computers, two areas that have been accorded high priority in Soviet economic planning. It therefore appeared that these technologies might offer the United States opportunities to use export controls for purposes of exercising political leverage over the Soviet Union.

The present study addresses in detail the significance of American petroleum equipment and technology to the U.S.S.R. and the resulting options for U.S. policy. However, the scope of this assessment is far broader. It examines the problems and opportunities that confront the U.S.S.R. in its five primary energy industries—oil, gas, coal, nuclear, and electric power. It discusses plausible prospects for these industries in the next 10 years; identifies the equipment and technology most important to the U.S.S.R. in these areas; evaluates the extent to which the United States is the sole or preferred supplier of such items; and analyzes the implications for both the entire Soviet bloc and the Western alliance of either providing or withholding Western equipment and technology.

OTA is grateful for the assistance of its project advisory panel chaired by Sen. Clifford Case, as well as for the advice of numerous reviewers in agencies of the U.S. Government, academia, and industry. However, it should be understood that OTA assumes full responsibility for its report, which does not necessarily represent the views of individual members of the advisory panel.

*Director*

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## Conversions (except where otherwise noted)

1 million tons standard fuel X 4.582 = million barrels of oil  
1 million metric tons hard coal X 5.051 = million barrels of oil  
1 million metric tons of hard coal X 0.6859 = million metric tons of oil  
1 million tons of standard fuel = 0.9091 million metric tons hard coal  
1 million metric tons of oil X 7.33 = million barrels oil equivalent  
1 million barrels oil equivalent per day X  $365 \div 7.33$  = million tons oil equivalent  
1 billion cubic meters natural gas X 0.8123 = million tons oil equivalent  
1 billion cubic meters natural gas X 5.982 = million barrels oil equivalent  
1 billion cubic feet X 23.01 = million metric tons oil equivalent  
1 cubic meter = 264.172 American gallons  
1 cubic foot = 0.0283168 cubic meters  
1 American barrel = 42 American gallons

## Abbreviations

million metric tons — mmt  
billion cubic meters — bcm  
million barrels per day — mbd  
million barrels of oil equivalent — mboe  
million barrels of oil equivalent per day — mbdoe  
British thermal unit — Btu  
kilowatt-hour — kWh  
Megawatts — MW