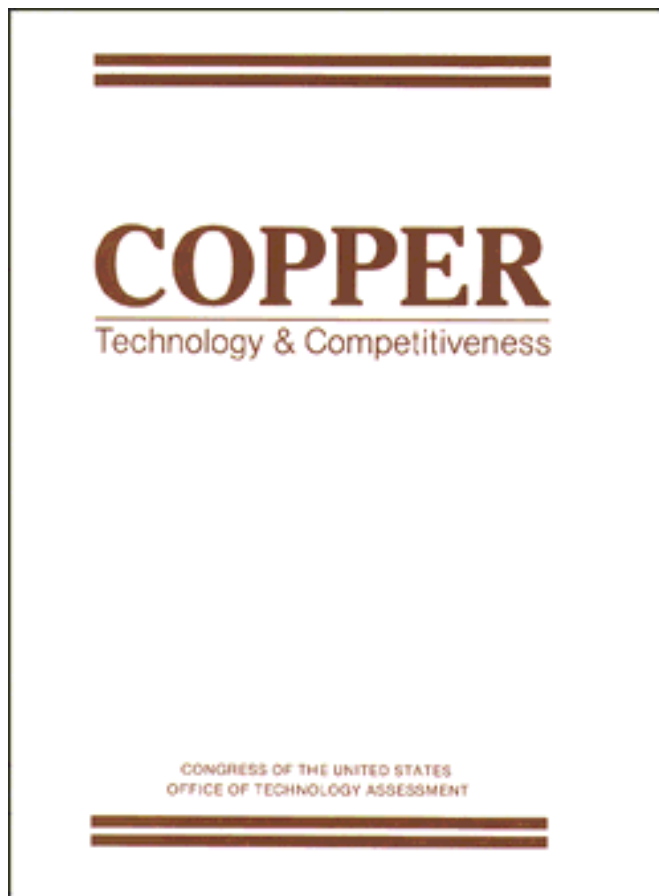


*Copper: Technology and Competitiveness*

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## Foreword


The discovery of copper by primitive people provided a transition from the Stone Age to the Metal Ages (Copper, Bronze, and Iron). For thousands of years, copper remained important for making tools, weapons, jewelry, and objets d'art. It was not until the Industrial Revolution and the age of electricity, however, that copper's excellent electrical conductivity stimulated a demand for a highly developed copper industry. The ancient mines were completely swamped by the increased world demand. But the westward expansion in North America led to the discovery of copper deposits that met much of this demand and made the United States the world leader in copper production for over a century.

Although copper markets historically have been volatile, exhibiting wide swings in supply and price with the opening of new mines and with general economic conditions, the U.S. industry had always managed to maintain its leadership. During the early 1980s, however, the global economic recession combined with the opening of numerous mines throughout the world to create oversupplies and low prices that called into question the survival of the domestic copper industry. Many U.S. mines and plants closed or cutback production. Over 28,000 jobs were eliminated. Producers sustained heavy financial losses and had to adopt aggressive cost-cutting programs.

This report responds to a request from the Technology Assessment Board—the congressional oversight body for the Office of Technology Assessment (OTA)—prompted by the balance-of-trade and other economic implications of these events. The report describes the conditions the domestic and world copper industry faced during the early 1980s. It documents the steps U.S. copper companies took to improve their position so dramatically in the mid-1980s, and evaluates the industry's present and possible future status, including relative costs of production and the elements of those costs.

The report concludes that the revitalized U.S. copper industry can compete in all but the worst foreseeable markets. Notably, the industry's turnaround came entirely from its own efforts; the Federal government rendered little assistance. The U.S. industry is now smaller, but it is still the world leader in smelter and refinery production, and ranks second in mine production. Its costs, though not the lowest in the world, are now low enough to weather most price swings. However, should the adverse conditions of the early 1980s recur, copper prices might fall to levels at which some domestic producers will again be unable to compete. The Report analyzes options available to the Federal government (and industry) to enhance the industry's competitive position.

Substantial assistance was received from many organizations and individuals in the course of this study. We would like to express special thanks to the OTA advisory panel, the project's consultants, the U.S. Bureau of Mines, and the many reviewers whose comments helped to ensure the completeness and accuracy of the report.

  
JOHN H. GIBBONS  
*Director*

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<sup>4</sup>Retired 1987.

<sup>5</sup>Until October 1986.

<sup>6</sup>After October 1986.

NOTE: OTA appreciates and is grateful for the valuable assistance and thoughtful critiques provided by the advisory panel members. The panel does not, however, necessarily approve, disapprove, or endorse this report. OTA assumes full responsibility for the report and the accuracy of its contents.

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