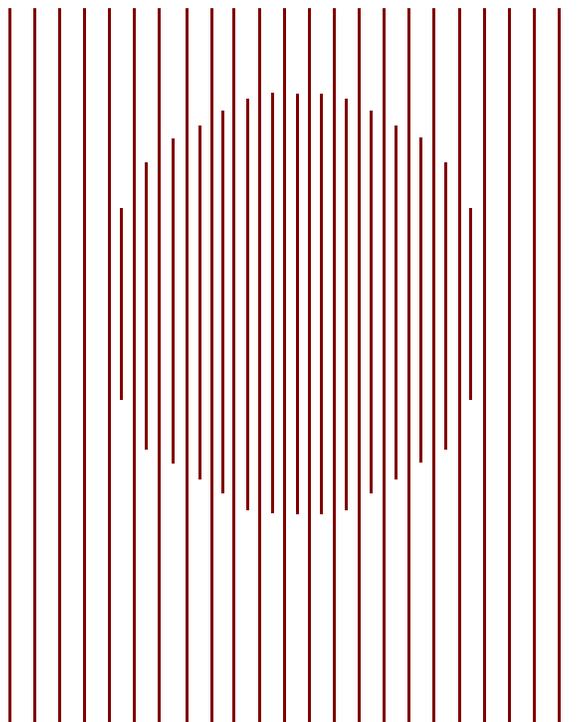


CBO PAPERS

**GREENING THE
NATIONAL ACCOUNTS**

March 1994



CONGRESSIONAL BUDGET OFFICE

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**CONGRESSIONAL BUDGET OFFICE
SECOND AND D STREETS, S.W.
WASHINGTON, D.C. 20515**

PREFACE

This Congressional Budget Office (CBO) paper was prepared in response to a request from the Joint Economic Committee to discuss the information needed to revise or expand the national income accounts to reflect changes in natural resources and the environment. The paper focuses on the benefits that might be realized and major problems that will be encountered in carrying out certain suggestions that fall under the rubric of green accounting.

Raymond Prince and Patrice L. Gordon of CBO's Natural Resources and Commerce Division wrote the paper, under the supervision of Jan Paul Acton and Roger Hitchner. Heather Miller and Veronica French provided research assistance. John Peterson and Robert Dennis of CBO offered insightful comments and helpful criticism. The authors wish to thank Carol Carson, Jack E. Triplett, Steven Landefeld, Arnold Katz, and Gary Rutledge, all of the Bureau of Economic Analysis; Anne Grambsch of the Environmental Protection Agency; and Henry Peskin, Robert Repetto, and Joel Darmstadter for their constructive comments.

Sherwood Kohn edited the manuscript, and Christian Spoor provided editorial assistance. Aaron Zeisler prepared the figures. Angela Z. McCollough produced the numerous drafts and prepared the paper for publication.

Robert D. Reischauer
Director

March 1994



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SUMMARY

National income accounting is one of the most important policymaking tools to appear in the last 50 years. It contributes to policymaking by using detailed economic data to compute such summary indicators as gross domestic product (GDP). Measurements such as the percentage of GDP spent on health care often alert decisionmakers to the need for new policy initiatives. Researchers often use the data to analyze policy alternatives. The information in the national accounts supports three basic functions, namely, to provide an economic interpretation of changes in the nation's assets and national wealth, to furnish gauges of current income based on the actual or imputed market value of goods and services, and to measure financial and factor input flows in the economy.

CRITICISMS OF THE TREATMENT OF NATURAL RESOURCES AND THE ENVIRONMENT IN THE NATIONAL ACCOUNTS

Many demands for changing the accounts arise from a concern that insufficient data about natural resources and the environment restrict the accounts' potential to inform decisionmakers on important issues such as the relationship between trade, growth, and environmental policies. Three major criticisms have emerged in the debate over the national accounts' treatment of natural resources and the environment:

- o Some say that the national accounts should reflect changes in environmental quality and natural resource reserves. Figures on investment and depreciation are supposed to tell decisionmakers whether productive assets are being maintained, but they ignore most changes in natural resources and the environment.
- o Critics argue that summary measures of income and output in the national accounts should include the services provided by natural resources and the environment because they affect the quality of life. Such benefits as recreation on public lands, the aesthetics of a clean environment, and the preservation of biodiversity are not included; nor are the effects of pollution, which are reflected in measures of national income only if they reduce worker productivity. Proposals to include an alternative

measure of national income in the accounts in the form of a "green" GDP represent an attempt to address this criticism.

- o It is said that the national accounts should identify the value added by environmental services that are implicitly included in current measures of income and should pinpoint some of the costs of reducing damages caused by pollution. The accounts ignore the capability of the environment to dispose of wastes, even though its ability to absorb pollutants is a valuable service to both producers and consumers. Money spent on avoiding damages caused by pollution--so-called defensive spending on such items as pollution abatement equipment and some prescription medicines--is included in national income but is not differentiated from other forms of investment or consumption in the national accounts.

ADDRESSING CRITICISMS OF THE ACCOUNTS' TREATMENT OF NATURAL RESOURCES AND THE ENVIRONMENT

Incorporating more information on natural resources and the environment into the accounts requires much conceptual work and data gathering. As a first step in addressing criticisms of the way in which the accounts treat natural resources and the environment, the Commerce Department's Bureau of Economic Analysis (BEA) plans to produce prototype estimates of the economic value of such nonrenewable natural resources as petroleum, gas, coal, uranium, and certain nonfuel minerals. These efforts, which BEA calls Phase I, will involve estimates made largely from available market data. The estimates could provide the basis for a measure of national income that is adjusted for the depletion of natural assets. Also, BEA has been compiling data for some time on expenditures for abatement equipment. These efforts are an important step in identifying the costs of avoiding pollution damages.

In time, BEA plans to extend its work to such renewable resources as forests and fisheries (Phase II). Building on this work, BEA intends eventually to evaluate a broader range of environmental assets, possibly based on levels of environmental quality (Phase III). Similar efforts are under way at the United Nations, which produces guidelines for the System of National Accounts (SNA) used by many member nations. To date neither BEA nor the U.N. has official plans to determine the full value of pollution damages, aesthetic effects, and the preservation of biodiversity.

BEA's attempts to address criticisms of the treatment of nonrenewable natural resources in the accounts (Phase I) will face significant measurement problems despite the general availability of market data. It is difficult when market conditions are changing to estimate changes in the reserves of nonrenewable natural resources that are economically exploitable. Moreover, the multiple-use characteristics of many items pose an important problem when estimating abatement expenditures. For example, air conditioners may reduce the effects of air pollution on sufferers of respiratory ailments but are not purchased solely for medicinal purposes. Researchers will have to determine how much of the total cost of such items should be assigned to reducing pollution damage.

Efforts to assign value to renewable resources and the environment (BEA's Phases II and III) will encounter additional measurement problems that BEA's Phase I efforts (assigning value to nonrenewable resources) will mostly avoid. The measurement of net changes in biological (renewable) resources, for example, is difficult because population growth rates are not precisely known. Furthermore, national average measures of environmental quality do not reveal regional "hot spots" where remedial actions may be necessary.

The principal problem in advancing beyond Phase I, however, will be the increasing importance of identifying reliable and consistent methods of pricing those nonmarket services that derive their value more from the benefits they yield final consumers than from their use as an input in the production of a marketed commodity. The need to identify such methods will intensify if so-called nonmarket final services prove to be a greater part of the total value of renewable measures and the environment than they are of nonrenewable resources. But it may prove more difficult to reach a consensus on the value of blue whales or clean lakes than oil deposits because the farther a resource is from the market economy--that is, the less linked a resource is to market activities--the more uncertain its monetary value becomes.

In the accounts, market prices are the basis for the value of goods and services that are bought and sold in organized markets. Assets, such as groundwater, provide goods and services that are rarely bought and sold but contribute to production. A price can be imputed indirectly for such goods and services by using information about the production process and the value of marketed output. Other assets, such as various wild species, provide services that are not sold and do not contribute directly to production. The choice of techniques for imputing a price to these services is, therefore, much more limited. The limited choice of techniques is an especially knotty

problem when attempting to place a value on the damage that pollution does to health.

CONCLUSIONS

The concept of incorporating more of the use of natural resources and the environment into the national accounts has been called green accounting. An important benefit of "greening" the national accounts would be to enhance the information available for analyzing policy issues. Among the issues are the effect of environmental protection on economic growth, the distributional impacts of environmental and natural resource policies, and the link between trade and environmental and resource policies. In addition, the process of compiling information for an integrated set of data could yield new insights into the workings of the economy.

Although natural resources and the environment are not given the same treatment as privately owned physical capital in the national accounts, some researchers would oppose green accounting. One concern is that it would be difficult to compare current and past data. Another concern is the problem of maintaining the standards of the accounts; for the most part these standards are thought to be set by applying market data. A primary advantage of using accounting systems for policy analysis is that they measure disparate goods and services with a common metric. But defining different items in economic terms rather than by some physical measurement is only worthwhile if these values are consistent and reliable.

The national accounts now record the value of some goods and services on the basis of imputed prices. Examples are limited, however, to such items as the value of services of owner-occupied housing. Can data be collected, and measures generated, to meet the standards of the accounts for reliable and consistent measures? These concerns can be addressed by separating out (in satellite accounts) the new estimates from official totals until a sufficient consensus develops around the consistency and integrity of new estimates. Revising the accounts beyond BEA's Phase I requires, however, a significantly expanded reliance on imputed prices for goods and services. Nevertheless, a gradual process of modifying measures of national economic performance is consistent with the history and development of the national accounts. It is within this context that any effort to incorporate into the national accounts more information on natural resources and the environment should be judged.