

## economy in review

# A Green GNP

*Taking the environment into account*

By John Miller

Indonesia's economy grew rapidly during the 1970s and 1980s—about 7% per year. Oil, natural gas, timber, rubber, and other natural resource exports fueled this apparently healthy economic expansion. Yet not everyone has joined in lauding the country's economic managers.

Robert Repetto, an economist with the World Resources Institute (WRI), is one critic. He says Indonesia has embarked on an "unsustainable course" by depleting its petroleum reserves, destroying its forests, and eroding its soil. The official growth rate does not acknowledge these losses: If it did, annual growth would fall to a modest 4%.

Indonesia's case is not unusual. Many developing nations have exported essential natural resources—denuding forests and milking mineral reserves—to finance short-term growth. And standard bookkeeping practices hide this natural resource drain. Gross National Product (GNP), the established measure of economic well-being, completely ignores the depletion of natural resources in calculating the value of goods and services an economy produces.

In fact, an expanding GNP (see box) and a sustainable, prosperous economy were never exactly synonymous. But the two never differed so much as they now do. Mounting environmental problems have created today's greater disparity and have led development agencies and economists to consider alternatives to GNP.

In 1987, the U.N.-sponsored World

Commission on Environment and Development warned all countries, rich and poor alike, "to take into full account [while measuring] growth the deterioration in the... stock of natural resources."

Many European countries now do this by supplementing GNP with some form of natural resource accounting. Norway compiles natural resource and environmental accounts for use in economic planning. And "natural patrimony accounts" allow French authorities to monitor the impact of economic activity on the environment.

The World Bank and the World Resources Institute, a private environmental think tank, have worked to develop alternative measures of economic performance sensitive to environmental damage and resource depletion. They hope to replace GNP with a measure that can act as a guide to sustainable development, a practice the WRI defines as "the management of natural, human, and financial assets so as to increase long-term wealth and well-being." Only after factoring environmental impact into the main accounts, these institutions argue, will economic losses associated with environmental damage be taken seriously.

## DOES GNP MEASURE UP?

In most countries, governments still consider GNP the most important measure of economic activity. That's the case in the United States. Each quarter, government officials and economists anxiously await the release of GNP figures. A steadily growing GNP, they read as a healthy economy, a decline in the growth rate hints at trouble to come, and a drop in the GNP means a recession.

According to traditional reasoning, GNP—more precisely, real (inflation-adjusted) GNP per capita—measures the level of "potential" well-being for citizens and residents of the nation. More output per person means more national income, and higher incomes allow for greater consumption. These factors can make people better off if a nation provides some equity in the distribution of goods, services, and income.

But GNP leaves out too many crucial factors to effectively measure the full economic well-being of a nation and its people. GNP ignores activities that don't involve market transactions, no matter how useful to society. In addition, it fails to examine income distribution, which is essential to evaluating the impact of economic growth on people's lives.

GNP also fails to provide clues to an economy's long-term potential, especially when applied to resource-exporting Third World countries. To do so, GNP would have to provide a practical guide to the impact of current resource use on future income. In short, it must measure a nation's sustainable income.

GNP, however, only considers sustainability when it accounts for "tangible assets"—like machinery and buildings—that make up business investment. When a business builds a new plant, its expen-

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JOHN MILLER is a member of the Dollars & Sense Collective and teaches economics at Wheaton College.

ditures contribute to the investment component of GNP. The new plant is recognized as "productive capital," and its depreciation is written off against the value of production. By accounting for depreciation, GNP recognizes the necessity of maintaining physical assets. Not maintaining assets would lead to declining future output.

This foresight doesn't extend to "biological capital." GNP neither recognizes natural resources as capital nor accounts for their depreciation. As a result, a country could come close to exhausting its resources and irreparably damage its capacity for future growth before the problem is recognized in the accounts. For example, the depletion of Indonesia's forests might not effect GNP until that country can no longer export timber at the current rate.

Repetto of the World Resources Institute shows how GNP can send false signals to policy-makers by treating natural resources as free and unnecessary to renew. He asks his readers to consider the following hypothetical example: Should a farmer cut and sell the timber in her woods to raise money for a new barn? Would she be better off? Most of us would answer yes, if the value of the barn was greater than that of the timber.

No such calculation is made in figuring GNP. Nowhere is the loss—even if it's a temporary loss—of a valuable natural resource, like timber, reflected in the accounts. In fact, if the farmer builds the barn, GNP would actually increase by the value of the timber and by the value of other products and services used to build the barn. According to the accounts, the timber was worthless as a forest, it only gained value once cut.

## TWO PICTURES OF INDONESIA

Repetto uses the Indonesian economy to examine the impact of natural resource depreciation on GNP-based meters of economic performance. He created accounts for the most important natural resources in the Indonesian economy: petroleum, timber, and soil. Together these three resources provide 75% of Indonesia's exports. Repetto estimated the physical destruction of those resources and then assigned a monetary value to those losses, subtracting the total as a "negative" investment. For timber and

## The Case Study of Indonesia

*World Resources Institutes's comparison of Gross Domestic Product and Net Domestic Product*

| Year                               | GDP    | Adjustment to Natural Resources |          |      |        | Net         | NDP |
|------------------------------------|--------|---------------------------------|----------|------|--------|-------------|-----|
|                                    |        | Petrol.                         | Forestry | Soil |        |             |     |
| 1971                               | 5,545  | 1527                            | -312     | -89  | 1,126  | 6,671       |     |
| 1972                               | 6,067  | 337                             | -354     | -83  | -100   | 5,967       |     |
| 1973                               | 6,753  | 407                             | -591     | -95  | -279   | 6,474       |     |
| 1974                               | 7,296  | 3,228                           | -533     | -90  | 2,605  | 9,901       |     |
| 1975                               | 7,631  | -787                            | -249     | -85  | -1,121 | 6,510       |     |
| 1976                               | 8,156  | -187                            | -423     | -74  | -684   | 7,472       |     |
| 1977                               | 8,882  | -1,225                          | -405     | -81  | -1,711 | 7,171       |     |
| 1978                               | 9,567  | -1,117                          | -401     | -89  | -1,607 | 7,960       |     |
| 1979                               | 10,165 | -1,200                          | -946     | -73  | -2,219 | 7,946       |     |
| 1980                               | 11,169 | -1,633                          | -965     | -65  | -2,663 | 8,506       |     |
| 1981                               | 12,055 | -1,552                          | -595     | -68  | -2,215 | 9,840       |     |
| 1982                               | 12,325 | -1,158                          | -551     | -55  | -1,764 | 10,561      |     |
| 1983                               | 12,842 | -1,825                          | -974     | -71  | -2,870 | 9,972       |     |
| 1984                               | 13,520 | -1,765                          | 493      | -76  | -2,334 | 11,186      |     |
| <b>Average Annual Growth: 7.1%</b> |        |                                 |          |      |        | <b>4.0%</b> |     |

Note: GDP and NDP are measured in constant 1973 Rupiah (billions.) A negative adjustment to a resource signals a decline in the physical reserves of that resource during the year.

soil, the two renewable resources, he adjusted his figures for the cost of replacing the assets.

From 1970 to 1984, Indonesia lost 7.2% of its standing timber. Significant soil erosion also occurred during the same period. Increases in farm output in Indonesia's hill country were achieved at the expense of soil quality. And known oil reserves declined each year after 1974.

Resource depreciation has a powerful impact on Indonesia's long-term economic potential. Much of the investment reported by the Indonesian government evaporates after subtracting the depletion of natural resources from official figures to achieve the "Net Domestic Product" (see Table 1). For example, Repetto's measure cut 1984 investment by about 66%. For 1979 and 1980, the value of depleted petroleum, soil, and timber surpassed the amount of investment in the economy. Repetto's measure reported negative net investment for those years. Accounting for resource depreciation has a similar impact on growth rates. Repetto's gauge cuts the

growth rate by close to 50%.

For Repetto, accounting for natural resource consumption flashes an unmistakable warning: Indonesia is on an "unsustainable course." And Indonesia hasn't altered its course since Repetto completed his study. Its rate of deforestation, for example, has actually increased since 1984, and natural resources—oil, natural gas, timber, and rubber—continue to be the nation's leading exports.

## DEFENSIVE EXPENDITURES

GNP falls short as a measure of sustainable income in another important way. GNP treats expenditures to counter the noxious environmental and social side effects of economic growth—such as cleaning up after an oil spill—as positive contributions to the economy.

These so-called "defensive expenditures" artificially inflate GNP. Defensive expenditures are in essence costs of production that the debit side of the accounts ignore. Their main function is to neutralize environmental and social damage. They add nothing to the

## Defining GNP

Gross National Product (GNP) is one of the most familiar economic terms. Economists and government officials use it to evaluate the effectiveness of economic policy and progress. But just what does GNP mean? And how is it calculated it?

In the United States, the Department of Commerce calculates GNP through a system known as the National Income and Product Accounts (NIPA). Developed in 1942, NIPA analyzes the economy according to John Maynard Keynes' main macroeconomic categories—consumer spending, business investment, government purchases of goods and services, exports, and imports.

GNP measures the market value of goods and services produced for "final use." "Intermediate goods" or materials used to produce a final product, are not counted. For example, the value of the cloth purchased by dress manufacturers is not added to GNP but is included in the price of the dress sold to consumers. To count it directly would be to count it twice.

GNP includes all the products of U.S. citizens and corporations, even those operating overseas. It also considers the profits on U.S. capital invested abroad.

The "Gross" in GNP means that all "investment goods"—buildings and machinery produced in a given year—are included in GNP, even those that replace worn-out machines and buildings.

Economists say a vigorous economy produces a growth rate of 4% or more and that a growth rate of about 2.5% is needed to keep employment and unemployment rates stable. During the second quarter of 1990, U.S. GNP grew by 0.4%.

availability of goods and services.

The treatment of environmental damage produces some bizarre anomalies in GNP. For example, the state of Massachusetts spent \$202 million cleaning up Boston Harbor in 1989. As government spending, this is added to GNP. On the other hand, Mobil plans to spend tens of millions of dollars over the next several years cleaning up an oil spill that has been seeping into the ground in Brooklyn's Greenpoint section for more than 40 years. Mobil's costs will be considered "intermediate production expenses" and will not be added to GNP. Thus government spending to counter environmental damage seems to add to the wealth of the nation, while private spending on the same thing does not.

In both cases, GNP obscures the link between environmental conditions, quality of life, and economic growth by not accounting for the initial damage. GNP further complicates the Boston Harbor case by considering the cost of the clean-up a positive contribution to GNP and national income. A more accurate measure would not result in added na-

tional income, regardless of who took responsibility for the problem.

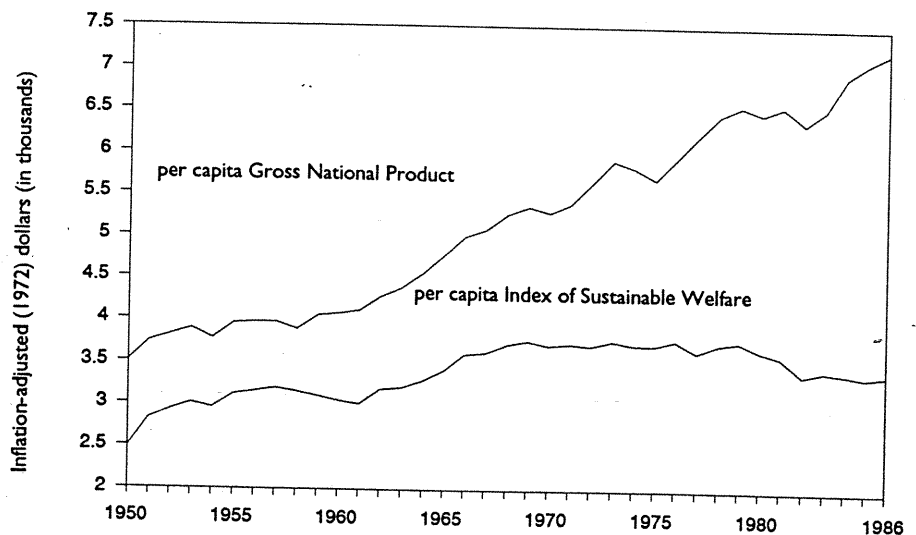
### ALTERNATIVE MEASURES

Economists have suggested many alternatives to GNP over the years. But the mounting environmental damage of the past decade and the deepening problems of countries pursuing resource-based development strategies have pushed the United Nations, environmental groups, and some countries to develop sophisticated alternative measures of economic performance.

One of the most sophisticated alternatives is the Index of Sustainable Economic Welfare (ISEW). Developed by World Bank economist Herman Daly and philosopher John Cobb as a replacement for GNP, ISEW makes several adjustments to the accounts. It weights consumption for a degree of inequality; adds the value of housework; deletes wasteful expenditures, including much of the military budget and national advertising; subtracts defensive expenditures; adjusts

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## Alternative Measures of Economic Welfare



Source: *For the Common Good*, John Cobb and Herman Daly.

opportunity to gouge consumers. The cost of producing oil has not changed in the United States nor in other oil-producing countries' since the U.N.'s oil embargo. What has changed is the perception of a possible shortage, magnified by new futures market trading, giving companies the room to charge higher prices. Since the embargo, the price of crude has climbed from around \$18 a barrel to approximately \$37 in late September.

Investors on Wall Street must be feeling a sense of *déjà vu*. They know that a few companies will make large profits, and so, despite the overall drop in the stock market, they are briskly buying up energy stocks. Paine Webber forecasts a sharp rise in earnings per share (one measure of profits) for the leading oil companies in the third quarter of 1990. The highest profits will go precisely to those companies that are the biggest producers of crude—Amerada Hess, British Petroleum, and Unocal.

It's *déjà vu* for consumers as well. Once more, the oil companies can profit from the world's misfortune. Once more a large share of those profits are being siphoned directly from consumers' wallets. ■

RESOURCES: American Petroleum Institute, *Financial Trends of Leading U.S. Oil Companies, 1968-1988*; John M. Blair, *The Control of Oil, 1976*; Oil, Chemical, and Atomic Workers International Union; "Growing Instability in the International Oil Industry," Mike Tanzer in *Instability and Change in the World Economy, 1989*; the *Wall Street Journal*, various dates.

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## GNP

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for the costs of pollution and environmental damage; and accounts for the depletion of non-renewable resources.

A far different picture of growth and economic welfare emerges after application of ISEW to the modern United States. Both real GNP per capita and ISEW per capita increased rapidly in the 1960s as output boomed and the income distribution grew somewhat more equal. Beginning in the 1970s, however, the two measures moved in opposite directions. Real GNP per capita increased by 2% per year in the 1970s and 1.8% per year between 1980 and 1986. But ISEW per capita stopped its steady increase in 1973 before tumbling by 1.3% per annum between 1981 and 1986. Daly and Cobb attribute the decline to slower growth in domestic investment, a worsening distribution of income, the exhaustion of oil, natural gas, and coal fields, and long-term environmental damage caused by corporate dumping of industrial waste.

### MEASURING UP

Measures of economic performance that take into account both economic and ecological factors are prerequisites for making sound public policy. Misleading information—like that provided by the GNP—can only contribute to the making of bad policy. Better gauges—like Daly and Cobb's ISEW, Repetto's natural resource accounts and the U.N. Development Programme's Human Development Index (see "Economy in Numbers")—wouldn't automatically lead to progressive policy, but they would allow us to assess more accurately the state of our economy, ecology, and world. Better measures would give us the information needed to take stock of the complex relationship between economic growth, environmental health, and social welfare. Only then might the riddles of sustainable development be addressed in a knowledgeable fashion.

But investment decisions hold the key to halting the degradation of the environment in today's world. Investment remakes the technology of today and

decides the technology of tomorrow. In the United States, lasting improvements in environmental conditions have only come in those few instances where alternative technologies have replaced those inimical to the environment. The classic example is lead-free gasoline, which has dramatically lowered levels of lead pollution.

These kinds of changes can only take place on a large scale when investment decisions are not private affairs guided solely by the pursuit of profits. Public pressure—as citizens and consumers—and economic incentive have forced limited improvement in corporate environmental practices and government policy, but to score more important victories, investment decisions must be subject to public control where they could be guided by accurate measures of sustainable growth, a sound environment, and a healthy economy that favors the economic welfare of the entire population. ■

RESOURCES: Robert Repetto, *Wasting Assets, 1989*; Herman Daly and John Cobb, *For the Common Good*; World Commission on Environment and Development, *Our Common Future, 1987*.

## LETTERS

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improvements in people's lives in Kerala takes on additional meaning in light of another story in the *Times*, only two days before the Kerala story appeared. This article portrayed Marxist Indian intellectuals as in ideological disarray due to recent events in the U.S.S.R. and Eastern Europe. While I have no specialized knowledge of the Indian left, it is clear that many of their ideas and policies are relevant to their country, regardless of the international situation. Indeed, left-wing policies work in India, as *Dollars & Sense* makes clear and as the *Times* story inadvertently confirms.)

The *Times* story, then, does not dispute the facts that *Dollars & Sense* presents, but only the D&S analysis makes sense of and draws lessons from these facts. Keep up the good work, *Dollars & Sense*.

Robert Shaffer  
Brooklyn, N.Y.