

SPECIAL PANEL:

Progress in Wealth Accounting and the Valuation of Ecosystem Services (WAVES)

Session chairs: Glenn-Marie Lange (*Senior Environmental Economist, World Bank*); Kirsten L.L. Oleson (*Assistant Professor of Ecological Economics, University of Hawai'i*)

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Panel abstract:

Green accounting offers an opportunity to include important environmental assets into decision-making and policy. This research program seeks to measure and value ecosystem services in theoretically robust ways, and in a manner consistent with accounting systems relevant to finance ministries and development organizations. This session will focus on a number of recent theoretical and empirical advances in the field of environmental wealth accounting, highlighting: (i) how efforts are targeted to policy (Lange et al), (ii) methods for capturing ecosystem services (Stoneham et al and Sumaila et al), and (iii) the linkage between wealth and sustainability (Arrow et al).

“Overview of natural capital accounting for policy analysis and decision-making”

Glenn-Marie Lange and Urvashi Narain (*Environment Department, The World Bank*)

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Abstract:

Economic development can be viewed as a process of building and managing a portfolio of assets: manufactured capital, natural capital and human and social capital. Natural capital is especially important for low income countries where it accounts for, on average of 36% of total wealth, and in some countries more than 50%. Furthermore, natural capital plays an important role in the development process, supporting growth and the accumulation of wealth. Significant progress has been made in developing and implementing a framework for measuring natural capital, culminating in the handbook for environmental accounting, System of Environmental and Economic Accounting (SEEA) prepared for the UN Statistical Commission. Yet two challenges remain: 1) the SEEA is not widely implemented outside OECD countries—even in developing countries where natural capital is a large share of national wealth; and 2) accounts for ecosystems are still not well developed. There is now international agreement on measurement of marketed natural resources and pollution and this part of the SEEA will be adopted as a statistical standard in 2012, but accounting for ecosystems and the services they provide is still at an experimental stage.

The World Bank is leading a new Global Partnership for Wealth Accounting and Valuation of Ecosystem Services (WAVES) to address both these challenges. A key factor in promoting wider adoption of natural capital accounting as well as developing internationally agreed methodology for ecosystem accounting is to demonstrate the policy uses of natural capital accounts. This paper will introduce WAVES, present some of the latest global figures on Comprehensive Wealth, and present examples of policy applications that range from the macroeconomic level to the sectoral level across both developed and developing countries.

“Improving Fisheries Accountability Worldwide: Food Security At Stake”

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Abstract:

For many coastal populations in developing countries, marine resources offer a natural source of opportunity to enhance both livelihoods and food security. This enhancement is usually realized through subsistence fisheries and locally sold catches. At a state level, marine resources also offer several economic services, including job creation, treasury income (e.g., via fishing access agreements), or local value added (e.g., via processing industries).

Due to the small-scale nature of most domestic fisheries in developing countries, national governing bodies usually do not account for them, although they have been estimated to represent the bulk of national fisheries in many cases in terms of catches. The Wealth Accounting and Valuation of Ecosystem Services (WAVES) global partnership, led by the World Bank, is aiming to correct this shortcoming, by increasing the accountability of fisheries worldwide. The first part of WAVES, due to end in December 2012, studied the services provided by terrestrial and marine ecosystems in 10 pilot-countries - either developed or developing - in order to facilitate the creation and implementation of a large-scale framework for green accounting.

Madagascar is one of the 6 developing pilot-countries for WAVES, and provides an interesting opportunity to improve green accounting, especially for fisheries, in the Western Indian Ocean. Madagascar is indeed widely known for its extraordinary terrestrial biodiversity, but its marine ecosystems have always been undermined. This project therefore offers the opportunity to build on a strong national program and promote sustainable development through the implementation of natural capital accounting. Furthermore, Madagascar is the country with lowest GDP per capita of 240 USD per year (eq. year 2000 USD) involved in WAVES. Up to 50% of Madagascar's population is currently relying on marine resources for daily protein consumption and livelihoods. Accounting for small-scale fisheries activities in this country would therefore be of great importance to national policy-makers, as it would allow them to take into consideration the importance of such small-scale fisheries in terms of food security.

On the other hand, the Western Indian Ocean is known as the second most productive tuna fishing ground in the world, attracting many legal and illegal vessels, mainly from Europe and Asia. Illegal fishing is therefore a serious problem in Madagascar's waters, hence diminishing economic gains for the country. Furthermore, most species caught in Madagascar are exported to Europe or Asia (e.g., shark fins, sea cucumber, octopus, tuna), and are unsustainably harvested due to high market prices. These species are therefore not available for local consumption, and as most of them are often exported illegally (sharks) or under a duty-free status (tuna), Madagascar does not receive any financial compensation for these exports.

The objectives of WAVES are therefore double: by increasing the use of fisheries accounting and by proposing ways forward, (1) different sectors of prime importance to the national economy and coastal populations will be determined and assisted for short- to long-term management plans; and (2) during its second phase, WAVES will help assess the potential benefits that could be derive by taking more effective control of its resources and fisheries, and by increasing its leverage for negotiating fairer access fees for the resources it cannot exploit (e.g., tuna).

This talk will present the methodology used and the results obtained during the first phase of WAVES in Madagascar, and will explore the different opportunities that these results may offer for the second phase in terms of implementing management plans and increasing sustainable wealth.

Sustainability and comprehensive wealth

Kenneth J. Arrow^a, Partha Dasgupta^b, Lawrence H. Goulder^a, Kevin J. Mumford^c, and Kirsten Oleson^d

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Abstract:

In this paper, we develop and apply a consistent and comprehensive theoretical framework for assessing whether economic growth is compatible with sustaining well-being over time. Our approach differs from earlier approaches by concentrating on wealth rather than income. The sustainability requirement is that a properly-defined comprehensive measure of wealth must be maintained through time. Our wealth measure is unusually comprehensive, capturing not only reproducible and human capital but also natural capital in its various aspects, health improvements (beyond those in human capital), and technological change. Several economic effects not mediated through the market are given emphasis. We consistently integrate population growth to arrive at changes in comprehensive wealth per capita.

We apply the framework to five countries that differ significantly in stages of development and resource bases: the United States, China, Brazil, India, and Venezuela. We show that the often-neglected contributors to wealth – technological change, natural capital, and health capital – fundamentally affect the conclusions one draws about whether given nations are achieving sustainability. Indeed, even countries that manage to maintain per-capita wealth (that is, achieve sustainability) differ considerably in the kinds of capital that contribute to this accomplishment.

The inclusion of health capital makes a huge difference to our estimates of changes in per-capita wealth. The value of this capital is more than twice that of all other forms of capital combined. As a result, health capital's growth rate largely determines the growth rate of comprehensive wealth.

“Inclusive Wealth Report”

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From a capital approach standpoint, economic sustainability is achieved if the aggregate stocks of assets do not decline over time. This is indeed what the changes in Inclusive Wealth Index measures. In this chapter of the Inclusive Wealth Report, we explore the sustainability criterion for a sample of 20 countries, three capital forms (manufactured, human, and natural capital), during the period 1990–2008. In expressing the Inclusive Wealth Index, the chapter also considers adjustments to these assets that account for carbon damages (i.e., the impact of climate change); oil capital gains; and total factor productivity. Finally the progress (regress) made in the light of the Inclusive Wealth Index by these 20 nations is contrasted with changes in the scores of their gross domestic product and their Human Development Index.

Key messages from the chapter are:

- This chapter analyzes changes in inclusive wealth and its components for 20 countries for the period 1990–2008. Wealth is primarily assessed here as the value of manufactured, human, and natural capital stocks.
- This chapter draws on work of Arrow *et al.* (2012), but goes beyond it by carrying out a more comprehensive assessment of natural capital which includes coal and fisheries.
- The importance of health capital is acknowledged, but health capital is excluded from the IWI as even modest changes in this capital would outweigh any changes in the other three capitals combined.
- The Index is adjusted for population changes by presenting per capita measures. The IWI is further adjusted for: carbon damages; oil capital gains; and total factor productivity. This is known as the Adjusted Inclusive Wealth Index.
- The results show that the Inclusive Wealth Index has in fact been increasing for all countries except for Russia. On a per capita basis, the IWI has also been decreasing for Colombia, Nigeria, Saudi Arabia, South Africa, and Venezuela. China, India, and Chile exhibit the highest growth among all countries studied.
- This chapter demonstrates that the IWI provides a different perspective for assessing the performance of an economy, by switching the focus of attention from flows to stock metrics (unlike the GDP). Preserving such stocks is essential for ensuring that aggregate output can be sustained in the long run so that future generations can fulfill their needs.