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Wealth, Natural Capital, and Sustainable Development: Contrasting Examples from Botswana and Namibia



Published: November 2004

Volume 29, pages 257–283 (2004) [Cite this article](#)[Save article](#)[View saved research](#) >[Environmental and Resource](#)[Economics](#)[Aims and scope](#) →[Submit manuscript](#) →[Glenn-marie Lange](#)¹[1754](#) Accesses [34](#) Citations [15](#) Altmetric [Explore all metrics](#) →

Abstract

Theoretical work has demonstrated that sustainable development requires non-declining per capita wealth, where wealth is defined to include produced, natural, human and social capital. Several studies have attempted to measure total national wealth or changes in wealth, but have been seriously hampered by a lack of data, especially for natural and human capital. To address this problem, the UN and other international statistical agencies developed a standardized framework for environmental accounts, the System of integrated Environmental and Economic Accounts (SEEA). Using the newly available asset accounts for natural

capital, national wealth accounts are constructed and used to assess the contrasting development paths of Botswana and Namibia. Botswana, with an explicit policy of reinvestment of resource rents, has roughly tripled per capita wealth and national income over the past two decades. Namibia, with no explicit policy to use natural capital to build wealth, has seen per capita wealth and income decline.

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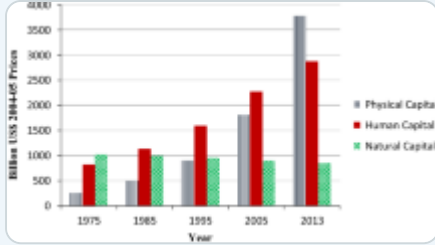
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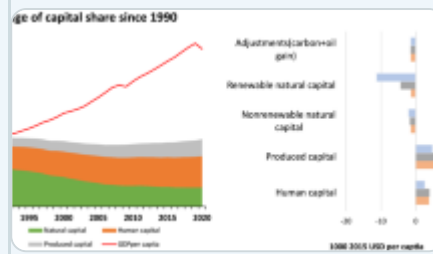
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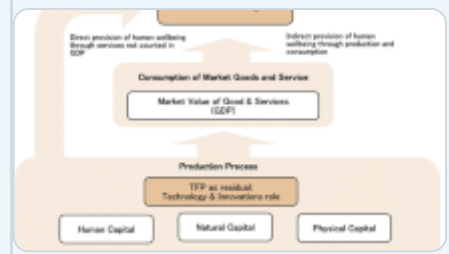
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References

Arntzen, J.(2002), 'Review of Agricultural Subsidies ',report to Ministry of Agriculture: Gaborone,Botswana.

Arrow, K.J.,P.Dasgupta and K.-G. M€aler (2003), 'Evaluating Projects and Assessing Sustainable Development in Imperfect Economies '.*Environmental and Resource Economics* **26**,647-685.

Australian Bureau of Statistics (2001),Australian System of National Accounts.Consolidated Balance Sheet.Canberra:ABS.

Auty, R.M.(1993),*Sustaining Development in Mineral Economies:The Resource Curse Thesis*London: Routledge.

Auty, R.M.and R. Mikesell (1998),*Sustainable Development in Mineral Economies*.Oxford: Clarendon Press.

Bank of Botswana (2001a),Annual Report 2000.Gaborone,Botswana.

Bank of Botswana (2001b),Unpublished Time Series of Net Foreign Financial Assets. Gaborone,Botswana.

Bank of Namibia (1995),Annual Report 1994.Windhoek,Namibia: Bank of Namibia.

Bank of Namibia (2001),Annual Report 2000.Windhoek,Namibia: Bank of Namibia.

Barnes, J.I.(1999),'Economic Potential for Biodiversity Use in Southern Africa:Empirical Evidence'.*Environment and Development Economics* **4**,215-220.

Barnes, J.I.(2001),'Economic Returns and Allocation of Resources in the Wildlife Sector of Botswana'.*South African Journal of Wildlife Research* **31**,141-153.

Barnes, J.I.,J. Cannon and K. Morrison (2001),'Economic Returns to Selected Land Uses in Ngamiland,Botswana ',Report to Conservation International,Washington,DC.

Barnes, J.and P. Lindeque (2003),'A Study to Value the Natural Asset Portfolio of the Ministry of Environment and Tourism (MET):Wildlife Stocks,Tourism

Land, and Forests ', unpublished report to the Directorate of Environmental Affairs, Ministry of Tourism and Environment. Windhoek, Namibia.

Bell, C., S. Devarajan and H. Gersbach (2003), 'The Long-Run Economic Impact of AIDS: Theory and an Application to South Africa '. World Bank paper (unpublished). Washington, DC: World Bank.

BIDPA (Botswana Institute for Development Policy Analysis) (2000), 'Macroeconomic Impacts of the HIV/AIDS Epidemic in Botswana'. Gaborone, Botswana: BIDPA.

Central Bureau of Statistics (1999), National Accounts 1998. Windhoek, Namibia: National Planning Commission.

Central Bureau of Statistics (2001), National Accounts 2000. Windhoek, Namibia: National Planning Commission.

Central Bureau of Statistics (2003), Population Census 2001. Windhoek, Namibia: National Planning Commission.

Central Statistics Office (1998), 'National Accounts Statistics-Capital Stock.' Stats Brief No. 98/7, June, Gaborone, Botswana: CSO.

Central Statistics Office (2000), Environment Statistics. Gaborone, Botswana: CSO.

Central Statistics Office (2003), Population Census 2001, Gaborone, Botswana: CSO.

Central Statistics Office (annual), Statistical Bulletin. Gaborone, Botswana: CSO.

Dasgupta, P. (2001). *Human Well-Being and the Natural Environment*. Oxford: Oxford University Press.

Dasgupta, P. (2002), 'Economic Development, Environmental Degradation and the Persistence of Deprivation in Poor Countries'. Paper presented at the World Bank, May.

Dasgupta, P. and K. M. Stiglitz (2000), 'Net National Product, Wealth, and Social Well-Being'. *Environment and Development Economics* 5, 69-94.

Dasgupta, P. and K. M. Stiglitz (2001), 'Wealth as a Criterion for Sustainable Development'. Beijer Institute Discussion Paper Series No. 140.

Department of Mines (annual), Annual Report. Gaborone, Botswana: Ministry of Mines, Energy and Water Resources.

Food and Agriculture Organization (2002), 'AIDS-a Threat to Rural Africa: Fact Sheet'. Rome: FAO.

Green, J., P. Akatu, M. Mfunwa, T. Poddar and S. Ding (2002), 'Botswana: Selected Issues and Statistical Appendix'. IMF Country Report No. 02/243

Gylfason, T. (1999), 'Exports, Inflation and Growth'. *World Development* 27(6), 1031-1057.

Haacker, M. (2002), 'The Economic Consequences of HIV/AIDS in Southern Africa'. IMF Working Paper, African Department WP/02/38.

Hamilton, K. (2002), 'Sustainable per Capita Welfare with Growing Population: Theory and Measurement'. Paper presented at the Second World

Congress of Environmental and Resource Economists, Monterey, California, 23-27 June.

Hamilton, K. and M. Clemmens (1999), 'Genuine Savings Rates in Developing Countries'. *World Bank Economic Review* **13**(2), 336-356.

Hartwick, J. (1977), 'Intergenerational Equity and the Investing of Rents from Exhaustible Resources'. *American Economic Review* **67**(5), 972-974.

Heal, G. and B. Kristrom (2001) 'National Income and the Environment', draft of a chapter forthcoming in T. Tietenberg and H. Folmer, eds., *International Yearbook of Environmental and Resource Economics*. Cheltenham, UK: Edward Elgar.

International Monetary Fund (2001), *International Financial Statistics Yearbook*. Washington, DC: IMF.

Kunte, A., K. Hamilton, J. Dixon and M. Clemens (1998), 'Estimating National Wealth: Methodology and Results'. Environment Department Papers, Environmental Economics Series No. 57, Washington, DC: World Bank.

Lange, G. (2001), 'The Contribution of Minerals to Sustainable Development in Botswana: Natural Resource Accounts for Minerals'. Final Report to the Botswana Natural Resource Accounting Programme. Gaborone, Botswana.

Lange, G. (2002) 'Alternative Measures of the Value of Natural Capital in Constant Prices'. Paper presented at the workshop, Putting Theory to Work: The Measurement of Genuine Wealth, 25-26 May 2002, Stanford University.

Lange, G. (2003a), 'Fisheries Accounts: Managing a Recovering Fishery', in G. Lange, R.

Hassan and K. Hamilton, eds., *Environmental Accounting in Action: Case Studies from Southern Africa*. Cheltenham, UK: Edward Elgar Publishers.

Lange, G. (2003b) 'The Value of Namibia's Commercial Fisheries.' Research Discussion Paper Number 55. Ministry of Environment and Tourism, Directorate of Environmental Affairs, Windhoek, Namibia, February 2003.

Lange, G., J.I. Barnes and J. Motinga (1998), 'Cattle Numbers, Herd Productivity, and Land Degradation in Namibia.' *Development Southern Africa* **15**(4), 555-572.

Lange, G., R. Hassan and K. Hamilton (2003), *Environmental Accounting in Action: Case Studies from Southern Africa*. Cheltenham, UK: Edward Elgar Publishers.

Lange, G. and M. Wright (2004), 'Sustainable Development in Mineral Economies: The Example of Botswana.' *Environment and Development Economics* **9**(4), 485-505.

M€aler, K. (1991), 'National Accounts and Environmental Resources'. *Environmental and Resource Economics* **1**(1), 1-15.

Marine Research and Information Centre (2001), Unpublished Database of Fish Stocks, Catch and TAC, MRIC, Swakopmund, Namibia.

Office of National Statistics (2003) 'Asset Value of Petroleum and Natural Gas Reserves', available from website of the UK's ONS: www.statistics.gov.uk.

Pearce, D. and G. Atkinson (1993), 'Capital Theory and the Measurement of Sustainable Development: An Indicator of Weak Sustainability'. *Ecological Economics* **8**, 103-108.

Pezzey, J.(1992), 'Sustainable Development Concepts:An Economic Analysis'.World Bank Environment Paper No.2.

Ryan, L.,R. Thomson and A. Sincock (2003), 'Accounting for Subsoil Assets in the National Accounts.'Paper presented at the London Group Meeting,Rome,5-7 November.

Sachs, J.and A. Warner (2001), 'The Curse of Natural Resources '.*European Economic Review* **45**,827-838.

Sala-i-Martin, X.and A. Subramaniam (2003), 'Addressing the Natural Resource Curse:An Illustration from Nigeria.'IMF Working Paper No 03/139.Washington,DC: IMF.

Sherbourne, R.(2003), 'A Rich Man 's Hobby,'Institute for Public Policy Research Opinion Paper Number 11.Windhoek,Namibia: IPPR.

Smith, R.and C. Simard (2001), 'A Proposed Approach to Sustainable Development Indicators Based on Capital.'Paper presented by Statistics Canada at the National Conference of Sustainable Development Indicators,March 27,Ottawa,Canada.

Solow, R.(1974), 'Intergenerational Equity and Exhaustible Resources '.*Review of Economic Studies* **41**,29-45.

Solow, R.(1986), 'On the Intergenerational Allocation of Natural Resources'.*Scandinavian Journal of Economics* **88**,141-149.

Solow, R.(2003)'Population Estimates and Projections:Data Online'.Retrieved from [http:// www.un.org/esa/population/unpop.htm](http://www.un.org/esa/population/unpop.htm) in January 2004.

United Nations,European Commission,International Monetary Fund,Organization for Economic Cooperation and Development,and World Bank (1993)System of National Accounts.New York: UN.

United Nations,European Commission,International Monetary Fund,Organization for Economic Cooperation and Development,and World Bank (2003)Integrated Environmental and Economic Accounting 2003.New York: UN.Available on the UN website: [www:un:org](http://www.un.org)

World Bank (1995),Namibia Public Expenditure Review.Washington,DC: World Bank.

World Bank (1997),'Expanding the Measure of Wealth:Indicators of Sustainable Development '.ESD Studies and Monographs Series No.17,Washington,DC: World Bank.

World Bank (2001),Namibia:Selected Development Impact of HIV/AIDS.Washington,DC: World Bank.

World Bank (2002),World Development Report.Washington,DC: World Bank.

World Bank (2003),World Development Indicators.EdStat online database available at [www:worldbank:org](http://www.worldbank.org)

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Cite this article

Lange, Gm. Wealth, Natural Capital, and Sustainable Development: Contrasting Examples from Botswana and Namibia. *Environmental and Resource Economics* **29**, 257–283 (2004).

<https://doi.org/10.1007/s10640-004-4045-z>

Issue date

November 2004

DOI

<https://doi.org/10.1007/s10640-004-4045-z>

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