

[Home](#) > [Environmental and Resource Economics](#) > Article

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

| Published: November 2004

| Volume 29, pages 257–283, (2004) [Cite this article](#)



[Environmental and Resource Economics](#)

[Aims and scope](#) →[Submit manuscript](#) →[Glenn-marie Lange](#)¹ 1712 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 capita to build wealth, has seen per capita wealth and income decline.

 This is a preview of subscription content, [log in via an institution](#)  to check access.

Access this article

Log in via an institution →

Subscribe and save

 Springer+ from €37.37 /Month

- Starting from 10 chapters or articles per month
- Access and download chapters and articles from more than 300k books and 2,500 journals
- Cancel anytime

View plans →

Buy Now

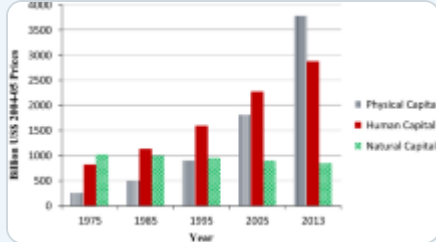
Buy article PDF 39,95 €

Price includes VAT (Poland)

Instant access to the full article PDF.

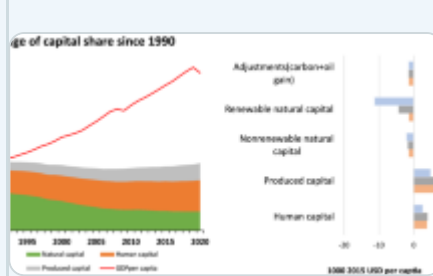
[Institutional subscriptions](#) →

Similar content being viewed by others



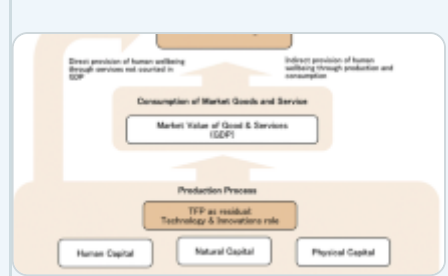
Sustainability and comprehensive wealth accounting: the case of India

Article | 28 April 2020



Tracing the evolution of natural capital in global sustainability metrics: the advance of inclusive wealth

Article | 19 December 2024



Linking Wealth and Productivity of Natural Capital for 140 Countries Between 1990 and 2014

Article | 03 January 2018

Explore related subjects

Discover the latest articles, books and news in related subjects, suggested using machine learning.

[Economic Growth](#)

[Materialism](#)

[Natural Resource and Energy Economics](#)

[Resource and Environmental Economics](#)

[Sustainable Growth](#)

[Economic Development, Innovation and Growth](#)

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.

[Google Scholar](#)

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.

[Google Scholar](#)

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.

[Google Scholar](#)

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

[Google Scholar](#)

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

[Google Scholar](#)

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.

[Google Scholar](#)

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.

[Google Scholar](#)

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.

[Google Scholar](#)

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

[Google Scholar](#)

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

[Google Scholar](#)

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

[Google Scholar](#)

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

[Google Scholar](#)

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

[Google Scholar](#)

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

[Google Scholar](#)

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

[Google Scholar](#)

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 € aler (2000), 'Net National Product, Wealth, and Social Well-Being'. *Environment and Development Economics* 5, 69-94.

[Google Scholar](#)

Dasgupta, P. and K. M € aler (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.

[Google Scholar](#)

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.

[Google Scholar](#)

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.

[Google Scholar](#)

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

[Google Scholar](#)

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.

[Google Scholar](#)

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

[Google Scholar](#)

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.

[Google Scholar](#)

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.

[Google Scholar](#)

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

[Google Scholar](#)

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

[Google Scholar](#)

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

[Google Scholar](#)

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.

[Google Scholar](#)

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.

[Google Scholar](#)

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.

[Google Scholar](#)

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.

[Google Scholar](#)

Solow, R.(1986),'On the Intergenerational Allocation of Natural

Resources'.*Scandinavian Journal of Economics* **88**,141-149.

[Google Scholar](#)

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.

[Google Scholar](#)

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)

[Google Scholar](#)

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

[Google Scholar](#)

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

[Google Scholar](#)

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

[Google Scholar](#)

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

[Google Scholar](#)

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

Author information

Authors and Affiliations

**Center for Economy, Environment and Society, The Earth Institute at
Columbia University, 2910 Broadway, New York, USA)**

Glenn-marie Lange

Rights and permissions

[Reprints and permissions](#)

About this article

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>

[Botswana](#)

[environmental accounting](#)

[Namibia](#)

[natural capital](#)

[sustainable development](#)

[wealth](#)

Search

Search by keyword or author



Navigation

Find a journal

Publish with us

Track your research