

Green Accounts for Green Growth

Kirk Hamilton
Development Research Group
The World Bank

Outline

- Why
- How
- What
- Who
- Is it sound?
- Challenges
- Using green accounts

Why green accounts

- Measuring unsustainability
 - Every year 20-30 countries in the World Development Indicators have negative 'adjusted' net saving
- Policies for green growth will have pervasive effects
 - An aggregate measure of greening will be useful in measuring performance

How we measure development will drive how we do development

Adjusted Net National Income (aNNI)

aNNI =	Gross National Income
	- Depreciation
	- Resource depletion

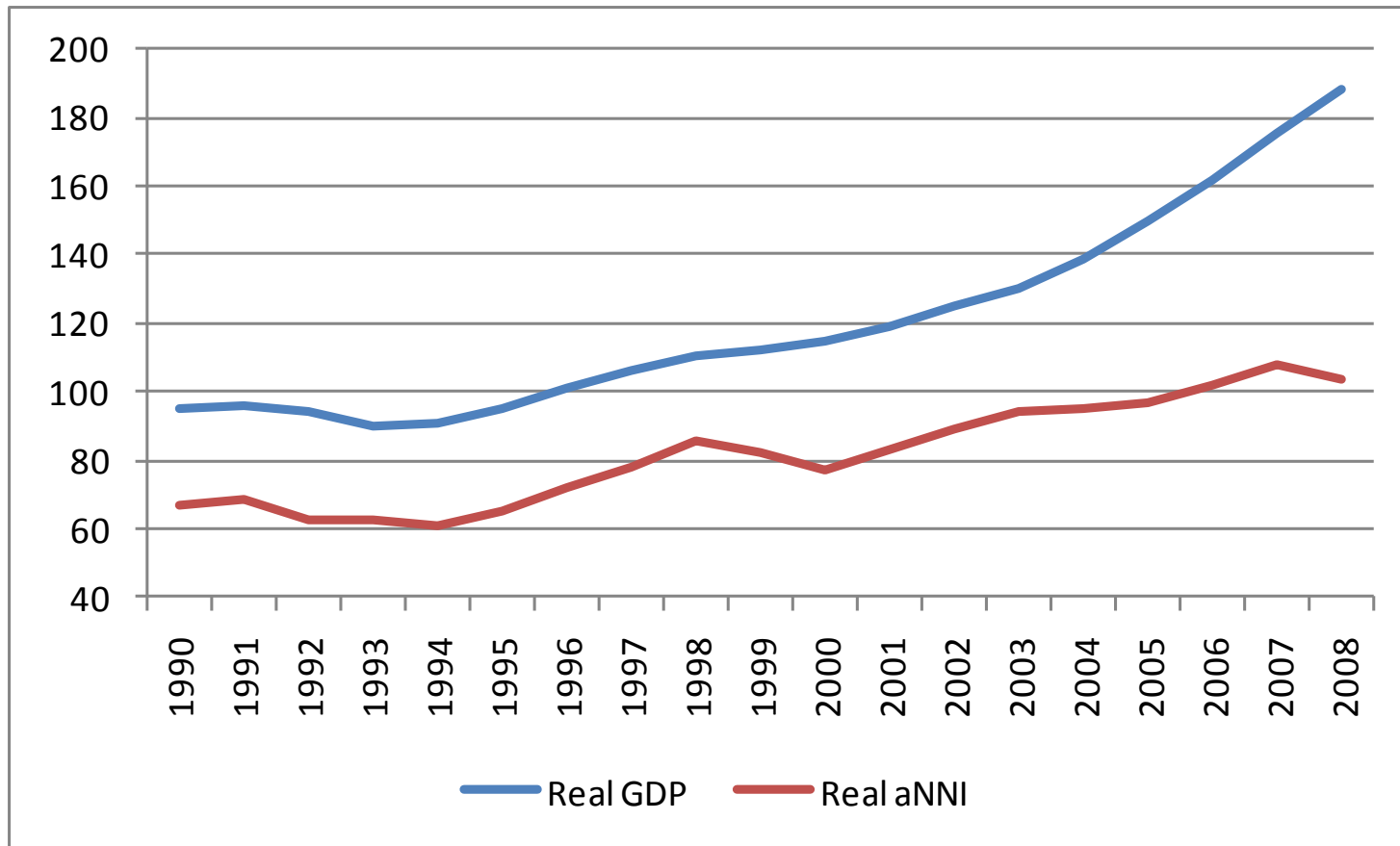
Adjusted Net Savings (ANS)

ANS =	Gross National Savings
	+ Education expenditure
	- Depreciation
	- Resource depletion
	- Pollution damage

Why focus on net savings? Because development is about building wealth – only this will increase future well-being

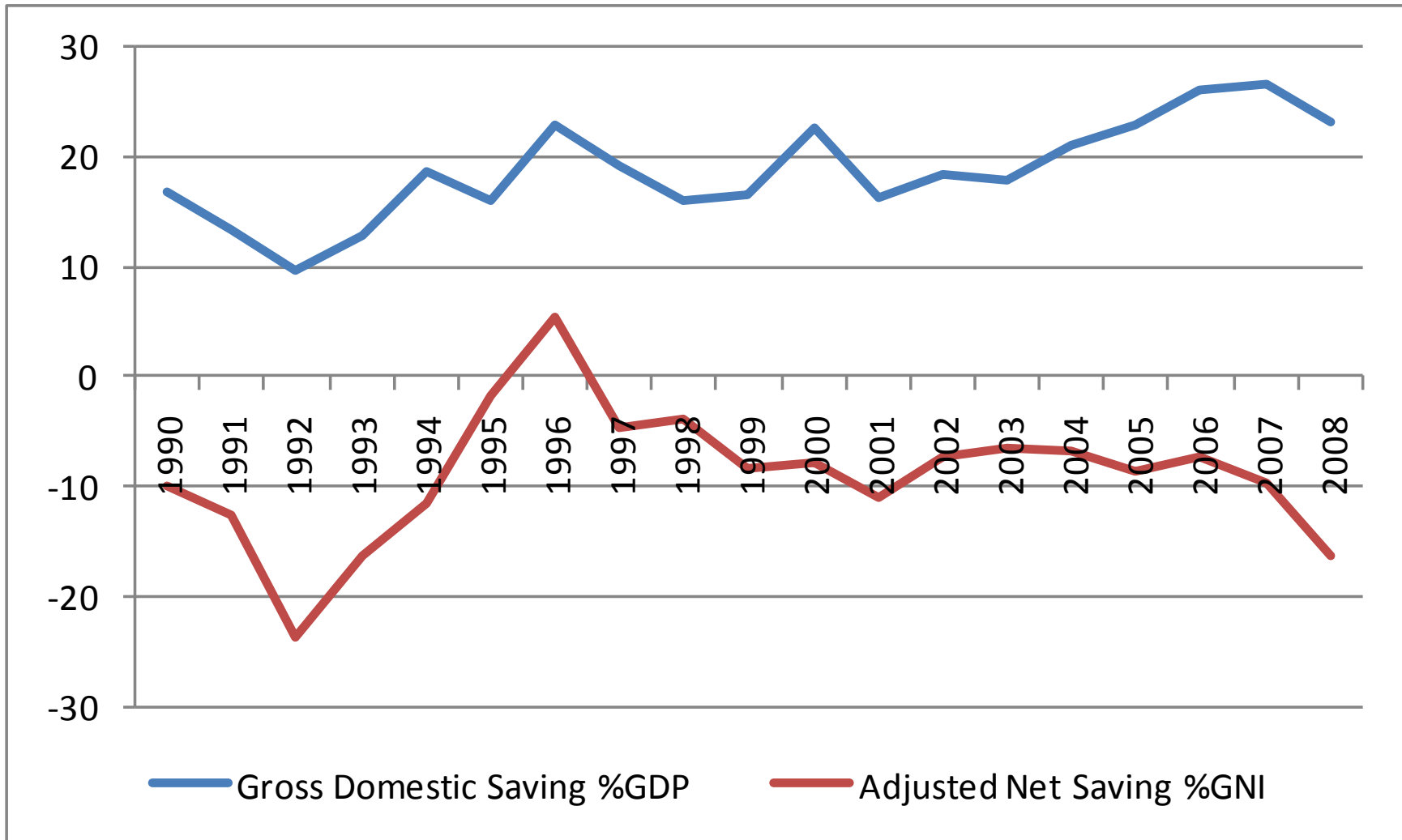
Measuring economic performance in resource-dependent African countries

Billion \$2005



Growth rates 2000 to 2008: GDP 6.4%, aNNI 3.8%

Saving for growth and development: the Finance minister is getting the wrong picture



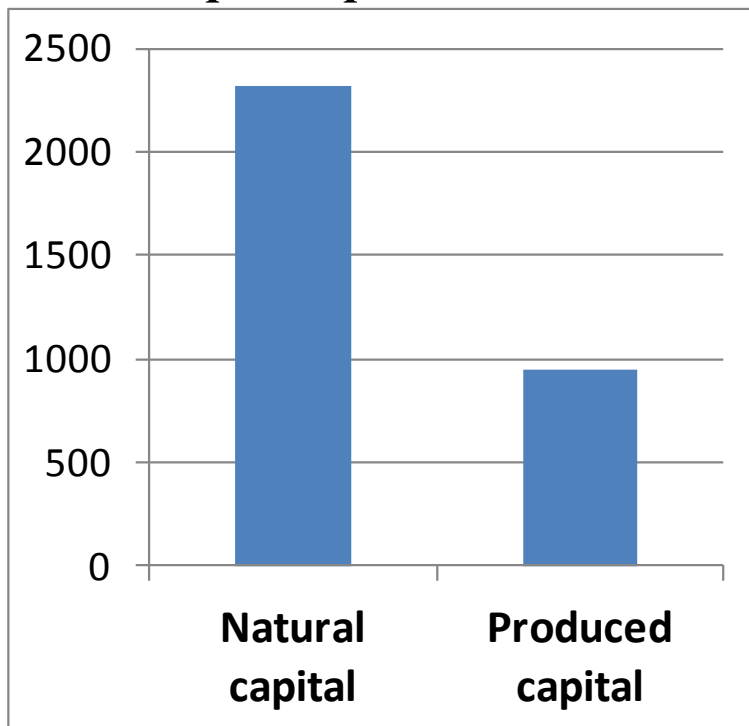
Who is doing green accounting?

Australia	France	Norway
Austria	Germany	Philippines
Botswana	Guatemala	Slovak Rep.
Brazil	Indonesia	South Africa
Canada	Japan	Sweden
Chile	Korea	UK
Czech Rep.	Mexico	
Denmark	Namibia	
Estonia	Netherlands	
Finland	New Zealand	

Who should be doing green accounting?

Low income countries

Low income countries – tangible wealth per capita, \$2005



Middle income countries

China – Depletion and degradation 2009

	%GNI
Energy depletion	2.9
Mineral depletion	0.2
PM ₁₀ health damage	2.8
Air pollution material damage	0.5
Water pollution health damage	0.5
Soil nutrient depletion	1.0
Carbon dioxide damage	1.1
Total	9.0

Is green accounting sound?

- Rooted in a body of growth theory going back to Weitzman (1976)
 - What to measure and how to measure it
- The World Bank's Adjusted Net Saving figures have been tested empirically – saving is correlated with future changes in consumption in developing countries:
 - Ferreira and Vincent (2005), Ferreira, Hamilton and Vincent (2008)
- Underpinned by a large literature on valuing environmental assets and health damages

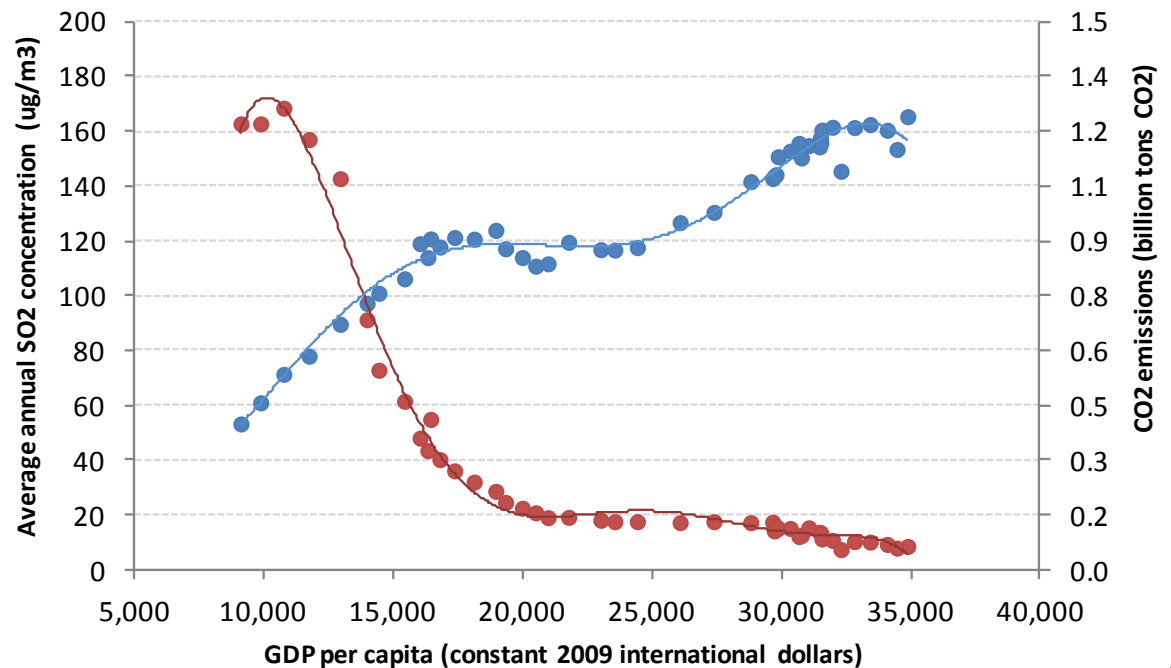
Challenges - methodology

- Some assets are difficult to value, e.g. biodiversity, while substitution possibilities may be limited for others
- Valuing ecosystems services – need the underlying physical data and science (WAVES partnership)
- Non-convexities and non-linearities in the natural world
 - Positive net saving only provisionally indicates sustainability – need better data, models

Challenges - epistemology

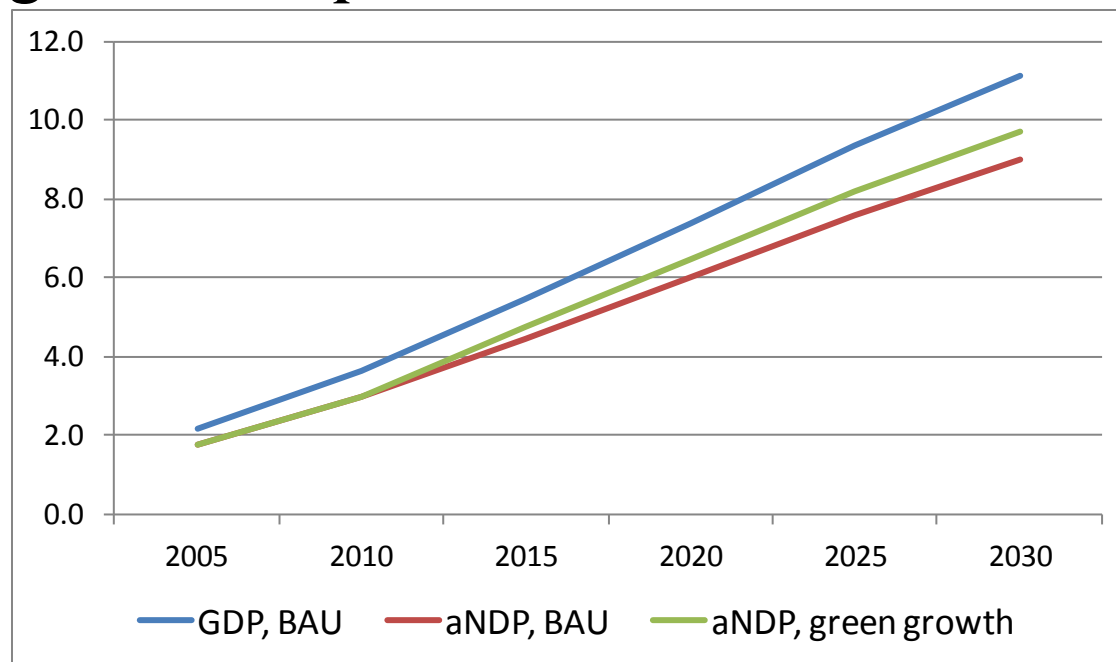
- ‘GDP fixation’ of Dept of Finance
 - The central problem of economics is to maximize social welfare, not production
- ‘Environment is a luxury good’ and you can ‘ride the Kuznets curve’

Japan
- SO₂ concentrations
- CO₂ emissions
vs. GDP / capita



Using the accounts – a hypothetical ‘green decade’

China gross & net product, 2005-2030, \$trn 2004 dollars



	Rate of growth 2010-2020	Rate of growth 2020-2030
GDP, BAU	7.4%	4.2%
aNDP, BAU	7.4%	4.2%
aNDP, green growth	8.2%	4.2%

Conclusions

- We know how to green the accounts, theory guides methodology, and empirical tests have been positive
- Many countries are working on green accounts
- Depletion and damages are significant in many developing countries
- There are accounting challenges, particularly on biodiversity, substitution possibilities and non-linearities
- We need to shift the focus of policy-making from production to wellbeing
- Green policies will boost the level and growth of green accounting aggregates

Thank you!

www.worldbank.org/environmentaleconomics