



THE WORLD BANK

HOW WEALTHY IS MOZAMBIQUE AFTER THE DISCOVERY OF COAL AND GAS?

MEASURING WEALTH IN MOZAMBIQUE
USING THE WEALTH ACCOUNTING
FRAMEWORK

World Bank

Mozambique Natural Capital Workshop, 28 August 2013

Introduction – Wealth Accounting

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- This workshop discusses several tools that inform policy making taking sustainability of growth into account.
- Wealth accounting is one such tool. While national accounts (GDP) measures income, wealth accounting measures the wealth from which income is derived
- Knowledge about wealth tells us something about sustainability of growth and future income flows. Wealth accounts, by focusing on natural capital, allows for degradation of forms of capital usually ignored by policy makers, but key for long-run growth.



Wealth Accounting – some notes

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□ $Total\ Wealth = K + V + IC,$

where K is produced capital, V is natural capital and IC intangible capital.

Total wealth is estimated as the present value of future consumption,

$$\int_t^{\infty} C(s) * e^{-\rho(s-t)} ds.$$

- Produced capital is what's usually understood by investment in national accounts (machinery, equipment, structures, urban land). Natural capital includes energy resources, minerals, timber, forest, crop and pasture land and protected areas. Intangible capital can be interpreted as a combination of human, social and institutional capital.
- While we can observe K and V we cannot observe IC, so we estimate IC as the residual of total wealth minus the other components.
- In addition to the domestic components, countries can also accumulate wealth (+ or -) in foreign assets, so an additional component (NFA - net foreign assets) is often added.

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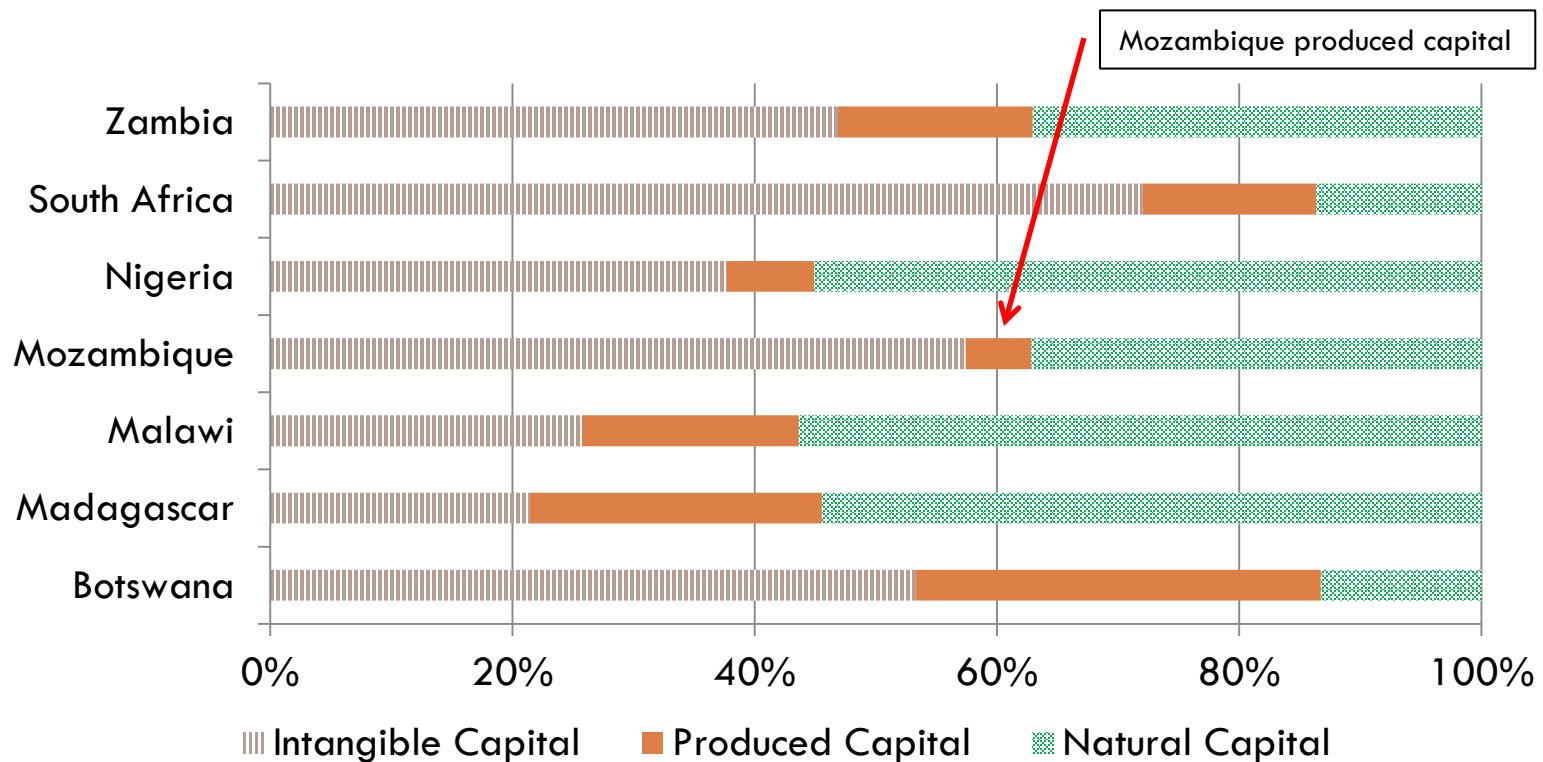
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Wealth accounting in practice

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- Mozambique has a relatively low share of produced capital when compared with its peers in the region, highlighting the need to translate natural capital into other forms of capital.

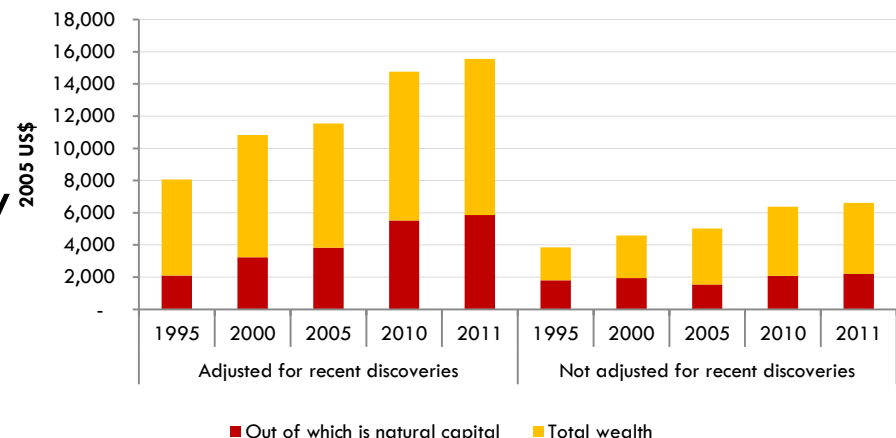


Policy Question: How can Mozambique manage its natural capital for sustainable growth?

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- With recent coal and gas discoveries, Mozambique could be one of the top ten coal exporters in the world and a global player in LNG markets. These discoveries could more than double Mozambique's wealth – but it remains one of the poorest countries in the region.
- Natural resources will lead to higher GDP growth, but not necessarily development. Mozambique will need a strategy to manage natural resources for long run and sustainable growth.

Per Capita Wealth in Mozambique with and without recent mineral discoveries



- The World Bank has prepared a policy note to help answer the question above with the help of wealth accounting framework.

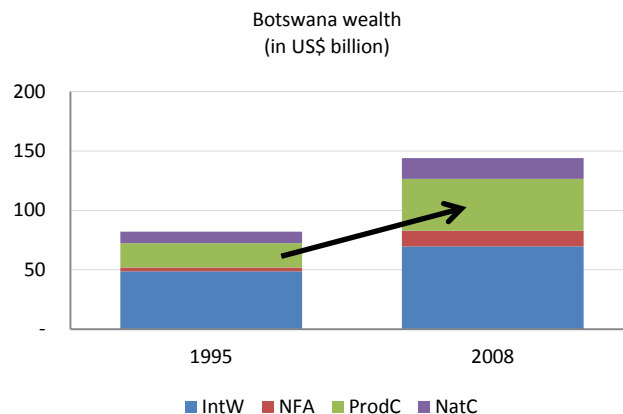


The challenge for natural resource rich countries is to translate natural capital into other forms of capital

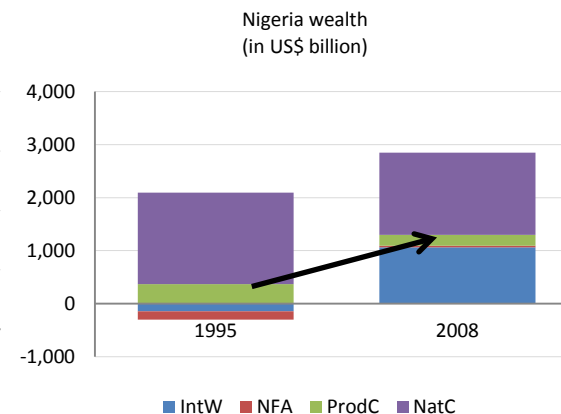
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- Translating natural resources into other forms of capital means investing a large share of the resource rents into human or physical capital. Sustainability of growth requires that rents from non-renewable resources are continuously invested
- E.g., in Botswana the government adopted the Sustainable Budget Index (SBI), which requires that the ratio of spending on non-investment by recurrent revenue should be 1 or lower. Such policies have resulted in significant growth of wealth in Botswana.

Botswana's wealth has doubled between 1995-08, while Nigeria's wealth has grown slower and continues to depend heavily on its natural capital.



Source: World Bank Staff estimates



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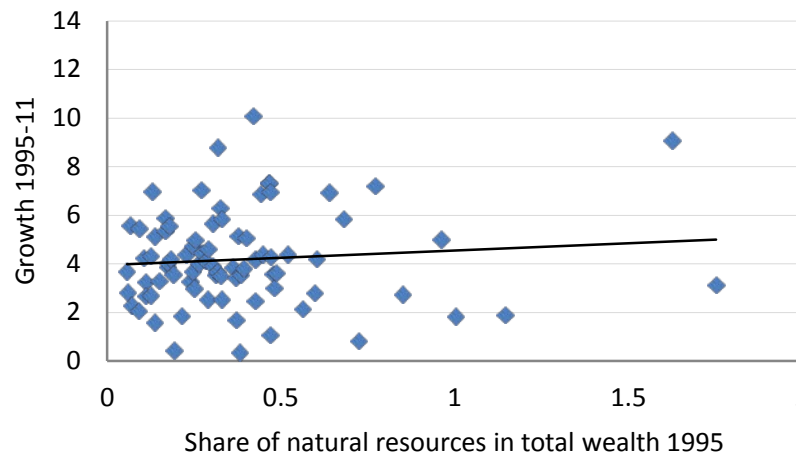


Strong institutions seem to be a prerequisite for managing natural resources well

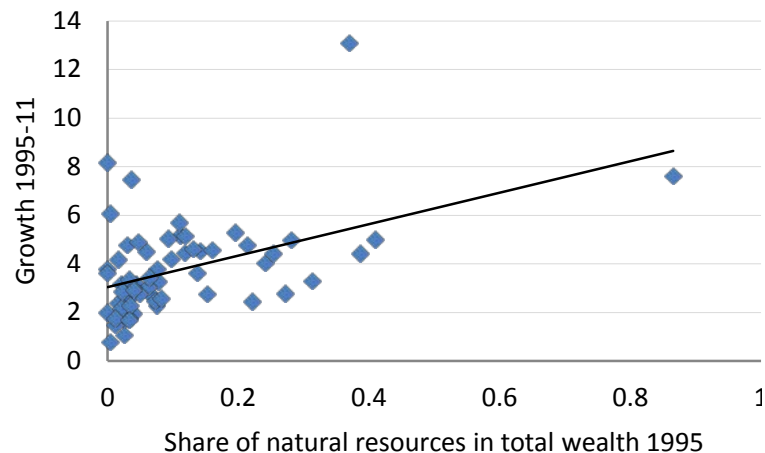
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- Literature talks about the ‘resource curse’ and how countries rich in natural resources often grow slower. This is only part of the story – the key is strong institutions and good governance.

Relationship between natural resources and growth for weak governance countries



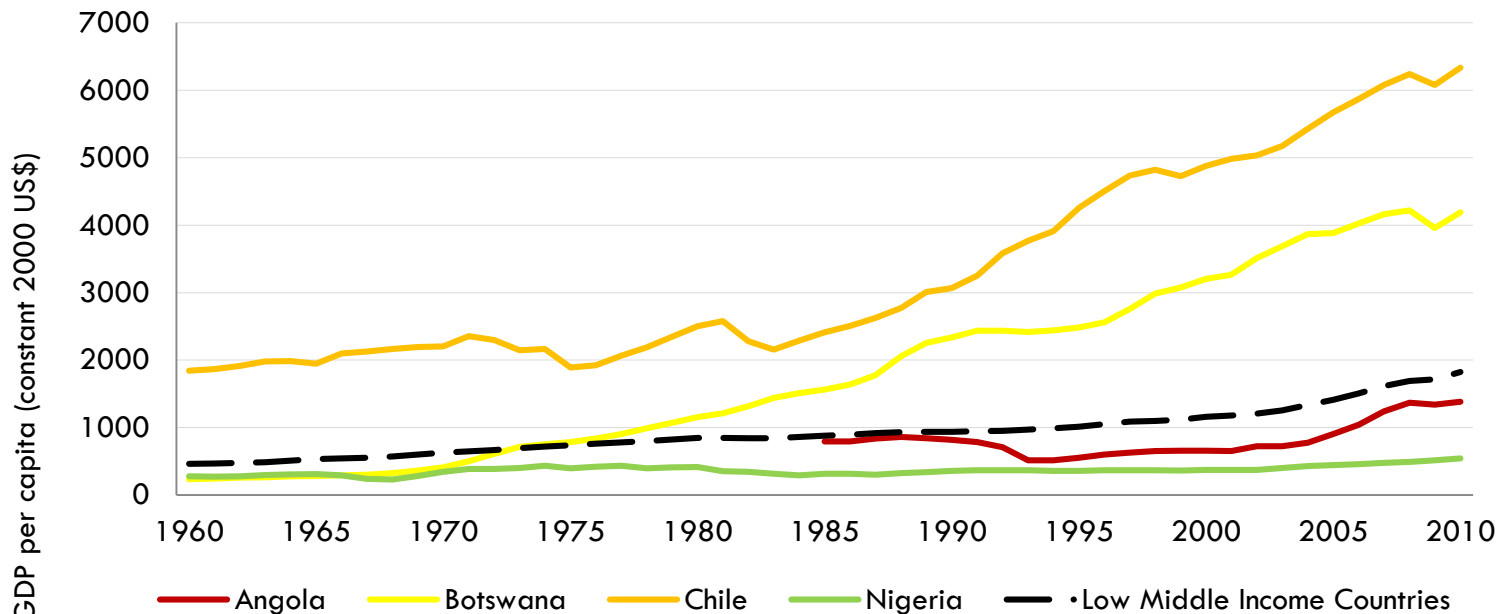
Relationship between natural resources and growth for strong governance countries



Investments – both in human and produced capital – are key for maintaining growth

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- Countries with low investment tend to grow slower over time. E.g. Angola's GFC was 13% over the last decade (28% in Botswana, 19% in SSA). This is reflected in PC GDP over time.
- Important is not only how much a country invests – but how well it does so. As Mozambique considers a significant scaling up of public expenditure, it should enhance its management of public finances and investment.

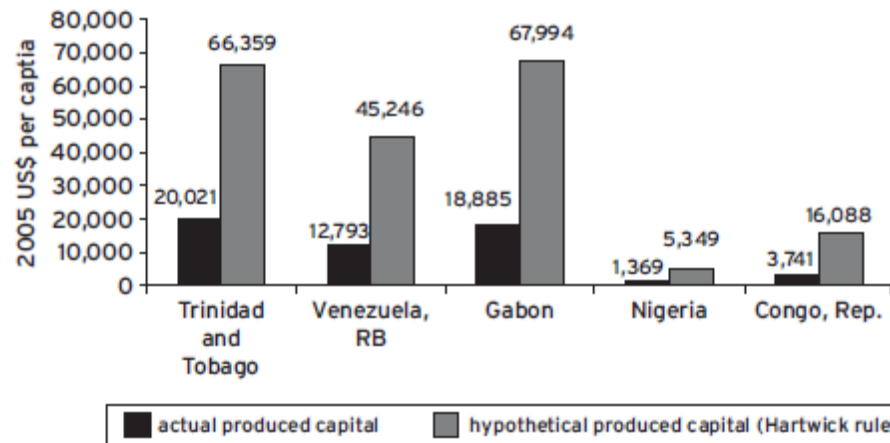


How much faster does physical capital grow if all rents are invested?

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- How would have physical capital grown in these countries if they have followed the Hartwick Rule of investing all rents from natural resources?
- Physical capital would have been between 3-4 times larger if the countries below (all resource rich) had invested all rents from natural resources. The much lower physical capital today will obviously have implications for the income that these countries can derive from their current wealth.

Produced Capital Per Capita, Actual and Hypothetical, in Five Resource-Rich Countries, 2005



Source: Authors' calculations based on World Bank data.

Note: Actual capital is the amount the country accumulated in 2005. Hypothetical produced capital is the amount the country could have accumulated if it had followed the Hartwick rule and reinvested all resource rents since 1980.

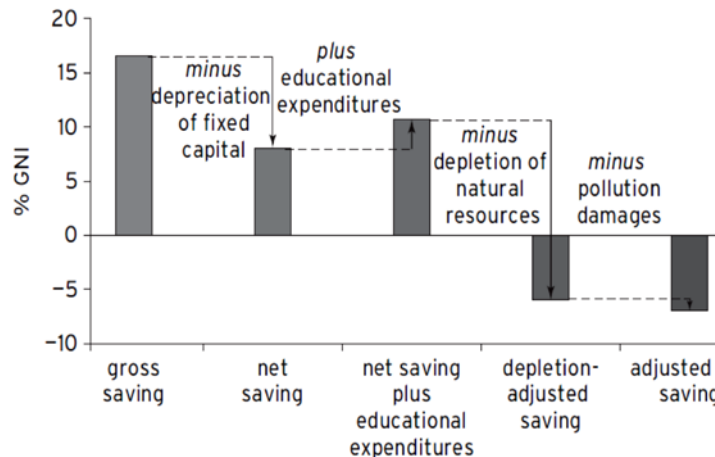


Measuring sustainability of growth – Adjusted Net Savings (ANS)

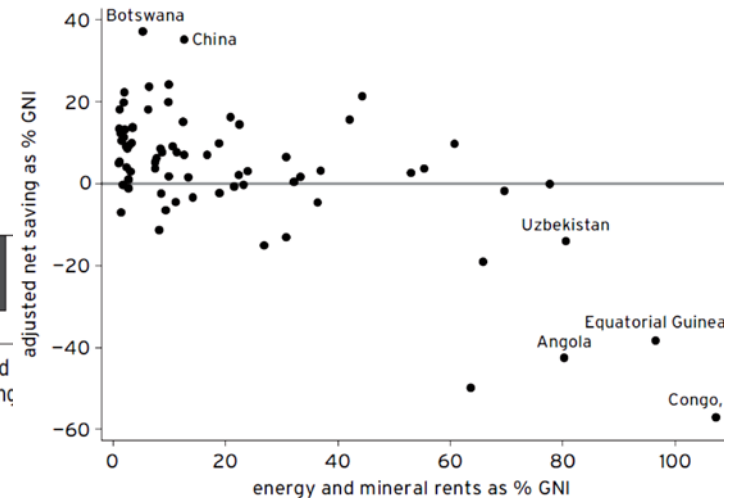
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- Wealth accounting attempts to measure changes in wealth through adjusted net savings (ANS). ANS therefore illustrates the sustainability of growth.
- ANS measures investments in different forms of capital and depreciation. National accounts only looks at physical capital, while ANS also includes natural and intangible capital. Negative ANS suggest non-sustainable growth patterns, often the case in RR countries.

ANS is calculated by adding investments and subtracting depletion in all capital forms



Relationship between ANS and the share of energy rents in GNI

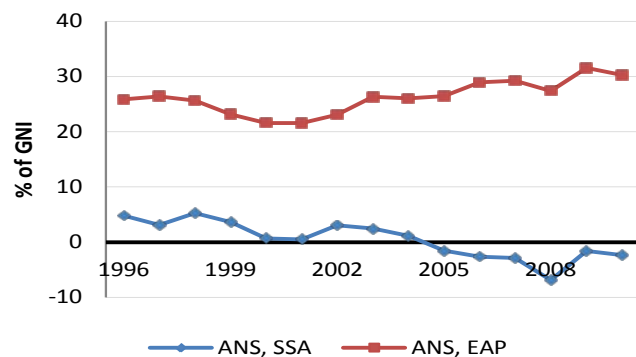


ANS in the region and Mozambique

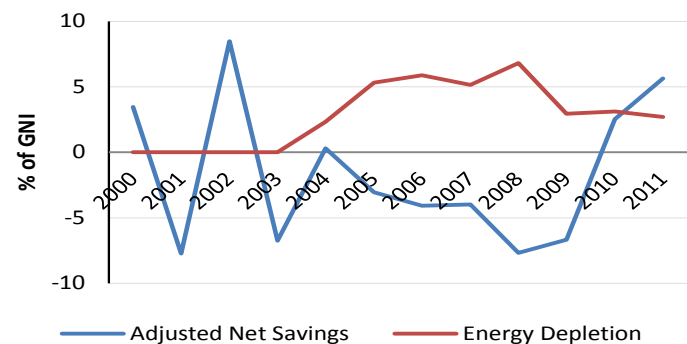
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- ANS in SSA has been negative for most of the last decade, illustrating the unsustainable nature of growth – which becomes even more evident if compared with ANS in East Asia.
- ANS in Mozambique was negative for most of the last decades, it has become positive (but remains relatively low) due to a scaling up in investment in the past few years

ANS in SSA and East Asia



ANS and energy depletion in Mozambique



- Indicators such as ANS can help Mozambique monitor growth patterns, ensuring growth is sustainable and the use and depletion of natural capital is taken into account.



Using wealth accounts for improved natural resources management

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- Measuring ANS can help countries identify patterns of growth that may not be sustainable. Mozambique can measure whether the natural capital being extracted is being invested in other forms of capital.
- Fiscal policy will be key in efforts to translate natural capital into other forms of capital given the Government's role in capturing and using economic rents from natural resources.
- Medium term planning (e.g. the PQG) could incorporate notions of sustainability and measurement to ensure growth contribute to long-term and sustainable development (which cannot be measured by current metrics, such as GDP).
- Mozambique could also implement reforms that support the use of resources rents for productive investments:
 - A rules based-system that determines how much of the resource rents will be spent (and on what) and how much will be saved
 - Acceleration of reforms to improve public financial management, particularly in dimensions important for resource rich countries
 - Enhanced Public Investment Management system (improved appraisal, evaluation and selection of public investment projects)

