

Natural Capital and World Bank Operations

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Overview

Governments, the World Bank, and other development agencies are increasingly using natural capital valuation and accounting in four ways:

- a. Macroeconomic policy analysis and loans** (development policy loans, or DPLs)
- b. Sectoral policy analysis and investments** (water, land, forestry, energy...)
- c. Regional development projects** (cross-sectoral analysis and projects, such as those with land-use tradeoffs)
- d. Links to climate change** (analysis of emissions reduction options, adaptation actions, financing)

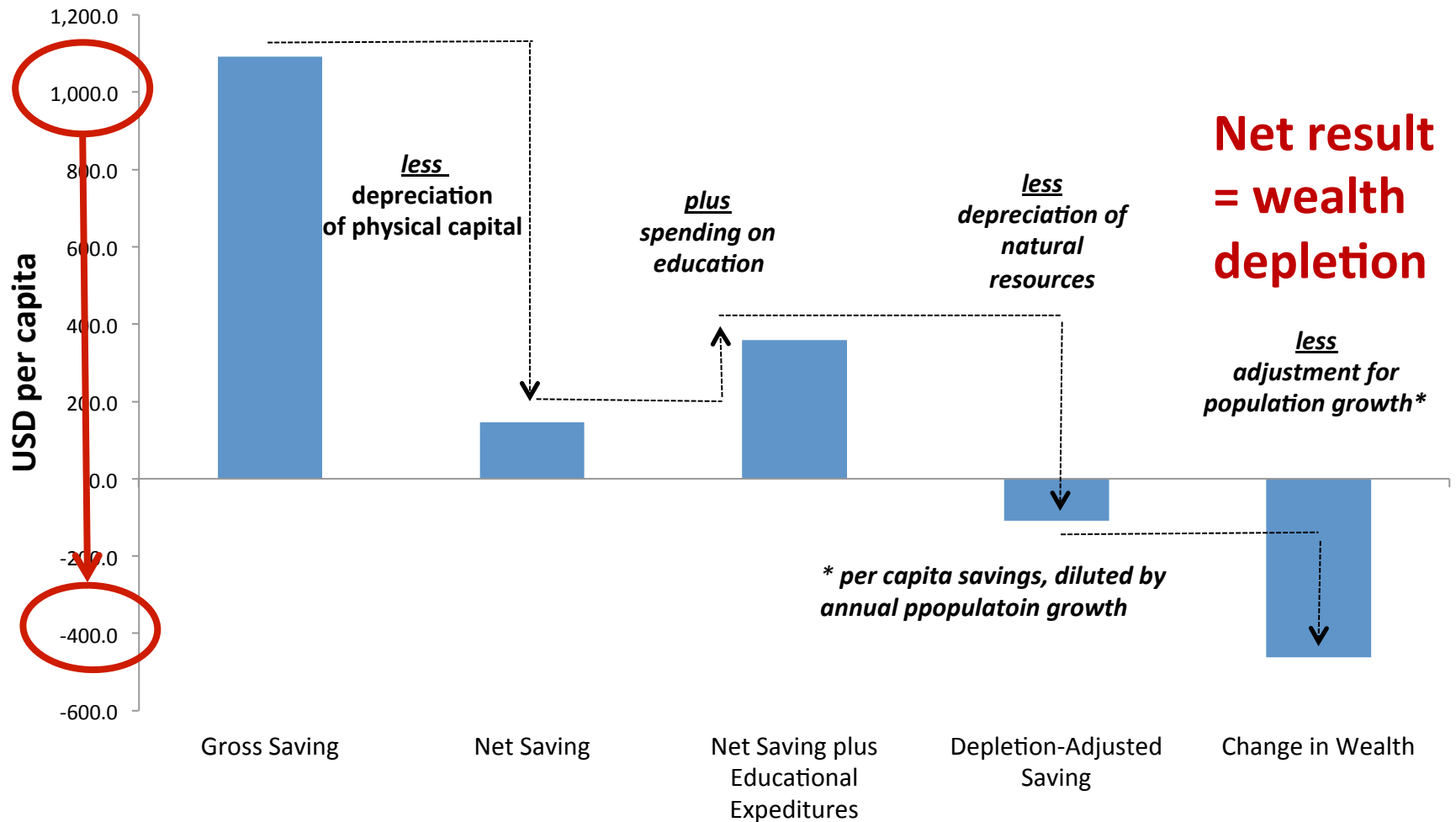
General Observations

- “Users” of natural capital values are interested in both valuation of natural capital and formal environmental accounts:
 - Environmental accounts are well suited to economic modeling because they follow the framework of the national accounts
 - Natural capital valuation is often more flexible for use in the context of policy analysis, cost-benefit analysis, and project finance
- Data is getting better all the time!
- It’s not always easy to trace a direct route between statistics and policy decisions, since statistics are used in many ways by many users, some of which are unknown

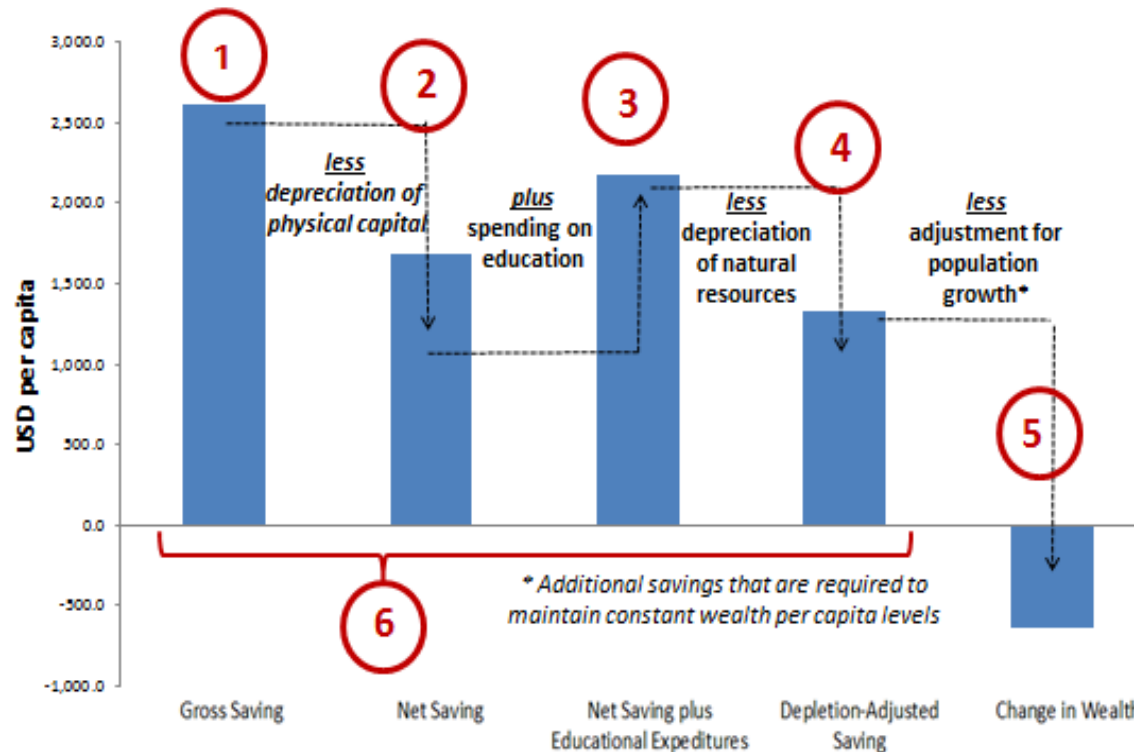
A. Macroeconomic policy

- Growth strategies – e.g., countries seeking to meet the World Bank “twin goals” of reducing poverty and promoting shared prosperity in a sustainable fashion.
- “Green growth” or national sustainable development strategies, including many links to climate change (low carbon strategies, Nationally Determined Contributions, etc.)
- Development Policy Loans (DPLs)

Calculating changes in total wealth per capita in Colombia, 2010



Policy levers to improve sustainability in terms of total wealth



1. Increase the level of savings

2. Improve the quality of physical/ built capital (with longer economic lives)

3. Increase spending on education and innovation

4a. Invest in the quantity of natural capital (some new resources, such as in mining and fossil fuels, can be discovered and the stock expanded)

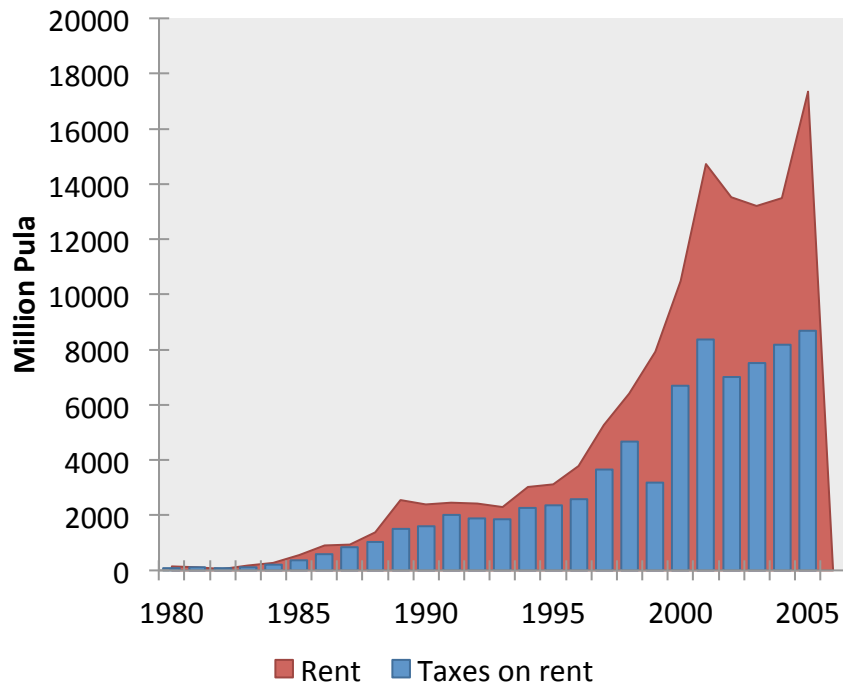
4b. Invest in the quality of natural resources (such as land)

5. Higher population growth rates dilute a country's total wealth.

6. Increase total factor productivity

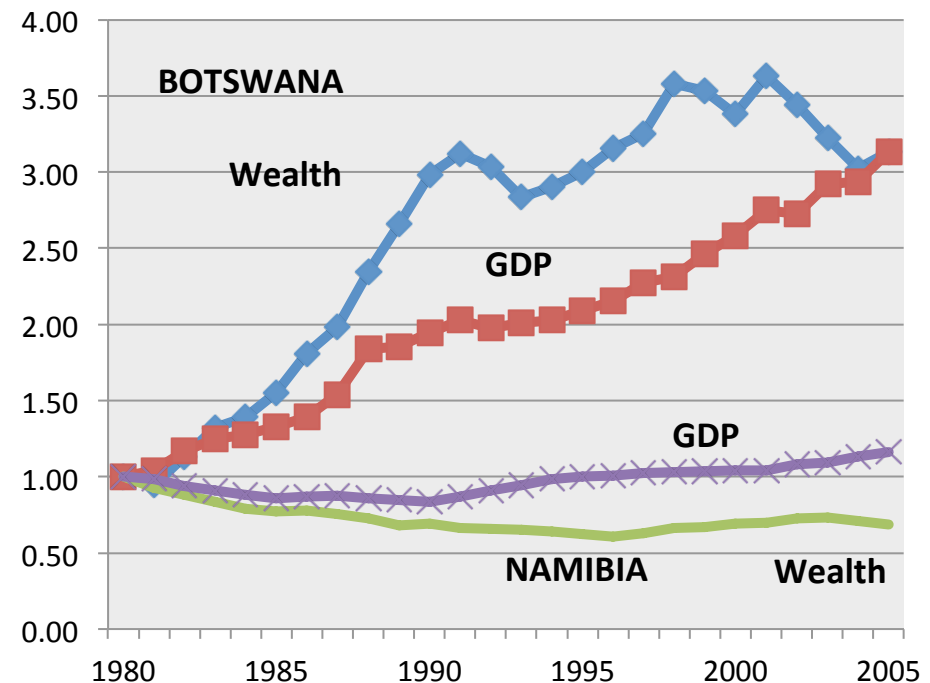
Mineral accounts – Botswana

1. Botswana government recovers mineral revenues (“rent”)



2. The investment of mineral revenues builds wealth and income

(index of real, percapita growth in wealth, GDP)



Note how total wealth and GDP per capita rose in Botswana, and neither did in neighboring Namibia.

Germany – Sustainable development strategy

- Environmental accounts play a major role in informing the German National Sustainable Development [Strategy](#)
 - Of the 21 indicators in the strategy, 3 are derived directly from the German environmental accounts and another two are based on a combination of environmental and national accounts data
 - At the request of the Federal Government, the Federal Statistical Office conducts an [analysis](#) of how the indicators have changed since the last report and of the progress made in achieving the specified goals

Canada – Environmental Accounting

- NCA data is used by Environment Canada to [report](#) on sustainable development in Canada
 - The contribution of natural capital to national wealth
 - Beginning in 2014, this will be done on a quarterly basis as a formal part of the *National Balance Sheet Accounts*
- [Data](#) used by Statistics Canada to show the evolution of natural resource reserves
 - Results show that Canada's increased resource wealth is largely price driven

Norway – Sovereign Wealth

- Arguably no other country has embedded natural capital thinking as deeply into its economic policies as Norway:
 - Norway intentionally sets aside large parts of the rent from the exploitation of its oil reserves
 - By doing so, it has created the [largest sovereign wealth fund](#) in the world – worth \$740 billion
 - This fund is used by Norway to invest in financial and produced assets around the world
 - These assets are intended to provide a source of income for future Norwegians when their oil resources have been depleted
 - This is a “textbook” example of the integrated management of all national assets to ensure long term sustainability

Sweden – Economic forecasting

- The Swedish Ministry of Finance prepares medium-term economic forecasts based on a general equilibrium model developed at the Swedish National Economic Research Institute that includes some environmental dimensions
 - The model draws on energy data and air emission data from the Swedish environmental accounts
 - It also is linked to transportation models, since transport is a major source of pollutant emissions and a key input into production
- Other uses of the accounting data feed into high-visibility public debates about tax policy, climate change, environmental policy and economic growth
 - National Commission on Climate Change
 - The Committee on Environmental Objectives,
 - The Committee for Growth and Environment,
 - Studies related to green taxes

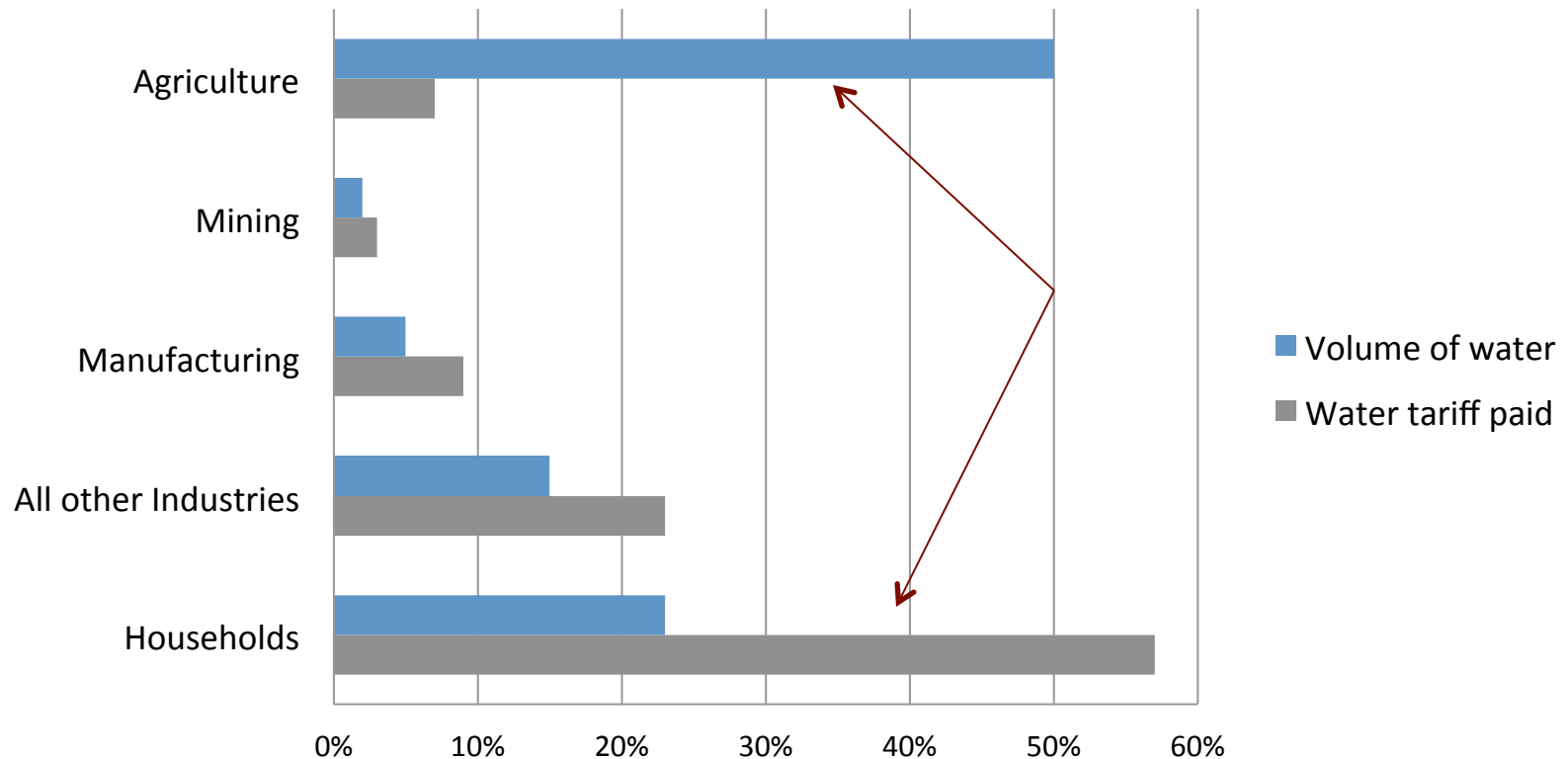
B. Sectoral Policies

- 1. Water accounting:** managing a scarce resource
- 2. Energy and air pollution:** cleaner, more efficient production
- 3. Stocks of minerals & energy:** managing resource rents for long term growth
- 4. Land and ecosystems:** balancing the needs of tourism, agriculture and other uses
- 5. Forest resources and protected areas management:** prioritizing investments

Water accounts – Australia

Are scarce water resources in Australia allocated efficiently?

Monetary vs. physical use of distributed water in key sectors,
2008-9 (Australia)





Valuing ecosystems for hydropower production in Himachal Pradesh, India

- Assess flow and value of ecosystem services and help
 - Design payment for ecosystem services scheme
 - Improve land management practices
- Which services?
 - Water supply for hydropower production
 - Sediment retention for hydropower facilities

Himachal Pradesh policy questions

- How has the forest wealth evolved over time? (asset accounts)
- What is the contribution of timber and other forest products to the state income, who is benefitting from these goods, and how can the contribution be increased sustainably? (supply-use table)
- What is the contribution of forests to hydropower (ecosystem account) and tourism sectors (eco-tourism account)?
- What value should a PES scheme attach to the sedimentation control services of the forest?

Botswana – managing resources and biodiversity

- Protected areas account for 40 percent of Botswana's land area



- National and ecosystem-based tourism accounts will inform management of eco-tourism in four key ecosystems: Okavango, Chobe, Makgadikgadi Pans, and Central Kalahari.

C. Regional Development Projects

1. Indicators: for monitoring levels and trends

2. Tradeoffs: managing trade-offs

- **between productive sectors** – such as agriculture, tourism, watershed conservation
- **allocating a shared resource**, typically land, water, forests, or ecosystems

Philippines: Southern Palawan

- Southern Palawan is home to many indigenous peoples and is rich in natural resources & biodiversity
- **BUT** is under pressure from
 - Commercial agriculture
 - Mineral extraction
 - Poaching
 - Unsustainable fisheries
 - Deforestation & forest degradation
- NCA valuation can help advise how these competing resource uses can be managed to achieve sustainable & inclusive growth?

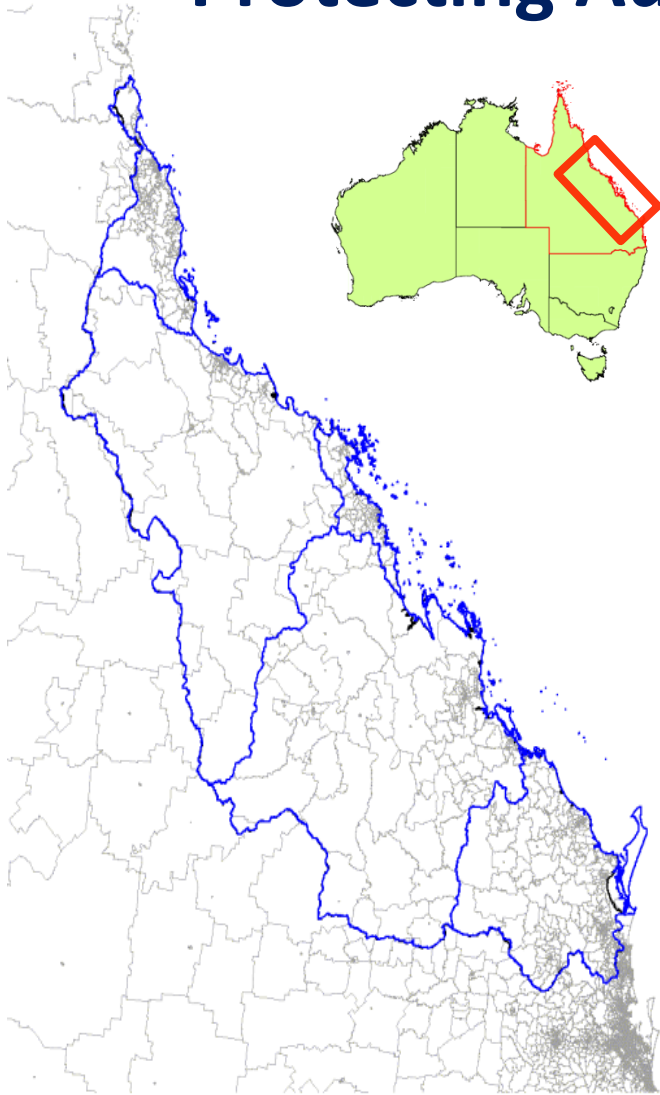


Philippines: Laguna Lake basin

- The Laguna Lake basin is a vital ecosystem
 - Water supply, fisheries, agriculture, forestry, flood retention & ecotourism
- **BUT** is at risk from pollution & sedimentation due to
 - Unfiltered sewage & solid waste
 - Pollution from aquaculture
 - Pesticide use in agriculture
 - Degradation of the watershed
 - Siltation of tributaries
- NCA valuation can help manage these different uses



Protecting Australia's Great Barrier Reef (1)



Major source of income and jobs from:

- Tourism
- Fishing industry

National icon—symbol of Australian identity

Coral reef managed well (protected from overfishing, overuse by tourism)

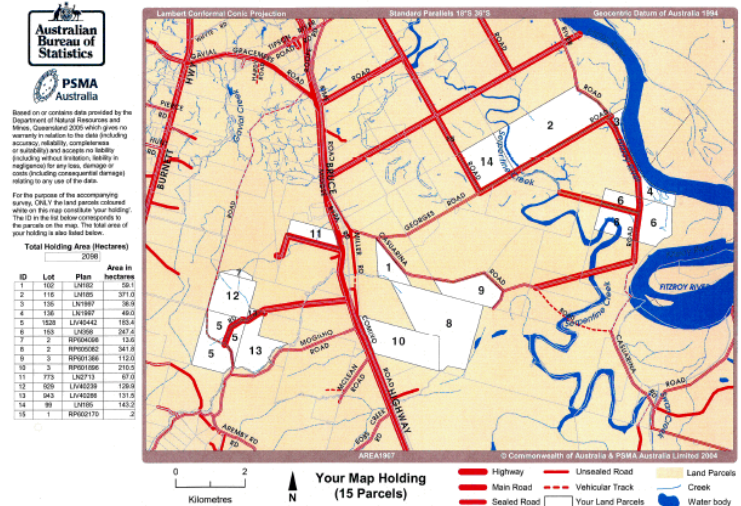
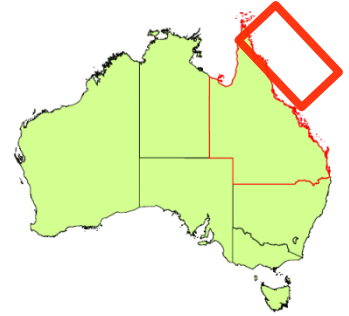
BUT, Major threats from on-shore activities, mainly agriculture —

- Sediment and pollutants (phosphorus, nitrogen)

Protecting Australia's Great Barrier Reef (2)

Ecosystem Accounts for the Great Barrier Reef catchment areas help manage the watershed by making linkages between land use, agricultural practices, income, jobs, water quality (sediment, chemicals) and downstream environmental impact on the GBR.

- Costs to the reef from current land use (impact on fishing, tourism)
- Economic impact of alternative land uses (agriculture jobs, income)



D. Links between Natural Capital and Climate Change

1. Emissions reduction options

- Analysis of trade-offs, particularly in the agricultural, forestry and energy sectors (e.g., climate smart agriculture, renewable energy)
- Inputs to NDCs (Nationally Determined Contributions) and NAMAs (Nationally Appropriate Mitigation Actions)
- Inputs to both top-down (macroeconomic) and bottom-up (sector-specific) modeling of possible mitigation actions.

2. Adaptation actions

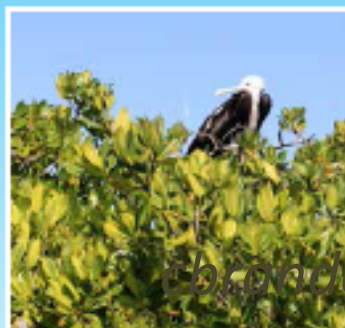
- Sectoral and regional inputs to green growth strategies
- Assessment of risk associated with climate change

3. Financing

- Assessment of the feasibility of climate-related investments

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**A Review of
Select Developed Countries**

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<http://www.wavespartnership.org/en/publications>

