



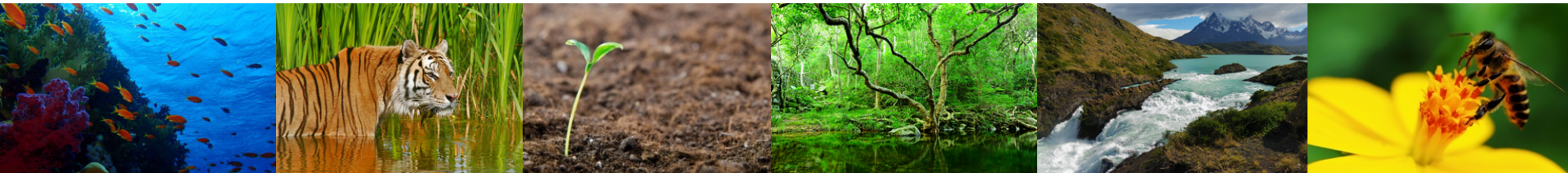
*Wealth
Accounting
and Valuation
of Ecosystem
Services*

International Examples of the Application of Environmental Accounts

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General observations



- It is not always easy to trace a direct route between statistics and policy decisions
 - Statistics are used in many ways by many users, some of which are unknown
- To date, the most policy relevant environmental accounts seem to be those related to climate change, as this is a policy issue that transcends all borders
 - Energy use accounts
 - Greenhouse gas emissions accounts
 - Environmental taxes and subsidies accounts
- The relevance of other accounts varies from country to country

- National sustainable development strategies provide a clear policy link for environmental accounts in several countries
- The concept of “green growth” being promoted by the [OECD](#) and [UNEP](#) currently is also a clear policy link for the accounts

General observations



- Most environmental accounts are released annually (or less frequently) and lack of timeliness can be a concern
 - Canada is moving toward quarterly releases of natural resource wealth; the [Netherlands](#) has already begun quarterly GHG emissions releases
 - There is a sense that higher frequency and improved timeliness will enhance relevance
- Environmental accounts are well suited to use in economic modeling because they follow the framework of the national accounts
 - Policy and research institutes that conduct modeling are, therefore, frequent users

General observations



- In promoting policy use of environmental accounts, several of their advantages relative to basic environmental statistics should be emphasized
 - **Comprehensiveness** – environmental accounts are comprehensive in their geographic and sectoral coverage
 - **Consistency** – environmental accounts apply consistent concepts, methods and structures over time, so that time series can be trusted to reveal actual trends
 - **Coherence** – environmental accounts are both internally consistent and externally consistent (notably with the SNA)

- The Australian Bureau of Statistics released a [report](#) in 2012 highlighting actual and potential policy applications of their environmental accounts in the following areas:
 - mitigating climate change
 - adapting to climate change
 - sustainability
 - managing the Great Barrier Reef
 - managing agricultural river basins
 - green growth
 - solid waste management

- Measuring sustainability in terms of *per capita* capital stocks

4.5 ESTIMATES OF AUSTRALIA'S CAPITAL BASE(a), volume measures, as at 30 Jun

	2000-01	2005-06	2006-07	2007-08	2008-09	2009-10
<i>Capital Estimate</i>	\$	\$	\$	\$	\$	\$
Produced Capital(b)	156 000	173 000	177 000	184 000	188 000	192 000
Net Financial Assets with the rest of the world	-22 000	-27 000	-30 000	-31 000	-32 000	-34 000
Natural Capital(partial)	214 000	214 000	213 000	212 000	210 000	210 000
Total	348 000	359 900	360 000	362 000	361 000	364 000
National Net Savings per capita	1 668	3 175	3 352	3 848	4 987	4 067

(a) Where available

(b) Excludes plantation timber inventories, which are included in natural capital

Source: Australian System of National Accounts (ABS cat.no. 5204.0)

- Experimental land cover account prepared to assess changes in land cover in the Great Barrier Reef region
 - Forest extent dropped by 13% to 14.6 million hectares during the 10 year period ending 2008
 - Most original forest has been converted to non-native vegetation and buildings
 - Industry now accounts for most land use in the region
 - 63% of farmers in the region applied chemical and 39% applied fertilizers

Canada – Various uses



- Data used by Environment Canada to report on sustainable development in Canada
- Data on natural resource wealth are used by Statistics Canada to show 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
- Data from GHG emissions accounts have been used by the Ministry of Finance to model climate change policies

- 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

- An existing econometric model in Germany has been extended using data from the environmental accounts to create the [Panta Rhei](#) model that considers environment-economy interactions
- In recent years, the model has been used for studies of
 - [renewable energy](#) with a focus on the labour market
 - energy efficiency
 - green information technology ICT
 - material efficiency
 - energy scenarios for the German energy future

Netherlands – Water accounting



- In the Netherlands, there is growing demand for information on the economic value of water and the wider economic consequences of water policy and management as a result of the [European Water Framework Directive](#)
- Statistics Netherlands has developed a National Accounting Matrix including Water Accounts in response, consisting of the following components:
 - physical flow accounts for water use
 - economic accounts for river basins
 - water emissions accounts for nutrients, heavy metals and other pollutants
 - assessment of available fresh water resources
- Integration of data at river basin level makes the water accounts an important information tool to support policy and decision making
- The water accounts have been directly used by the Ministry for Infrastructure and Environment for reporting to the Water Framework Directive

- In response to demand from Dutch Ministry of Economic Affairs, Statistics Netherlands has prepared an “Economic Radar of the Sustainable Energy Sector”
- The interest in monitoring the sustainable energy sector lies in evaluating economic opportunities of the Netherlands in the global transition towards a renewable energy supply system and more attention for energy conservation
- According to the study, trends show a gradual increase in the importance of sustainable energy sector from 2008-2010

Netherlands – Measuring sustainable energy

	2008	2009	2010
<i>absolute values</i>			
Employment ² (FTE, rounded)	16 000	16 700	17 400
Production (mln euro, rounded)	5 160	4 800	na
Value added (mln euro, rounded)	1 710	1 750	na
Import of goods (mln euro, rounded)	2 232	2 300	na
Export of goods (mln euro, rounded)	1 806	2 200	na
Gross capital formation:			
Demand side exploitation phase (mln euro, rounded) ³	1 400	870	1 190
Investments pre-exploitation phase	234	261	na
Innovation (R&D expenditures per euro turnover ⁴ , %)	2.0	na	2.4

¹ 2010 growth figure for P-SES equal to 5 percent

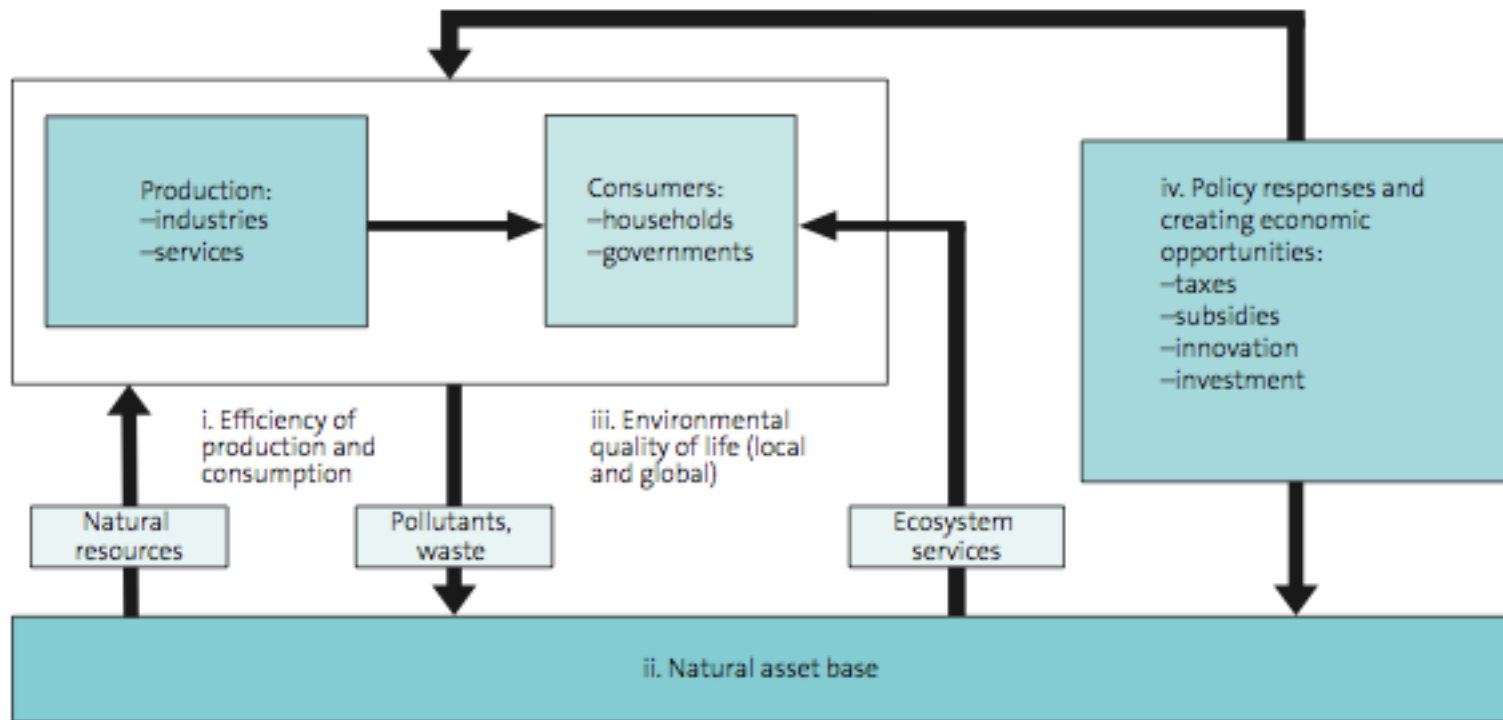
² Includes only employees on the payroll of SES companies. Employees hired from temp. agencies are not included

³ Includes only projects reported to the EIA scheme, based on financial reports by A-NL

⁴ 2008 figure has changed compared to previous Radar results because of comparability reasons. This figure includes only companies of ten or more employees. Figures only representative for medium-sized and large companies

Netherlands – Measuring green growth

- In response to the [OECD](#) strategy on green growth, Statistics Netherland produced a [report](#) on green growth in Holland using data from the environmental accounts

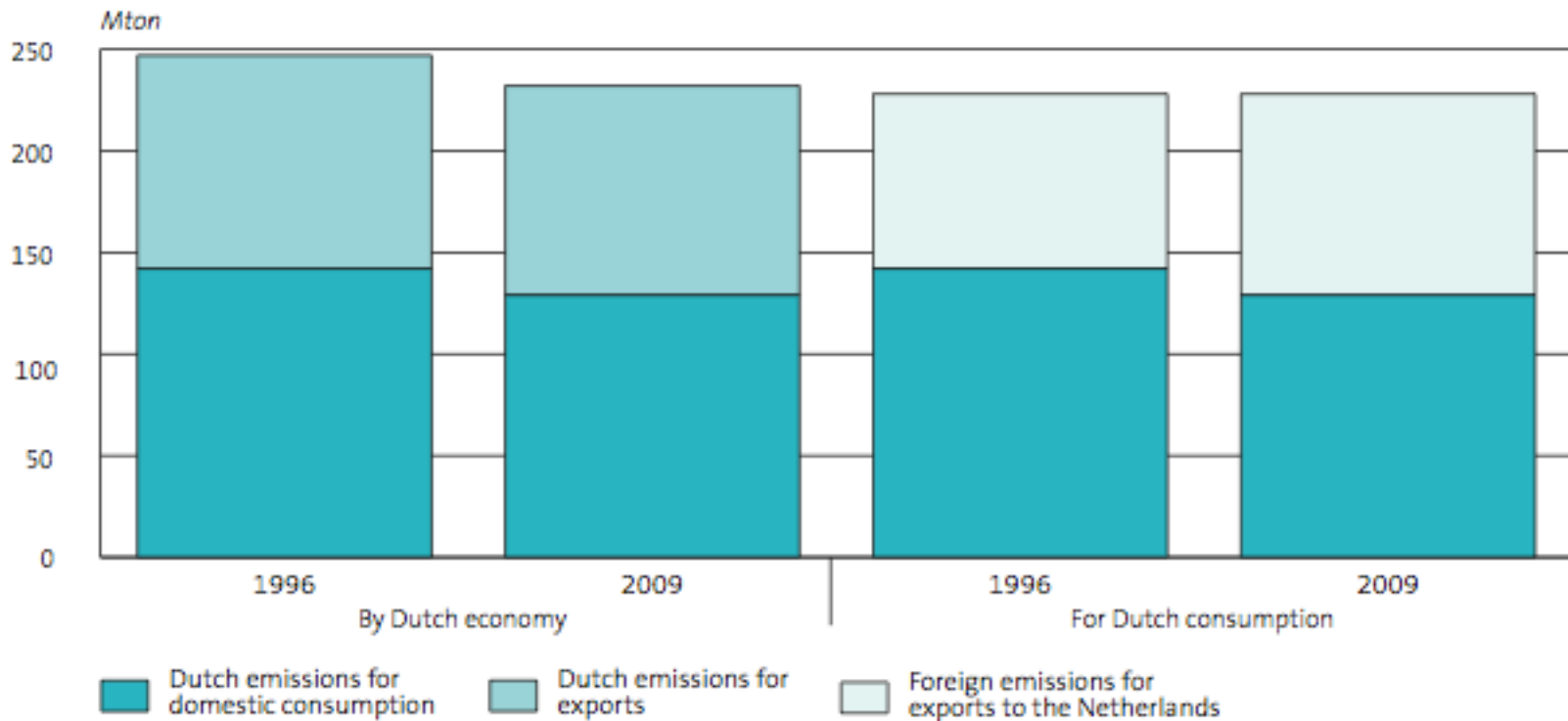


Netherlands – Measuring green growth



- Greenhouse gas emissions as a result of Dutch consumption remained stable between 1996 and 2009. Although the domestic emissions fell by 13 Mton, foreign emissions required to produce Dutch imports increased by the same amount.

Greenhouse gas emissions from production and consumption



Source: Statistics Netherlands, Environmental accounts of the Netherlands 2009.

Norway – Sovereign Wealth Fund



- 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
- The Norwegian energy resource account is used as the basis for the calculation

- Norway has adopted a sustainable development strategy in which the capital approach is clearly embedded
- Several of the indicators are derived from Norway's environmental accounts
 - Norwegian emissions of greenhouse gases compared with the Kyoto target
 - Energy use per unit gross domestic product
 - Petroleum adjusted national savings

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 commissions on climate change
 - The Committee on Environmental Objectives,
 - The Committee for Growth and Environment,
 - Studies related to green taxes

- Statistics Sweden was commissioned by the Swedish National Water Board to prepare a [report](#) in response to the European Commission water directive
- Using data from the water accounts, they found that:
 - From 1995-2005 Swedish GDP increased by 32% while water use fell by 2%
 - Water-intensive industries account for 62% of all water withdrawals in Sweden
 - These industries recorded an increase of water abstraction by 3%
- The report was conducted at the level of the five major water basins of Sweden