GDP vs. 'beyond GDP'

Green accounting as an alternative measure (progress, wealth & wellbeing of nations) – international experiences & challenges

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Outline

- Brief Overview of Sys. of National Accounting (SNA)
- Why Environmental Accounting?
- Key issues in Environ. Accounting
- Developments in Env-Econ Accounting
- Examples - Env accounting (Dev'ed & dev'ing Cts.)
- Summary

National Accounting (brief Intro.)

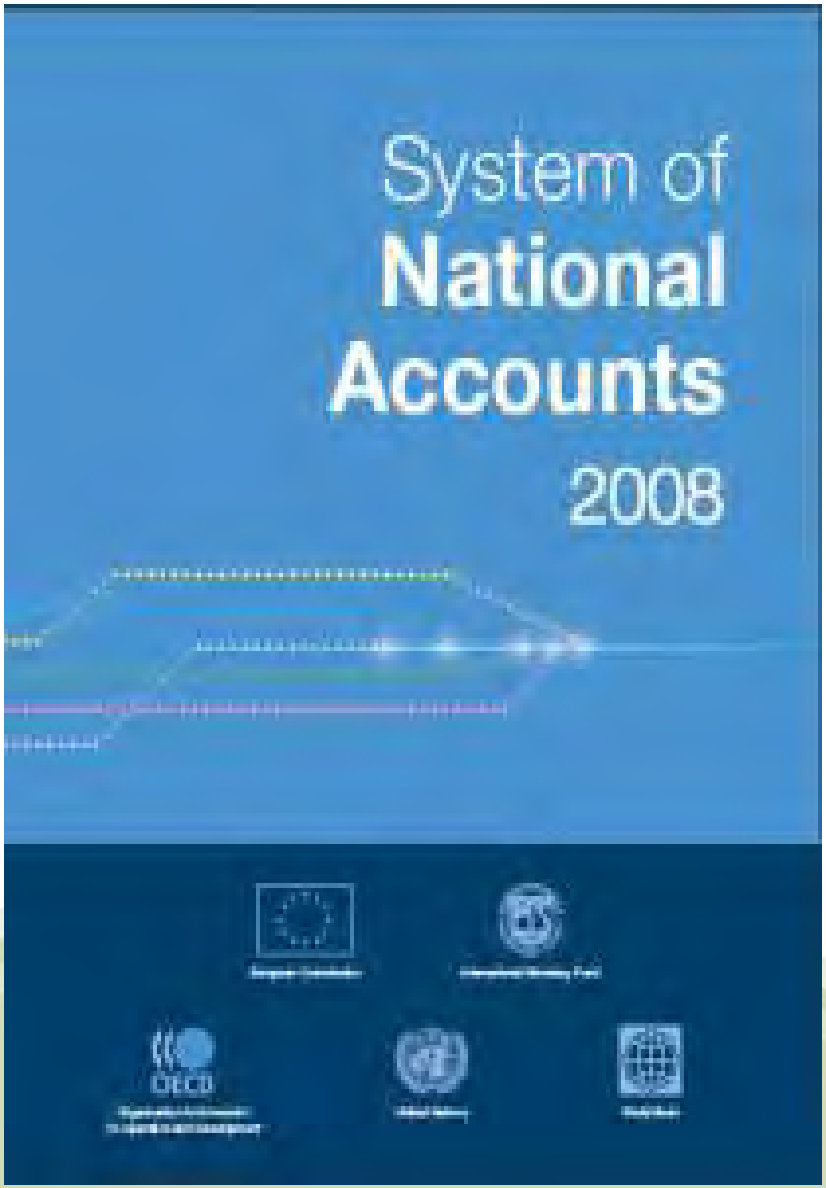
1. National Accounting (?) – a measure economic performance a nation (e.g. GDP; econ. growth)

Brief overview:

– before1930s ('Great Depression'): No detailed income & output data; No consideration of the dynamics of economic changes; No standard accounting framework

– After the Great Depression: More elaborate national accounting framework; Income/output data collection expanded; development of conceptual framework in which the accounts are presented (i.e. based on agg. demand: C, I, G, M, & X) - **[Keynesian Economics]**

Nat. Acct. Intro …(contd.)



•Until 1953, no internationally agreed standard for national accounting.

•1953 SNA: internationally agreed standard set of recommendations on compiling of economic activity

•Major SNA updates(1968, 1993 and **2008**).

•SNA framework largely **ignores the productive value of natural resources and the 'sink' functions of the environment**.

Why Green/Environmental Accounting?

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– Economic activities can reduce the ability of ecosystem capital to deliver ecosystem services.

– The degradation of ecosystems' capability to deliver ecosystem services is recorded **neither** in business accounting books **nor** in conventional national accounts.

– Consuming ecosystem capital without accounting or paying is equivalent to creating ecological debts.

- **Measurement framework in support of sustainable Dev't**
- **Integrate sustainability into economic measurement?**

Major Dev‘ts: Envr-Econ. Accouting

- 1987 –Brundtland Commission Report - *“Our Common Future”* WCED
- 1992 - Release of *Agenda 21- Programme of Action for Sustainable Development* - Recommendations of UN “Earth Summit” (Rio-1992)
- 1993 Handbook of National Accounting: Integrated Environ. & Econ. Acct. (SEEA 1993)
- 1994 – London Group on Environ. Acct.(to provide forum for practitioners)
- 1995 – Nairobi Group established (a group of experts)
- 2003 – Handbook of National Accounting: Integrated Environ. & Econ. Acct. (SEEA 2003)
- 2007 – SEEA2003 Revision process
- 2012 – SEEA2012 Central Framework (international statistical standard)

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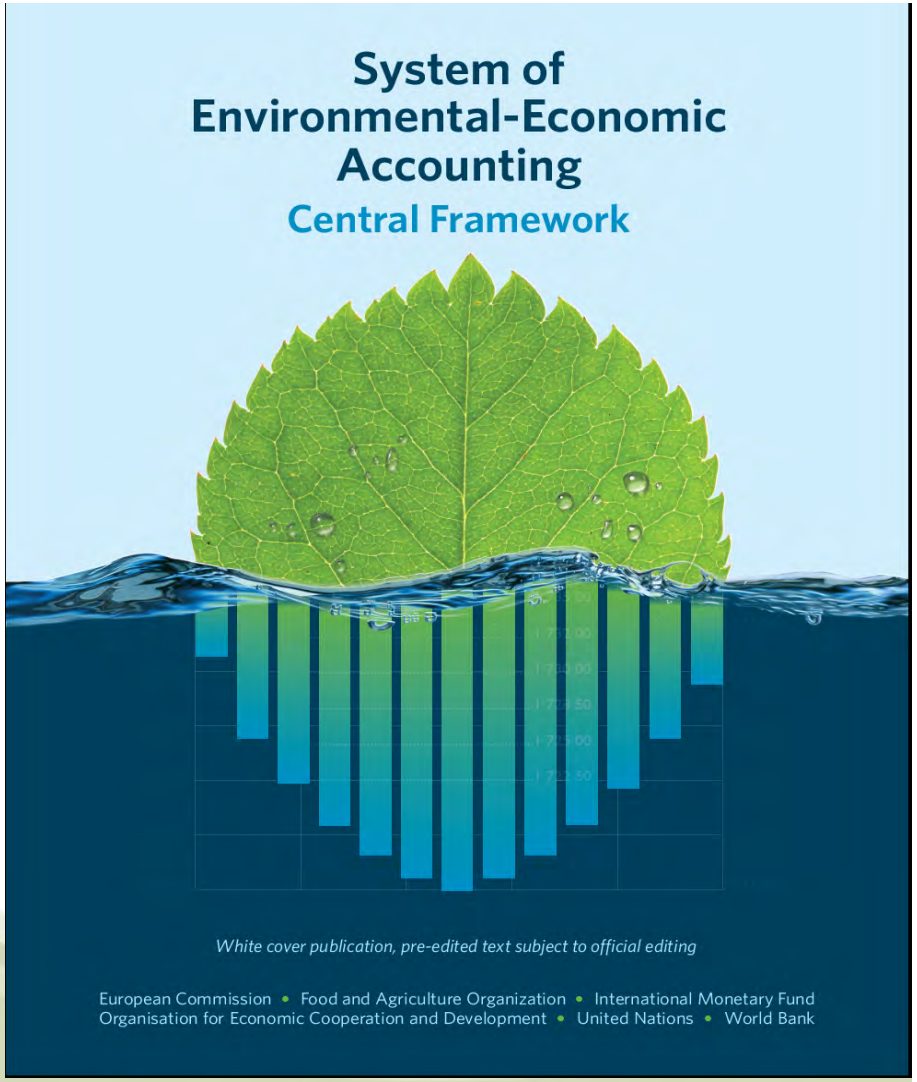
Forest Research

SEEA-2012 central framework (statistical standard)

- is an **accounting framework** that describes the interactions between the economy & the environment, and the stocks and changes in stocks of environmental assets.
- provides a framework to **combine a wide range of source data** to create aggregates, indicators and trends across the broad spectrum of environmental and economic issues
- SEEA framework encompasses **measurements** in three main areas
  - ***Physical flows of materials and energy***
  - ***Stocks of environmental assets and changes in these stocks***
  - ***Economic activity and transactions related to the environment***



SEEA – Water (2012)

- provides a conceptual framework for organizing **econ. and hydrological information**, enabling a consistent analysis of the contribution of water to the economy and of the impact of the economy on water resources.
- SEEA-Water includes info on:

(a) Stocks and flows of water resources;

(*b*) Pressures imposed (water abstraction and emissions);

(*c*) Supply of water & its use in the production process and by HHs;

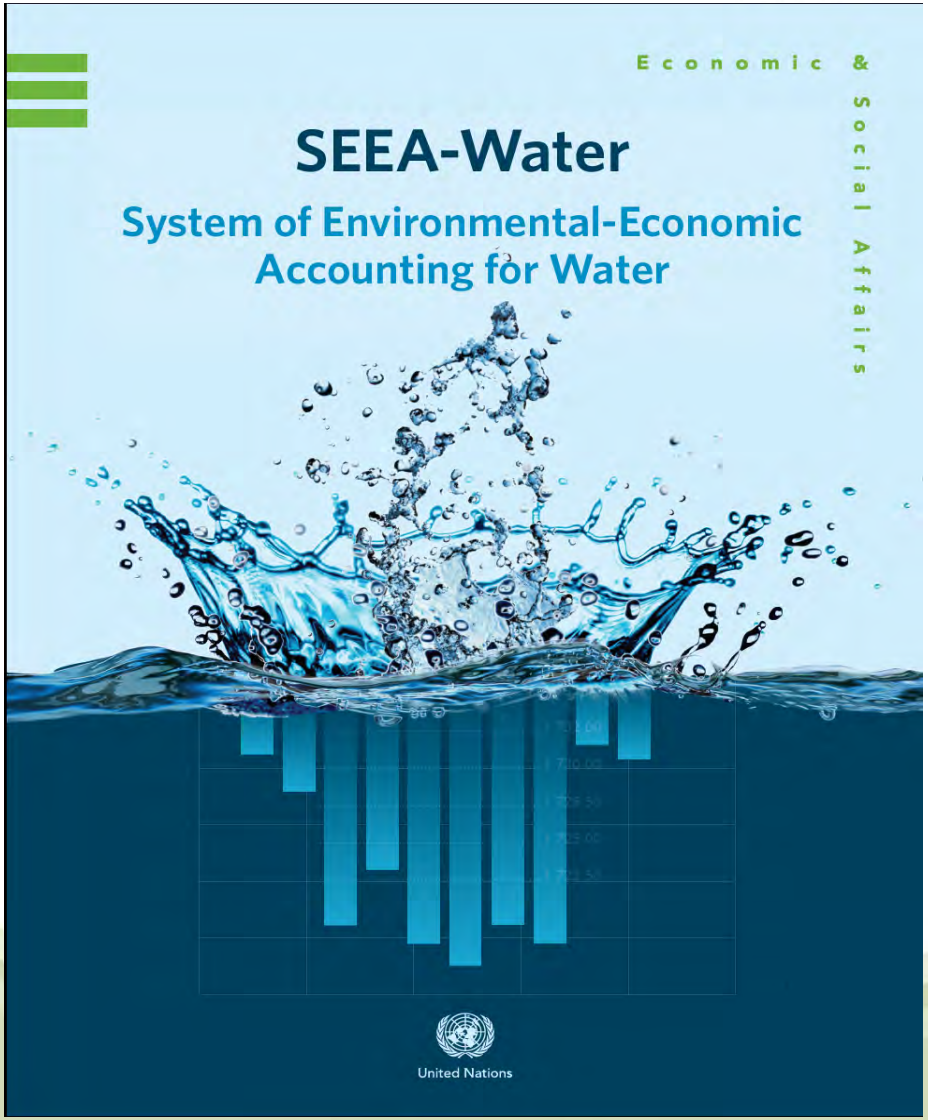
(*d*) Reuse of water within the economy;

(*e*) Costs of collection, purification, distribution and treatment, service charges paid by its users;

(*f*) Financing of these costs (who is to pay); for the water supply and sanitation services;

(*g*) Payment of permits for access to abstract water or to use it as a sink for the discharge of wastewater;

(*h*) Hydraulic stock in place, as well as investments in hydraulic infrastructure



Ecosystem Accounting

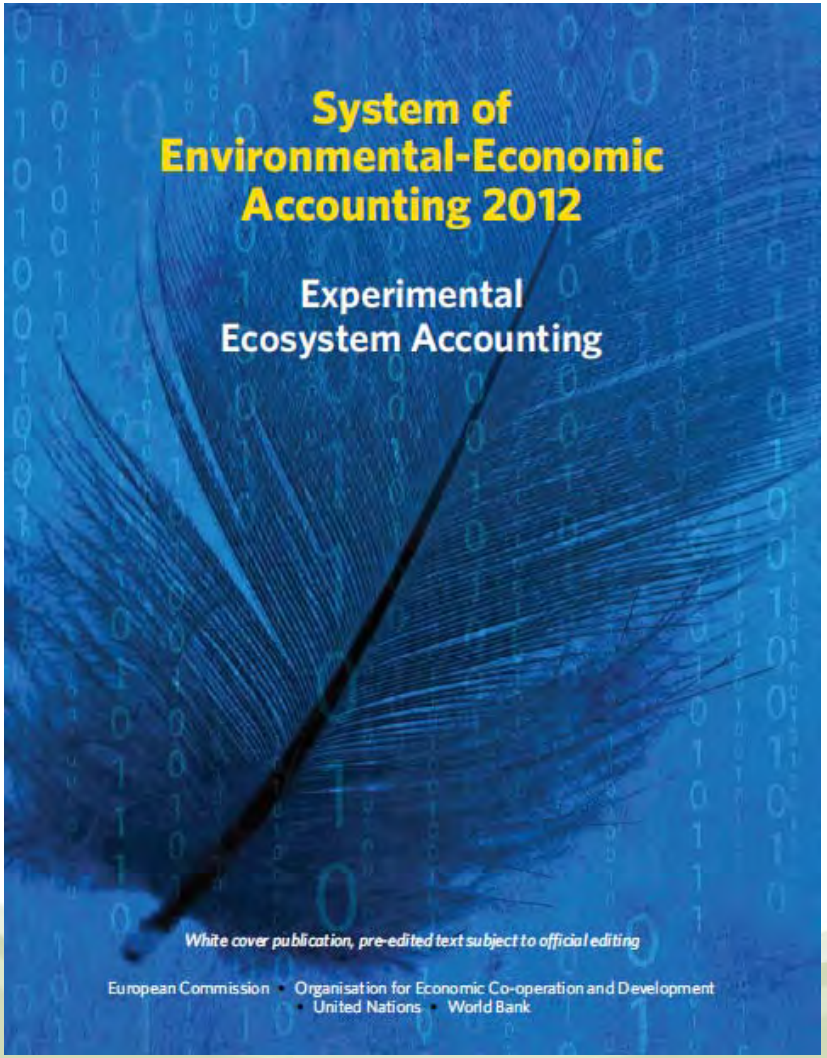
"The use of an accounting framework enables the stock of ecosystems – ***ecosystem assets*** – and flows from ecosystems – ***ecosystem services*** – to be defined in relation to each other and also in relation to a range of other environmental, economic and social information."

"Accounts" for assessing

- Ecosystem extent
- Ecosystem condition and changes in condition
- Expected ecosystem service flows

The Experimental Ecosystem Accounting Manual also describes accounting for

- Carbon
- Biodiversity



Key Issues (1)– technical

1. Classifications/scale: ecosystems from plot/field to national/global level (e.g., BH (UK NEA); Socio-ecological systme (EEA) ; Land-cover mapping, etc)

2. Units: measurement units (e.g., hectares, cubic meters, joules, £, etc) and statistical units (entities for which data is collected & accounts are compiled).

- material flow accounts - everything in tonnes
- carbon or energy unit-equivalents
- ecological footprint accounts- surface area as a general unit-equivalent

3. Monetary (valuation): individual preferences (WTP)??; defensive expenditures or cost of restoring??; etc.

Key Issues (2) – scope/type

1. Phyical accounts: Consider purely physical data: material and energy resource input; waste generation, resource depletion etc. e.g. Emissions accounts for GHG.
2. Accounts based envir. expenditures: e.g. account of expenditures made by businesses, govts and hhs to protect the environment
3. Physical and monetary accounts: accounts for environmental assets measured in physical and monetary terms.
4. Environ. sattelite accounts (1, 2, & 3): link measures of emissions of pollutants, material use, costs of remediation, and environmental taxes to measures of economic activity; add new information to the core national accounts; evaluate the environmental performance of different industrial sectors.

3. Integrated accounts: Adjusting the existing SNA to account the impact of the economy on the environment

Env. Acct: developed countries (examples)

Country	Key Features/ Particular focus of Env. acct
Norway	Physical accounts on energy resources and air pollution (pioneer in Env. Acct since 1970s)
France	Natural patrimony accounts – Physical accounting (provide data to monitor the state and changes in the natural environment).
The Netherlands	Material flow accounts (NAMEA)– Air emissions, water emissions, waste, energy, water and environmental expenditure accounts.
Australia AUD$4.8 trillion	Stock & flow accounts for energy & emissions, fisheries, minerals, and water; monetary values for land, mineral, forest stock accounts
Canada	Natural resource stock accounts, material and energy flow accounts and environmental protection expenditures accounts.
Germany	Material and energy flow accounts, fully compatible with Germany's system of national accounts and are based on the SEEA framework.
UK ONS	Atmospheric emissions, energy consumption, oil & gas reserves, and trade in basic materials, environmental taxation and spending on environmental protection.

UK natural capital accounting initiatives

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New decision-support tools needed, but…

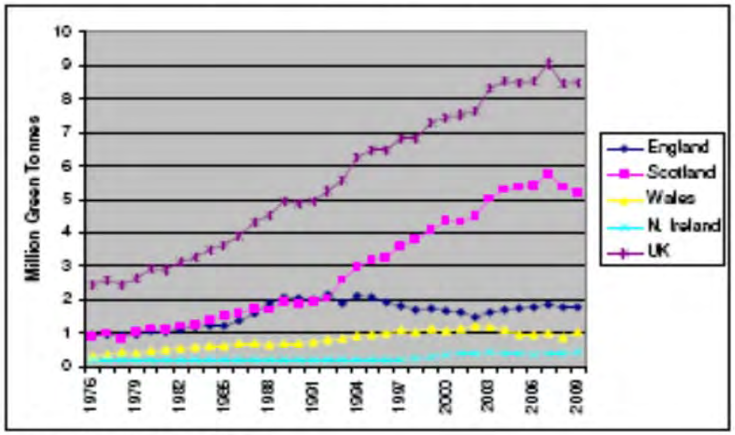
on-going debates:

- e.g. whether natural capital in national accounts is valued at **exchange (market) values** or wider economic welfare / **social values**
- implications of accounting for natural capital: '**commodification**' & **privatisation** of nature?

Wood example: UK

Chapter 22:
Economic Values from Ecosystems

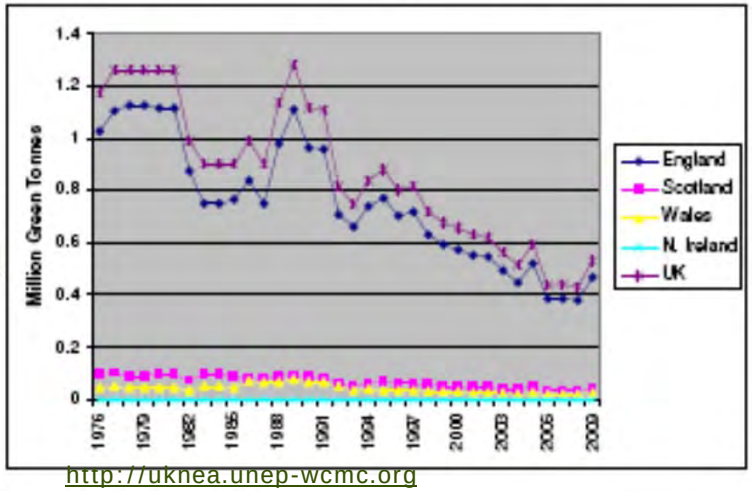
Figure 2 – UK softwood production by country (million green tonnes).



Source - *Forestry Commission.*

22.3.14 The Amenity Value of Nature 1098
22.3.15 Education and Environmental Knowledge 1101

Figure 3 – UK hardwood production by country (million green tonnes).



Source - *Forestry Commission*

http://uknea.unep-wcmc.org

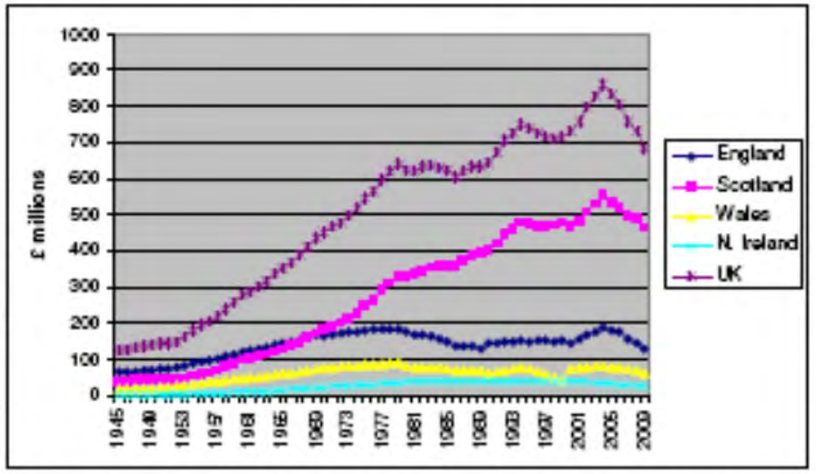
Findings include:

Social value of carbon sequestration per hectare of woodland (£239/ha) in 2009 was **more than double the standing sales value of the wood produced** (£73/ha - £91/ha)

Chapter 8:
Woodlands

Coordinating Lead Author: Chris Quine
Lead Authors: Christine Cahalan, Alison Hester, Jonathan Humphrey, Keith Kirby, Andy Moffat and Gregory Valatin

Figure 17 – Value of annual carbon sequestration by UK woodlands (at 2010 prices).



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Note: based upon CEH estimates and the DECC (2010) central estimate of £53/tCO$_2$ in 2009

1st May 2014

Env. Acct: developing countries (examples)

Country	Major features/particular focus of Env. Acct
Botswana	Water and mineral accounts, using SEEA whenever possible; both stock and flow accounts for water; preliminary work on monetary valuation of mineral stocks.
Colombia	Physical and monetary asset accounts for oil, gas and coal, mineral resources and forest resources.
Costa Rica	Developed accounts for forestry, soil erosion, and fisheries. Costa Rica is one of the WAVES partnership countries
The Philippines	Resource stock accounts for forests, minerals, fisheries, and soil, and costs of preventing air and water pollution
Namibia	Environmental accounts for natural assets such as water, fisheries, minerals, and livestock since the 1990s.

On-going 'env. Acct' initiatives: Dev-ing Cts

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WAVES

G**lobal partnership -** Aim: promote sustainable development by ensuring that natural resources are mainstreamed in development planning and national economic accounts.

8 Core Implementing countries (3 Africa, 3 LA; 2 Asia):

- Botswana
- Colombia
- Costa Rica
- Guatemala
- Indonesia
- Madagascar
- Philippines
- Rwanda

Summary

- **Major challenges in env. accounting**
  - Lack of common international def. & classifications ESs
  - Valuation (monetary) of ESs
  - Non-material ESs, e.g. cultural ESs (difficult to account)
  - No countries have developed/applied fully integrated env-econ accounting
- **Opportunities**
  - Methodological developments (e.g. SEEA2012, SEEA-Water, SEEA-Energy, SEEA-experimental ESs)
  - Various national/global research/initiatives (e.g. MEA, WAVES, TEEB, UK NEA, SNH NCAI, etc.)
  - Data – availability & access (e.g. CSS, valuation studies)
  - Increasing human capacities (individuals, organizational, networks , international collaborations, etc.)
  - Increasing political/government support (or willingness)

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Thank You!