Agenda

Global Workshop on Forest Accounting

Washington DC May 11-13 2014

Learning Goals

- Strengthen technical understanding and capacity among participants.
- Deliver basic training on forest accounting, from defining policy questions; identifying the accounts and indicators needed to answer the questions.
- Test training materials prepared for the development of a “Forest Accounting Sourcebook.”
- Start to build a common language for forest accounting among all WAVES partner countries.
- Develop a forest accounting “Community of Practice” as part of the broader efforts for sharing knowledge promoted by WAVES.

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DAY 1: MAY 11, 2014
What are the Forest Challenges and how Forest Accounts Can Help?

9:00 - 9:30 am	**Registration**
9:30 - 9:45 am	**Welcome and introduction** Juergen Voegele, Sector Director, AES, World Bank
9:45 - 10:30 am	**How the Workshop will be run** **Facilitators:** Paul Mitchell, David Bain
10:30 - 11:30 am	**Keynote Address: Key Policy Issues and Challenges for Forests** Frances Seymour, Senior Fellow, Center for Global Development
11:30 - 11:45 am	COFFEE BREAK
11:45 - 12:45 pm	**Panel: How can forest accounts and forest statistics help countries address these challenges?** **Moderator:** John Matuszak Adviser, Head of Global Engagement, WAVES, World Bank **Panelists:** Nigel Sizer, Global Director, Forests Program, World Resources Institute Gerhard Dietrle, Adviser, World Bank, Ken MacDicken, Senior Forestry Officer, FAO Glenn-Marie Lange, WAVES Program Manager, World Bank Julian Chow, United Nations Statistics Division
12:45 - 14:00 pm	**Lunch Break (including group picture)** World Bank
14:00 - 14:45 pm	**Forest Accounts: Process and Implementation** **Presenter:** Juan Pablo Castaneda, World Bank
14:45 - 15:00 pm	**COFFEE BREAK**
15:00 - 17:00 pm	**Group Exercise I: Formulating Policy Questions** **Presenter:** Maria Lourdes Ferrer, Director FASPO, Department of Environment and Natural Resources, The Philippines **Group exercise facilitator:** Paul Mitchell, World Bank Guided exercise to have participants begin thinking of the policy development process and how to link to forest accounts
17:00 - 17:15 pm	**Wrap-up**

DAY 2: MAY 12, 2014
Linking Policy and Forests Accounts

9:00 - 9:30 am	**Introduction and Review of Day 1** **Facilitator:** Paul Mitchell, World Bank
9:30 - 10:15 am	**Country Policy Questions** **Presenters:** Costa Rica and India
10:15 - 10:30 pm	COFFEE BREAK
10:30 - 12:45 pm	**Group Exercise II: Establish Accounts and Indicators** **Presenters:** Juan Pablo Castaneda, World Bank Le Truong, General Statistics office, Vietnam **Group Exercise Facilitator:** Paul Mitchell, World Bank Guided exercise that builds on the first exercise to develop a set of relevant indicators
12:45 - 14:15 pm	**Lunch Break** World Bank
14:15 - 16:00 pm	**Group Exercise III: Linking Accounts and Indicators to Policy** **Presenter:** Juan Pablo Castaneda, World Bank **Group Exercise Facilitator:** Paul Mitchell, World Bank Guided exercise that builds on the first two exercise to discuss how the indicators can help to inform policy
16:00 - 16:30 pm	COFFEE BREAK
16:30 - 17:30 pm	**Country Policy Applications** **Presenters:** Jaime Carrera, Researcher, IARNA, Guatemala Alejandro Caparros, Institute of Public Goods and Policies, Spain
17:30 - 17:45 pm	**Wrap-up**

DAY 3: MAY 13, 2014
Getting Into the Weeds: Focus on Compilation of Accounts

8:30 - 9:30 am	**Forest Accounts Overview** **Presenters:** Elsa Varela, European Forest Institute Ulf Narloch, World Bank
9:30 - 11:00 am	**Exercise: Compiling Forest Accounts (Part I)** **Facilitator:** David Bain
11:00 - 11:15 am	COFFEE BREAK
11:15 - 12:45 pm	**Exercise: Compiling Forest Accounts (Part II)** **Facilitator:** David Bain
12:45 - 14:00 pm	**Lunch Break** World Bank
14:00 - 15:15 pm	**Panel: Common Challenges for Compiling and Institutionalizing Forest Accounts** **Moderator:** David Bain **Panelists:** Juventino Galvez, IARNA, Guatemala Haripriya Gundimeda, Associate Professor, Indian Institute of Technology and GIST, India Alejandro Caparros, Associate Professor at the Institute of Public Goods and Policies, Spain Monica Rodriguez, Indicators and Environmental Accounts Coordinator, Colombia
15:15 -- 15:30 pm	COFFEE BREAK
15:30 - 16:30 pm	**Developing a Strong Community of Practice** **Presenter:** Carter Brandon, World Bank **Facilitator for Group Discussion:** Paul Mitchell, World Bank
16:30 - 16:45 pm	**Closing Remarks** Glenn-Marie Lange, WAVES Program Manager, World Bank

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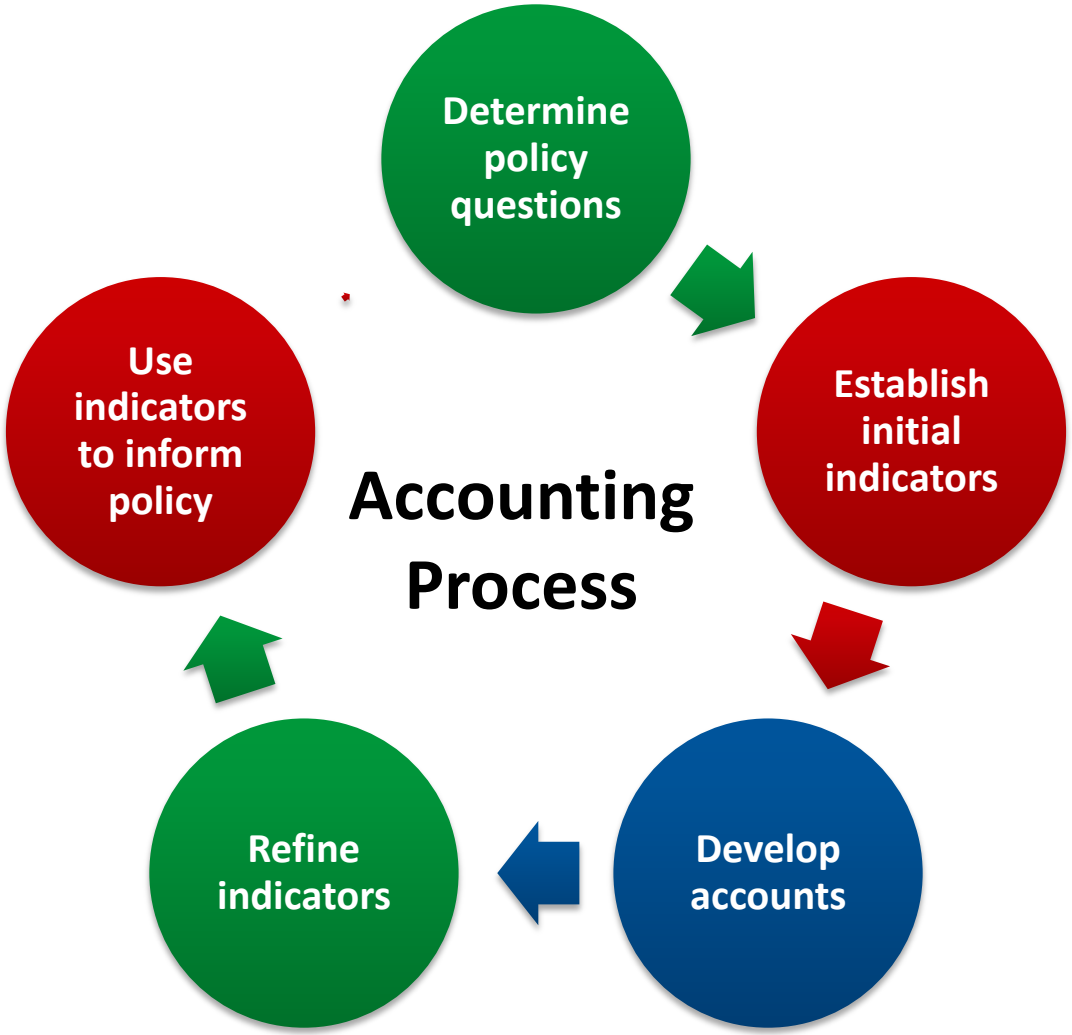
Group exercise 1:
Formulating policy questions


Determine policy questions
Establish initial indicators
Develop accounts
Refine indicators
Use indicators to inform policy
Accounting Process

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Formulating policy questions: Background

1. **What is a policy?**

‘A **policy** is a protocol to guide decisions and achieve rational outcomes. A policy is a statement of intent. Policies can be understood as ... mechanisms arranged to reach explicit goals.’

Wikipedia

Formulating policy questions: Background

2. Who asks policy questions?

a) Government -
   i. Local
   ii. State/Provincial
   iii. National
b) International agencies
c) Businesses

But they can also be driven by civil society or the media.

Formulating policy questions: Background

3. Some key government policy concerns

a) Economic
b) Social
c) Environmental

➢These concerns usually begin with policy questions, then become operational decisions flowing from policies.

➢But remember, both the questions and decisions are usually also wrapped around a political frame.

Formulating policy questions: Background

- The most important step is to determine the policy questions so that you can develop the right indicators and accounts.

- These are usually current questions but the accounts may be used for future policy questions.

- The policy questions must be simple, clear, concise and timebound

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Group exercise 1: Formulating Policy Questions

At your table appoint a facilitator (if one has not been allocated) and a person to take down the comments.

1.Discuss among yourselves all the policy and operational decisions that you are dealing with now or know you will deal with in the future. List them.

2. From this list determine two priority policies or decisions. Provide an outline of the likely economic, social and environmental consequences of adopting these policies or decisions.

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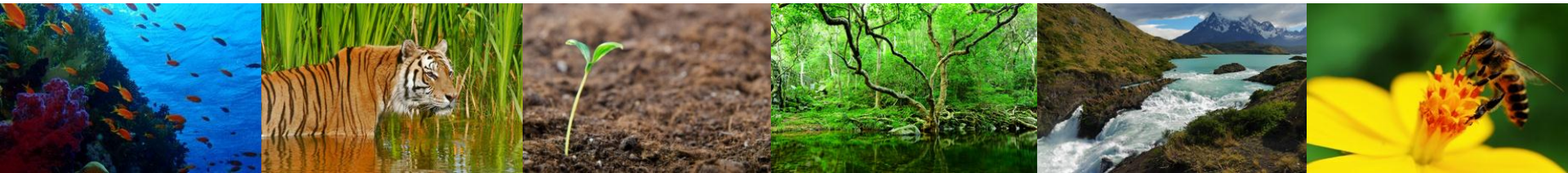
Group exercise 2.

Establishing accounts and indicators



Indicators and accounts

- Once you have established the policy questions and the potential consequences, indicators and accounts need to be established.

- Initial indicators need to be established then a determination on what accounts might be needed for these indicators must be made.

- After establishing the accounts the indicators need to be reviewed to determine if they are still valid and can be supported.

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Establishing accounts and indicators: Background

1. **What do we mean by 'indicators'?**
   a) **An economic indicator** is a statistic about an economic activity. Economic indicators allow analysis of economic performance and predictions of future performance. Examples: unemployment rate, housing starts, CPI, industrial production, GDP, retail sales, stock market prices, money supply changes.

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Establishing accounts and indicators: Background

b) **Environmental indicators** are simple measures that tell us what is happening in the environment. Since the environment is very complex, indicators provide a practical and economical way to track the state of the environment. Example: concentrations of ozone depleting substances in the atmosphere, tracked over time, is a good indicator for the issue of stratospheric ozone depletion.

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From accounts to indicators: Background

2. Why use environmental indicators?

a) To see if environmental objectives are being met
b) To communicate the state of the environment or to use as an advocacy tool.
c) As a diagnostic tool for detecting trends in the environment.

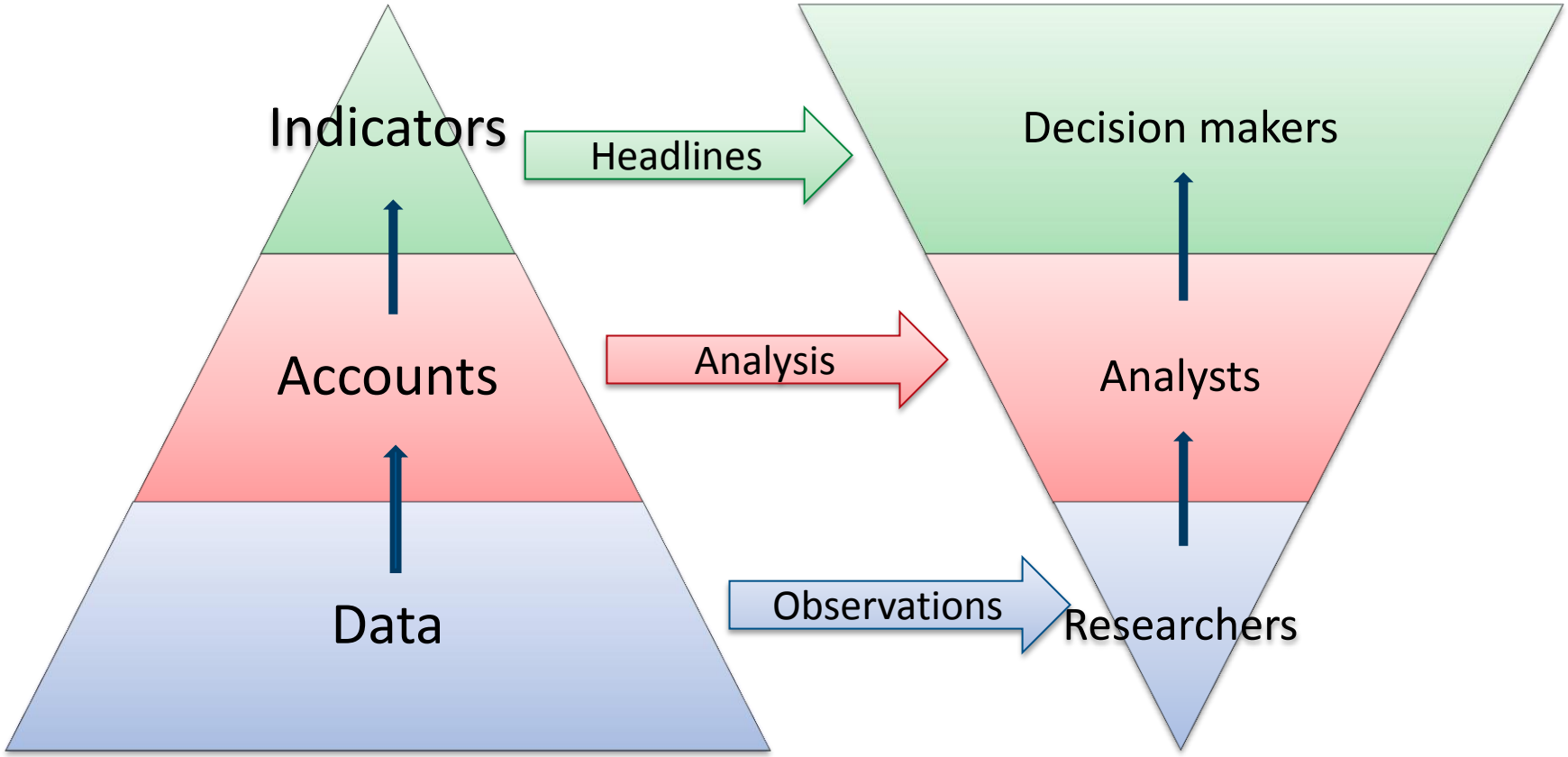
Establishing accounts and indicators

Background

Can these indicators concerns be expressed in accounts?

a) Economic – SNA
b) Social – various standards
c) Wider environment – SEEA
d) Narrow environment – *Manuals and guidelines on forest accounting*

Who uses what information?



The information pyramid

The decision pyramid

Group exercise 2: Establishing accounts to indicators

Using the policy questions and surrounding issues you designed in Exercise 1,

Part 1

- Develop an initial set of indicators that will inform decision making on the policies or operational decisions you have selected.

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Group exercise 2: Establishing accounts to indicators

Part 2

- Establish the accounts need to support these indicators

Part 3

- Determine final indicators based on the accounts development.

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Group exercise 3.

Linking Accounts and Indicators to policy

Linking accounts and indicators to policy: Background

SEEA Part 3: 2.18

- From an economic point of view, the way natural resources and residual flows are managed has consequences on:
  - i. short term costs and long term economic sustainability,
  - ii. the supply of strategically important materials,
  - iii. the costs associated with the downstream management of materials, and
  - iv. the productivity of economic activities and industrial sectors.

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Linking accounts and indicators to policy: Background

Using the set of indicators you developed in Exercise 2,

- Explain how your indicators will help inform the policy decisions you have selected.
- What do you think the policy responses are likely to be?
- Are indicators better than accounts for your decision makers?

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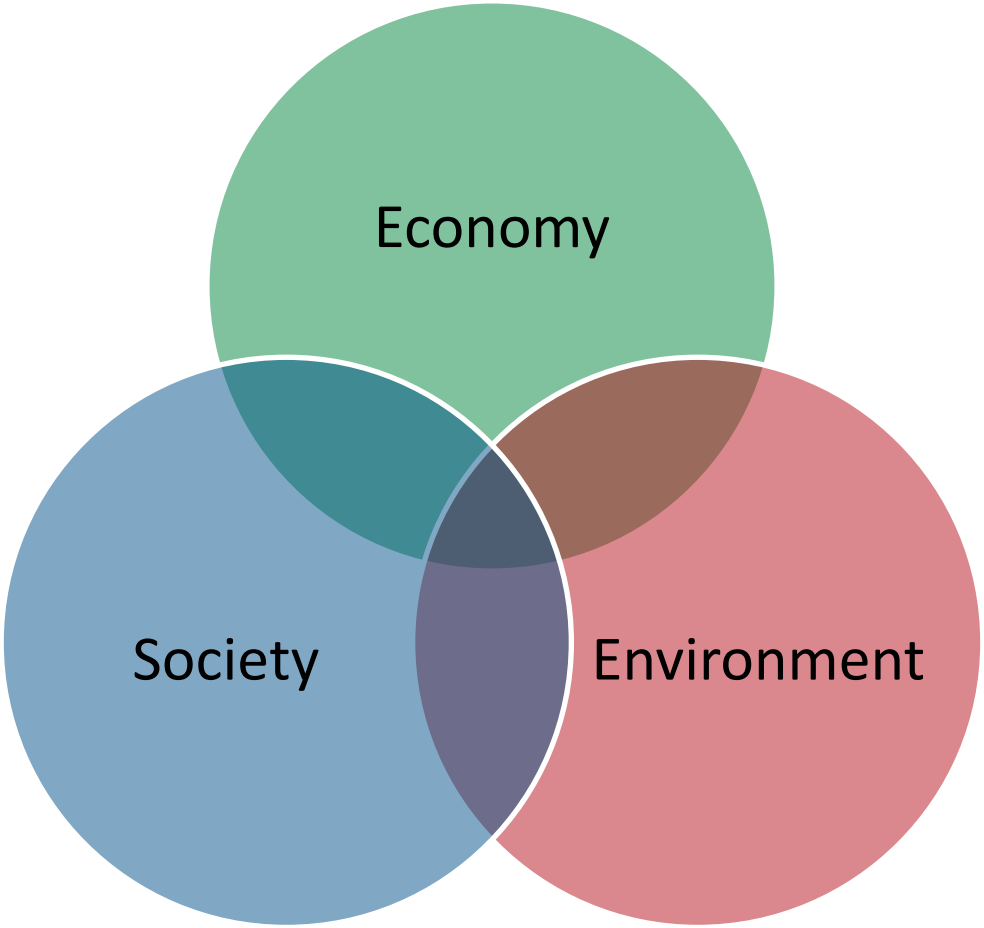
Can policy responses be integrated?



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Compiling physical and monetary accounts

Monetary and physical accounts: Background

1. SNA, production and assets

- The SNA is the international statistical standard designed to provide a description of economic activity.
- The scope of the SNA is defined by a set of boundaries, most importantly the production boundary which defines when an activity is considered productive.
- Production is an activity, carried out under the responsibility, control and management of an institutional unit, that uses inputs of labour, capital, and goods and services to produce outputs of goods and services.
- In the SNA, an asset is a store of value representing a benefit or series of benefits accruing to the economic owner by holding or using the entity over a period of time.
- The asset boundary for fixed assets consists of goods and services that are used in production for more than one year.
- Natural resources that provide 'provisioning services' to their owners are included.

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Monetary and physical accounts: Background

- SEEA was developed to provide a more comprehensive understanding of the interrelationship between the economy and the environment
- SEEA uses the boundary of production defined by the SNA, but extends the asset boundary to include ‘naturally occurring living and non-living components of the earth, together providing the bio-physical environment, that may provide benefits to humanity.’
- Incorporates natural resources (non-produced assets) that can provide ‘regulating’, as well as provisioning services.

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2. Stocks and Flows

In any account, there are generally 2 important observations that can be made:

a) What is the level of the variable we are interested in at a point in time? This level is generally called a ‘stock’

b) What are the transactions that change the levels of those variables over a period of time? The change in the levels over time are generally called ‘flows’

Stocks and Flows

Businesses and Governments

In general terms, a business' financial accounts, and a countries national accounts can be summarised as:

$ Value of stock of assets (less liabilities) at start of accounting period

+/- $ Value of transactions **and other flows** during the period

= $ Value of stock of assets (less liabilities) at end of accounting period

Stocks and Flows

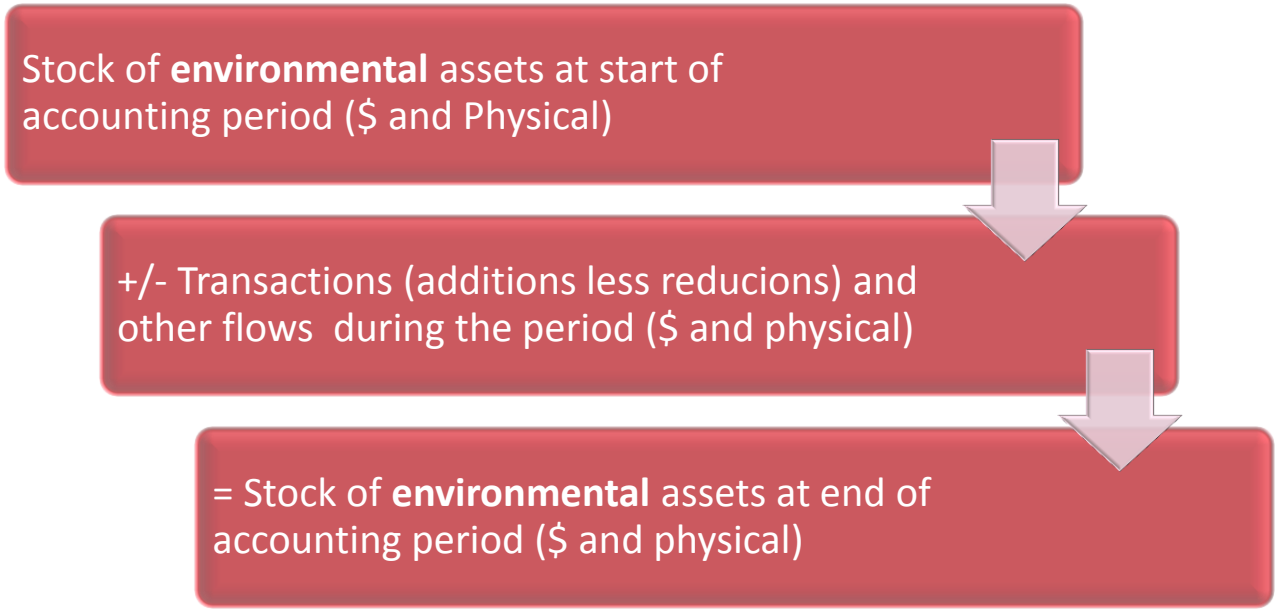
Natural Resource Accounts

In the same way as stocks and flows can be measured and summarised for businesses and countries, NRAs can be compiled for both renewable and non-renewable natural resources.

- Unlike accounts for business and government, NRAs can be compiled in both monetary and physical units.
- And, unlike these accounts, NRAs can extend the 'asset boundary' used in the SNA

Stocks and Flows

Natural Resource Accounts: Again, in general terms, NRAs can be summarised in almost the same way as for businesses and countries (no liabilities recorded though)



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Volumes and prices

- Volumes are measured in physical units – numbers, areas, cubic metres, tonnes, etc.,
- But a change in quality also represents a change in volume

3. Volumes and prices

- Prices are measured in currency units - $, etc.
- Prices can be measured differently – from the point of view of the producer (basic prices), or the point of view of the purchaser (producers' prices) - these prices will be different
- Valuation should be consistent across accounts, producers' prices are generally easier to observe
- Prices can be current or historic – pricing current volumes in historic prices negates the effect of price change in valuation

Monetary and physical accounts: Background

For example: Forests Hybrid account (draft)

Flows

Vietnam, Timber resources	Value (billion Dong)	Volume ('000 cubic m.)
Timber stocks: 1 January 2010	**1,542,528**	**952,178**
Total additions (+) in 2010	**31,261**	**19,297**
Total reductions (-) in 2010	**-6549**	**-4043**
Net changes to timber (+/-) in 2010	**24,711**	**15,254**
Timber stocks: 31 December 2010	**1,567,240**	**967,432**

SOURCE: GSO, MARD, VAFS

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2. How to compile physical forest accounts

Compiling physical forest accounts

- Accounts like the hybrid account that we looked at earlier are interesting in themselves. They can show opening stocks in both value and volume, the corresponding flows during the accounting period, and closing stocks.
- But our interest goes beyond total stocks and flows, we want to know about what kinds of stock exist and the kinds of flows that effect the stocks.
- We want to know about depletion and sustainability.
- To learn more, we need much more detailed accounts.

Compiling physical forest accounts

- SEEA suggests a range of accounts that will tell us more – for example (table 5.8.1):

Forest Physical Asset Account ('000 m^3)	Type of forest		
	Planted forest	Natural forest	
		Available for wood supply	Not available for wood supply
Opening stocks of forest resources (1 Jan 2012)	8 400	8 000	1 600
Additions (+) to stock (2012)			
Growth	1 200	1 100	20
Reclassifications	50	150	
Total additions to stock	1 250	1 250	20
Reductions (-) in stock (2012)			
Removals	1 300	1 000	
Felling residues	170	120	
Natural losses	30	30	
Catastrophic losses			
Reclassifications	150		150
Total reductions in stock	1 500	1 150	170
Closing stocks of timber resources (31 Dec 2012)	8 100	8 100	1 450

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Compiling physical forest accounts

- This basic SEEA account can be compiled for physical variables:
  - Resource by type – timber and non-timber forest products (NTFP)
  - Natural/plantation
  - Species
  - Ownership – institutional sectors
  - Area – hectares or acres
  - Volume - Cubic metres (feet) of timber

- With a little modification, but still keeping to the stocks and flows principles, a SEEA-style account can be compiled for physical carbon as well

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Compiling physical forest accounts

- Physical account for forest carbon (after Jukka Muukkonen, 2007)

Forest Physical Carbon Account (units)	Type of forest			
	Planted forest	Natural forest		
		Available for wood supply	Not available for wood supply	Non-timber forest products
Opening stocks of forest carbon (date *d*)				
Changes in carbon stock in living biomass (period *t*)				
Increase due to biomass growth				
Decrease due to biomass loss				
Commercial felling				
Fuelwood gathering				
Natural losses				
Catastrophic losses				
Changes in carbon stock in dead organic matter (period *t*)				
Changes in carbon stock in dead wood				
Changes in carbon stock in litter				
Changes in carbon stock in forest soils (period *t*)				
Mineral soils (organic fraction)				
Organic soils				
Net changes (Δ) to carbon stock in period t				
Closing stocks of carbon (*d*+Δ *t*)				

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Compiling physical forest accounts

Accounts need a lot of information to be useful.

- Consider the starting point for the accounts – Opening stock
  - Firstly, what are the opening stocks? That depends....
    - What will be the scope of the accounts?
      - National, provincial, regional, local....?
    - Coverage – which assets are we interested in?
      - Timber – natural & planted, available/non-available for harvest, species
      - Non-timber forest products – bamboo, rattan, firewood, food, medicinal plants
    - Units – area/volume by resource type

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Compiling physical forest accounts

Consider flows during the period:

- Additions to stock:
  - Natural/managed growth?
  - Reclassifications – changes from usually degraded agriculture to forests, changes from natural to planted

- Reductions in stock:
  - Removals – natural and planted forest
    - Legal and illegal
  - Natural losses – aging trees, insects and other pests
  - Catastrophic losses – impact of severe fires, floods, storms
  - Reclassifications – changes from forest to agriculture or settled areas, development of infrastructure – roads, dams

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Compiling physical forest accounts

Who holds all this information?

- Does data exist?
- Is data available for compiling accounts?
- Single or multiple sources?
- Is the data consistent for coverage and classification over time?
- At what level of classification is the data available?
- Are new data collections needed. If so, who will be responsible and who will pay?

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Compiling physical forest accounts

Exercise:

- Using the information provided in the handouts, compile a physical timber resource account for SEEAland.

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Compiling physical forest accounts

- Example: Vietnam - Physical forest asset account, hectares

	Forest land with forest		
	Natural forest	Planted forest	Total
Opening stocks (1 January 2007)	10,410,141	2,463,709	12,873,850
Increase (+) in stock (2007)			
Natural forest increase	59,204		59,204
Newly planted	-	171,444	171,444
Other reasons, including reclassifications	-	24,157	24,157
Total increase in stock	59,204	195,601	254,805
Decrease (-) in stock (2007)			
Timber exploitation and harvesting	376	23,194	23,570
Forest fires	697	1,276	1,973
Natural losses, insects and diseases	58	71	129
Deforestation	1,694	2,249	3,943
Catastrophic losses	-	-	-
Land conversions, reclassifications	11,808	12,441	24,249
Other reasons	70,493	-	70,493
Total decrease in stock	85,126	39,231	124357
Net changes (Δ) to stock (depletions/additions) in 2007	-25,922	156,370	130,448
Closing stocks (31 December 2007)	10,348,914	2,554,509	12,03,423

Source: MARD

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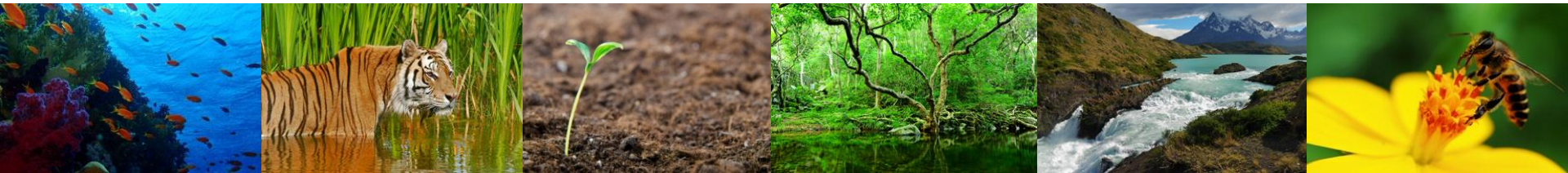
3. How to compile monetary forest accounts



Compiling monetary forest accounts

- SNA requires a value for all **produced outputs** of goods and services to be included in the calculation of GDP
  - Produced forest goods include: timber, NTFP including firewood and building materials
  - Valuation is straightforward, if volumes and market (purchasers') prices can be observed – but, not always the case
  - Should illegal harvesting of timber and NTFP from protected forests be included?

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Compiling monetary forest accounts

- Produced forest services include:
  - Management, care and protection of forests by rangers, etc.,
  - Care and management of forests and watersheds by communities, so long as these services are paid for,
  - Forest based tourism and recreation services, so long as these services are paid for.
  - Usually valued as the amount paid for the service
- SEEA's requirements for valuing produced goods and services are the same as for SNA

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Compiling monetary forest accounts

- In ecosystem accounting terms
  - Provisioning service – a service that provides inputs to productive processes, e.g., extraction of timber as input to a productive process – logging, or consumption services such as tourism and recreation. (SNA & SEEA)
  - Regulating service – no extraction, but service has a beneficial, external impact on economic activities or on people. E.g., flood regulation by coastal or riparian ecosystems facilitate production and improve peoples safety, carbon sequestration. (SEEA)
  - Cultural service – passive interaction with the ecosystem, e.g., visiting and enjoying a park. (experimental)

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Compiling monetary forest accounts

Services

- Valuation of regulating and cultural services is challenging, though there are markets for some ecosystem services, e.g. watershed protection services and carbon sequestration
- SEEA Forest accounts can be extended to accommodate values for regulating services – so long as a value can be identified
- Accounts to accommodate cultural services are more 'experimental'

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Compiling monetary forest accounts

- Monetary accounts for natural resources such as forests provide an important link between the environment and the economy measured in the national accounts – remember, national accounts are only compiled in monetary units.
- Monetary NRAs can show not only the value of forest goods and services recorded in GDP, but can be extended to show the **total economic value** of forests.

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Compiling monetary forest accounts

- SEEA suggests a template for monetary timber accounts, table5.8.2, (here extended to forests)

Forest Asset Monetary Account ($)	Type of forest		Total
	Planted forest	Natural forest Available for wood supply	
Opening stocks of forest resources (date *d*)	86 549	82 428	168 977
Additions (+) to stock (period *t*)			
Growth	12 364	11 334	23 698
Reclassifications	515	1 546	2 061
Total additions to stock	12 879	12 880	25 759
Reductions (-) in stock (period *t*)			
Removals	13 395	10 303	23 698
Felling residues	1 752	1 236	2 988
Natural losses	309	309	608
Catastrophic losses			
Reclassifications	1 546		1 546
Total reductions in stock	17 001	11 489	28 850
Revaluations (period *t*)		16 692	16 692
Closing stocks of timber resources (*d+*Δ *t*)	82 428	100 150	182 578

Compiling monetary forest accounts

- You may have noted that the SEEA monetary account does not include a column for ‘natural forests not available for wood supply’, as for the physical account.
- Should the value of illegal logging from ‘protected areas’, i.e., not available for production, be included in this account?

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Compiling monetary forest accounts

Exercise:

- Using your experiences from the Group Exercises on Day 2, and data from the exercise earlier today, discuss how you would value the physical stocks and flows measured in the exercise.
- What additional ecosystem services would you like to value?
- How would you value these ecosystem services?

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Compiling monetary forest accounts

Net present value

- Economic valuation of environments assets, in the absence of market transactions, can be estimated by calculating the NPV of the stream of future resource rents the resource will yield. That is, assets are valued on the basis of the net present value of the expected future earnings. In theory, this is equivalent to the market price of the natural resource stock. The NPV method generally used to determine the present value of net cash flows is represented by:

$$V_t = \sum_{t=1}^{n} \frac{RR_t}{(1+r)^t}$$

where: V = net present value, RR = resource rent, r = discount rate, n = asset life

NPV assumes that for each year the ongoing resource rent remains constant over the life of the asset (though ideally, factors that may affect future resource rents should be taken into account). The NPV of the asset at the beginning of each year for the remaining asset life is calculated, using the expected life length and (real) discount rate.

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Compiling monetary forest accounts – Vietnam (draft)

Account 1: Economic value of forest services

Unit: billion dong

	Indicators	2010		2011		2012	
		2010 constant price	current price	2010 constant price	current price	2010 constant price	current price
Provisioning	**1. Tangible values - Forest products**	**14,948**	**14,948**	**16,161**	**18,844**	**17,602**	**22,611**
	1.1 Timber	6,549	6,549	7,601	8,614	8,507	10,549
	1.2 Firewood	3,704	3,704	2,921	3,289	3,880	4,810
	1.3 Bamboo and other similar things	2,478	2,478	2,483	2,796	3,469	4,603
	1.4 Food	248	248	205	239	299	396
	1.5 Other NTFP	1,969	1,969	2,951	3,906	1,447	2,253
Regulating	**2. Tangible values - Forest environmental services**	**8,328**	**8,328**	**8,284**	**9,395**	**8,729**	**10,547**
	2.1 Tourism/recreation	36	36	44	46	48	60
	2.2 Watershed protection	81	81	254	282	949	1,172
	2.3 Coastal protection (a)	2,197	2,197	1,963	2,183	1,672	2,065
	2.4 Carbon sequestration	6,014	6,014	6,023	6,884	6,060	7,250
Cultural	**3. Intangible values**	**…**	**…**	**…**	**…**	**…**	**…**
	3.1 Landscape values (a)	…	…	…	…	…	…
	3.2 Forest biodiversity protection (a)	…	…	…	…	…	…
	3.3 Cultural values (a)	…	…	…	…	…	…
	Total economic value	**23,276**	**23,276**	**24,445**	**28,239**	**26,331**	**33,158**

(a) While it is possible to assign values to these items, estimates are not yet available.

DATA SOURCE: GSO, MARD, VAFS

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Forest Accounting for Development

Capturing the Value of Forests Using Natural Capital Accounting

www.wavespartnership.org






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