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WEALTH ACCOUNTING AND THE VALUATION OF ECOSYSTEM SERVICES

Issues in Ecosystem Accounting (III): the case of Philippines

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Outline of the presentation

1) What has been done so far in developing accounts?

2) What issues have we encountered & how have we handled them?

3) What are the issues moving forward?

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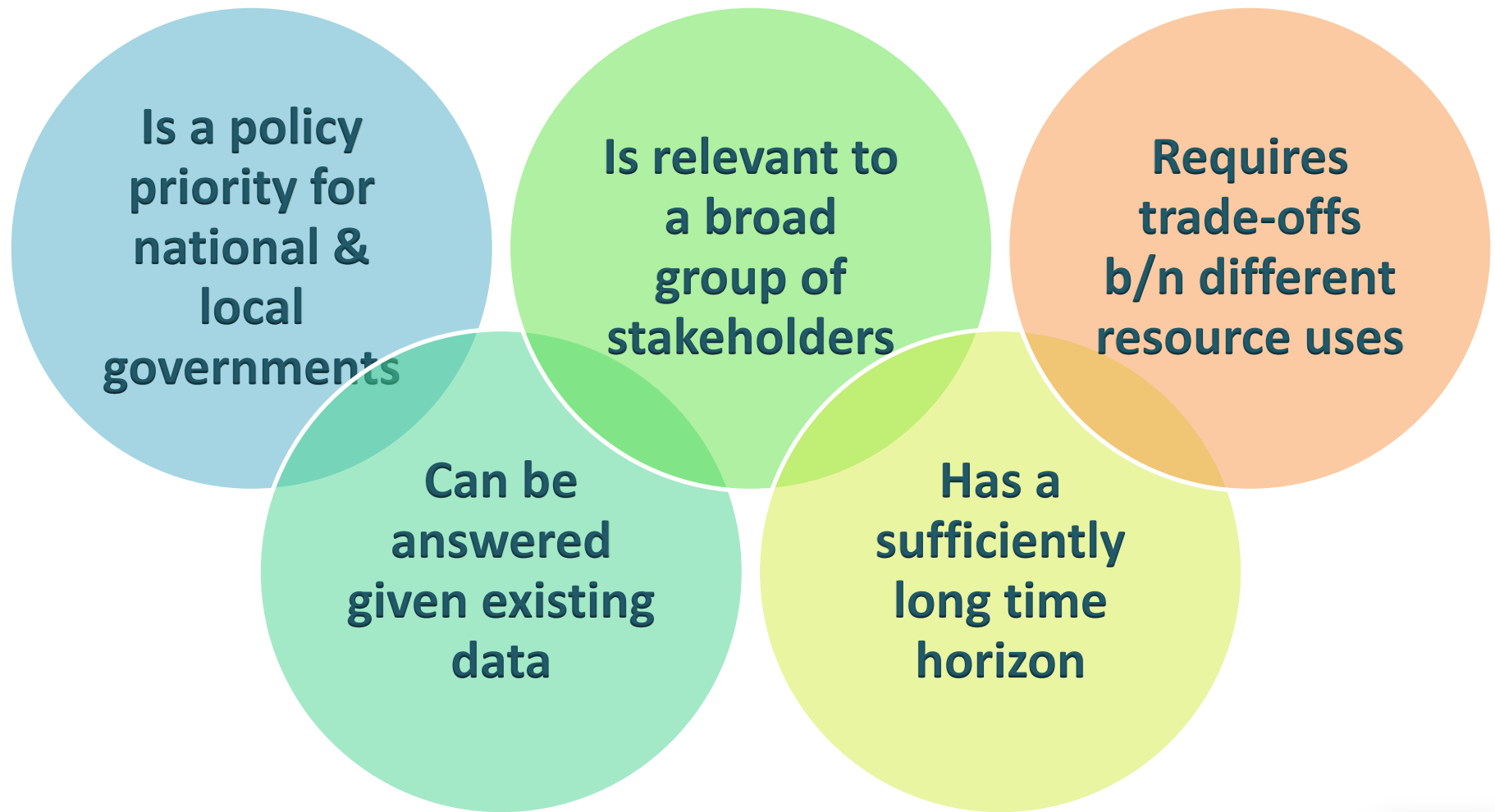# 1. Development of ecosystem accounts under Phil-WAVES

❑ **Step 1: Identify the policy question**

❑ **Step 2: Set up the implementation arrangement**

❑ **Step 3: Collect data & develop accounting framework**

❑ **Step 4: Prioritize ecosystem services**

❑ **Step 5: Develop ecosystem accounts**

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Step 1: The policy question as the starting point

- Every ecosystem account needs to be motivated by a clearly defined policy question.

- The problem is that there are often many possible policy questions.

- Which ones are most suitable for ecosystem accounting?

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A good policy question...

- Is a policy priority for national & local governments
- Is relevant to a broad group of stakeholders
- Requires trade-offs b/n different resource uses
- Can be answered given existing data
- Has a sufficiently long time horizon

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All key stakeholders should be involved from the start

Academe & research centers

Gov'nt

National (policy makers, regulators)

Local (frontliners, implementers)

Line agencies (i.e., LLDA)

NGOs & volunteer groups

Multilateral organizations

Development agencies

CSOs

Business

Media

Special interest groups

Labor & urban poor groups

Church

Indigenous peoples

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What did we do under Phil-WAVES?

✓ Initial discussions with Government during project preparation

✓ FGDs to validate identified policy issues

✓ Multi-stakeholder workshops to narrow down policy issues

✓ Follow-up consultations with special interest groups

✓ Field visits to validate policy question on the ground
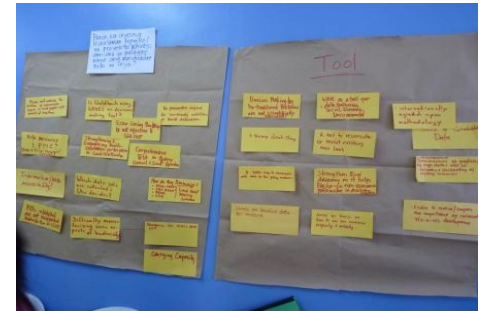
Southern Palawan - the last frontier

- Southern Palawan is home to many IPs & rich in natural resources & biodiversity

- **BUT** is under pressure from
  - ➤ Commercial agriculture
  - ➤ Mineral extraction
  - ➤ Poaching
  - ➤ Unsustainable fisheries
  - ➤ Deforestation & forest degradation

  How can these competing resource uses be managed to achieve sustainable & inclusive growth?

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Laguna Lake basin – the center of economic activity

- 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
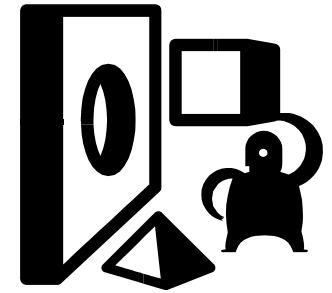 - Degradation of the watershed
  - Siltation of tributaries

What economic instruments could help manage these different uses?

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Step 2: Who is best placed to develop ecosystem accounts?

The problem is:

- *Ecosystem accounts are experimental & inherently interdisciplinary*
- *No single agency has all the required skills*

A multi-stakeholder solution was needed that

- *Involves all key agencies, including the statistical & mapping authorities*
- *Is led by the primary data/account user*

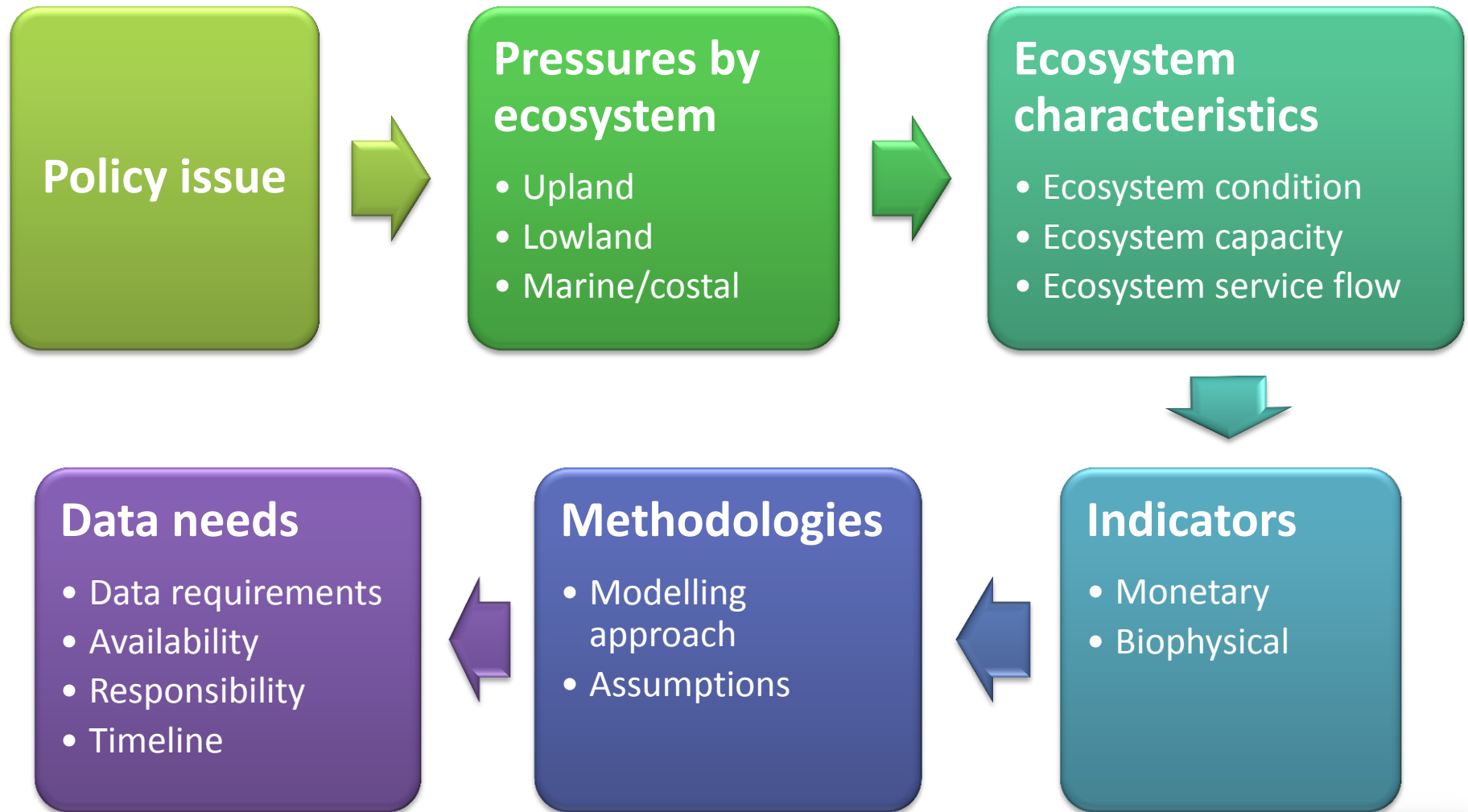**BUT** this is challenging as it requires

- *Broad based capacity building &*
- *Clearly defined roles & responsibilities*
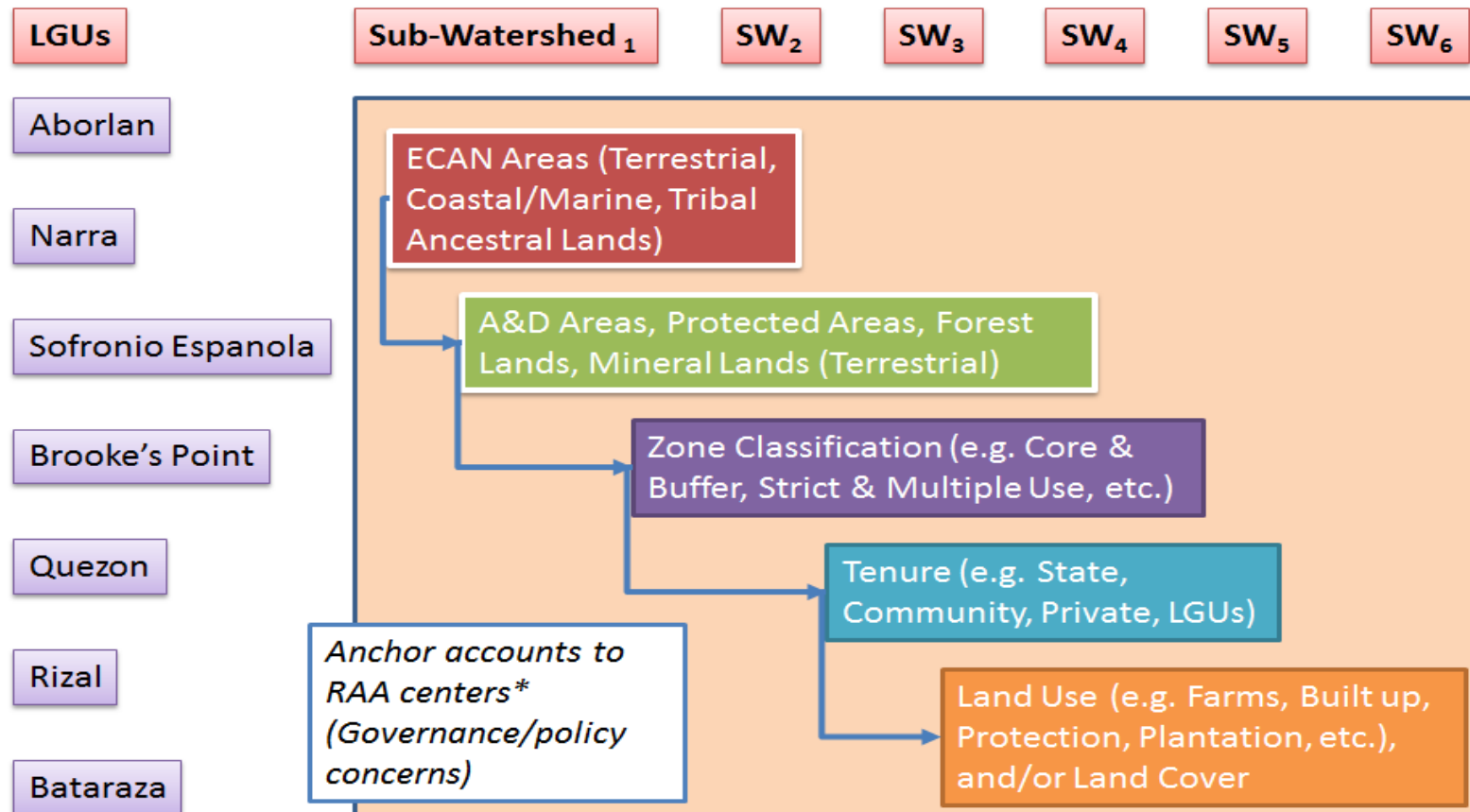
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A multi-stakeholder arrangement is key

Interagency Steering Committee

- *Provides strategic direction & guidance*
- *Addresses implementation bottlenecks*
- *Decides on institutionalization*
- *Ensures all key stakeholders learn about uses of ecosystem accounts*

Lead agency

National Economic and Development Agency

- *Provides project oversight*
- *Ensures effective interagency coordination & collaboration*
- *In charge of leading policy dialogue*

Multi-stakeholder TWGs

Department of Environment & Natural Resource/Palawan Council for Sustainable Development

Laguna Lake Development Authority

- *Carry out data collection*
- *Develop ecosystem accounts*
- *Lead policy analysis*

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Step 3: To identify data needs, need to link…

Policy issue

Pressures by ecosystem
- Upland
- Lowland
- Marine/costal

Ecosystem characteristics
- Ecosystem condition
- Ecosystem capacity
- Ecosystem service flow

Data needs
- Data requirements
- Availability
- Responsibility
- Timeline

Methodologies
- Modelling approach
- Assumptions

Indicators
- Monetary
- Biophysical

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... & develop an accounts structure

… & develop an accounts structure

Protected Areas (MMPL) in LGU$_1$

Standard Zoning	Tenure	Land Use	Accounts
Strict Protection Zone (Core Zone – SEP)	CADT/CADC	Protection Areas	Ecosystem Condition
		Sacred Grounds	Ecosystem Services
		Other Cultural Areas	Ecosystem Capacity
Multiple Use Zone (Buffer Zone – SEP)	CADT/CADC	Farms	Ecosystem Condition
	PACBRMA	Plantations	Ecosystem Services
Restricted use area	SAPA	Built up areas	Ecosystem Capacity
Controlled use area		Protection Areas	
Traditional use area		Others	
Multiple/manipulative use			

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Data collection is a long process

- A large number of datasets was collected by both TWGs
    - Administrative, biophysical, socioeconomic, remote sensing

- Some primary data collection was necessary
    - FGDs with palm oil, coconut & rice farmer
    - Fisheries survey

- Data had to be validated & quality checked

- Data had to be spatially integrated

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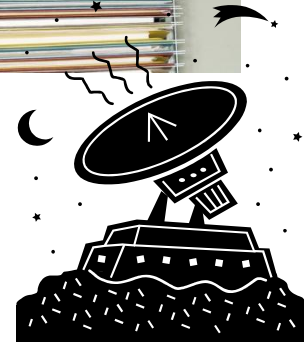
# Step 4: Ecosystem services should be prioritized based on policy needs…

- ✓ Support policy analysis needs of DENR, LLDA & other governing bodies

- ✓ Regard trade-offs of conflicting land options
  - ▪ e.g. mining vs conservation or protected area management

- ✓ Be used for both local & national level decision makers for land use planning & similar purposes

- ✓ Be useful for the local managers, who will be accountable to collect & sustain the development of the accounts

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... & data availability

➤ The source & method data collection should be integrated in regular data collection structure of local & national agencies

   ▪ e.g. PSA & other line agencies such as DENR, LLDA & DA

➤ The prioritization of accounts needs to be based on the availability & completeness of existing data
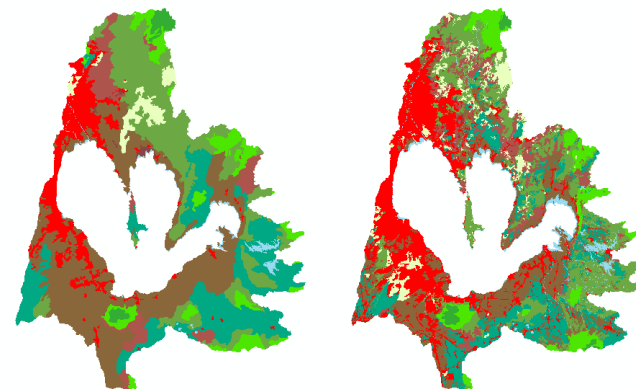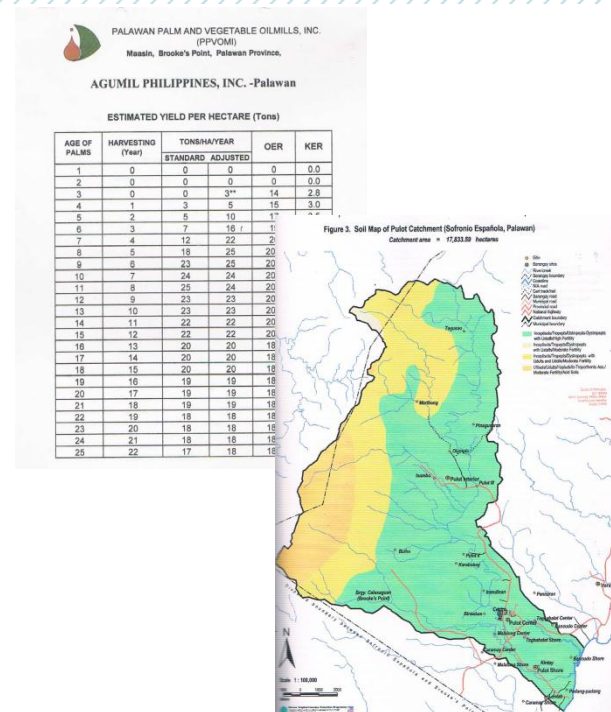
Step 5: Developing the Accounts requires several steps

Building capacity
- Training on Ecosystem Accounting
- Field familiarization
- Action Planning
- Data needs assessment
- Organizing/Tasking of TWG
- DPSIR and Accounts Framework
- Prioritization

Determining the ecosystem accounting units
- Land Accounts
- Boundaries and scale of accounts
- Base maps and map layers
- Establish baseline year, Opening, Closing Period
- Grouping of accounts (upland, lowland, coastal)

Spatially integrating the data
- Integration into land accounts
- Ecosystem and admin boundaries
- Land Cover maps
- Bio-physical information

Developing physical accounts
- Land accounts
- Production/Flow Accounts
- Asset Accounts
- Ecosystem Services, Condition, Capacity
- Modeling Biophysical processes

Developing monetary accounts
- Monetary Valuation
- Producer surplus approach
- Cost-based methods

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Chosen ecosystem accounts for Southern Palawan ....

Land Accounts

- **Land Cover by Environmental Critical Areas Network Zones**
- **Land Cover by Ownership**
- **Land Cover by Land Classification (4 classes)**
- **Land Cover Change (2003-2010)**
- **Coastal Areas and Habitats**
- **Foreshore areas**

Ecosystem Production Accounts

- **Timber**
- **Non-timber**
- **Coconut, Rice & Oil Palm**
- **Corn**
- **Soil and sediment retention**
- **Hydrological services**

Ecosystem Condition Accounts (change & level):

- **Soil erosion level**
- **Sediment loading**
- **Hydrology & stream networks**
- **Net Primary Production**
- **Coastal Condition (macro algae, mangrove timber gross volume, species diversity & density of mangroves)**

Ecosystem Asset Accounts

- **Timber**
- **Non-timber**
- **Coconut, Rice & Oil Palm**
- **Corn**

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… & the Laguna Lake Basin

Land Accounts:

- Land cover by municipality
- Land cover by sub-basin, and
- Land cover by land classification by municipality
- Land Cover Change (2003-2013)

Ecosystem Production Accounts

- Water Provisioning
- Flood Retention
- Soil and sediment retention
- Fishery Production

Ecosystem Condition Accounts (change & level):

- Soil Erosion
- Sediment loading
- Topography
- Bathymetry
- Water Quality
- Net Primary Production

Ecosystem Asset Accounts:

- Flood Retention
- Fishery
- Water Asset Accounts

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2. Key issues & proposed solutions

- ❑ **Data access, collection & quality**
- ❑ **Capacity & resource constraints**
- ❑ **Institutionalization**
- ❑ **Valuation of regulating services**
- ❑ **Valuation of provisioning services**
- ❑ **Scale-up**
- ❑ **Other issues**

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Data access, collection & quality is a major challenge

Ecosystem accounts need more than one data set from different owners with various requirements for access, many with access fees

Multi-year data needed for asset accounting is limited

Periods and interval b/n collection of data by agencies varies (most are every 5 years), mostly done through special & donor funded projects
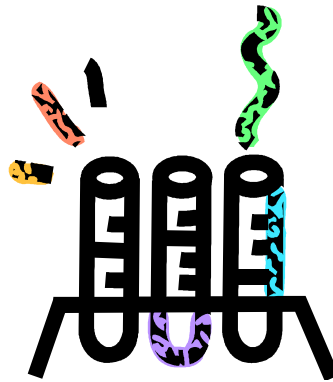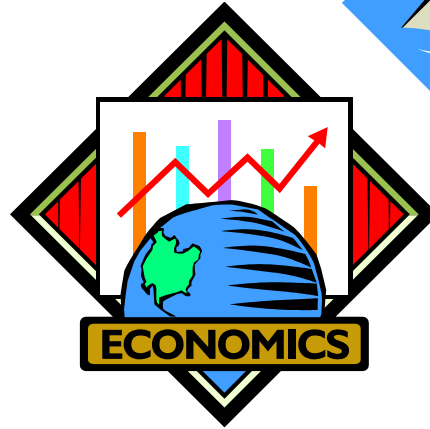
Origins of processed data is not well documented and creation of metadata is not a norm

Some data lacks ground validation, & has low reliability

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Ecosystem accounting requires many skills & lots of time
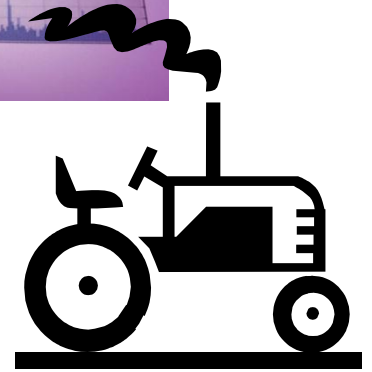
Need to balance expert help & capacity building

➢ Local experts are critical to provide hands-on guidance & support

➢ International experts are key to guide the process & providing training

➢ Capacity building is needed for a broad range of issues

  ▪ SEEA CF & EEA, GIS, data processing & management, writing, policy analysis

➢ Quality control by international expert & the national statistical authority is essential
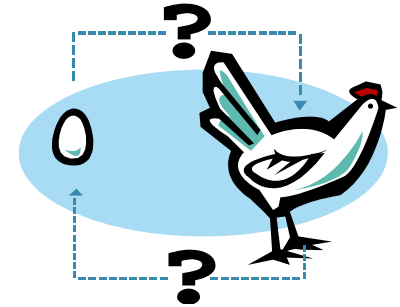

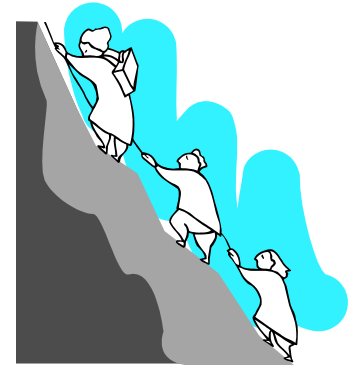
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Why is institutionalization a major challenge?

1. Ecosystem accounting is new.
   - The Government wants to see a *proof of concept* first.
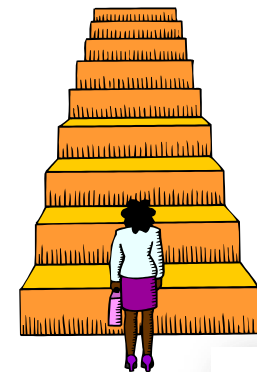
2. Ecosystem accounting is interdisciplinary.
   - Government agencies need to collaborate that typically do not work together

3. Ecosystem accounting takes time.
   - Government interest needs to be maintained without visible results
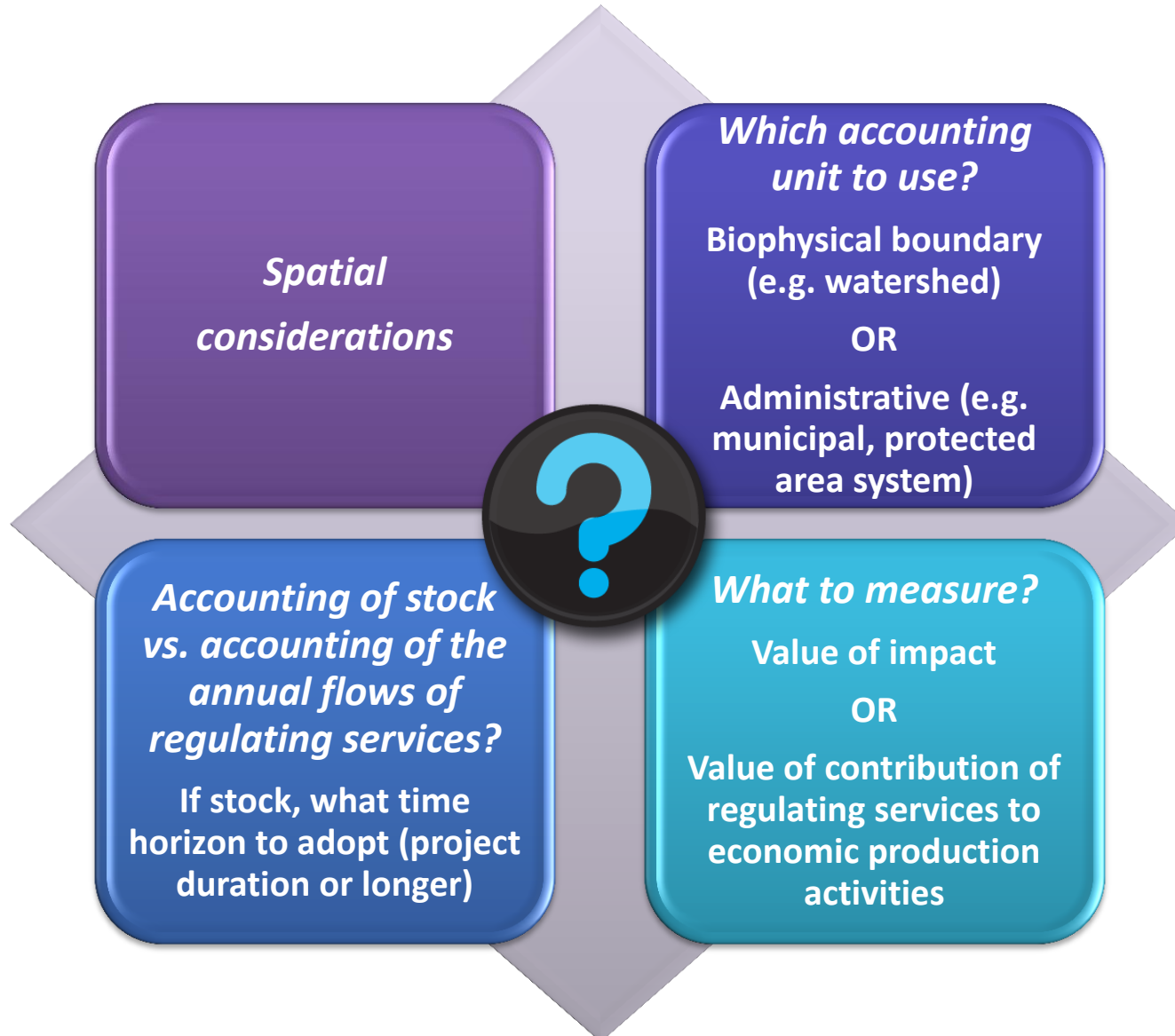
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Need to build enabling framework for institutionalization

- ➢ Ensure effective coordination between Government agencies is critical using existing mechanisms

- ➢ Involve all key agencies in development of the accounts based on their core mandate

- ➢ Support establishment of a consolidated data management & sharing system

- ➢ Build demand for ecosystem accounts & their uses

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The valuation of regulating services is challenging

Spatial considerations

Which accounting unit to use?

Biophysical boundary (e.g. watershed)

OR

Administrative (e.g. municipal, protected area system)

Accounting of stock vs. accounting of the annual flows of regulating services?

If stock, what time horizon to adopt (project duration or longer)

What to measure?

Value of impact

OR

Value of contribution of regulating services to economic production activities

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Example: How to value soil and sedimentation services?

Valuation of soil retention services (on-site value)

➢ *Production function approach* (Cobb-Douglas Production Function?) *requires collection of production data of downstream farms or on-site farms* (if valuing lost soil with associated loss of soil nutrients)?

➢ *Measure volume of soil erosion, and estimate value of nutrient lost via replacement cost method* (use of organic or inorganic fertilizer)

Valuation of sediment retention services (off-site value)

➢ *Avoided damage cost through sediment removal or construction of sediment trap*

➢ *Needs data on allowable sediment load in downstream croplands or water bodies*

➢ *Need to estimate marginal value of dredging or construction of sediment traps*
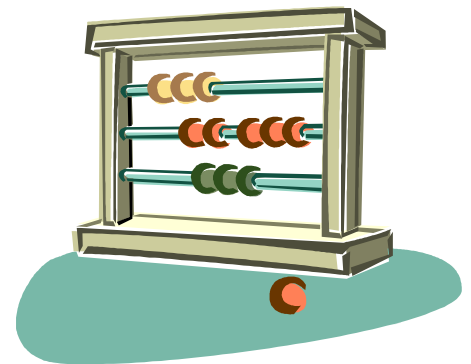
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Moreover,

➤ *Sum up the soil retention services & sediment retention services as the regulating service of the Land Cover/Land Use?*

➤ *What about the positive contribution of transported soil nutrient to downstream croplands?*

➤ *Do we measure and sum up both positive and negative impact? Estimate net contribution of the Land Cover/Land Use?*
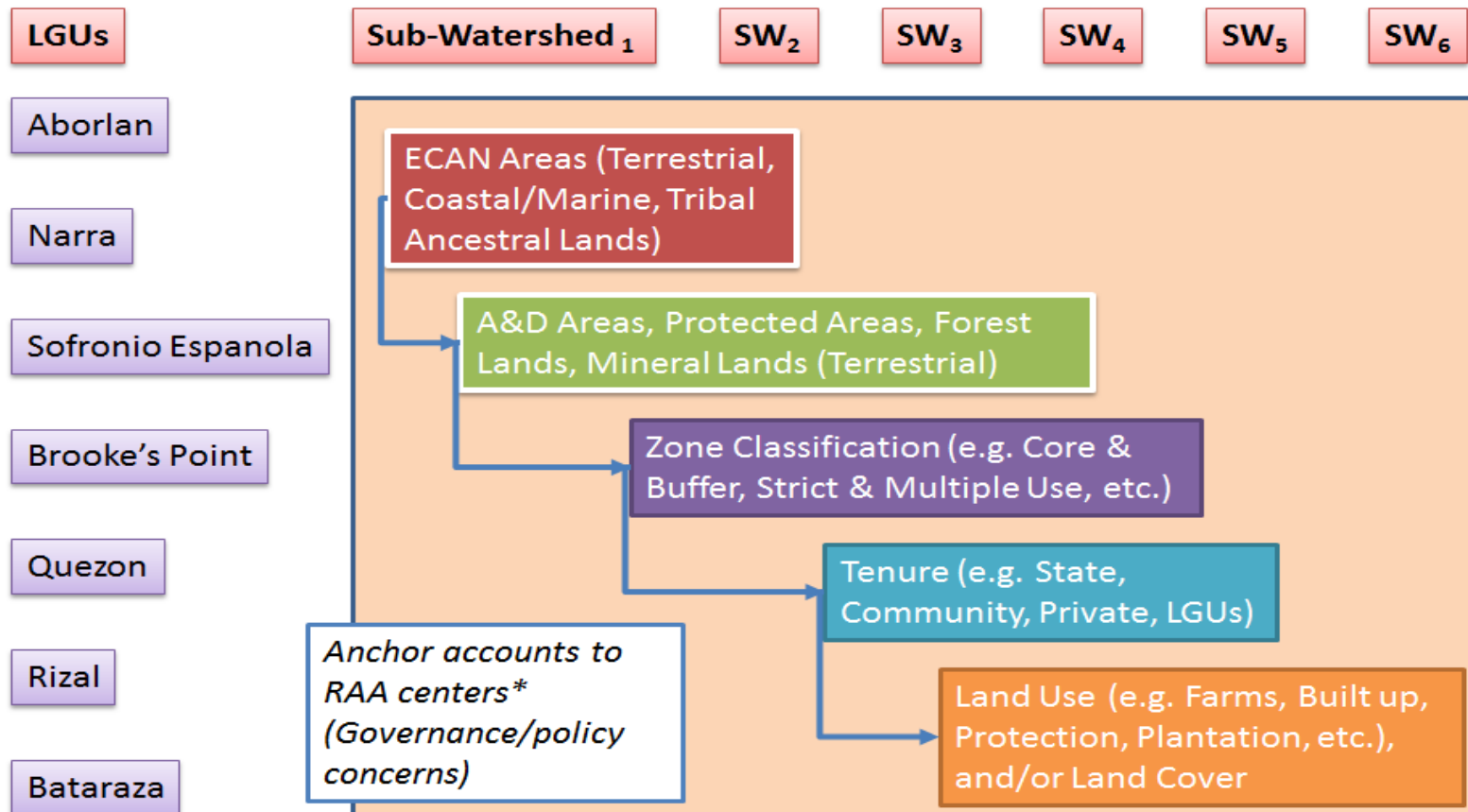
How to avoid double-counting in the valuation of provisioning services?

✓ Philippine Statistical Agency measures agricultural crops through value added approach.

✓ While ecosystem services uses resource rent approach.
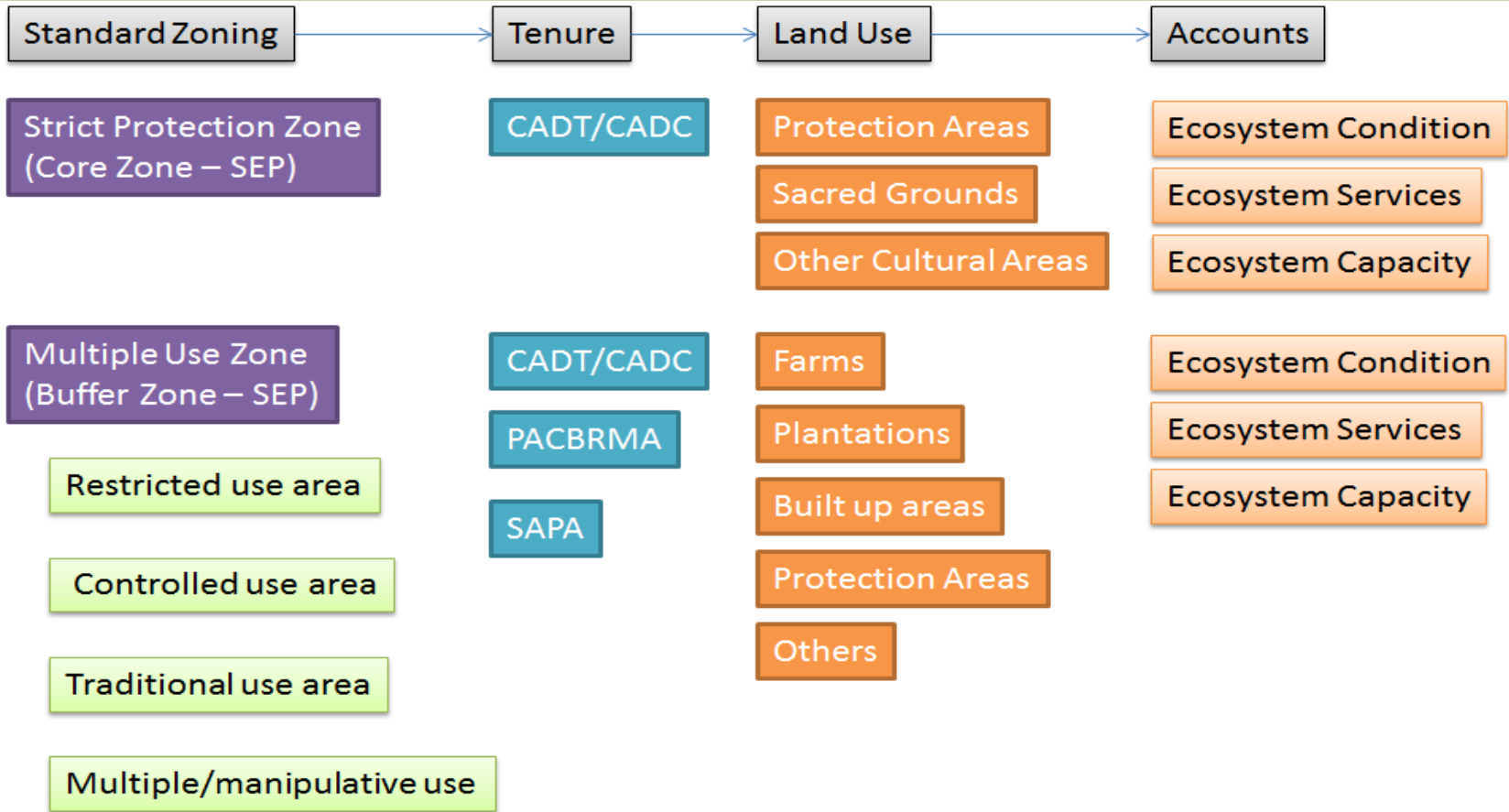
➢ *Or is this the same?*

Southern Palawan Accounts Structure

LGUs | Sub-Watershed $_1$ | SW$_2$ | SW$_3$ | SW$_4$ | SW$_5$ | SW$_6$

Aborlan

Narra

Sofronio Espanola

Brooke's Point

Quezon

Rizal

Bataraza

ECAN Areas (Terrestrial, Coastal/Marine, Tribal Ancestral Lands)

A&D Areas, Protected Areas, Forest Lands, Mineral Lands (Terrestrial)

Zone Classification (e.g. Core & Buffer, Strict & Multiple Use, etc.)

Tenure (e.g. State, Community, Private, LGUs)

Land Use (e.g. Farms, Built up, Protection, Plantation, etc.), and/or Land Cover

Anchor accounts to RAA centers (Governance/policy concerns)*

*RAA Centers – Responsibility, Accountability and Authority Centers e.g. DENR, PCSD, LGUs

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Protected Areas (MMPL) in LGU$_1$

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… scaling up

# What does it take to scale up ecosystem accounts?

➢ *Set up a multi-stakeholder institutional framework*
  - ➢ DENR/PSA to issue a joint administrative order to scale up ecosystem accounts
  - ➢ Create a central database for ecosystem accounts & associated data accessible to all stakeholders
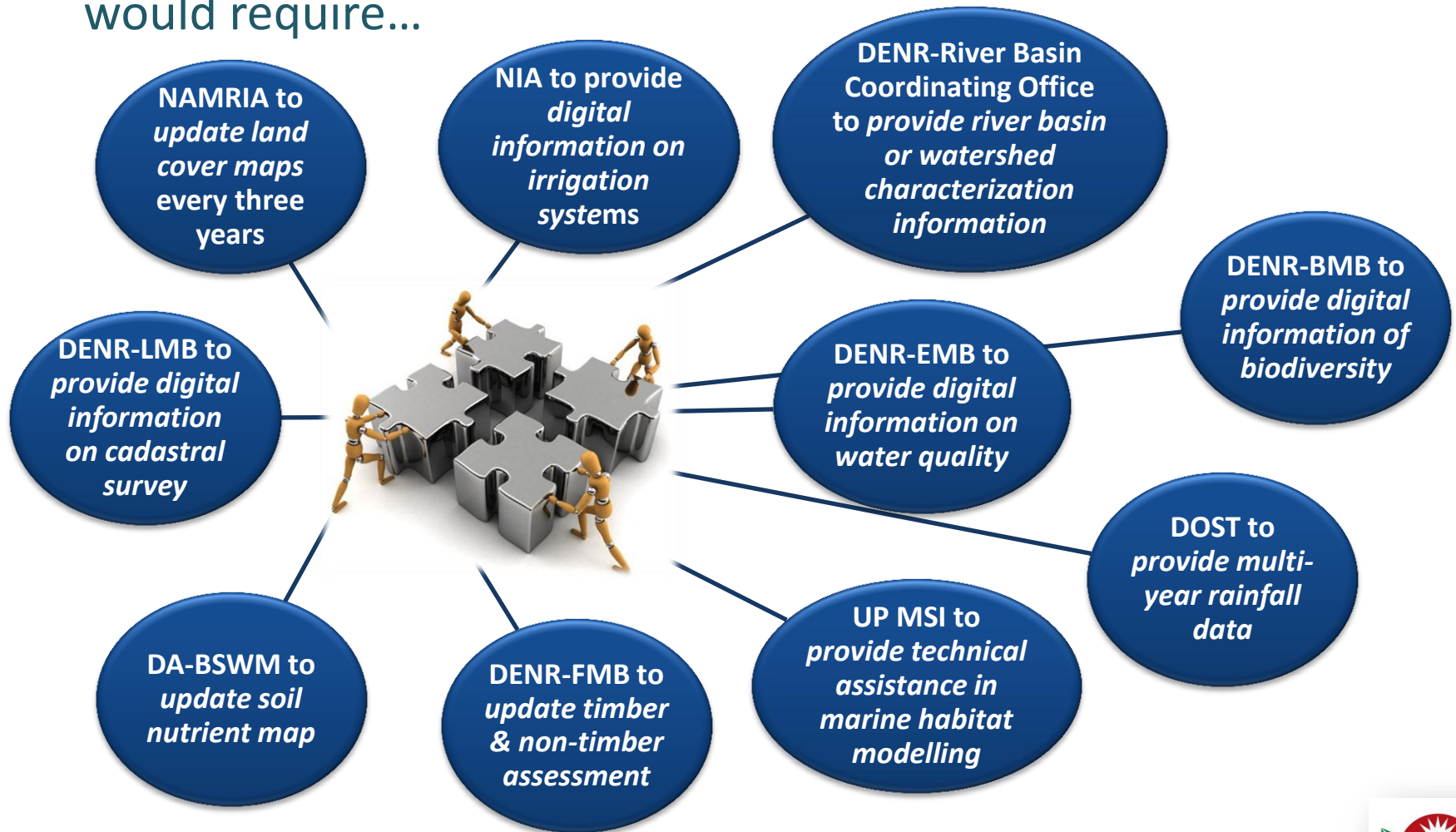
➢ *Extensive capacity building*
  - ➢ Develop a pool or teams of trainers on ecosystem accounting that can be deployed to different regions in the Philippines
  - ➢ UP Los Banos to develop a training course on ecosystem accounting
  - ➢ Develop a users manual for developing each accounts

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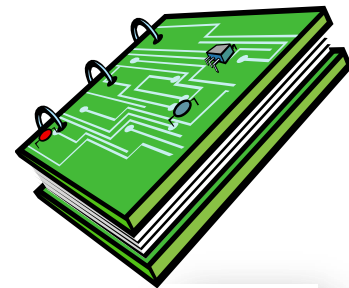
Support from all National agencies will be critical...

... which is where the challenge lies. For example, data collection would require...

NAMRIA to *update land cover maps every three years*

NIA to provide *digital information on irrigation systems*

DENR-River Basin Coordinating Office to *provide river basin or watershed characterization information*

DENR-BMB to *provide digital information of biodiversity*

DENR-LMB to *provide digital information on cadastral survey*

DENR-EMB to *provide digital information on water quality*

DOST to *provide multi-year rainfall data*

DA-BSWM to *update soil nutrient map*

DENR-FMB to *update timber & non-timber assessment*

**UP MSI to** *provide technical assistance in marine habitat modelling*

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Ecosystem accounts can be scaled up at the site level

➤ At the municipal level could

- ✓ Develop summary accounts by land use zones to support Comprehensive Land Use Plans
- ✓ Link ecosystem accounts with LGU reporting such as Financial Balance Sheets & Income Statements
- ✓ Engage key institutions in data collection efforts
  - ▪ DENR/DA to generate data, PSA to conduct surveys, NAMRIA to support mapping
- ✓ Collaborate with academic institution on monetary valuation &modelling of ecosystem services

➤ At the provincial level could

- ✓ Develop ecosystem accounts for another LGU (e.g. Brooke's Point in Southern Palawan)
- ✓ Develop accounts for selected ecosystem services & develop an ecosystem balance sheet (monetary account)

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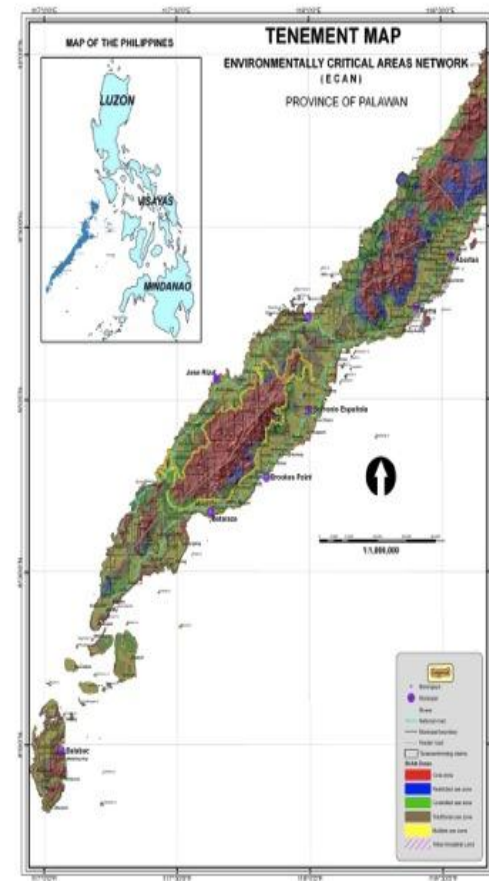
Other issues

- ➢ Development of monetary accounts of ecosystem services within a LGU:

    - ▪ Develop Ecosystem Balance Sheet with Ecosystem Assets & Liabilities (Current & Non-Current) & Ecosystem Equity

    - ▪ Link with LGU's Financial Assets & Liabilities

    - ➢ Will link economic-decision making with impact of ecosystem services

- ➢ Valuation of biodiversity for trade-off analysis, e.g. biodiversity conservation vs. mining

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3. Way forward

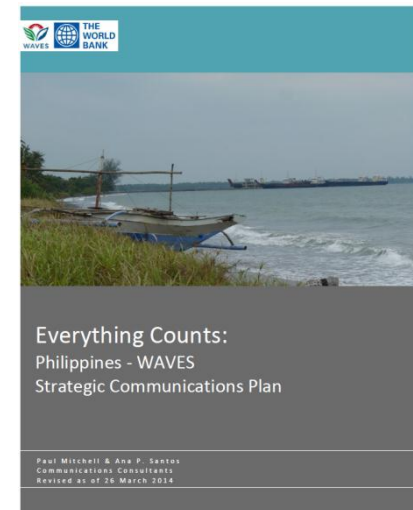❑ **Policy Analysis**
❑ **Presentation of results**

There are several pieces of Policy Analysis we could do

- ✓ Land allocation and land use options
- ✓ Trade-off analysis for conflicting land use
- ✓ Support for updating/revising of existing ENR policies
- ✓ Land use planning/zoning
- ✓ Updating of Resource user fees
- ✓ Implementing Payment for Ecosystem Services
- ✓ Improving financing for environment and natural resources management
- ✓ Implementing Integrated Ecosystem Management through convergence of plans by different national government agencies

Presentation of results will need to be targeted

1. Local government units (Provincial & municipal) – main provider of most ecosystem services data requirements, engaging them will support sustained & more frequent collection of data

2. Watershed or ecosystem governing bodies who are the main users of accounts

3. National government agencies who are generators of data for developing the accounts, and provides funding for sustained collection of data

Maraming Salamat Po / Thank you