

Final Proposal

Ecosystem Accounting and Economic Valuation of Sto. Tomas Watershed Ecosystems and Natural Capital, Zambales

I. Introduction

The Department of Environment and Natural Resources (DENR) in the Philippines, in collaboration with Stanford University and the Asian Development Bank (ADB), aims to enhance integrated watershed management planning through ecosystem services assessment and valuation. This proposal outlines the scope of work for the pilot project focusing on the Sto Tomas Watershed in Zambales Province, including mapping and valuing key ecosystem services and capacity development within DENR.

II. Background

Watersheds in the Philippines play a crucial role in providing clean water, irrigation, and flood mitigation services to the population. However, degradation due to deforestation and unsustainable practices has led to water quality issues and increased vulnerability to climate change. There is a need to enhance current watershed management methodologies to prioritize investments and interventions effectively.

III. Objectives

1. Develop capacity within DENR to map, value, and conduct non-market valuation of ecosystem services in the Sto Tomas Watershed.
2. Identify pathways to use ecosystem services information, including non-market valuation, for integrated watershed management planning in the Sto Tomas Watershed.
3. Build capacity within DENR to apply the developed methodologies in other watersheds in the Philippines covered by the Natural Capital Accounting Roadmap.

IV. Proposed Activities

1. Conduct a workshop with ERDB-DENR to review InVEST modeling outputs, data collected from Sto. Tomas Watershed, and refresher on ecosystem accounts:

Objectives:

- a. To present, and review InVEST modeling outputs for the Sto. Tomas Watershed, ensuring localized calibration and accuracy for subsequent economic valuation and watershed management decisions.
- b. To review and validate the quality, completeness, and relevance of data collected for economic valuation, needed for ecosystem and natural capital accounting and valuation.
- c. To provide a refresher on ecosystem accounting concepts, processes, and tools for effective application in policy and decision-making for the Sto. Tomas Watershed.

- d. To agree upon actionable plans and management strategies for the Sto. Tomas Watershed, utilizing ecosystem accounting and economic valuation to inform decisions and enhance watershed management practices.

Review of InVEST Modeling Outputs (2 days of sessions)

Activity	Duration	Experts Time	Experts Preparation Time
<ul style="list-style-type: none"> Presentation of the initial InVEST modeling outputs for Sto. Tomas Watershed, and needed calibration for localized results; 	1/2 day, 8 hrs	Review of results of each InVEST modeling outputs	Review of results of InVEST modeling outputs prior to presentation, including the calibration of the models
<ul style="list-style-type: none"> Group discussion and feedback on the modeling results. 	1/2 day,	Setting up of report tables and maps for economic valuation, combined with mentoring	Preparation of templates of data reporting
<ul style="list-style-type: none"> Analysis of key findings and implications for economic valuation and watershed management decisions and strategies. 	1/2 day,	For ERDB: discussion of the CRVA strategies and setting up of needed economic analysis (or multi-criteria analysis, etc); Synthesis of data needs and tables for economic valuation	Review of the CRVA and recommendations for economic analysis of proposed strategies

Data Review and Validation for Economic Valuation Work (Ideally 2 days)

Activity	Duration	Experts Time	Expert Preparation Time
<ul style="list-style-type: none"> Presentation of the data collected from Sto. Tomas Watershed by ERDB teams 	1/2 day, ERDB-DENR teams present data collected by each sub-groups	Review of ERDB Teams presentation and synthesis of available data needed for economic valuation	Review of existing data shared by ERDB teams, and assessment data gaps
<ul style="list-style-type: none"> Examination of data quality, completeness, and relevance for ecosystem and natural capital accounting and economic valuation 	1/2, ERDB Team and mentors workshop to review compiled data	Workshop time and detailed review of existing data	Develop natural capital accounts and economic valuation processes and tools appropriate for Sto Tomas watershed
<ul style="list-style-type: none"> Interactive session for participants to provide insights and validate data accuracy. 	1/2 day,	Workshop time and design of data collection to accomplish natural capital accounts and economic valuation	Design of data collection instruments to develop ecosystem accounts and economic valuation

Refresher on Ecosystem Accounts (2 ½ days)

Activity	Duration	Experts Time	Experts Preparation Time
<ul style="list-style-type: none"> • Presentation of the overview of the concepts and importance of ecosystem accounting. 	1/2 day	Discussion of concepts of Ecosystem and natural capital accounting, and the UN SEEA guidelines	Presentation and discussion materials tailored for the target watershed
<ul style="list-style-type: none"> • Ecosystem Accounting Processes and Tools, 	1 day	Presentations and workshops in identifying ecosystem services and developing the accounts	Preparation of presentation materials tailored for Sto Tomas Watershed
<ul style="list-style-type: none"> • Use of ecosystem and natural capital accounts and economic valuation in policy and decisions for the Sto Tomas Watershed 	1 day	Presentation of case examples of applications of ecosystem and natural capital accounts; tools for applying ecosystem and natural capital accounts in policies and decisions; processes for applying to Sto Tomas Watershed	Review of programs and strategies based on plan documents and the CRVA of Sto Tomas Watershed.

Outputs:

- InVEST-Generated Outputs: Detailed outputs on selected ecosystem services provided by ecosystems in the Sto. Tomas Watershed, including extent, condition, and ecosystem services in physical terms.
- Identification of Ecosystem Services and Assets: Identification of ecosystem services and assets in the Sto. Tomas Watershed for developing monetary accounts and economic valuation using non-market valuation approaches.
- Data Report: Comprehensive report detailing available data and identifying gaps necessary for undertaking monetary accounting and economic valuation of selected ecosystem services.
- Action Plans for DENR Staff: Developed action plans by DENR staff to apply ecosystem accounting and valuation to identified ecosystem services in the Sto. Tomas Watershed.
- Agreed Watershed Management Strategies: Identified and agreed-upon watershed management strategies and programs subject for analysis using economic valuation criteria.

2. Developing Ecosystem and Natural Capital Accounts in Physical Terms

Objective:

To translate the reviewed and validated data, as well as the insights from the workshop, into comprehensive ecosystem and natural capital accounts.

Activity	Duration	Expert Time
<ul style="list-style-type: none"> • Synthesizing Data: Integrating the reviewed InVEST modeling outputs and validated data 	1 month	Mentoring the DENR-ERDB teams in

to form a complete picture of the ecosystem services and natural assets in the watershed.		
<ul style="list-style-type: none"> • Developing Accounts: Creating detailed ecosystem and natural capital accounts that quantify the extent, condition, and physical services of the ecosystem. 	1 months	Mentoring and reviewing outputs of DENR-ERDB Team
<ul style="list-style-type: none"> • Identifying Economic Indicators: Pinpointing the ecosystem services and assets that will be subjected to economic valuation using appropriate non-market valuation approaches. 	<1 month	Brief workshop with the ERDB-Team to review the ecosystem accounts that will be used in developing monetary ecosystem services accounts and ecosystem assets accounting

Outputs

1. Synthesized Data Report: A report integrating the reviewed InVEST modeling outputs and validated data, providing a complete picture of the ecosystem services and natural assets in the Sto. Tomas Watershed.
2. Detailed Ecosystem and Natural Capital Accounts: Fully developed accounts that quantify the extent, condition, and ecosystem services of the ecosystems within Sto Tomas Watershed.
3. Refined Economic Valuation Identification Report: A detailed document identifying the ecosystem services and assets to be subjected to economic valuation, including the selected non-market valuation approaches for these services and assets.
4. Mentoring and Capacity Building Outputs: Documentation of the mentoring process and capacity-building activities conducted with the DENR-ERDB teams.

3. Developing Monetary Ecosystem Services and Ecosystem Asset Accounts: This activity builds on the mapped baseline supply of ecosystem services and focuses on valuing these services within the framework of the United Nations' System of Environmental-Economic Accounting (SEEA). It also extends the application of non-market (welfare-based) valuation of identified ecosystem services. The Asian Development Bank (ADB) and/or a consultant will lead the valuation process, applying appropriate valuation techniques and methodologies to assign monetary values to the ecosystem services.

Objective: To translate the quantified ecosystem services and ecosystem assets into monetary terms, enabling economic valuation that will inform watershed management decisions.

Activity	Duration	Experts Time
<ul style="list-style-type: none"> • Workshop on Economic Valuation of Ecosystem Services: Focused on identified ecosystem services 	3-4 days	Conduct of training on economic valuation of identified ecosystem services
<ul style="list-style-type: none"> • Applying Non-Market Valuation Methods: 	1-2 months;	Mentoring the DENR-ERDB teams in applying these methods,

<ul style="list-style-type: none"> - Refitment of data collection instruments for developing economic valuation - Contingent valuation, travel cost method, or hedonic pricing, to assign monetary values to the identified ecosystem services and assets. 		conducting the valuations, and ensuring accuracy and relevance; Providing Support in developing
<ul style="list-style-type: none"> • Creating Monetary Ecosystem Services: Develop detailed accounts that quantify the economic value of ecosystem services and assets in monetary terms. 	1-2 months	Reviewing and refining the monetary accounts, providing feedback
<ul style="list-style-type: none"> • Reviewing and Validating Economic Values: Conduct workshops to review and validate the values assigned to ecosystem services and assets with stakeholders 	1 month (with 3-4 days workshop)	Organizing and facilitating workshops, gathering feedback, and making necessary adjustments to the monetary accounts.

Outputs:

- Economic Valuation Report: A report detailing the economic values assigned to the identified ecosystem services and assets in the Sto. Tomas Watershed.
- Validated Monetary Ecosystem Services Accounts: Finalized monetary accounts that provide an economic valuation of the ecosystem services and assets, ready for integration into watershed management strategies and programs.
- Validation Summary: A report of the validation workshops, including feedback and any adjustments made to the monetary valuations.

4. Integrating ecosystem services accounts and valuation into IWMP planning: Based on the findings from the mapping, modeling, and valuation, this activity will involve processes of integrating ecosystem services into the planning and management processes of the Integrated Watershed Management Plan (IWMP) for the Sto Tomas Watershed. The roadmap will outline specific steps and strategies for incorporating ecosystem service information into decision-making processes, setting targets for ecosystem service enhancement, and prioritizing management interventions. It will also identify key stakeholders and institutional arrangements necessary for effective implementation of the roadmap. The specific activity for this is a workshop focused on policy and decision-making application of ecosystem services accounting and valuation.

Objective: To incorporate ecosystem services accounts and their economic valuations into the Integrated Watershed Management Plan (IWMP) for the Sto. Tomas Watershed, ensuring that the management strategies and programs are informed by comprehensive ecosystem accounting and valuation.

Activities:	Duration	Experts Time
Workshop on Integrating Ecosystem Services into IWMP Planning: Conduct a workshop focused on applying ecosystem services accounts and valuation to the IWMP, ensuring that the management plans are guided by	3-4 days	Facilitate the workshop, providing guidance on integrating ecosystem services information into planning processes, setting targets for ecosystem

the economic values and physical data derived from the ecosystem accounts.		service enhancement, and prioritizing management interventions.
Developing a Roadmap for Integration: Create a detailed roadmap outlining specific steps and strategies for incorporating ecosystem service information into the IWMP. This includes setting targets for ecosystem service enhancement, identifying key stakeholders, and establishing institutional arrangements for effective implementation.	1 month	Mentoring the DENR-ERDB teams in developing the roadmap, providing feedback, and ensuring it aligns with best practices and local context.
Stakeholder Engagement and Validation: Engage with key stakeholders to validate the integration of ecosystem services accounts into the IWMP, ensuring broad support and collaboration for the implementation of the roadmap.	1 month (with 3-4 days of stakeholder meetings)	Organizing and facilitating stakeholder meetings, gathering feedback, and making necessary adjustments to the roadmap and IWMP.

Outputs:

- Integrated Economic Criteria in IWMP Document: A IWMP for the Sto. Tomas Watershed that incorporates ecosystem services accounts and their economic valuations, providing a solid foundation for informed watershed management strategies and programs.
- Roadmap for Ecosystem Services Integration: A detailed roadmap outlining the steps, strategies, targets, stakeholders, and institutional arrangements for incorporating ecosystem services into the IWMP.
- Stakeholder Validation Report: A report summarizing the stakeholder engagement process, including feedback received and any adjustments made to the IWMP and the roadmap based on stakeholder input.

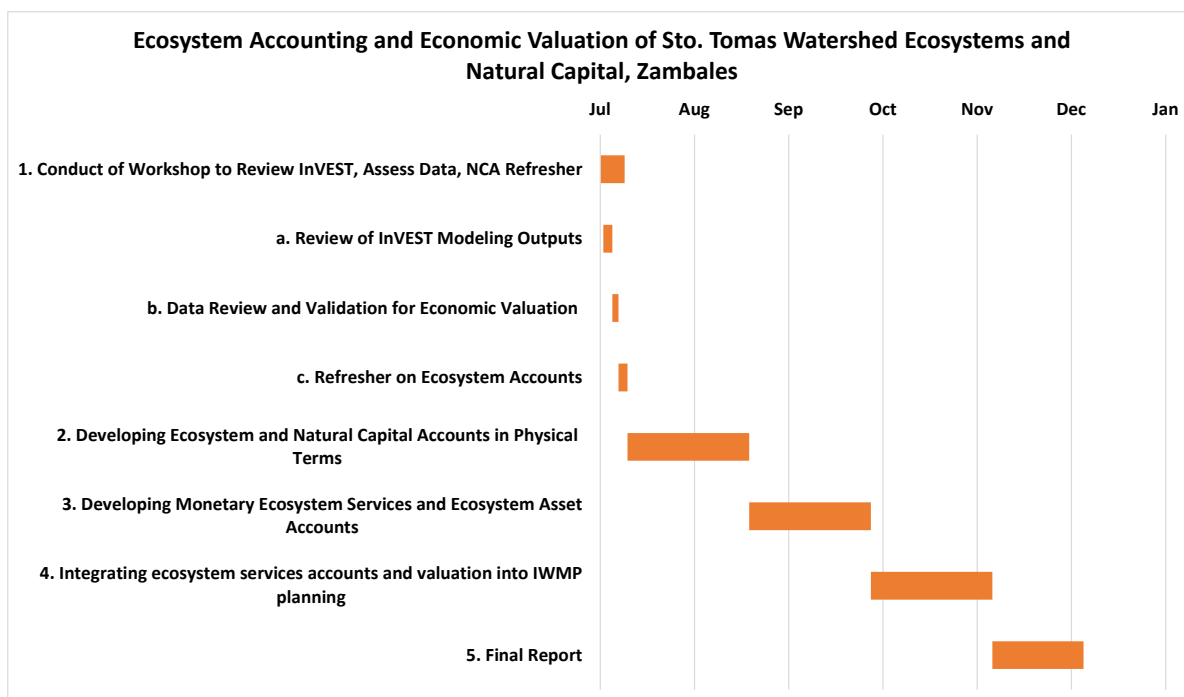
V. Deliverables

1. Workshop with ERDB-DENR to review InVEST modeling outputs, data collected from Sto. Tomas Watershed, and refresher on ecosystem accounts:
 - InVEST-Generated Outputs
 - Identification of Ecosystem Services and Assets
 - Data Report
 - Action Plans for DENR Staff
 - Agreed Watershed Management Strategies
2. Developing Ecosystem and Natural Capital Accounts in Physical Terms:
 - Synthesized Data Report

- Detailed Ecosystem and Natural Capital Accounts (Physical)
 - Refined Economic Valuation Identification Report
 - Mentoring and Capacity Building Outputs
3. Developing Monetary Ecosystem Services and Ecosystem Asset Accounts:
 - Economic Valuation Report
 - Monetary Ecosystem Services Accounts
 - Ecosystem Asset Accounts
 4. Integrating ecosystem services accounts and valuation into IWMP planning:
 - Integrated Economic Criteria in IWMP Document
 - Roadmap for Ecosystem Services Integration
 - Stakeholder Validation Report
 5. Final Report

VI. Proposed Timeline

TASK	Projected Start	Estimated End
1. Conduct a workshop with ERDB-DENR to review InVEST modeling outputs, data collected from Sto. Tomas Watershed, and refresher on ecosystem accounts:	01-Jul-24	02-Jul-24
a. Review of InVEST Modeling Outputs (2 days of sessions)	02-Jul-24	05-Jul-24
b. Data Review and Validation for Economic Valuation Work (Ideally 2 days)	05-Jul-24	07-Jul-24
c. Refresher on Ecosystem Accounts (2 ½ days)	07-Jul-24	10-Jul-24
2. Developing Ecosystem and Natural Capital Accounts in Physical Terms	10-Jul-24	19-Aug-24
3. Developing Monetary Ecosystem Services and Ecosystem Asset Accounts:	19-Aug-24	28-Sep-24
4. Integrating ecosystem services accounts and valuation into IWMP planning:	28-Sep-24	07-Nov-24
5. Final Report	07-Nov-24	07-Dec-24



The timeline is subject to adjustments based on the actual progress and requirements of each activity.

VII. Partners and Stakeholders

- Internal partners include DENR staff, regional and field VA focal/technical staff, and the Natural Capital Accounting Technical Working Group.
- External partners include Stanford University and the ADB.

VIII. Budget

Cost Items	Peso Values	US Dollar
1. Personnel		
a. Experts	1,996,250	34,717
Dr. Gem B. Castillo	388,125	6,750
Dr. Herminia A. Francisco	363,688	6,325
Dr. Asa Jose U. Sajise	359,375	6,250
Dr. Canesio D. Predo	395,313	6,875
Dr. Julianne Bariuan-Elca	189,750	3,300
b. Research Associate, 5 monts (2 pax)	300,000	5,217
2. Direct Costs	868,965	15,112
Task #1: Conduct of workshop/training to review InVEST Outputs, Data Review, NCA Refresher	120,960	2,104
Workshop Costs	120,960	2,104
Meals	95,200	1,656
Venue	20,000	348

Accommodation		-
Miscellaneous	5,760	100
Task #2. Developing Ecosystem and Natural Capital Accounts in Physical Terms	95,970	1,669
Workshop Costs	95,970	1,669
Meals	71,400	1,242
Venue	20,000	348
Accommodation		-
Miscellaneous	4,570	79
	510,075	8,871
Task #3. Developing Monetary Ecosystem Services and Ecosystem Asset Accounts	95,970	1,669
Workshop Costs	71,400	1,242
Meals	20,000	348
Venue		-
		79
Accommodation	4,570	
Miscellaneous	95,970	1,669
Conduct of survey	414,105	7,202
Enumerators Compensation	90,000	1,565
Questionnaire Printing and Photocopying Costs	16,300	283
Visual Aids Printing	15,000	261
Enumerators Insurance	10,000	174
Encoding Cost	28,000	487
Enumerator Training (2 days)	56,805	988
Survey Monitoring, days	1,500	26
Transportation Costs	64,000	1,113
Tokens for Survey Respondents	80,000	1,391
Accommodation	52,500	913
Task #4. Integrating ecosystem services accounts and valuation into IWMP planning:	141,960	2,469
Workshop Costs	95,970	1,669
Meals	71,400	1,242
Venue	20,000	348
Accommodation		-
Miscellaneous	4,570	79
Stakeholder Consultation Workshop	45,990	800
Meals	23,800	414
Venue	20,000	348
Accommodation		-
Miscellaneous	2,190	38
Total Cost	2,865,215	49,830

Contingency Cost	286,522	4,983
Overhead Costs (10% of Cost)	286,522	4,983
Total Cost + Contingency and Overhead	3,438,258	59,796

IX. Proposed REAP-EEG Team

1. Ecosystem Accounting Expert(s)	Dr. Gem B. Castillo Dr. Herminia A. Francisco
2. ENR Valuation Expert	Dr. Asa Jose U. Sajise
3. Ecosystem Accounts Modeling Expert	Dr. Canesio D. Predo
4. Science Communication	Dr. Julienne Bariuan-Elca
5. Research Associates (2)	(To be hired)