Technical Assistance Report

Project Number: 44141-012
Regional—Capacity Development Technical Assistance
December 2013

Promoting Ecosystem Services and Forest Carbon Financing in Asia and the Pacific

(Financed by the Climate Change Fund)

Asian Development Bank

ABBREVIATIONS

ADB	–	Asian Development Bank
DMC	–	developing member country
EOD	–	Environment Operational Directions
GIS	–	geographic information systems
NGO	–	nongovernment organization
PES	–	payments for ecosystem services
REDD	–	reduced emissions from deforestation and forest degradation
TA	–	technical assistance

TECHNICAL ASSISTANCE CLASSIFICATION

Type	–	Regional—capacity development technical assistance (R-CDTA)
Targeting classification	–	General intervention
Sector (subsector)	–	Agriculture and natural resources (land-based natural resources management, fishery, forestry)
Theme (subtheme)	–	**Environmental sustainability** (natural resource conservation, global and regional transboundary concerns, environmental policy and legislation), capacity development (institutional development)
Climate change	–	Climate change mitigation and adaptation
Location (impact)	–	Rural (high), urban (low), national (medium), regional (medium)
Partnership	–	Climate Change Fund

NOTE

In this report, "$" refers to US dollars.

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CONTENTS

I. INTRODUCTION

1. The sustainable management of forests and the protection of biological diversity are emphasized as part of the Asian Development Bank's (ADB) Strategy 2020.[1] Consistent with Strategy 2020, in March 2013 ADB approved its Environment Operational Directions, 2013–2020: Promoting Transitions to Green Growth in Asia and the Pacific (EOD). The EOD highlights the need to address the ongoing degradation of natural ecosystems in the region and promotes investments in "natural capital" as a key measure to help developing member countries (DMCs) transition to environmentally sustainable growth.

2. The technical assistance (TA) is designed to support the implementation of the EOD by assisting DMCs in developing knowledge and in building their capacity to undertake economic valuation of ecosystem services and to integrate these values into strategic planning and project-level decision-making processes.[2] The TA is also designed to address specific criteria of ADB's Climate Change Fund, including support to maintain, restore, and enhance carbon-rich natural ecosystems, while maximizing co-benefits for the conservation of biodiversity and the generation of other ecosystem services. The TA is in line with ADB's ongoing support for regional cooperation in the protection and sustainable management of large-scale ecosystems in areas such as the Coral Triangle, the Greater Mekong Subregion, and the Heart of Borneo. The design and monitoring framework appears in Appendix 1.[3]

II. ISSUES

3. Natural ecosystems in Asia and the Pacific are among the richest and most diverse on earth.[4] However, in the last 30 years, biodiversity in the region has declined by 64%—twice the global average.[5] Ecosystem goods and services flow from the region's stocks of "natural capital" and are worth billions of dollars per year. The myriad of provisioning, regulating, and other services support, among others, food and fiber production, clean water assurance, soil protection, climate regulation, and flood control. They also contribute to food, water, and energy security, and climate resilience. This is particularly important for poor rural communities, which often rely directly on ecosystem services for their livelihoods and have less access to affordable substitutes.

4. Few ecosystem services have explicit prices or are traded in open markets. As a result, markets rarely take such services fully into account; nor are they reflected adequately in national accounts and economic development planning. This contributes to their decline and often marginalizes the importance of natural capital in decision-making processes. Furthermore, lack of information and market failures have largely prevented the private sector from using market-based financial mechanisms to support ecosystem services to the full extent possible.

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[1] ADB. 2008. *Strategy 2020: The Long-Term Strategic Framework of the Asian Development Bank, 2008–2020*. Manila.

[2] Millennium Ecosystem Assessment, 2005. *Ecosystems and Human Well-being: Synthesis*. Washington, DC: Island Press. Ecosystem services refer to benefits people obtain from ecosystems, including (i) provisioning services, such as food and water; (ii) regulating services, such as regulation of floods, drought, land, and disease; (iii) supporting services, such as soil formation and nutrient cycling; and (iv) cultural services, such as spiritual, religious, recreational, and other nonmaterial benefits.

[3] The TA first appeared in the business opportunities section of ADB's website on 20 November 2013.

[4] The region holds 20% of the world's biodiversity; 14% of the world's tropical forests; and 34% of global coral reefs, including the greatest number of marine species in the world.

[5] ADB and WWF. 2012. *Ecological Footprint and Investment in Natural Capital*. Manila.

5. In response, there is growing interest from DMCs to better value and capture the economic benefits of ecosystem services. This is in line with commitments made under the Convention on Biological Diversity Strategic Plan for Biodiversity and Aichi Targets for 2010-2020, which aim to integrate biodiversity values into national and local development and poverty reduction strategies and planning processes by 2020. Although such approaches are not new, the momentum in favor of mainstreaming economic analysis of ecosystem services has accelerated in recent years, owing to factors such as new evidence on declining ecosystem services and their effects on poverty, employment, incomes, and taxation revenues, and links with apparatuses such as monetary and fiscal policies.[6] In particular, this change has been stimulated by analytical studies such as the Millennium Ecosystem Assessment and initiatives such as The Economics of Ecosystems and Biodiversity, which have drawn greater attention from policymakers to the economic benefits of biodiversity. [7]

6. Despite this momentum, few DMCs have policies, regulations, or institutional capacities in place to systematically assess the economic values of ecosystems and integrate them in strategic planning and project-level decision making. Furthermore, there are significant opportunities to better use the outcomes of ecosystem service assessments to identify so called "green economy" opportunities, including the establishment of financing mechanisms to support biodiversity conservation and sustainable livelihoods. These mechanisms include payment for ecosystem services (PES), forest carbon financing, direct user fees, offset mechanisms, and a range of others in both the public and the private sectors.[8]

7. ADB has helped support these approaches through capacity development, policy advice, and pilot projects on PES and reduced emissions from deforestation and forest degradation-plus (REDD+) in a number of DMCs. [9] In particular, lessons from the ADB TA for Capturing Economic Benefits from Ecosystem Services show that better and more accessible information and improvements in the quantification of ecosystem services that have global significance (such as carbon and biodiversity) can help spur local and regional initiatives that provide local environmental improvements and livelihoods benefits. With better information, more coordinated policies, and more efficient governance structures, private entities are also becoming more willing to support the provision of ecosystem services through PES schemes.[10] However, PES schemes in the region still need to demonstrate more explicitly the links between land use practices, delivery of the ecosystem service, and socioeconomic well-being. Rigorous assessments of ecosystem service values provide a basis for making these links explicit, and such assessments are needed to build confidence and establish payment levels that reflect at least the opportunity cost of alternative land uses. Government policy and institutional frameworks may also be needed in many cases, to help mediate payments between buyers and sellers of ecosystem services across large geographic scales.

8. The TA is designed to address these issues. It will support ADB's current work on climate change. It will also support the protection and management of large-scale ecosystems by building knowledge, partnerships, and capacity for the assessments and valuation of ecosystem services, and by strengthening strategic planning and project-level decision making.

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[6] P. Kumar, ed. 2012. *The Economics of Ecosystems and Biodiversity: Ecological and Economic Foundations*. Abingdon and New York: Routledge.

[7] Millennium Ecosystem Assessment. 2005. *Ecosystems and Human Well-being*. World Resources Institute, Washington, DC.

[8] C. Parker et al., eds. 2012. *The Little Biodiversity Finance Book*. Oxford: Global Canopy Programme.

[9] Reducing greenhouse gas emissions from deforestation and forest degradation.

[10] ADB. 2009. *Technical Assistance for Capturing Economic Benefits from Ecosystem Services*. Manila (TA 7302-REG).

III. THE TECHNICAL ASSISTANCE

A. Impact and Outcome

9. The impact of the TA will be better integration of ecosystem service values within the national and subnational development planning processes in selected DMCs.[11] The outcome will be greater commitment of participating DMCs to integrating requirements for ecosystem service assessment into policies and regulatory frameworks.

B. Methodology and Key Activities

10. The TA will address constraints on and gaps in the assessment and valuation of ecosystem services as part of strategic planning and project development processes. Linked to this effort, it will evaluate "green economy" opportunities, including the establishment of sustainable conservation financing mechanisms such as PES. The TA activities will contribute to three main outputs: (i) knowledge shared and partnerships strengthened for economic valuation of ecosystem services; (ii) mapping and valuation performed for ecosystem services in critical landscapes and seascapes; and (iii) pilot activities conducted of the integration of ecosystem service values and financing mechanisms into planning processes and projects**.** The TA will add value to regional cooperation programs and work with DMCs that participate in these programs.[12] The TA will also focus on developing partnerships to support TA delivery and to strengthen knowledge networks and capacity in the region.

11. Selection criteria for pilot activities will include the following: (i) degree of linkage with ongoing and planned projects and initiatives; (ii) targeting of thematic gaps for ecosystem service assessments; (iii) opportunities for scale-up and replication; (iii) countries or target areas where support has been limited; (iv) support for community benefits and poverty reduction; and (v) opportunities for co-benefits in climate change mitigation, adaptation, and biodiversity conservation. TA support will include technical advisory services by consultants; resources for publications, training, and knowledge-sharing workshops; and additional analytical studies.

12. **Output 1: Knowledge shared and partnerships strengthened for economic valuation of ecosystem services.** The TA will review methods and tools for the assessment and economic valuation of ecosystem services and biodiversity, including climate regulation services. It will also review case studies to assess gaps, barriers, constraints, and opportunities for wider use of these methods and tools in the region.[13] This work will be combined with a review of experiences and good practices in establishing successful PES, REDD+, and other financial mechanisms and incentives in projects and initiatives conducted by ADB and others. Methodological considerations will include classifications, concepts, indicators or proxies, and data sources required for the physical measurement of ecosystem services; and pricing and valuation approaches suited to the information available and the data constraints in DMCs. These reviews will provide the basis for the pilot activities under outputs 2 and 3.

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[11] The impact of the TA will not be limited to the participating pilot countries but will extend to other DMCs through regional knowledge sharing and the establishment of supportive partnerships.

[12] These programs include (i) the Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (Indonesia, Malaysia, Papua New Guinea, the Philippines, Solomon Islands, and Timor-Leste); (ii) the Greater Mekong Subregion Core Environment Program and Biodiversity Corridors Initiative (Cambodia, the People's Republic of China, the Lao People's Democratic Republic, Myanmar, Thailand, and Viet Nam); and (iii) the Heart of Borneo Initiative (Brunei Darussalam, Indonesia, and Malaysia).

[13] This review will include the ecosystem accounting guidelines of the United Nations Statistics Division: UN Statistics Division. 2012. *Draft Ecosystem Accounting Guidelines 2012*. http://climate-l.iisd.org/news/un-statistics-division-drafts-ecosystem-accounting-guidelines/

13. The TA will support knowledge generation, DMC capacity strengthening, and pilot activities by strengthening partnerships and knowledge networks with key global, regional, and local organizations, including academic groups, national and regional organizations, and nongovernment organizations (NGOs), as well as programs sponsored by other development partners. It will also promote and support south–south knowledge exchange. This will include working with regional cooperation programs such as the Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security, the Greater Mekong Subregion Core Environment Program and Biodiversity Corridors Initiative, and the Heart of Borneo Initiative. National capacity building and institutional strengthening will be linked to the pilot activities under outputs 2 and 3. Knowledge generated will be shared regionally with all DMCs through publications, training, workshops, and web-based materials. Final knowledge products are expected to include (i) case studies and policy briefs on ecosystem service valuation, conservation and carbon financing, and country mainstreaming approaches; and (ii) guidance notes and training modules on ecosystem service assessments, economic analysis, methodological tools, and data requirements.

14. **Output 2: Mapping and valuation performed for ecosystem services in critical landscapes and seascapes.** To build DMC capacity, the TA will demonstrate the process of assessing and valuing ecosystem services, including spatial mapping for at least three critical landscapes or seascapes. Data will be collected from databases on biodiversity, climate change, and other topics, as well as small-scale surveys, studies, and consultant inputs. Economic valuation will be undertaken for selected ecosystem components and services, and used to support strategic planning processes and economic analysis of projects under output 3. Support for assessments will be provided on demand in two to three DMCs through close cooperation with ADB regional departments. Ideally, the assessments will link with ongoing or planned projects, where additional resources for ecosystem service assessments can provide a catalyst in establishing PES and REDD+ mechanisms, or will help improve policy, strategy, and planning processes in DMCs.

15. **Output 3: Pilot activities conducted of the integration of ecosystem service values and financing mechanisms into projects and planning.** Building on output 2, the TA will support the integration of ecosystem service values through pilot activities in two to three selected DMCs at three levels: (i) integration into the preparation of ADB country partnership strategy, through links with country environment analysis and country environment notes and relevant sector papers (one pilot activity to be selected from DMCs with strategy preparation scheduled in 2014–2015); (ii) integration within a national or subnational planning processes (one pilot activity); and (iii) integration in project-level feasibility studies and decision making, including project economic analysis (two pilot activities).

16. To increase capacity and ownership, DMCs will participate in pilot activities. Focal point agencies, including ministries of environment, planning, and finance, will be selected on the basis of their role and mandate to support further mainstreaming in national policies, regulations, and planning processes. These agencies will be the focus of institutional analysis.

17. Each pilot activity will assess options for establishing financial mechanisms such as PES or REDD+. Through participatory planning processes, they will evaluate opportunity costs and green growth opportunities within the given strategic planning or project context. Project assessments will be undertaken in collaboration with ADB's Economics and Research Department, with a view to drawing out lessons on integrating ecosystem service assessments in project-level economic analysis. DMCs will also receive initial support to develop action plans and road maps for scaling up ecosystem service assessment and valuation.

18. The TA will be implemented over 24 months, from January 2014 to December 2015.

C. Cost and Financing

19. The TA is estimated to cost $800,000 and will be financed as a grant by the Climate Change Fund.[14] DMC participation will be confirmed when the pilot activities are selected. It is expected that participating DMCs will identify staff to participate and provide leadership and administrative support in country assessments and capacity-building activities. ADB will not finance any activity in any participating DMC unless the government of that country confirms it has no objection. The detailed cost estimates and financing plan appear in Appendix 2.

D. Implementation Arrangements

20. ADB will be the executing agency, with the Environment and Safeguards Division of the Regional and Sustainable Development Department as the focal point. Output 1 of the TA will focus on developing partnerships with regional organizations, academic institutions, and other NGOs to strengthen knowledge on ecosystem service assessment and valuation. Partnerships may also be developed to support pilot activity implementation under outputs 2 and 3. Preliminary partnership discussions have been held with the Ecosystems Services Partnership, the Sub-Global Assessment Network, the Association of Southeast Asian Nations (ASEAN) Center for Biodiversity, and the World Wide Fund for Nature.

21. Pilot activities under outputs 2 and 3 will be linked to current and planned projects supported by ADB. Pilot activities will be proposed by regional departments. Identification of pilot activities will be coordinated through ADB's adaptation and land use working group, which will serve as a steering committee for pilot activity approval. DMC engagement will be coordinated through the selected projects. ADB's environment community of practice will serve as a knowledge hub for project communication and internal information dissemination.

22. The TA will finance consulting services, workshops and training, and report preparation. Consulting services totaling 47 person-months (17 international and 30 national) will be required. ADB will engage consultants in accordance with the Guidelines on the Use of Consultants (2013, as amended from time to time). They will be selected individually in response to specific requests by regional departments during project implementation. The outline terms of reference for consultants appear in Appendix 3. All disbursements under the TA will be made in accordance with ADB's *Technical Assistance Disbursement Handbook* (2010, as amended from time to time).

IV. THE PRESIDENT'S DECISION

23. The President, acting under the authority delegated by the Board, has approved the provision of technical assistance not exceeding the equivalent of $800,000 on a grant basis for Promoting Ecosystem Services and Forest Carbon Financing in Asia and the Pacific, and hereby reports this action to the Board.

[14] Established by ADB.

DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
Impact Increased integration of ecosystem service values within national and subnational development planning processes	By 2020, from 2013 baseline: At least three DMCs apply policies or regulations for integrating ecosystem service values into strategic planning and projects	DMC reports against the UNCBD Aichi Targets on Biodiversity Global Biodiversity Outlook (UNEP) Other relevant ecosystem and biodiversity surveys and monitoring reports	**Assumption** Governments within the region are committed to addressing biodiversity loss, ecosystem degradation, and climate change. **Risk** Economic priorities or ad hoc decision making override national commitments and priorities for addressing biodiversity loss and climate change.
Outcome Increased commitment of DMCs to integrating requirements for ecosystem service assessment within policies and regulatory frameworks	By 2016: At least three target DMCs develop road maps or action plans for integrating ecosystem services valuation into strategic planning and project decision making	DMC reports against the UNCBD Aichi Targets on Biodiversity National and regional reports of DMCs TA reports	**Assumption** Ecosystems provide essential services that support human welfare. **Risks** Economic values of ecosystem services in critical landscapes and seascapes are lower than the opportunity cost of development alternatives. Confidence in results of economic assessment processes Is limited.
Outputs 1. Knowledge shared and partnerships strengthened for economic valuation of ecosystem services	Partnership agreements established with at least three global and regional organizations or initiatives on applying ecosystem service valuation in the Asia and Pacific region by 2015 At least three knowledge products and guidance notes on assessment methodologies, case studies, and financial mechanisms published by 2015	TA progress reports DMC strategy and planning documents ADB country partnership strategies ADB project preparatory technical assistance reports, and reports and recommendations of the President	**Assumptions** Countries and partners are willing to collaborate to apply ecosystem service valuation into strategic planning and project decision making. Suitable economic valuation tools exist and can be applied in a timely and cost-effective manner to support decision making. **Risks** Provision of data for analysis is inadequate or ill timed.

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
	At least 100 people from DMCs participate in regional and national knowledge-sharing events and training by 2015		Processes and timing of national and subnational planning or project preparation do not allow for integration of ecosystem service values processes.
2. Mapping and valuation performed for ecosystem services in critical landscapes and seascapes	Ecosystem services mapped and valued in at least three landscapes or seascapes by 2015		Required expertise is not available to support TA implementation.
3. Pilot activities conducted of the integration of ecosystem service values and financing mechanisms in planning processes and projects	At least two pilot activities completed for integration with DMC strategies or plans by 2015 At least two pilot activities completed for integration linked to project prefeasibility studies by 2015		
Activities with Milestones 1.1 Rapid review and synthesis of methodolgies and tools for economic analysis of ecosystem services, including services associated with climate change regulation, adaptation, and disaster risk reduction (by month 3) 1.2 Rapid review of selected previous ecosystem service assessments in Asia and the Pacific; analysis of spatial, thematic, and methodological gaps (by month 3) 1.3 Review and synthesis of good-practice case studies from Asia and the Pacific and analysis of lessons in the application of ecosystem services assessment, including barriers and constraints for replication and scale-up (by month 3) 1.4 Update of institutional mapping of key organizations, initiatives, and projects actively supporting ecosystem service assessments and valuation in the Asia and Pacific region (by month 4) 1.5 Consultations with DMCs, international organizations, NGOs, and other stakeholders; development of initial partnership agreements on knowledge and capacity support for ecosystem service assessments and valuation linked to TA objectives and implementation (by month 6) 1.6 Organization of at least two regional knowledge-sharing events (by months 12 and 23) 1.7 Organization of at least two training courses on ecosystem service assessment and valuation (by month 20) 1.8 Publication of at least two knowledge products on valuation assessment methodologies, case studies, and financial mechanisms in Asia and the Pacific (by month 23)			**Inputs** **Climate Change Fund:** $800,000

Activities with Milestones	
1.9 Preparation of guidance note on economic analysis of ecosystem services for ADB projects (by month 24) 2.1 Identification of target DMCs and selection of at least two priority landscapes or seascapes for ecosystem service mapping and valuation under the TA as linked to activity 3.1 (by month 6) 2.2 Development of ecosystem mapping and assessment methods to be applied in the TA in selected landscapes and seascapes, including key ecosystem stocks and flows to be assessed (by month 8) 2.3 Collection of available information and data on ecosystem services in selected landscapes and seascapes (by month 14) 2.4 Design and conduct of additional targeted surveys and studies on ecosystem services and values in selected landscapes and seascapes (by month 16) 2.5 Spatial mapping of ecosystem service and values, including values for climate change regulation, adaptation, and disaster risk reduction for selected landscapes and seascapes (by month 16) 2.6 Identification of opportunities for green economy options, business models, and financial mechanisms, including PES and/or carbon market opportunities in target landscapes and seascapes (by month 18) 2.7 Completion of assessment reports on ecosystem services and values for selected landscapes and seascapes (by month 20). 3.1 Selection of target DMCs, planning processes, and projects as targets for TA implementation as linked to activity 2.1 (by month 6) 3.2 Analysis of policies, regulations, planning processes, and institutional mandates and responsibilities for protection and management of natural ecosystems and biodiversity as linked to selected planning processes and projects (by month 8) 3.3 Capacity needs assessment for target national institutions and individuals to support ecosystem service assessments and valuation (by month 12) 3.4 Technical support to DMCs and project teams in the analysis and interpretation of information and data, and mapping of ecosystem services and economic analysis in the context of selected planning processes (two pilot activities) and projects (two pilot activities), as linked to activities 2.4 and 2.5 (by month 18) 3.4 Participatory assessment of potential green economy options for the protection and sustainable management of ecosystem services as part of selected strategic planning processes (two pilot activities) and project prefeasibility (two pilot activities), as linked to activity 2.6 (by month 22) 3.5 Submission of recommendations for action plans and road maps for scaling up ecosystem service assessment and valuation in target DMCs (by month 23) 3.6 Submission of final report on pilot activities (by month 23)	

ADB = Asian Development Bank, DMC = developing member country, NGO = nongovernment organization, PES = payment for ecosystem services, TA = technical assistance, UNCBD = United Nations Convention on Biological Diversity, UNEP = United Nations Environment Programme
Source: Asian Development Bank.

COST ESTIMATES AND FINANCING PLAN
($'000)

Item	Amount
Asian Development Bank[a]	
1. Consultants	
a. Remuneration and per diem	
i. International consultants	325.0
ii. National consultants	165.0
b. International and local travel	55.0
c. Reports preparation	25.0
2. Studies and data sourcing	125.0
3. Workshops and training	50.0
4. Miscellaneous administration costs[b]	5.0
5. Contingency	50.0
Total	**800.0**

[a] Financed by the Climate Change Fund.
[b] Includes costs for supplies and materials, document reproduction and translation, and other administrative costs.
Source: Asian Development Bank estimates.

OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

A. Consulting Services

1. **Senior ecological economist and team leader (international, 11 person-months)**. The consultant will have at least a master's degree in environmental or ecological economics or related discipline and at least 10 years of experience related to ecosystem service assessment, payment for ecosystem services (PES), or carbon financing, or other conservation finance approaches. Experience in Asia and the Pacific is highly desirable. The consultant will be responsible for the following tasks:

(i) coordinate and plan implementation of the technical assistance (TA), including coordinating inputs by other consultants;
(ii) identify and liaise with potential implementation and knowledge partners to support the overall outcome of the TA;
(iii) review and synthesize methods and tools for ecosystem service valuation, PES, and reduced emissions from deforestation and forest degradation-plus (REDD+); and analysis of barriers, constraints, and opportunities for their wider adoption in Asia and the Pacific, including assessment of entry points and drivers for potential support from the Asian Development Bank (ADB);
(iv) review and synthesize the status of ADB support for ecosystems service assessments, PES, and REDD+, including lessons learned;
(v) liaise with ADB regional departments on entry points for the TA and potential support for ongoing and planned projects, following established criteria for the selection of pilot projects;
(vi) support ADB regional departments and DMCs in designing and implementing pilot assessments of ecosystem services;
(vii) support ADB regional departments and DMCs in identifying and developing opportunities to integrate conservation finance opportunities including PES and REDD+ into targeted national policies or subnational planning processes and pilot projects;
(viii) lead analytical studies to determine the economic value of ecosystem services as part of pilot projects;
(ix) lead national-level knowledge-sharing and capacity-building activities linked to pilot projects; and
(x) coordinate and provide major inputs to the final project knowledge products, including a guidance note on the integration of ecosystem service assessment with project-level design and economic analysis.

2. **Regional project coordinator and capacity-building expert (national, 20 person-months).** The consultant will have at least 10 years of experience in project administration, financial administration, and budgeting, and at least a bachelor's degree in a related discipline. Experience with ADB is highly desirable. The consultant should come from the Philippines and will be responsible for the following tasks:

(i) support the TA and team leader in organizing and coordinating the implementation of the TA;
(ii) support the coordination and scheduling of inputs by short-term consultants for pilot project implementation;
(iii) develop project implementation schedules and apply adaptive management approaches to ensure smooth delivery of the TA outputs;

(iv) support the recruitment of short-term consultants;
(v) support financial administration of the TA;
(vi) coordinate and organize national and regional workshops and trainings, including preparation of invitations, financial arrangements, and logistics;
(vii) support the team leader in organizing and facilitating capacity-building activities;
(viii) support the preparation of project knowledge products and information dissemination, including background research and synthesis, and editing of information;
(ix) coordinate arrangements for the publication of key knowledge products, including desktop publishing, editing, printing, and dissemination; and
(x) carry out any other tasks needed to ensure the smooth implementation of the TA.

B. Unallocated Positions—International

3. International consultants (6 person-months) will be hired on a flexible basis through independent recruitment to support the implementation of pilot projects under outputs 2 and 3. Outline terms of reference for expected specialist positions, provided below, will be further defined during project implementation on the basis of the selection of specific subprojects.

4. **Ecological assessment specialist.** The specialist will be responsible for advising on the spatial and temporal scale for the ecosystem service assessment linked to the project or policy and planning context; and for leading the assessment of the stocks and flows of ecosystem services within the defined pilot project context. This work includes the development of project-specific methods tailored to specific needs, time, and data constraints; the provision of guidance to national consultants on data collection and assessment; and overall responsibility for final analysis of services. As appropriate to pilot projects, the ecosystem service assessment will include (i) the extent and distribution of species and ecosystems, biomass, and net primary production; (ii) measures of ecosystem condition and pressures; and (iii) evaluation of provisioning, regulatory, and cultural service values. The specialist will have at least 10 years of experience, including previous experience with ecosystem service assessment and at least a master's degree or the equivalent in ecology or biology. Experience in Asia and the Pacific is highly desirable.

5. **Sustainable conservation and carbon finance specialist.** The consultant will be responsible for leading the assessment of conservation finance and carbon finance opportunities (PES/REDD+) and other green growth or sustainable business opportunities relevant to the context of the defined pilot project. The specialist will evaluate options in consultation with project partners and develop business plans and strategies. Where relevant, he or she will conduct outreach to the private sector. The specialist will have at least 10 years of experience, including previous experience with conservation finance and at least a master's degree or the equivalent in economics, finance, or related disciples. Experience in Asia and the Pacific is highly desirable.

6. **Policy, institutional, and capacity-building specialist.** The consultant will be responsible for leading institutional-strengthening and capacity-building activities under the project, including pilot activities under outputs 2 and 3. This work may include (i) analysis of legal, policy, and institutional, capacities and gaps; (ii) analysis of national or sector policies and plans relevant to the project context; (iii) identification of entry points for mainstreaming ecosystem service assessment and valuation; and (iv) design and implementation of institutional and capacity-building interventions. The specialist will have at least 10 years of

experience relevant to the terms of reference and a master's degree or equivalent. Experience in Asia and the Pacific is highly desirable.

7. **Ecosystem mapping and geographic information systems specialist.** The consultant will be responsible for guiding the collection, spatial mapping, and analysis of ecosystem service data under outputs 2 and 3. This may include (i) strategic advice on data requirements and sources; (ii) design of suitable geographic information systems (GIS) and data systems for the mapping and valuation of ecosystem services; (iii) spatial interpretation and analytical support for pilot projects; (iv) guidance to national GIS consultants; and (v) final preparation and presentation of maps for project studies, reports, and publications. The specialist will have at least 10 years of experience in GIS related to biodiversity and ecosystem assessment and at least a master's degree or equivalent in a related disciple. Experience in Asia and the Pacific is highly desirable.

C. Unallocated Positions—National

8. National consultants (10 person-months) will be hired on a flexible basis through independent recruitment to support the implementation of pilot projects under outputs 2 and 3. The expected expertise is outlined below. The list of consultant positions, expertise, tasks, and level of inputs required will be updated and finalized after the final selection of pilot projects.

9. **Biodiversity expert.** The consultant will work under the guidance of the team leader and the international ecological assessment specialist. He or she will be responsible for (i) collecting and assessing data required for ecosystem service assessments; (ii) supporting consultations with participating stakeholders on ecosystem stocks, flows, and benefit streams; (iii) reviewing documents for targeted policies, plans, and projects to identify potential impacts and benefits for ecosystem stocks and flows; (iv) supporting training and capacity-building activities; (v) and contributing to project reports as needed. The biodiversity expert will have at least 10 years of experience and a master's degree or equivalent in biology, ecology, or similar discipline.

10. **Ecological economist.** The consultant will work under the guidance of the team leader and the international sustainable conservation and carbon finance specialist. He or she will be responsible for (i) undertaking necessary analytical studies for the estimation of ecosystem service values for the targeted policy, planning, or project context; (ii) supporting consultations with participating stakeholders on ecosystem service valuation methods, analytical studies, and results; (iii) reviewing documents for targeted policies, plans, and projects to support the integration of valuation data within the design or update of the targeted policy, planning, or project contexts; (iv) identifying opportunities for conservation finance and carbon finance opportunities (PES/REDD+) and other green growth or sustainable business opportunities, and preparing concept notes for further development of identified opportunities; (v) supporting training and capacity-building activities; (vi) and contributing to project reports as needed. The ecological economist will have at least 10 years of experience and a master's degree or equivalent in environmental economics or similar discipline.

11. **Hydrologist.** The consultant will work under the guidance of the team leader and will be responsible for gathering hydrological data related to target ecosystems and landscapes, and for analyzing hydrological data as a basis for project-level economic analysis. The hydrologist will have at least 8 years of experience in hydrology, including assessment of watershed dynamics or a similar discipline, and a master's degree or equivalent.

12. **GIS expert.** The consultant will work under the guidance of the team leader and the international ecosystem mapping and GIS specialist. He or she will be responsible for (i) collection of local information and spatial data on biodiversity and ecosystems; (ii) establishment of GIS data sets for pilot projects; and (iii) mapping and interpretation of data. The GIS expert will have at least 8 years of experience and a master's degree or equivalent in GIS or a similar discipline, as well as experience in the mapping and assessment of biodiversity and ecosystems.