

COMPONENT 1

POLICIES AND MARKET INCENTIVES IN SUPPORT OF NATURAL CAPITAL



COMPONENT 1

POLICIES AND MARKET INCENTIVES IN SUPPORT OF NATURAL CAPITAL

OUTPUT 1.2.4

UPDATE THE NATIONAL BUDGET POLICY

OUTPUT 1.2.7

LINK NC INFORMATION FOR TOURISM AND WATER RESOURCES WITH THE DEVELOPMENT OF MTEFS AND THE 13TH NESDP

OUTPUT 1.2.8

USE NC INFORMATION FOR TOURISM AND WATER RESOURCES TO LOBBY FOR AN INCREASE IN STATE BUDGET ALLOCATIONS FOR CONSERVATION OF NC

Author

Adis Israngkura, Thailand Development Research Institute (TDRI)

Peerawat Suriyaburaphakul, Thailand Development Research Institute (TDRI)

Acknowledgment

The research team wishes to express its profound gratitude to the distinguished government agencies and experts who generously provided their time, knowledge, and perspectives through interviews and focus group discussions. Their invaluable contributions have been instrumental in advancing the integration of natural capital accounts on tourism and water resources into Krabi Province's development planning and Medium-Term Expenditure Framework (MTEF), as well as in supporting the formulation of proposals for enhanced budget allocations toward the conservation of upstream, coastal, and nearshore marine ecosystems.

We extend our sincere appreciation to the following institutions for their participation in the **Expert Focus Group Meeting on 31 March 2026**:

- Office of the Permanent Secretary, Ministry of Tourism and Sports
- National Statistical Office (NSO)
- Fiscal Policy Office, Ministry of Finance (FPO)
- Office of Natural Resources and Environmental Policy and Planning (ONEP)
- Office of the National Economic and Social Development Council (NESDC)
- Hydro-Informatics Institute
- Office of the National Water Resources
- Department of Water Resources
- Budget Bureau

We also gratefully acknowledge the kind cooperation of agencies that provided **in-depth interviews**, which yielded critical insights for this study:

- National Statistical Office (NSO), 7 April 2026
- Budget Bureau, 29 April 2026
- Office of the National Economic and Social Development Council (NESDC), 5 May 2026
- Office of the Permanent Secretary, Ministry of Tourism and Sports, 8 May 2026
- Office of the National Water Resources (ONWR), 19 May 2026

The generosity and commitment of these agencies have significantly enriched the research process, strengthened the integration of natural capital accounting into provincial and national planning frameworks, and provided a foundation for evidence-based policy development.

Contents

	page
Acknowledgment.....	i
Contents	ii
Executive Summary	1
1. Introduction.....	1
2. Implementation of Activities.....	1
2.1 Expert Focus Group Meeting on 31 March 2026	2
2.2 In-depth Interview with the National Statistical Office on 7 April 2026	8
2.3 In-depth Interview with the Budget Bureau on 29 April 2026.....	9
2.4 In-depth Interview with the Office of the National Economic and Social Development Council (NESDC) on 5 May 2026	11
2.5 In-depth Interview with the Office of the Permanent Secretary, Ministry of Tourism and Sports on 8 May 2026.	13
2.6 In-depth Interview with the Office of the National Water Resources (ONWR) on 19 May 2026	14
3. Policy recommendations.....	16
3.1 Reforming the National Budget System to Support the Development of Natural Capital Accounts and National Satellite Accounts.....	16
3.2 Integrating Natural Capital Account Data into the Budget Allocation Process under the MTEF and the 14th National Economic and Social Development Plan	18
3.3 Applying Natural Capital Account Data to Enhance the Efficiency of Budget Allocation for Tourism and Water Resource Management.....	19

Figures

	page
Figure 1 Expert Focus Group Meeting: Office of the Permanent Secretary, Ministry of Tourism and Sports	3
Figure 2 Expert Focus Group Meeting: National Statistical Office (NSO)	4
Figure 3 Expert Focus Group Meeting: Fiscal Policy Office (FPO)	5
Figure 4 Expert Focus Group Meeting: Office of Natural Resources and Environmental Policy and Planning (ONEP)	6
Figure 5 Expert Focus Group Meeting: Office of the National Economic and Social Development Council (NESDC).....	7
Figure 6 In-depth Interview with the National Statistical Office on 7 April 2026.....	9
Figure 7 In-depth Interview with the Budget Bureau on 29 April 2026	11
Figure 8 In-depth Interview with the Office of the National Economic and Social Development Council (NESDC) on 5 May 2026	12
Figure 9 In-depth Interview with the Office of the Permanent Secretary, Ministry of Tourism and Sports on 8 May 2026.....	14
Figure 10 In-depth Interview with the Office of the National Water Resources (ONWR) on 19 May 2026	15

Executive Summary

Natural resources and ecosystems constitute fundamental capital for Thailand's economic and social development, particularly in tourism and water resource sectors that underpin income generation, employment, and long-term stability. Yet, increasing pressures from climate change, urban expansion, and resource demand have led to degradation of natural assets, threatening their capacity to sustain future growth. To address these challenges, the establishment of Natural Capital Accounting (NCA) under the United Nations' System of Environmental-Economic Accounting (SEEA) framework provides a vital instrument for linking ecosystem services with economic and social data, thereby strengthening evidence-based policy formulation and resource allocation.

In Thailand, the integration of NCA into national planning mechanisms such as the Medium-Term Expenditure Framework (MTEF) and the 14th National Economic and Social Development Plan is essential to ensure that development strategies are aligned with the capacities and constraints of natural capital. This study implemented a series of expert consultations, focus group meetings, and in-depth interviews with key agencies—including the Ministry of Tourism and Sports, the National Statistical Office, the Fiscal Policy Office, the Office of Natural Resources and Environmental Policy and Planning, the Office of the National Economic and Social Development Council, and the Bureau of the Budget—to examine pathways for mainstreaming NCA data into fiscal and policy processes.

The findings highlight several critical insights. First, agencies emphasized the importance of updating and disaggregating datasets, ensuring consistency with national statistical standards, and avoiding risks of double counting. Second, the integration of NCA into budget allocation frameworks was seen as a means to improve equity and efficiency, particularly for tourism-dependent provinces such as Krabi, where infrastructure burdens exceed those reflected by resident populations. Third, innovative mechanisms such as ecological fiscal transfers and the incorporation of opportunity cost concepts were identified as promising approaches to strengthen conservation incentives and enhance transparency in resource management. Finally, the study underscored the need for inter-agency collaboration, methodological consistency, and alignment with national accounts to ensure credibility and policy relevance.

Overall, the research demonstrates that systematic integration of natural capital accounts into Thailand's fiscal and development planning can enhance the precision of budget allocation, safeguard ecosystem sustainability, and promote balanced growth. By embedding SEEA-based ecosystem accounts into the MTEF and the 14th National Plan, Thailand can advance toward a development trajectory that harmonizes economic expansion with natural resource conservation and long-term social well-being.

1. Introduction

Natural resources and ecosystems constitute fundamental capital for the economic and social development of the nation, particularly in the tourism and water resource sectors, which play a crucial role in generating income, employment, and long-term economic and social stability. However, increasing utilization of natural resources, coupled with challenges arising from climate change, urban expansion, and heightened resource demand, has led to degradation of natural assets and ecosystem services, thereby posing risks to their capacity to support future development.

The establishment of Natural Capital Accounting (NCA) under the United Nations' System of Environmental-Economic Accounting (SEEA) framework is a vital instrument for linking information on natural resources and ecosystem services with economic and social data. This integration highlights the role and value of natural capital as assets that underpin sustainable development, while also providing an empirical evidence base for policy formulation, development planning, and more efficient allocation of public resources.

In the context of Thailand, enhancing the application of NCA data for tangible policy use requires systematic integration into national planning and resource allocation mechanisms. In particular, the Medium-Term Expenditure Framework (MTEF) serves as a critical tool for aligning government expenditure with medium-term development objectives, while the 14th National Economic and Social Development Plan provides the overarching policy framework for driving national development in the coming period.

Integrating natural capital accounts for tourism and water resources into the MTEF and the 14th Plan will ensure that national goals, strategies, and resource allocations are consistent with the capacities and constraints of natural capital. This approach enables comprehensive reflection of both the costs and benefits of resource utilization, promotes budget allocations that safeguard resource sustainability, and enhances the efficiency of public investment. Ultimately, it fosters a balance between economic growth, natural resource conservation, and improvements in the quality of life of the population.

Accordingly, activities have been undertaken to examine mechanisms and pathways for linking natural capital accounts in tourism and water resources to the processes of MTEF preparation and the formulation of the 14th National Economic and Social Development Plan. These activities included consultations and in-depth interviews with relevant agencies to gather perspectives and recommendations for developing systematic and effective approaches to utilizing NCA data in national policy and planning. This will provide a critical foundation for steering Thailand's economic and social development toward long-term sustainability.

2. Implementation of Activities

To advance the integration of natural capital accounting data on tourism and water resources into the formulation of the Medium-Term Expenditure Framework (MTEF) and the 14th National Economic and Social Development Plan, the research team implemented six key activities designed to collect expert opinions, recommendations, and practical approaches for mainstreaming natural capital accounting into national policy and planning processes. The details are as follows:

2.1 Expert Focus Group Meeting on 31 March 2026

An expert focus group meeting was convened to gather insights on strategies for linking natural capital accounting data on tourism and water resources with the preparation of the MTEF and the 14th National Economic and Social Development Plan. This meeting was held at the Pullman King Power Hotel, Bangkok (Rangnam).

The meeting commenced with a presentation on natural capital accounting for the tourism sector and water resources in Krabi Province, developed in accordance with the SEEA EA (System of Environmental-Economic Accounting – Ecosystem Accounting). The presentation was delivered by Associate Professor Dr. Adis Israngkura, the project lead. This was followed by a presentation on the Water Resources Satellite Account (WRSa) by Dr. Winai Chaowiwat, representing the Hydro-Informatics Institute. Subsequently, group discussions were conducted to gather additional input and data. The key points can be summarized as follows:

Office of the Permanent Secretary, Ministry of Tourism and Sports

The Office expressed its appreciation to the research team for presenting a systematic and well-structured overview of natural capital accounting and its linkages with the tourism sector. In particular, the selection of the case study area was commended for aligning well with the research questions, enabling a clearer and more accessible assessment of the value of natural resources.

Regarding the Tourism Satellite Account (TSA) data used in the study, the Office noted that more recent data—up to 2025—are now available and recommended that the research team update the dataset accordingly. It also suggested further consideration of the use of TSA data at the regional or provincial level to ensure that the findings more accurately reflect spatial contexts. For example, in estimating the value of rail transport at approximately THB 15 million, the figures may not be consistent with the reality of Krabi Province, which does not have a rail transport system. This could lead to analytical results that do not fully reflect local conditions. The Office further recommended increasing the collection of primary data, as the current analysis relies largely on secondary data. Additional field data would enhance the robustness and credibility of the study.

The Office also observed that the definition of tourism applied in the study differs from the operational definition used by the Ministry. However, this discrepancy stems from data limitations in Thailand, which do not yet allow for full adherence to the Ministry's definition. For instance, in the case of domestic tourism in Krabi Province, the Ministry defines this as residents of Krabi traveling within the province. In practice, however, such disaggregated data are not available. As a result, the research team has had to rely on data representing Thai tourists traveling to Krabi instead.

Finally, with regard to the findings on natural capital asset accounts for terrestrial ecosystems, the Office agreed with the conclusion that the value of natural capital declined over the study period. This trend was considered consistent with the tourism dynamics of the area, which experienced high levels of activity in 2019, followed by a significant downturn due to the COVID-19 pandemic.

Figure 1 Expert Focus Group Meeting: Office of the Permanent Secretary, Ministry of Tourism and Sports



Source: Photograph by the author, 2026

National Statistical Office (NSO)

The NSO expressed its appreciation to the research team for initiating the application of the System of Environmental-Economic Accounting (SEEA) framework in the study. This approach was recognized as instrumental in systematically capturing the existence, utilization, and valuation of natural resources.

Regarding the Water Resources Satellite Account (WRSA), the NSO noted that the study design allows for a clear disaggregation of data into supply and use components, in line with analytical needs. The accounting process can also be aligned with the fiscal year framework, as the underlying data are available on a monthly basis. In practice, water accounts are often compiled in reference to the hydrological cycle used in water allocation planning by the Royal Irrigation Department, which typically begins in November each year.

The NSO further shared its prior experience in developing tourism accounts under the TSA-SEEA framework, following the guidelines of the United Nations World Tourism Organization (UNWTO), in collaboration with the National Science and Technology Development Agency (NSTDA) for the Andaman Tourism Development Cluster prior to the COVID-19 pandemic. In addition, the NSO has collaborated with the Department of Tourism, NSTDA, and experts from ESCAP to develop natural capital accounts for tourism in the form of Ocean Accounts for the same cluster, also under the SEEA framework. These studies examined the types of resources utilized by tourism activities and developed related satellite accounts, including water, energy, waste, and greenhouse gas accounts, supported by five core accounts under the SEEA framework.

On data usage, the NSO emphasized the importance of ensuring consistency in data sources, definitions, and temporal coverage to enable accurate linkage with Gross Domestic Product (GDP) calculations. For example, the TSA compiled by the NSO is fully aligned with the national TSA framework. The NSO also suggested that the research team may consider constructing accounts at a “cluster” or multi-province level for areas with similar characteristics. Defining the unit of analysis at an excessively granular level may limit the applicability of the results for policy formulation and management purposes.

Figure 2 Expert Focus Group Meeting: National Statistical Office (NSO)



Source: Photograph by the author, 2026

Fiscal Policy Office (FPO)

Krabi Province generates significant economic value from the tourism sector, which has led to increasing pressure on natural capital and the degradation of local resources. However, during the COVID-19 pandemic, tax revenues declined markedly. This reflects an inherent trade-off between the utilization of natural resources for economic gains and the long-term sustainability of the resource base. From the agency's perspective, natural capital accounting should be integrated into the project appraisal and approval process—particularly for tourism-related infrastructure projects in provinces that are highly dependent on tourism revenues, such as Krabi, Phuket, and Phang Nga. In this regard, data from natural capital accounts should be used in conjunction with Gross Provincial Product (GPP) to support more comprehensive and balanced policy decision-making.

The FPO also noted that it has conducted studies on the valuation of natural capital loss, which could be highly relevant to this line of research. In particular, the use of satellite imagery was highlighted as a valuable tool for analyzing economic activities linked to changes in natural resources. For example, nighttime light data can be used to identify areas with high light intensity, which may serve as a proxy for concentrated economic activity during nighttime—particularly in tourism areas. Similarly, data on nitrogen emissions from heavy industrial activities can indicate the spatial concentration of industrial operations. These approaches can be further extended to other dimensions, such as changes in natural water bodies, to better capture spatial dynamics.

Regarding budget allocation, current criteria are largely based on population size at the provincial level. This approach may not be suitable for tourism-dependent provinces such as Krabi, which, despite having relatively small resident populations, experience high volumes of tourists. As a result, the burden on infrastructure and public services is significantly higher than what is reflected by official population figures. The existing allocation mechanism may therefore not adequately capture the true fiscal and service demands of such

areas. The FPO suggested that alternative data and emerging technologies should be incorporated to improve the allocation framework. While some alternative data have begun to be utilized, tourist numbers are not yet included in the calculation, partly due to the view that tourists are not direct taxpayers. However, tourists do contribute to tax revenues indirectly through consumption of goods and services. Therefore, the budget allocation criteria should be revisited to better reflect the economic and social burdens faced by tourism-intensive provinces.

Figure 3 Expert Focus Group Meeting: Fiscal Policy Office (FPO)



Source: Photograph by the author, 2026

Office of Natural Resources and Environmental Policy and Planning (ONEP)

The Office of Natural Resources and Environmental Policy and Planning highlighted an approach implemented in Malaysia known as the Ecological Fiscal Transfer (EFT) mechanism. This approach allocates higher budgetary resources to states or areas that maintain a high proportion of forest cover, using forest area as a key indicator in determining budget allocation for natural resource conservation.

From the agency's perspective, the System of Environmental-Economic Accounting (SEEA) framework—given its emphasis on the valuation of natural capital—could be adapted to support the design of such budget allocation mechanisms. This approach would not only enable budget allocation to better reflect the value of natural resources, but also serve as an incentive for local areas to prioritize the conservation and sustainable management of forest resources on a continuous basis.

Figure 4 Expert Focus Group Meeting: Office of Natural Resources and Environmental Policy and Planning (ONEP)



Source: Photograph by the author, 2026

Office of the National Economic and Social Development Council (NESDC)

The NESDC noted that the compilation of accounts under the System of National Accounts (SNA) framework must take into account issues of hidden populations and labor mobility. At present, three key agencies are involved in producing such data: the NESDC, the Bank of Thailand, and the National Statistical Office. Given that population mobility cannot be accurately captured using household registration data alone, estimation techniques are required. In this regard, tourists exhibit similar characteristics, and their measurement also requires supplementary tools and data. For example, tourism surveys conducted by the Ministry of Tourism and Sports—such as those capturing travel purposes and motivations (e.g., attraction to the unique qualities of destinations)—can help improve data accuracy.

In the context of the System of Environmental-Economic Accounting (SEEA), the NESDC emphasized the need to consider both economic and environmental dimensions in tandem. On the economic side, attention should be given to income generation and value creation, while on the environmental side, the costs of conservation, restoration, and resource management must be incorporated. A comprehensive assessment therefore requires accounting for all relevant environmental factors. The inclusion of forest accounts was also recommended, as it would enhance the completeness of SEEA-based analyses.

The NESDC further suggested that reporting should clearly specify the components of data, particularly distinguishing cost elements and providing greater clarity on the sources of resources—for example, identifying the originating river basins of water resources. This would improve transparency and facilitate more effective

policy use. In addition, the application of opportunity cost concepts was recommended to ensure a more comprehensive evaluation of costs and returns.

From a policy perspective, the NESDC advised that, given its mandate to adopt a national-level perspective, recommendations should avoid prescriptive language such as mandating the integration of SEEA principles directly into provincial plans. Instead, more appropriate phrasing would be to encourage the promotion or adoption of SEEA principles as guiding practices within the framework of the 14th National Economic and Social Development Plan.

Regarding biodiversity, the NESDC observed that while domestic funding for biodiversity conservation has declined, international funding has increased. This suggests the need to explore alternative financing mechanisms linked to conservation efforts, such as sustainability funds or instruments including green bonds and blue bonds, which are specifically designed to support conservation-related activities. The NESDC considered this to be an area that could be advanced and incorporated into the 14th National Economic and Social Development Plan.

Finally, the NESDC noted that SEEA-related initiatives in Thailand have progressed steadily since 2012, with several agencies already undertaking relevant activities. For instance, the agricultural sector has developed concepts such as Green GDP, while in the services sector, the Ministry of Tourism and Sports is currently the only agency implementing such approaches in a concrete manner. Other sectors have yet to develop comparable accounting systems. The NESDC also cautioned that certain activities may pose risks of double counting, and emphasized the importance of carefully verifying data to avoid duplication before using the results for reporting or policy reference.

Figure 5 Expert Focus Group Meeting: Office of the National Economic and Social Development Council (NESDC)



Source: Photograph by the author, 2026

2.2 In-depth Interview with the National Statistical Office on 7 April 2026

An in-depth interview was conducted with the National Statistical Office to gather opinions and recommendations on approaches for compiling natural capital accounting data related to tourism and water resources.

The meeting commenced with a presentation on natural capital accounting for the tourism sector and water resources in Krabi Province, developed in accordance with the SEEA EA (System of Environmental-Economic Accounting – Ecosystem Accounting). The presentation was delivered by Associate Professor Dr. Adis Israngkura, the project lead. This was followed by a consultation session to gather feedback on the Water Resources Satellite Account (WRSA) by representatives from the National Statistical Office (NSO). The key points are summarized as follows:

1. Classification of “Other” Water Resources

The category of “other” water resources should be further disaggregated into more clearly defined subcategories. The current aggregation contains a relatively large volume of water resources, and more detailed classification would improve the accuracy and interpretability of the data.

2. Consistency of Internal Water Flows

Flows between inland water resources—representing transfers from one water body to another—should exhibit balanced inflows and outflows. However, the current accounts display inconsistencies, indicating an imbalance in recorded figures.

3. Recording of Precipitation Inputs

Increases in water resources from precipitation are currently recorded as equal additions to both rivers/streams and groundwater, which does not reflect hydrological reality. Moreover, precipitation should not be directly attributed to groundwater, as infiltration through soil layers is required before recharge occurs, typically over an extended period.

4. Structure of Water Use Tables

In line with the SEEA-Water framework, water use tables should be separated into (i) Supply table, indicating sources of water, and (ii) Demand table, reflecting water use across different purposes. This separation would enhance analytical clarity.

5. Treatment of Missing Data in Accounting Tables

Cells with unavailable data should be recorded as n/a rather than zero, as the two carry distinct meanings in interpretation. For example, cases such as inflows from external territories or newly discovered aquifers should not be represented as zero values.

In addition, the NSO has prior experience in developing National Ocean Accounts, which are classified as satellite accounts. This experience has played an important role in supporting relevant agencies in establishing systematic and comprehensive approaches to national accounting. Currently, the NSO seeks to initiate a

collaborative framework with relevant agencies to promote data integration across multiple dimensions of national accounts. For instance, the NSO has presented the National Ocean Accounts framework to the Office of National Water Resources (ONWR) to enhance clarity and methodological consistency, as well as to support inter-agency data linkage.

Figure 6 In-depth Interview with the National Statistical Office on 7 April 2026



Source: Photograph by the author, 2026

2.3 In-depth Interview with the Budget Bureau on 29 April 2026

An in-depth interview was conducted with the Bureau of the Budget to gather opinions and recommendations on approaches for integrating natural capital accounting (NCA) data on tourism and water resources into the Medium-Term Expenditure Framework (MTEF). The meeting began with a presentation on NCA for tourism and water resources in Krabi Province, developed in accordance with the SEEA-EA (System of Environmental-Economic Accounting – Ecosystem Accounting), delivered by Associate Professor Dr. Adis Israngkura, the project lead.

The Bureau emphasized that the data generated under the study are highly valuable for informing budget allocation decisions. Expansion of such studies to other geographical areas would further strengthen the evidence base for area-based budgeting. Since the Bureau must review budget requests from all provinces, empirical data that reflect local problems, potentials, and impacts can improve precision in allocation and ensure responsiveness to policy priorities.

Environmental dimensions were highlighted as critical considerations. The Bureau noted that environmental data can support budget allocation in ways that align with agency mandates. However, allocation decisions cannot rely solely on environmental factors; they must also consider project readiness, urgency, cost-effectiveness, agency capacity to mobilize revenue, and expected benefits. Importantly, the Bureau stressed that data carry greater weight when missions or projects are formally incorporated into the official plans of responsible agencies. Without such formal linkage, supporting data alone may not suffice to justify allocation.

At the local level, certain projects may be initiated directly by local administrative organizations, provided they demonstrate readiness in terms of location, design, and tangible benefits. Risks of duplication are mitigated

through pre-allocation verification and committee-level forums that review implementation plans before budget requests are submitted.

In terms of allocation criteria, project readiness remains paramount, particularly for investment or construction projects. Agencies must demonstrate land availability, clarity of design, intended use, and expected outcomes. Budget allocation must also reflect equity and appropriateness, balancing fairness with the specific capacities and constraints of each locality.

In addition, the Bureau emphasized that budget allocation should also take into account population density and the actual number of tourists in each area, together with the essential infrastructure required to support them, such as wastewater treatment systems, solid waste management facilities, and adequate water resources. This consideration ensures that provinces with high tourist inflows or significant “floating populations” receive budgetary support commensurate with the pressures placed on their infrastructure and public services.

For agencies with revenue-generating capacity, co-financing approaches may be adopted to enhance efficiency. Spatial and contextual data, such as drought maps and severity indicators, are increasingly used to guide targeted allocation under fiscal constraints. This reflects the Bureau’s shift toward demand-driven budgeting supported by data analytics, particularly for fiscal year 2027.

The Bureau further noted that NCA data can concretely demonstrate local economic activities and potentials, such as niche tourism in Krabi (e.g., diving, birdwatching), thereby helping agencies like the Ministry of Tourism and Sports or the Tourism Authority of Thailand to design support measures aligned with local strengths. Budget requests should remain necessary, focused, and problem-oriented, avoiding excessive demands beyond the fiscal framework.

The budget process involves agency submissions, Bureau review, Cabinet approval, and parliamentary scrutiny. Throughout, the Bureau acts as a technical advisor, ensuring allocations are consistent with fiscal ceilings and national priorities. Monitoring and evaluation are integral, requiring agencies to prepare MTEFs at the output and project levels. Transparency is also emphasized, with public disclosure of budget information to enhance accountability and evidence-based policy analysis.

In conclusion, the Bureau underscored that spatial and empirical data, including NCA, can significantly improve budget allocation. However, for such data to have concrete impact, they must be formally linked to agency mandates and plans, supported by evidence of necessity, cost-effectiveness, and expected outcomes, and accompanied by systems for monitoring, evaluation, and transparency. If these conditions are met, budget allocation can become more precise, equitable, efficient, and responsive to local needs, thereby strengthening the integration of natural capital into national fiscal policy.

Figure 7 In-depth Interview with the Budget Bureau on 29 April 2026



Source: Photograph by the author, 2026

2.4 In-depth Interview with the Office of the National Economic and Social Development Council (NESDC) on 5 May 2026

An in-depth interview was conducted with the Office of the National Economic and Social Development Council (NESDC) to obtain opinions and recommendations on approaches for integrating natural capital accounting data on tourism and water resources into the preparation of the 14th National Economic and Social Development Plan.

The meeting commenced with a presentation on natural capital accounting for the tourism sector and water resources in Krabi Province, developed in accordance with the SEEA EA (System of Environmental-Economic Accounting – Ecosystem Accounting). The presentation was delivered by Associate Professor Dr. Adis Israngkura, the project manager. The key points are summarized as follows:

The NESDC team explains that NESDC looks at the big picture (national level plans and policies) and is responsible for monitoring national indicators such as GDP. There are many groups responsible for ecosystem accounts, including the department of National Accounts that can provide relevant data and/or recommendations. For the context of SEEA, NESDC advises that the data (used in the 5 accounts) be consolidated with other government agencies to certify the credibility of the data, otherwise the data can be deemed unreliable. It was mentioned that one of the pain points for developing statistical data (such as this project) is whether the data was collected using the National Statistical Office's data collection standards. If the data collection method is not aligned with the NSO's standards, its' credibility may be disputed.

There was a discussion on the challenges of double counting of assets and not seeing the clear link between the ecosystem accounts and the economy. Due to limited experts in ecosystem accounting, some assets may be double counted (different methodologies). Since environmental (ecosystem) data was recently collected, there was a gap in environmental data to construct complete accounts. However, to consider the project's SEEA accounts into the planning of the 14th NESDP, the links between ecosystem accounting and the economy should

be clear (i.e. the opportunity costs for investing in ecosystem conservation and/or restoration), along with consolidation of the collected data. And since the SEEA is done on a provincial level, the boundaries of the Krabi's Gross Provincial Product (GPP) is unclear. The NESDC team explained that NESDC's GPP is used as a tool to quantify value from provincial assets. GPP of all provinces are then used for national planning.

The TDRI team mentioned that Krabi Province faces issues of water shortages that impact tourist businesses, to the extent that hotels and resorts must refund their guests because they do not have sufficient water. The province also has a wastewater management issue that is affecting its valuable ecosystems (as demonstrated in the Ecosystem Services Flow Accounts). Data from Krabi's SEEA could be used as a cost-benefit analysis to assess the impacts of land use. The developed SEEA is aimed to support sectorial policy, specifically for the tourism sector and the water resources sector.

On the topic of requesting budget allocations, it was advised that NESDC is responsible for the National Development Plan (that is the master plan for Provincial Development Plans), which is not the same as Sub-district Administrative Organization Plans (under the jurisdiction of the Ministry of Interior). Before requesting allocations, it must be defined which plan the project or activity will be included in, to determine which budget group to make the request. TDRI shared that the Budget Bureau also advised this point.

In terms of recommendations for the SEEA, the NESDC team suggests changing the units (of land) from hectare to "rai", to be more contextually appropriate for Thailand.

Figure 8 In-depth Interview with the Office of the National Economic and Social Development Council (NESDC) on 5 May 2026



Source: Photograph by the author, 2026

2.5 In-depth Interview with the Office of the Permanent Secretary, Ministry of Tourism and Sports on 8 May 2026.

An in-depth interview was conducted with the Office of the Permanent Secretary, Ministry of Tourism and Sports (MOTS) to gather opinions and recommendations on approaches for utilizing natural capital accounting (NCA) data on tourism and water resources to support the formulation of tourism-related policies and measures. The meeting began with a presentation on NCA for the tourism sector and water resources in Krabi Province, developed in accordance with the SEEA-EA (System of Environmental-Economic Accounting – Ecosystem Accounting), delivered by Associate Professor Dr. Adis Israngkura, the project lead.

The MOTS representatives explained that they are planning to introduce “Measure Sustainable Tourism” as an indicator to assess the sustainability of tourism activities, and they believe that NCA information can be highly useful for this initiative. Dr. Adis presented examples of project activities, including a youth camp initiative to train local youth in Krabi as tour guides for migratory bird watching in Khlong Prasong, aimed at instilling environmental awareness and appreciation of ecosystems. Collaboration with “GreenFins” on sustainable diving practices was also highlighted as a model for promoting environmentally friendly tourism.

The MOTS team referred to the “Thailand Tourism Standard,” overseen by the Department of Tourism, which certifies eco-friendly tourism goods and services to ensure quality, safety, hygiene, fairness, and uniqueness. They advised the project team to consult the Department of Tourism for further details, particularly regarding certification for the migratory bird watching activity. The TDRI team shared videos from the GreenFins initiative and the Jib Jib Youth Conservation Camp to illustrate ongoing efforts in sustainable tourism and youth engagement.

Challenges in Krabi were also discussed, including wastewater management in Ao Nang Subdistrict, where untreated wastewater from Klong Chak has flowed into Ao Nang Beach, negatively affecting tourist perceptions and diverting visitors to other beaches such as Nopparat Thara. NCA findings further revealed that while tourism-related businesses consume only 5–10 percent of the water supply, they are disproportionately impacted during droughts. Another issue raised was the improper handling of physical tickets by park officials, which compromises visitor counts and revenue accuracy. E-ticketing was proposed as a solution to enhance transparency and track tourism-related data, such as visitor origins and attraction preferences. However, concerns were noted regarding compliance with personal data protection laws (PDPA).

From these discussions, several policy directions emerged. MOTS emphasized the importance of allocating budgets for investment and maintenance of tourism infrastructure, including the regulation of island visits similar to the Maya Bay case, and investment in wastewater treatment and integrated solid waste management in collaboration with provinces, local administrative organizations, the Royal Irrigation Department, the Department of Water Resources, and the Pollution Control Department. Seasonal and periodic closure of islands was recommended to allow ecosystems to recover naturally, while maritime zoning was proposed to separate local and commercial fisheries from conservation areas such as coral reefs, seagrass beds, and dugong habitats. Environmentally friendly diving practices under the GreenFins initiative were highlighted as a model for training

and certification, supported by accredited organizations such as PADI and the Reef World Foundation in collaboration with the Department of Marine and Coastal Resources. Birdwatching and conservation initiatives were also emphasized, including capacity building for local personnel and the protection of natural habitats along migratory bird flyways, supported by activities such as the Jib Jib Youth Conservation Camp.

In conclusion, the Office of the Permanent Secretary underscored that integrating NCA data into tourism policy and planning provides a robust evidence base for promoting sustainable tourism. Linking NCA findings with national standards, infrastructure investment, ecosystem management, and community-based conservation initiatives will strengthen Thailand's capacity to balance tourism growth with environmental sustainability, ensuring that the tourism sector continues to generate economic benefits while safeguarding the natural capital upon which it depends.

Figure 9 In-depth Interview with the Office of the Permanent Secretary, Ministry of Tourism and Sports on 8 May 2026.



Source: Photograph by the author, 2026

2.6 In-depth Interview with the Office of the National Water Resources (ONWR) on 19 May 2026

An in-depth interview was conducted with the Office of the National Water Resources (ONWR) to gather opinions and recommendations on approaches for utilizing natural capital accounting data on tourism and water resources to support the formulation of water resource policies and measures.

The meeting commenced with a presentation on natural capital accounting for the tourism sector and water resources in Krabi Province, developed in accordance with the SEEA EA (System of Environmental-Economic Accounting – Ecosystem Accounting). The presentation was delivered by Ms. Prinyarat Leangcharoen and Mr. Peerawat Suriyaburaphakul. The key points are summarized as follows:

The study further indicates that the current water pricing structure does not adequately reflect the true costs and the opportunity costs associated with comprehensive water resource management. The ONWR representatives mentioned that It has therefore been recommended that the tariff structure be revised to incorporate the costs of wastewater management, thereby covering expenditures across the entire water

management chain—from water sourcing, production, and service expansion to wastewater treatment and disposal. Such an integrated pricing framework would promote more efficient utilization of water resources while ensuring that the actual costs of management are transparently reflected.

In order to enhance the policy relevance of data derived from natural capital accounts and water resource accounts, representatives from the Office of the National Water Resources (ONWR) emphasized that addressing seasonal water shortages should not rely solely on the development of new water sources, as this mandate is already undertaken by responsible agencies. Instead, greater emphasis should be placed on demand-side management, particularly through measures that support adaptation in the agricultural sector. This includes encouraging farmers to shift towards cultivating crops that require less water yet generate higher economic value, thereby reducing pressure on water resources and improving long-term efficiency in water use.

Furthermore, it was proposed that the compilation of water resource accounts should prioritize the river basin level rather than the provincial level. Provincial boundaries often fail to capture the dynamics of water inflows and outflows, whereas basin-level analysis allows for clearer assessment and linkage of water circulation across provinces and basins. This approach would enable water resource accounts to more accurately reflect the realities of water use and management.

At the national scale, a key recommendation is to integrate data from natural capital accounts and water resource accounts into the planning and budgeting processes. In particular, coordination with the Office of the National Economic and Social Development Council (NESDC) and the Bureau of the Budget is essential to ensure that such data serve as empirical evidence for project prioritization and budget allocation frameworks. This integration would align provincial development budgets with ecosystem conservation and restoration objectives, thereby contributing to balanced and sustainable environmental and economic development in the long term.

Figure 10 In-depth Interview with the Office of the National Water Resources (ONWR) on 19 May 2026



Source: Photograph by the author, 2026

3. Policy recommendations

Advancing Natural Capital Accounting (NCA) and National Satellite Accounts under the SEEA framework requires comprehensive reforms in Thailand's budgetary and planning systems. These reforms are necessary to ensure that empirical evidence on the linkages between ecosystems, resources, and economic activity can effectively inform fiscal decision-making. Strengthening standardized data collection, building technical expertise, and establishing inter-agency verification mechanisms are essential to enhance credibility and integration with GDP and GPP. At the same time, budget allocation criteria must evolve to reflect environmental costs, floating populations, and service burdens, while innovative fiscal instruments such as Ecological Fiscal Transfers and green or blue bonds can incentivize conservation. Embedding natural capital missions into institutional plans and linking them with the Medium-Term Expenditure Framework and the 14th National Economic and Social Development Plan will transform NCA data into a practical tool for equitable, transparent, and sustainable resource allocation. This can be summarized into policy recommendations corresponding to outputs 1.2.4, 1.2.7, and 1.2.8 as follows:

3.1 Reforming the National Budget System to Support the Development of Natural Capital Accounts and National Satellite Accounts

Advancing the development of Natural Capital Accounting (NCA) and National sectoral Satellite Accounts under the System of Environmental-Economic Accounting (SEEA) framework, so that they can be effectively utilized in national policy formulation and budget allocation, requires reforms to the budget system in tandem with the strengthening of government data systems. The compilation of such accounts is not merely an exercise in environmental database development, but rather the creation of empirical evidence capable of capturing the linkages between natural resources, ecosystems, and economic activity—linkages that are essential for informing development planning and national fiscal decision-making.

Strengthening the Data and Statistical Foundation

First, the Budget Bureau should allocate budgets on a sustained basis to strengthen data infrastructure, supporting the National Statistical Office (NSO), the Office of the National Economic and Social Development Council (NESDC), and relevant sectoral data-owning agencies in establishing standardized primary data collection systems nationwide. This would reduce reliance on secondary data and enhance the credibility of natural capital accounts. Data collection methodologies should be aligned with NSO standards to ensure that the resulting data can be accurately and reliably integrated into the national accounting system, Gross Domestic Product (GDP), and Gross Provincial Product (GPP) calculations, thereby securing broader acceptance in policy formulation.

Second, investment in human capital and technical expertise in ecosystem accounting should be increased. Thailand currently has a limited pool of specialists in this field, which has resulted in inconsistent valuation methodologies and a risk of double counting of natural resource values. Budgetary support should therefore be

directed toward curriculum development, training programs, research, and the establishment of inter-agency collaborative networks, in order to harmonize accounting standards across the country.

Third, an inter-agency data consolidation mechanism should be established, bringing together the NSO, NESDC, the Comptroller General's Department, and relevant data-owning agencies to jointly verify and certify data quality prior to its use in policy decision-making. This would enhance the reliability of natural capital account data, reduce data redundancy, and ensure full integration with the national accounting system.

Fourth, the development of technical standards appropriate to the Thai context should be supported, in order to foster a shared understanding of natural capital accounting while maintaining consistency with international standards—for example, converting land area units from hectares to "rai," the standard unit of measurement in Thailand, to improve accessibility and interpretability for data-owning agencies and interested members of the public. In addition, the development of natural resource accounts in sectors where data remain incomplete should be accelerated, so as to achieve comprehensive coverage of all natural capital components. This would ensure that accounts compiled under the SEEA framework are complete and can be effectively applied to development planning in a manner consistent with the national context.

Reforming Budget Allocation Criteria and Fiscal Instruments

With respect to the budget system, allocation criteria should be revised to more accurately reflect environmental costs and the true burden of public service provision. Rather than relying solely on registered population figures, allocation criteria should also account for floating or transient populations—such as tourists and mobile labor forces—as well as natural capital indicators, including forest cover, water resource quality, and conservation area coverage. This would ensure that provinces bearing a disproportionately high burden of natural resource management receive commensurate budget allocations, in line with recommendations from fiscal authorities that the current system does not adequately reflect the actual burden faced by tourism-dependent provinces.

Furthermore, Thailand should examine the applicability of the Ecological Fiscal Transfer (EFT) mechanism, as practiced in Malaysia, whereby areas that successfully maintain forest cover or natural resource stocks receive additional budget allocations. Such a mechanism would create fiscal incentives for local authorities and provinces to prioritize the sustained conservation of natural resources, using data derived from natural capital accounts as a supporting indicator for budget allocation decisions.

Mobilizing Alternative Financing Mechanisms

Beyond state budget allocations, the government should support the use of alternative conservation financing mechanisms, such as sustainability funds, green bonds, and blue bonds, to expand the pool of resources available for natural resource conservation and restoration—particularly in view of the growing trend of international financing flows for biodiversity conservation.

Ensuring Practical Implementation

Nevertheless, as advised by the Budget Bureau, the availability of natural capital account data alone is insufficient to secure budget allocation. To translate such data into concrete action, related projects or missions must be formally incorporated into the operational plans of the responsible host agencies. Realizing the practical impact of natural capital accounting therefore depends on the cooperation of relevant agencies in embedding these missions within their own institutional plans, so that natural capital account data can serve as tangible empirical evidence supporting budget allocation decisions.

3.2 Integrating Natural Capital Account Data into the Budget Allocation Process under the MTEF and the 14th National Economic and Social Development Plan

Enabling Natural Capital Accounting (NCA) data to be effectively utilized in national policy formulation and budget allocation requires linking such data with government planning and budgeting processes—particularly the Medium-Term Expenditure Framework (MTEF) and the 14th National Economic and Social Development Plan—so that natural capital data becomes an integral part of the evidence base underpinning national policy decisions and resource allocation.

Linking Natural Capital Data with Institutional Plans

As advised by the Budget Bureau, the availability of natural capital account data alone is insufficient to secure budget allocation. For related projects or measures to be translated into practical implementation, host agencies must first formally incorporate such missions or projects into their official operational plans before budget requests can be submitted effectively. The development of natural capital accounts should therefore proceed in parallel with their integration into the development plans of relevant agencies—whether provincial development plans, ministerial plans, or the plans of local administrative organizations—as well as the MTEF, in order to establish a systematic linkage between policy, planning, and budgeting. This approach would also enable multiple agencies to jointly advance natural capital-related missions within their respective mandates and authorities, rather than relying on the efforts of any single agency acting alone.

Applying Spatial and Empirical Data to Budget Prioritization

In the budget allocation process, the Budget Bureau places considerable emphasis on the use of spatial and empirical data to support decision-making—particularly satellite imagery, drought maps, water use data, indicators of problem severity, and spatial data on economic activity. Such data can effectively support demand-driven budgeting. Integrating these data sources with natural capital account data would enable project prioritization to more accurately reflect the problems, potentials, and environmental costs specific to each area.

Reforming Allocation Criteria to Reflect Actual Service Burdens

Furthermore, budget allocation criteria should be revised to reflect the actual burden of public service provision, rather than being based solely on registered population figures. Many tourism-dependent provinces have large floating populations and high visitor numbers, resulting in burdens on infrastructure, water management,

wastewater treatment, and waste management that exceed what is captured by resident population figures alone. Incorporating data on tourist volumes, floating populations, and indirect income generated from tourism activities into budget allocation decisions would therefore make resource allocation more equitable and more accurately reflective of the true burden borne by each area.

Advancing Ecological Fiscal Transfer as a Long-Term Fiscal Instrument

In the longer term, Thailand should examine the feasibility of applying an Ecological Fiscal Transfer (EFT) mechanism, using data from natural capital accounts compiled under the SEEA framework as the basis for allocation criteria that reward areas demonstrating effective conservation and restoration of natural resources. Such a mechanism would transform the role of natural capital account data from a purely statistical tool into a concrete fiscal instrument capable of creating tangible incentives for natural resource conservation.

Adopting a Flexible, Promotional Policy Approach

With respect to overall policy direction, NESDC has recommended that the application of the SEEA framework under the 14th National Economic and Social Development Plan be pursued through an approach of "promotion" or "support" for agencies and areas to adopt the principles voluntarily, rather than through mandatory requirements—given that different areas face varying constraints and contexts. A flexible approach of this kind would be more conducive to scaling up implementation at the national level.

Ensuring Data Credibility and Standardization

At the same time, both the NSO and NESDC concur that data credibility is a critical factor in enabling natural capital accounts to be used to support policy decision-making. Data collection methods should therefore conform to NSO standards, accompanied by inter-agency mechanisms for data integration and verification, so as to reduce data redundancy and the risk of double counting of resource values, while ensuring accurate linkage with Gross Provincial Product (GPP) and Gross Domestic Product (GDP).

Adopting a Cluster-Based Approach for Policy Relevance

Finally, to enhance the policy relevance of the data at the national level, consideration should be given to compiling natural capital accounts at the level of provincial clusters—covering areas with similar economic and natural resource characteristics, such as the Andaman provincial cluster or shared river basin groupings. Analysis at this scale would more effectively capture the dynamics of resource use and economic activity than analysis confined to a single province, and the resulting findings could be applied more effectively to regional planning, budget allocation, and national policy formulation.

3.3 Applying Natural Capital Account Data to Enhance the Efficiency of Budget Allocation for Tourism and Water Resource Management

Natural Capital Accounting (NCA) data serves not only as a tool for valuing natural resources and ecosystems, but also as empirical evidence to support budget allocation that is responsive to the problems, potentials, and environmental costs specific to each area—particularly within the tourism and water resource management

sectors, which are economic sectors closely dependent on the integrity of natural capital. Integrating NCA data into the planning and budgeting processes of relevant agencies would enhance the precision, transparency, and sustainability of public investment decisions.

Application to Tourism Policy

With respect to tourism, the Ministry of Tourism and Sports considers that NCA data can support the formulation of sustainable tourism policies and measures, particularly the development of a Measure Sustainable Tourism indicator to track tourism development in tandem with natural resource conservation. Such data can also inform the prioritization of infrastructure investment projects—including wastewater treatment systems, solid waste management, water resource management systems, and other tourism-related infrastructure—in ecologically sensitive areas, ensuring that investment decisions reflect both economic returns and potential environmental costs.

NCA data can further support the design of conservation-oriented management measures for tourist areas, such as establishing tourist carrying capacity limits, implementing seasonal closures of tourist sites to allow ecosystem recovery, designating marine zoning schemes, and conserving coral reefs, seagrass beds, and habitats of rare marine species. In addition, the development of digital data systems—such as electronic ticketing (e-ticketing)—should be supported to improve the efficiency of visitor and revenue data collection, while ensuring that the management of tourist sites remains compliant with personal data protection legislation (PDPA).

The use of natural capital account data can also support budget allocation for community-based and ecotourism initiatives, through activities that foster public participation in natural resource conservation—such as capacity building for local tour guides, the promotion of birdwatching activities, responsible diving practices consistent with the Green Fins standard, and the enhancement of the Thailand Tourism Standard. These measures would help achieve a long-term balance between tourism-generated revenue and the conservation of natural capital.

Application to Water Resource Management

With respect to water resource management, data from water resource accounts can effectively support the prioritization of water-related investments. The Office of the National Water Resources (ONWR) emphasizes the importance of shifting the paradigm of water management away from an exclusive focus on expanding water supply, toward demand-side management, through improved water use efficiency across all sectors—particularly by encouraging the agricultural sector to transition toward crops that require less water but generate higher economic value. This would reduce the risk of water scarcity and enhance the long-term efficiency of national water use.

In addition, water resource account data should be applied to inform the restructuring of water tariffs, so that pricing reflects the true costs of water management across the entire value chain—from water sourcing, production, and distribution, service expansion, wastewater collection, and treatment. This would ensure that water pricing appropriately reflects both costs and the opportunity cost of water resources, thereby promoting more efficient water use.

To ensure that analysis is consistent with hydrological characteristics, the compilation of water resource accounts should be undertaken at the river basin level rather than the provincial level, since water flows do not conform to administrative boundaries. Basin-level accounting would better capture the interconnection of water volumes across upstream, midstream, and downstream areas, and could more appropriately inform water resource allocation planning.

Linking Water Security and Tourism-Dependent Economies

In areas where the economy is heavily dependent on tourism, NCA data can clearly demonstrate the linkage between water security and economic activity. Although the tourism sector consumes a relatively modest share of water compared to the agricultural sector, the impacts of water scarcity have direct consequences for income, employment, and the reputation of tourist destinations. Budget allocation for water resources should therefore take into account both economic impacts and water volume data, so that investment in infrastructure and water management responds effectively to the actual needs of each area.

The Need for Inter-Agency Collaboration

Ultimately, maximizing the benefits of natural capital and water resource account data requires collaboration among the Office of the National Water Resources, the Office of the National Economic and Social Development Council, the Budget Bureau, the Ministry of Tourism and Sports, and other relevant agencies, in integrating such data into planning processes, project prioritization, and budget allocation. This would enable public investment to generate both economic returns and natural capital conservation simultaneously laying the foundation for balanced and sustainable national development in the long term.

THE INTEGRATION OF NATURAL CAPITAL ACCOUNTING IN
PUBLIC AND PRIVATE SECTOR POLICY AND DECISION-MAKING
FOR SUSTAINABLE LANDSCAPES

NATURAL
CAPITAL

Funded by



UN
environment
programme

Executing Agencies



TDRI
THAILAND
DEVELOPMENT
RESEARCH
INSTITUTE