Title of UNDP supported GEF financed project	Sustainable Management Models for Local Government Organisations to Enhance Biodiversity Protection and Utilization in Selected Eco-regions of Thailand
PIMS#	5271
GEF project ID#	5726
TE time frame	January -March 2020
date of TE report	April 2020
Region and countries included in the project	Asia and the Pacific/ Thailand
GEF Operational Focal Area/Strategic Programme	Biodiversity
GEF agency	United Nations Development Programme (UNDP)
Implementing Partner	Biodiversity-Based Economy Development Office (BEDO) (Public Organisation), under the Ministry of Natural Resources and Environment (MoNRE)
Project partner	Department of Local Administration, under the Ministry of Interior (MoI)
TE International Consultant	José Antonio CABO BUJÁN
TE National Consultant	Walaitat WORAKUL

Table of Contents

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- The community leaders and LGO officials of Bang Khachao, and the vice-governor of the province of Samut Prakan.
- The community leaders and the LGO officials of Don Hoi Lot, and the vice-governor of the province of Samut Songkhram.
- Project consultants from Thailand Wetland Foundation, Thailand Environmental Institute, Thammasat University, Suan Dusit University, and King Prajadhipok's Institute.
- Participants from national government agencies: Department of Local Administration and Department of Fisheries.

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Executive Summary

Project Summary Table

Project title: Sustainable Management Models for Local Government Organizations to Enhance Biodiversity Protection and Utilization in Selected Ecoregions of Thailand			
UNDP Project ID (PIMS #)	5271	PIF approval date[1]	08/05/2014
GEF Project ID (PMIS #):	5726	CEO endorsement date[2]	05/06/2015
ATLAS Business Unit, Award # Proj. ID:	00086180	ProDoc signature date[3]	19/02/2016
Country(ies):	Thailand	Date project manager hired	23/05/2016
		Inception workshop date[4]	02/09/2016
Region:	Asia-Pacific	MTR completion date[5]	06/02/2019
Focal Area:	Biodiversity	Original planned closing date[6]	August 2019
GEF Focal Area Strategic Objective:	Objective 1	Revised closing date	February 2020
Trust Fund	GEF TF		
Executing Agency/ Implementing Partner:	Biodiversity-Based Economy Development Office (BEDO) (Public Organisation), under the Ministry of Natural Resources and Environment (MoNRE)		
Other execution partners:			
Project financing	**At CEO endorsement (US$)**		**At terminal evaluation (US$)**
[1] GEF financing	1,926,000		1,364,454.25
[2] UNDP contribution	30,000		30,148.13
[3] Government	7,530,000		3,113,789.01
[4] Other partners	0		5,200.63
[5] Total co-financing [2]+[3]+[4] :	7,560,000		3,149,137.77
Project total costs [1+5] :	9,486,000		4,513,592.02

Project Description (brief)

Economic growth in Thailand had led to an important reduction in poverty levels but also the degradation of the country's biodiversity assets. Thailand has met the Aichi targets in terms of percentage of land area protected. Still, the protection of biodiversity in production landscapes and mainstreaming of biodiversity into governance and production sectors have lagged. The project *Sustainable Management Models for Local Government Organizations to Enhance Biodiversity Protection and Utilization in Selected Eco-regions of Thailand* (SLBT project) was designed to correct the lack of incentive for the decentralized local administrative organizations in Thailand to account for the impact of their development plans on biodiversity. The project was implemented by the Biodiversity-Based Economy Development Office (BEDO) (Public Organisation), under the Ministry of Natural Resources and Environment (MoNRE).

The SLBT strategy combined raising awareness and development of capacities of local government and the Department of Local Administration, and the design and test of instruments to mainstreaming biodiversity. The project experienced challenges related to priority changes in the aftermath of the

[1] (GEF, 2020)
[2] (GEF, 2020)
[3] (Holmgren & Worakul, 2018)
[4] (Holmgren & Worakul, 2018)
[5] (Yuberk & Cholsindusongkramchai, 2018)
[6] (UNDP and BEDO, 2015)

change of government in 2014, just after the project document was signed. Still, it succeeded in developing a biodiversity health index, the main instrument to evaluate the environmental performance of local administrations in Thailand, and, more importantly, it secured its endorsement by the Department of Local Administration.

Evaluation Rating Table

Rating Project Performance		
Criteria	**Rating**	**Comments**
Monitoring and Evaluation: Highly Satisfactory (HS), Satisfactory (S) Moderately Satisfactory (MS), Moderately Unsatisfactory (MU), Unsatisfactory (U), Highly Unsatisfactory (HU)		
Overall quality of M&E	MS	Despite the shortcomings of the indicator framework, the project collected relevant information for the project
M&E design at project start up	MU	Some indicators not-cost effective or not sensitive to project effects
M&E Plan Implementation	S	The PMU collected data for the indicator framework. Audits, midterm review and final evaluation efficiently executed
Execution by implementing partner and GEF agency: Highly Satisfactory (HS), Satisfactory (S) Moderately Satisfactory (MS), Moderately Unsatisfactory (MU), Unsatisfactory (U), Highly Unsatisfactory (HU)		
Overall Quality of Project Implementation/Execution	S	Disbursement and administration soundly executed
Implementing Agency Execution	S	UNDP fulfilled project cycle oversight role
Executing Agency Execution	HS	IP engaged proactively addressing implementation challenges, and solving most of them
Outcomes: Highly Satisfactory (HS), Satisfactory (S) Moderately Satisfactory (MS), Moderately Unsatisfactory (MU), Unsatisfactory (U), Highly Unsatisfactory (HU)		
Overall quality of project outcomes	MS	The SLBT project has kick-started biodiversity mainstreaming at the local level in Thailand by developing and endorsing policy and instruments.
Relevance: relevant (R) or not relevant (NR)	R	The SLBT project is strongly aligned with national policies and CBD commitments and the GEF biodiversity strategy
Effectiveness	MS	The SLBT project started the process of mainstreaming biodiversity but did not achieve critical targets on account of design weaknesses and late commitment by the key project partner. As a result, policy instruments have been developed and endorsed, but not yet applied in actual governance.
Efficiency	S	Cost-effective approach in line with lessons learned and GEF strategy

Sustainability: Likely (L), Moderately likely (ML), Moderately Unlikely (MU), Unlikely (U)		
Overall sustainability	ML	There's a moderately likely chance of the project's outcomes being sustained in the mid-term (5 years)
Financial resources	L	BEDO budget allocations and GEF support will continue and committed supporting project sites to promote mainstreaming
Socio-economic	ML	Increased awareness of importance biodiversity, but not sufficient commitment from LGOs, compounded by scarce human and technical capacities to fulfil BHI requirements
Institutional framework and governance	ML	DLA and BEDO willing to adopt mainstreaming tools, but implementation mechanism needs to be defined. BEDO secured inclusion of biodiversity in local government in the new Biodiversity Bill
Environmental	L	Biodiversity values in target sites stable. Climate change a very clear and present menace at both sites within the next 20 years, but not for nationwide policy results
Impact: Significant (S), Minimal (M), Negligible (N)		
Environmental status improvement	N	There has been no worsening of the environmental status, but it cannot be yet attributed to the project.
Environmental stress reduction	N	Increased awareness and ownership by resource users, but very limited geographically.
Progress towards stress/ status change	S	First practical tools for mainstreaming biodiversity at local government level in Thailand
Overall progress results: Highly Satisfactory (HS), Satisfactory (S) Moderately Satisfactory (MS), Moderately Unsatisfactory (MU), Unsatisfactory (U), Highly Unsatisfactory (HU)		
Overall progress results	MS	The project has made significant improvements over the business-as-usual scenario, even could not achieved all its targets within implementation period

Summary of conclusions, recommendations and lessons

Conclusions

The SLBT project strategy supported the National Biodiversity Strategy and Action Plan (NBSAP) and the GEF biodiversity mainstreaming approach, making it a highly relevant project. Still, the project design underestimated the transaction costs of involving numerous national government and non-government organizations in a chain of activities that needed precise and timely implementation to achieve the expected results. The project design's lynchpin was the engagement of DLA to enact a new biodiversity policy for local government. However, the DLA only fully engaged with the project during the last year of implementation. While DLA was actively involved during project preparation, its priorities changed as the project started implementation. As a result, by the time of the final evaluation,

only one local government organization was fully committed to including the biodiversity health index (BHI) in their planning process.

Despite those challenges, by project end, DLA and BEDO endorsed the policy changes crafted by the project, and they support their implementation on the ground. Moreover, BEDO will submit the BHI for cabinet endorsement through the MoNRE-chaired National Committee on Biodiversity. If approved, the BHI will be applied nationwide. Local management of biodiversity, as understood by this project, has also been put into the new Biodiversity Act draft, very likely to be passed this year (2020).

Still, the detailed implementation mechanism for the BHI evaluation has yet to be defined, and the gap between the new requirements and the capacities of TAOs needs to be bridged. Moreover, the expected ecological benefits (water quality, habitat extent, species health), which were the indicators of project success, will only be detectable in some years after the actual implementation of the mainstreaming tools, and upstream and off-site effects may mask them.

The final evaluation rates the overall results of the project as moderately satisfactory. This rating does not make justice to the efforts undertaken by the implementing agency, BEDO. BEDO and its PMU acted decisively to bridge the gap between project design and the facts on the ground, completing most of the project outputs by engaging recognized research institutions as project contractors. While this strategy could not have possibly reached the ambitious goals set by the project design, it came a long way to set the basis for the successful mainstreaming of biodiversity at the local government level. The final evaluation considers the execution of the project by BEDO to be highly satisfactory.

At the local government level, effective biodiversity mainstreaming will need continuous support from DLA and BEDO. The project has showcased financial incentives for biodiversity conservation by supporting the development of profitable, sustainable income-generating activities (GI mango, birdwatching tourism, shrimp-fishery-based products). Still, without further support, these activities may yet be too weak to bring about a "critical mass" of local government support to tip the balance in favour of broad adoption of the Biodiversity Health Index.

Climate change constitutes a risk for sustainable management of biodiversity that can be averted, at least partially by adopting ecosystem-based solutions, especially in coastal areas. The final evaluation rates the sustainability of the project's outcomes as moderately likely.

Recommendations and lessons learned

Immediate actions

1. UNDP and BEDO should follow up on the formal commitment to the BHI adopted at the national workshop on biodiversity mainstreaming held last March. A concrete roadmap must be formally agreed upon by the mains stakeholders, DLA/MoI and MoNRE.

2. BEDO and DLA should continue to support champion local governments by investing in development of their capacities to implement the BHI. This could be achieved, as suggested by DLA and BEDO, through the provincial structures of MoNRE and the training capacities of KPI.

3. BEDO and the Department of Fisheries should continue efforts with the fisherfolk in Don Hoi Lot towards sustainable fishing practices. These efforts should likely involve more stakeholders, including tourism entrepreneurs, and the Department of Coastal and Marine Resources. Given

the opportunities presented by its tourism potential, the adoption of a voluntary good practices code could show the way for similar agreements in other areas of the country.

4. BEDO and the DLA could consider, within the bounds of political propriety, encouraging the discussion of environmental and biodiversity goals in the political debate of the coming local elections, by showing local officials that people, and hence votes, are interested in measures taken to promote a healthy environment.

5. BEDO and the Thailand Wetland Foundation should ensure the promotion of birdwatching tourism in Doi Hoi Lot. Biodiversity-based tourism may provide a necessary economic incentive for local government to mainstream biodiversity in local governance. The advance of fishery-based sustainable products shows promising results if linked to a code of good fishing practices. BEDO support will be necessary for the newly developed products (shrimp powder) and services (birdwatching tourism) in Don Hoi Lot. These income-generating projects pose more challenges than the more established GI mango production in Bang Khachao.

Proposals for future directions underlining main objectives

UNDP and the implementing partners of future projects must ensure full commitment by all critical project partners or reform the project strategy if the support by any of the essential partners is withdrawn. Signature of the project document and a memorandum of understanding should serve to consolidate the promised support even in the event of changes in the administration.

Regarding biodiversity monitoring, BEDO should partner up with ONEP and DLA to maintain a functional database to manage the results of the biodiversity monitoring that the application of the BHI needs. Biodiversity monitoring would require strong involvement by ONEP and the DMCR (in coastal areas and especially for fishery-related biodiversity). UNDP could support a more substantial involvement of these two agencies in the frame of the new GEF-7 project portfolio.

Given the climate risks in coastal sites in Thailand, UNDP and MoNRE should partner up to link conservation measures to climate change adaptation benefits. This partnership should produce evidence for local officials on the benefits of low-regret ecosystem-based solutions like mangrove and gallery forest conservation against potential impacts of climate change, in this case, sea-level rise and rainfall extremes.

Best practices and lessons learned

The provincial working groups established by BEDO constitute an effective way to mainstream project concepts and initiatives into local government organizational systems and ensuring continuity/sustainability of project results after the project ends.

Linking biodiversity objectives to social goals through income-generating benefits constitutes the best entry point for local government, usually more preoccupied with the immediate necessities of constituents than, in their perspective, the vague potential consequence of the loss of biodiversity.

Densely populated, deeply humanized landscapes like the lower Chao Phraya basin and the Gulf of Thailand are better suited for biodiversity mainstreaming into governance or productive sectors, rather than declaration as protected areas. In these circumstances, enforcement of protection is bound to be costly, contested, and, therefore, unlikely to be effective.

This project was compromised by the underestimation of the transaction costs of coordinating a large number of relevant stakeholders with responsibilities. The potential benefits of coordination, cooperation, and synergies should be carefully considered against the mounting costs of convincing an additional partner to assist with the project. The transaction costs should instead be incurred at the PPG phase, by actively involving the required partners, and securing formal agreements that clearly state the contribution and benefits for each party.

When including biological indicators, the costs of setting up a sustainable monitoring system and the time needed for changes in management to obtain a response from habitats and species should be considered. Moreover, external effects, such as upstream effects on water quality, should be addressed rigorously.

Acronyms and Abbreviations

BEDO	Biodiversity-Based Economy Development Office
CBO	Community-based Organization
DLA	Department of Local Administration
DMCR	Department of Marine and Coastal Resources
GEF	Global Environmental Facility
GI	Geographical Indicator
ha.	Hectares
LGO	Local Government Organization
MoNRE	Ministry of Natural Resources and Environment
MTR	Midterm review
NBSAP	National Biodiversity Strategy and Action Plan
NESDP	National Economic and Social Development Plan
NGO	non-government organizations
NT	Near Threatened
ONEP	Office of Natural Resources and Environmental Policy and Planning
PAO	Provincial Administrative Organization
PMU	Project Management Unit
PCD	Pollution Control Department
RFD	Royal Forestry Department
SLBT	Sustainable Management Models for Local Government Organizations to Enhance Biodiversity Protection and Utilization in Selected Eco-regions of Thailand project
TAO	Tambon Administrative Organization
UNDP	United Nations Development Programme
VU	Vulnerable

1. Introduction

Purpose of the evaluation

All projects funded by the Global Environmental Facility (GEF) and implemented by the United Nations Development Programme (UNDP) must have a project terminal evaluation conducted by an independent team. This evaluation was commissioned by the UNDP Thailand in December 2019, to assess and disclose the extent of project accomplishments and to synthesize lessons that can help to improve the selection and implementation of future GEF financed UNDP activities.

Scope & Methodology

The evaluation team (one national, one international consultant) has employed several qualitative research methods, including literature review, focus group discussions, in-depth individual interviews, and structured observation.

Literature review included peer-review and grey literature, as well as government, GEF and UNDP policy documents to assess the validity of the project assumptions, the relevance of the risks, and effectiveness and sustainability. Project reports, especially Project Implementation Reviews (PIRs), quarterly reports, and the project's inception workshop report, have informed the evaluation team on the project's effectiveness (triangulated by primary informants through interviews). Combined delivery reports (CDR) and annual work plans provided information on project finances. Annex 5 contains a list of documents reviewed.

Individual interviews and focus discussion groups have disclosed motivations and perceptions of stakeholders, as well as served to verify documental information. Annex 3 includes a list of all respondents interviewed. The evaluation team interviewed representatives from the following groups:

1. UNDP management, Programme analysts and regional technical advisor
2. Project management unit team
3. Project director of the implementing partner (BEDO)
4. Representatives of the project's responsible partners:
    a. King Prajadhipok's Institute (KPI),
    b. Thailand Environmental Institute
    c. Thai Wetland foundation
    5. Project technical consultants:
    a. Thammasat University
    b. Suan Dusit University

Structure of the evaluation report

The report is divided into four sections. Section 2 describes the project and its development context. Section 3 contains the evaluation's findings, divided into project design, implementation, and results (relevance, efficiency, effectiveness, sustainability, impacts, mainstreaming, and country ownership). Conclusions and recommendations follow in sections 4 and 5.

2. Project description and development context

Project start and duration

The project, Sustainable Management Models for Local Government Organizations to Enhance Biodiversity Protection and Utilization in Selected Eco-regions of Thailand (SLBT project), was developed in 2014-15. The project was approved in June 2015, and implementation started on February 2016. The project has operationally closed in March 2020.

Problems that the project sought to address

Thailand's sustained economic growth since the 1990s has led to a reduction of poverty and inequality, but also to an expansion of urban areas, increased fossil fuel consumption, and pollution. The lower Chao Phraya watershed and the adjacent coast of the Gulf of Thailand, including the Bangkok metropolitan area, are the epicentre of development and growth, concentrating 50% of Thailand's population and generating over 50% of its GDP[7]. Despite the expansion of urban surface, the area still has important biodiversity values. It includes one Ramsar site, Don Hoi Lot (87.5 km^2)[8], and two important bird areas: Lower Central Basin (1,900 km^2) and Inner Gulf of Thailand (1,000 km^2)[9]. These areas still host significant populations of migratory birds, as well as sustain artisanal fisheries, agriculture, and tourism. Yet, urban and tourism development poses a threat to the remnants of natural habitats and biodiversity in production landscapes nationwide and at the project's two sites in particular.

Protected areas are the main instrument for the conservation of biodiversity. However, densely populated production landscapes are not likely candidates for strict protection (IUCN categories I to IV) (figure 6). Moreover, protected areas within production landscapes are not enough to mitigate threats to biodiversity posed by their surroundings[10]. Thus, conservation in production landscapes, such as the Bangkok Metropolitan Area and the Gulf of Thailand, entails addressing threats through the mainstreaming of biodiversity into economic sectors and governance. The project design identifies three barriers hampering conservation of biodiversity in Thailand and, specifically in the project sites:

1. Absence of regulatory framework enabling local government organizations (sub-district and provinces) to mainstream biodiversity into planning and budgeting.

2. Absence of valid models for biodiversity conservation at the local government level.

3. Limited understanding of the economic and social benefits of biodiversity amongst local communities and local level decision-makers.

Since 1999, Thailand has a mixed system of territorial organization combining a central service delivery through deconcentrated field offices, with officials appointed by the Ministry of Interior who also oversee elected officials of the Local autonomous Government Organizations (Provincial, Municipalities and Sub-district LGOs). Development planning entails a top-down approach based on the National

[7] (OECD, 2015)
[8] (Ramsar Convention, 2001)
[99] (BirdLife International, 2020) (BirdLife International, 2020)
[10] (Huntley & Redford, 2014) (Dudley, 2008)

Economic and Social Development Plan and a bottom-up approach based on the Community Development plans. The latter are prepared at the village level and compiled by the sub-district (tambon) level governments (Subdistrict/ Tambon Administrative Organization, SAO/TAO). Both approaches converge at the provincial level (Provincial Administrative Organization, PAO), where the objectives contained in provincial development plans are harmonized with national policy and approved by the Department of Local Administration (DLA). The DLA evaluates the performance of local governments based on the effectiveness in the accomplishment of their development plan, administration of resources, and delivery of services, which, among others, include natural resource management. This performance evaluation determines the disbursement of national budget grants, which constitute over 60% of the local budget on average[11]. Due to the negligible importance of biodiversity conservation in the performance evaluation of local governments and weak awareness among local officials on biodiversity, there is little incentive for local officials to account for environmental degradation. Therefore, the SLBT project design identified the SAO/TAO and PAO as the optimal entry points for biodiversity mainstreaming policy instruments.

Immediate and development objectives of the project

The SLBT project's theory of change entailed mainstreaming of biodiversity conservation through the development of instruments and enactment of policy guidelines. The project would then promote the implementation of those instruments at two locations in the provinces of Samut Prakarn and Samut Songkhram, located in the lower Chao Phraya river basin and the estuary of the Mae Khlong river respectively. At the same time, the project would showcase the economic benefits of biodiversity conservation by promoting sustainable agriculture and fisheries.

The ultimate impact of the project would be the sustainable management of 69,618 ha. of coastal and estuarine area, what means conserving the habitats of several near threatened (NT) migratory shorebird species including *Limosa lapponica*, Bar-tailed Godwit (NT), *Numenius arquata*, Eurasian Curlew (NT), *Limnodromus semipalmatus*, Asian Dowitcher (NT), and *Calidris tenuirostris*, Great Knot (EN) in Samut Songkhram, as well as the endemic earthworm *Glyphidrilus sp* at Bang Khachao (Samut Prakan). Also, the project would have increased the income of sustainable mango producers in Bang Khachao and razor clam (*Solen regularis*) harvesters in Don Hoi Lot (Samut Songkhram), by enabling access to premium markets. At the same time, sustainable agricultural and fishing practices should reduce pollution and fishing effort, respectively.

Baseline Indicators established

Progress towards the SLBT's objective is measured by a framework of 15 indicators. The development objective indicators (with targets) are as follows:

1. 69,618 hectares of land and coastal area has biodiversity considerations mainstreamed into its management through development of regulations.

2. Two provinces with important biodiversity areas within ecoregions where the Biodiversity Health Index (BHI) developed by the project is used as an annual performance measure for LGOs by the DLA

[11] (UCLG and OECD, 2016) (World Bank, 2012)

3. No decline in the populations of the near threatened *Numenius arquata* (Eurasian Curlew) and the endemic *Glyphidrilus sp* (Flying earthworm).

For the first two indicators, the baseline was considered to be nearly zero, as only 32 hectares of the total project site area was under protection and the BHI had yet to be developed. The baselines for the biological populations was to be established during the first year of implementation.

For outcomes, the 12 indicators are as follows:

1.1 Policy statement and guidance on inclusion of biodiversity considerations in local government development planning and performance assessment issued by the Ministry of Interior (MoI).
1.2 Two Provincial Administrative Organizations (PAOs) are meeting the BHI targets established within their Development Plans.
1.3 Ten Sub-district Administrative Organizations (SAOs) are meeting the BHI targets in their Performance management agreements with the Office of the Provincial Governor.
1.4 20% increase in capacity development indicator score for the Department of Local Administration (DLA).
2.1 69,618 ha. of land and coastal area with participatory land/coastal management plans.
2.2 Environmental health indicators
    2.2.2 Increase in species density of Razor Clams in Don Hoi Lot (Samut Songkhram).
    2.2.2 No decline in water quality levels in Don Hoi Lord (Samut Songkhram).
    2.2.3 No decline in area classified as 'green area' in Bang Khachao (Samut Prakarn).
    2.2.4 Improvements in water quality levels in Bang Khachao (Samut Prakan).
2.3 Increase in Biodiversity Health Index of Don Hoi Lot (Samut Songkhram) and Bang Khachao (Samut Prakarn).
2.4 Sustainable production indicators
    2.4.1 80% of full-time razor clam *(Solen regularis)* harvesters are certified in Don Hoi Lot (Samut Songkhram).
    2.4.2 Over 70 ha. of certified mango production in Bang Khachao (Samut Prakarn).

The baseline for the implementation of administrative instruments, such as the BHI was obviously zero, as they would be introduced by the project. For the environmental and sustainable production indicators the baseline was to be established during the first year of implementation.

Main stakeholders

The main stakeholders of the SBLT project identified in the project document were:

- Biodiversity-Based Economy Development Office (BEDO), is a public organization under the Ministry of Natural Resources and Environment (MoNRE) established in July 2007 to promote the sustainable use of biodiversity resources[12]

- Department of Local Administration (DLA) of the Ministry of Interior, provides support to local authorities to deliver their mandates and reviews LGO performance through specific indicators, on which budget allocation to the LGO is based.

- Local government organizations (LGO) are the autonomous administrative organizations. In the SLBT project the following LGOs were involved:

[12] (UNDP Thailand, 2010) (BEDO, 2018)

- Sub-district administrative organizations (SAOs) or Tambon Adminsitrative Organizations (TAOs): Bang Khachao, Bang Gor Bua, Bang Yor, Bang Nam Pheung, Bang Krasorb, Zongkanong (Samut Prakarn), Don Hoi Lot, Laem Yai, Bang Chakreng, Bang Kaew, Klong Kone (Samut Songkhram).

- Provincial administrative organizations (PAOs): Samut Prakarn, Samut Songkhram

- Community-based organizations (CBO): Fishermen within Don Hoi Lot, Mango farmers within Bang Khachao, tourism operators in both Bang Khachao and Don Hoi Lot

- The Office of Natural Resources and Environmental Policy and Planning (ONEP) of MoNRE is the national focal point for the Convention on Biological Diversity (CBD) and responsible for the design and implementation of national biodiversity policy, including the current National Biodiversity Strategy and Action Plan (NBSAP).

- The Department of Marine and Coastal Resources (DMCR) of MoNRE is mandated to formulate coastal and marine policies and strategies, conduct research and development, and oversee resource use. It has several research centers, including the Marine and Coastal Resources Research and Development Center and the Mangrove Forest Resource Development and Learning Support Center.

- Pollution Control Department (PCD) – responsible for setting environmental standards and addressing pollution within Thailand. They provide guidance to local authorities on levels of pollution acceptable from different forms of development.

- The Royal Forest Department (RFD), of MoNRE, mandated to monitor and prevent destruction of forests, coordinate research on forests and encourage community and private forest management.

- Conservation NGOs present in Bang Khachao, like the Green Area Protection Network and the Lumphu Bang Krasorb Conservation Group and the Green World Foundation.

- Committee on Management of Don Hoi Lot Ramsar Site and Working Group on Demarcation of the Don Hoi Lot Ramsar Site Boundary

- Research and academic organizations that have worked at either or both sites:
    - Faculty of Science, Chulalongkorn University
    - Division of Environmental and Urban Planning, Faculty of Architecture, Kasetsart University
    - Department of Marine Science, Faculty of Fisheries, Kasetsart University
    - Centre of Excellence in Biodiversity, Faculty of Science, Prince of Songkhla University (PSU), Songkhla Campus
    - Thailand Environment Institute (TEI)
    - Faculty of Architecture and Planning, Thammasat University

Expected Results

SLBT is expected to achieve the following outcomes through a coordinated sequence of 6 outputs (figure 1):

1. Establishment of an enabling framework for LGOs to plan and monitor land management for biodiversity conservation

2. Demonstration of biodiversity mainstreaming in local government development Programmes in two pilot areas

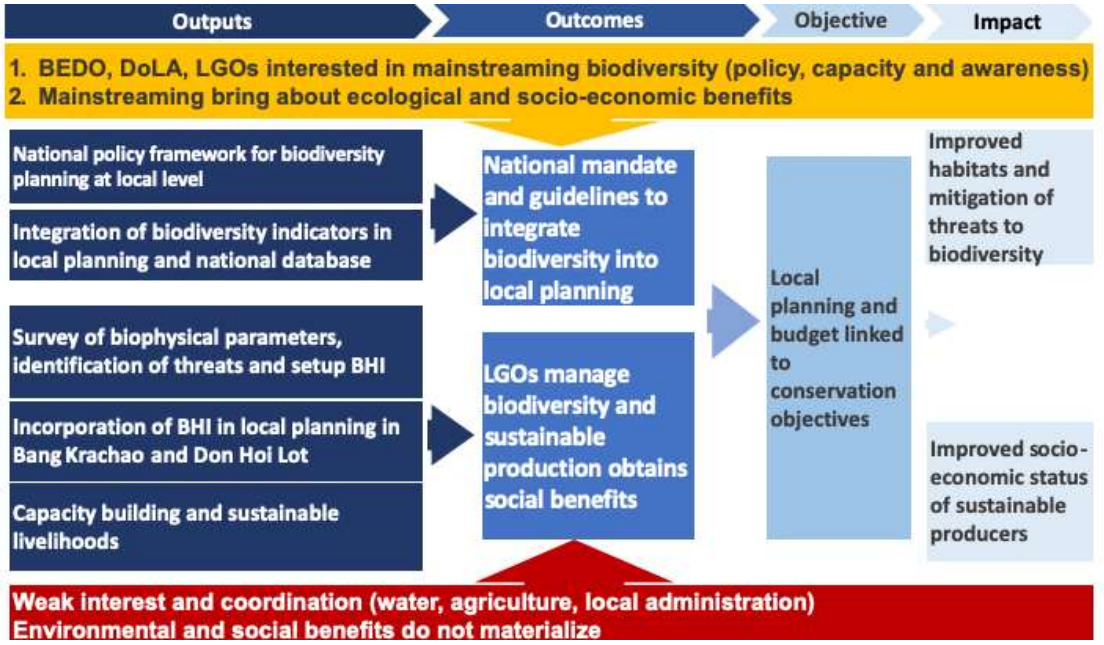


Figure 1. Project's theory of change conceptual map. From left to right, outputs, outcomes, project objective and impacts. Risks, factors that affect the results where the project has some influence are in red below. Assumptions, necessary conditions for the realization of the results are in yellow above. Conceptual model based on the GEF Evaluation Office (2009) ROtI Handbook[13].

Project sites: Don Hoi Lot and Bang Khachao

Bang Khachao is divided into six Tambon Administrative Organizations (TAO) covering 1,819 hectares in the Samut Prakarn province, just across the river from Bangkok. Up to 2005, the Ministry of Environment acquired 204 hectares of dispersed abandoned agricultural plots, now managed by the Royal Forestry Department (RFD). Independently, since 2003, the RFD, with support from the National Petroleum Exploration and Production Company, rehabilitated the 23.7 continuous hectares of the Si Nakhon Khuean Khan ecological interpretation park (Public and Botanical Park)[14]. Bang Khachao is a remarkable site for being the only area in Metropolitan Bangkok with significant tree cover and agricultural areas. Bang Khachao is a highly modified remnant of the ecotone between the Chao Phraya freshwater swamp forests ecoregion and the Indochina mangroves ecoregion. It still has some

[13] (GEF Evaluation Office, 2009)
[14] (PTTEP, n.d.)

mangrove associated vegetation, such as *Soneratia casiolaris*, Nypa fructicans and *Acanthus ebracteatus*. Some small remnants of Chao Phraya swamp forest still exist within the Botanical park. Local avifauna is abundant, and the area hosts migratory birds, including, occasionally, *Pitta nympha* (VU)[15]. 75% of Bang Khachao is still woodland (50%) or agricultural land (25%)[16]. See annex four for more details.

Don Hoi Lot (Samut Songkhram) comprises four TAO. Ramsar site of 87,500 hectares declared in 2001. The local Ramsar committee does not seem to be active. It occupies both sides of the mouth of the Mae Klong (Kwae) river, and it is mostly composed of shrimp and fishponds, salt pans, and a thin fringe of mangroves and mudflats. Valuable local artisanal fishery of *Solen regularis* (Solenidae). Artisanal fisherfolk conflict with commercial trawlers, accused of overexploitation and habitat destruction, and invading the 3-mile area reserved by law to small-scale fisheries. However, even the artisanal fishery functions as an open resource, in the sense that anybody can, in principle, access the fishery. Nonetheless, gear regulations are enforced, and fishers must register their fishing boats with the Marine Department and themselves with the Department of Fisheries. Registered fishers are entitled to receive training and other support from the government. Artisanal fishers mostly agree on the declining numbers of their catches and the need to self-regulate. However, they have so far not been able to come up with any management arrangement, catch limit, or entry regulation. Don Hoi Lot is a popular destination for local tourists, and its main attraction is the local gastronomy. Still, there is a budding bird watching tourism promoted by the SLBT project. There is a remarkable community-based mangrove reforestation in Tambon Bangkaew, supported by various government agencies and private companies. SLBT contributed by conducting a study on mangrove biodiversity and sustainable utilization. See annex four for more details.

Development and environmental context

Just after the approval of the project concept, in May 2014, a military-appointed government took control of the country[17]. The change in government had impacts on the engagement of the Project's Implementation Partner—DLA, as discussed in section three of this report. Elections held in March 2019 resulted in the victory of the incumbent prime minister with the support of several parties that seems to ensure a continuity of environmental policy. Local elections, not held since 2014, are programmed to be held this year (2020).

Despite political troubles, the country has shown continuous and robust economic growth and a net reduction of poverty[18]. However, poverty pockets persist in rural areas, especially in the South and Northeast[19]. Decades of economic growth and development had an impact on the country's environment. Forest and woodlands, including mangroves, have been almost wholly degraded or lost in some areas, especially in the lower Chao Phraya Basin and the Gulf of Thailand. Water quality in the main watersheds has also severely declined[20].

However, much of the degradation observed today occurred during the rapid transformation of the Gulf coast and lower Chao Phraya basin between the mid-1970s to the mid-1990s (see annex four). Development of aquaculture and salt ponds along the Gulf coast, including Samut Songkhram, resulted

[15] (Upton, 2019)
[16] (UNDP and BEDO, 2015)
[17] (Fuller, 2014)
[18] (UNDP Thailand, 2016)
[19] (UNDP Thailand, 2016)
[20] (ONEP, 2019)

in the loss of 70% of mangrove cover, but conversion had stopped by the late 1990s[21]. However, population and urban area growth continue in the Bangkok metropolitan area in detriment of agricultural land[22]. Although the proportion of treated wastewater has drastically improved since the year 2000, it was still just 48% of the total sewage generated in greater Bangkok in 2012. Thus, the lower reaches of the Chao Phraya river are moderately to severely polluted (BOD levels of 4-15 and 30-50 mg/l respectively)[23].

[21] (World Bank, 2006) (UN Environment, 2020)
[22] (OECD, 2015)
[23] (OECD, 2015)

3. Findings

3.1 Project Design / Formulation

Analysis of LFA/Results Framework (Project logic and Indicators)

The design of the SLBT project responds to the standard GEF practice for biodiversity mainstreaming projects. GEF's mainstreaming theory of change involves strengthening the regulatory framework and promotion of sustainable production. Such interventions would result in averting habitat loss in production landscapes (areas outside of the protected areas), promoting the conservation and sustainable use of globally significant biodiversity[24], which is precisely the strategy of the SLBT project.

However, obtaining the expected results required a nearly perfect sequence of activities and outputs, which depended on factors and organizations beyond the control of the project (see section three). Thus, the policy products and instruments (outcome 1) needed to be finalized before they could be applied at the local level (outcome 2). Moreover, the link between the cause (biodiversity mainstreamed in local government planning) and the expected effect (habitat and species response) requires a timeframe exceeding the 5-year implementation period of the project.

The project's indicator framework corresponds to the standard indicators of a GEF biodiversity mainstreaming project. At outcome/ objective level, it includes the number of hectares under sustainable management, populations of indicator species (near threatened/ vulnerable shorebirds and endemic earthworm), and the degree to which biodiversity values and ecosystem service values are internalized in policy and decision making[25]. The other project indicators intended to show progress in capacity development (capacity development scorecard) and extent to which sustainable practices were applied (improvement of water quality and density of fishery species). However, the indicator framework presented some weaknesses detailed below.

The first indicator of the objective (same as indicator one of outcome two), lacks specificity, as areas under sustainable management are being expanded by processes unrelated to this project. The totality of the one project sites (Bang Khachao) has been declared as an IUCN category VI protected area through a process led by ONEP, independently from the SLBT project (although the project supported the declaration and it was engaged in raising awareness at local government and community level).

The pollution component of the second indicator of outcome 2, on threats to biodiversity, also has problems related to specificity. Pollution levels in the project area do not respond to changes in local management but to the pollution levels along the watersheds of the Chao Phraya and Mae Khlong. In the case of Bang Khachao, water quality in its channels reflects the level of wastewater treatment in adjacent Bangkok instead. Thus, the project indicator framework ignored external influence on water pollution. The project's strategy includes upstream effects as a risk, but the mitigation strategy merely expects the basin situation to improve, which was not the case.

The fishery component of the fourth indicator of outcome two, on the scale of certified production, presents problems related to its measurability. The number of certified fishers in Don Hoi Lot should have reached 80% by the end of the project. However, as access to the razor clam fishery is free, the baseline (number of fishers) cannot be determined.

[24] (GEF, 2016)
[25] (GEF, 2016)

The fourth indicator for outcome one, on capacity development, is not achievable. Improvements in capacity were supposed to be measured just with capacity development scores of the responsible partner DLA. The late incorporation of DLA to the project makes this target unachievable.

Likewise, monitoring of the endemic, and scarce, flying earthworm (*Glyphidrilus* sp) (third objective indicator) cannot be achieved with standard monitoring techniques that could be applied by the project or the LGOs. Moreover, *Glyphidrilus* sp could not be located at all during the project's implementation period.

The same indicator also has problems related to its relevance. Indicator shorebird species *Numenius arquata* has the most extensive range of all the species cited in the project document and is hence the less likely to respond to local changes in management. Off-site effects could also negatively affect the indicator: the global status of the only vulnerable species at the project start, *Calidris tenuirostris*, has worsened, and it is now considered endangered. *Calidris tenuirostris* has the most limited range of all the shorebird species cited in the project document[26]. More importantly, the response delay between the cause (project) and effect (species threatened status) required continuous monitoring beyond the implementation period.

Assumptions and Risks

The project explicitly assumed that BEDO and DLA would effectively cooperate with local government organizations to successfully include biodiversity indicators in their regular performance evaluation and budget allocation. For LGOs, this entailed a willingness to assume new responsibilities (account for the impact of their actions on biodiversity) without any resistance, explained by the top-down approach brought in by the DLA and the rise in awareness on biodiversity that BEDO would have provided. The project document assumes no changes in the policy framework, increasing capacity, and shared understanding of biodiversity. However, the project identified political turmoil and the absence of a shared vision on biodiversity as risks (weak coordination, no interest), which contradicts the project's explicit assumptions.

Implicitly, the project design assumed that coordinating up to 15 national and local government organizations, several non-government organizations (NGOs), and community-based organizations with an important role in the project implementation could be done within reasonable transaction costs and within the project's timeframe. This substantial coordination effort would have to be concluded within the first 24 months of project implementation for the first results of the biodiversity health index and their linkage to budget allocation to be ready by the end of the project. Moreover, the project also assumed that:

1. the response of the selected indicator species would solely depend on the improved management of biodiversity by local government units.

2. the response of species populations would occur within 2 to 5 years of the start of the project.

3. the better practices introduced by LGOs to improve their index scores would include effects on water quality, and that effect would be detectable against the background basin pollution.

[26] (Bird Life International, 2019)

4. certified mango produced in Bang Khachao under good agricultural practices would achieve a premium price during the project implementation.
5. the razor clam fishery could limit access to the fishery and get most of the registered fishers certified and earning more than those who would not.

Yet, of these five implicit assumptions only number four held true. The indicator species (shorebirds) have much wider ranges than the project sites. Improvement of habitat quality would have also delayed beyond the project timeframe. Water quality at the project sites would be dependent on external factors, and the assessment of the clam fishery in Don Hoi Lot was rather superficial.

Lessons from other relevant projects incorporated into project design

The SLBT project used the concept of Community-based sustainable enterprises developed under the GEF-4 project *Sustainable Management of Biodiversity in Thailand's Production Landscape*, (2011-2015) as well as the indicators for sustainable production (proportion of certified producers and hectares under sustainable management). Under this project, BEDO improved its capacity to support the development of biodiversity-based products in communities in four provinces[27].

Planned stakeholder participation

The implementing and responsible partners, BEDO, and DLA, were supposed to facilitate the introduction of the Biodiversity Health Index to the local governments. The DLA would have enacted the policy and guidelines for mainstreaming biodiversity into local development and land/coastal use plans. In contrast, BEDO would have facilitated the certification process for sustainable production and coordinate the other government, non-government, and community-based organizations for the monitoring of the indicator framework. Monitoring results should have been incorporated into a functional database to support local government planning. At least four national government organizations (ONEP, DMCR, RFD, and PCD) and at least eight non-government and academic organizations would have been involved in monitoring and the setting-up of said database.

ONEP would have provided technical support for the development of the biodiversity health index (BHI) and its guidelines, as well as for biological monitoring (shorebirds and endemics). Moreover, ONEP would have integrated the BHI into the management plans of the protected areas under its jurisdiction.

The DMCR would have cooperated with the project in the integration of the BHI into a coastal management plan for Don Hoi Lot. Moreover, its Coastal Resources Research and Development Center and Mangrove Forest Resource Development and Learning Support Center would have provided technical assistance to conduct the monitoring of the coastal biological indicators.

The RFD would have supported the development of biodiversity mainstreamed local government plans and support biological monitoring at both sites, and the PCD should have contributed to water quality measurements. Local conservation groups and national NGOs, like the Green World Foundation and BioBlitz Initiative, Thailand Wetlands Foundation, the Don Hoi Lot Conservation Group, Green Area Protection Network, and Bang Krasorb Conservation Group and academic and research institutions, including the Thailand Environment Institute, Thammasat, Chulalongkorn and Kasetsart universities, would have either contributed to monitoring of biodiversity at the local level or with data for the project

[27] (Worakul & Sillitoe, 2015)

database. These groups were also supposed to support the project by raising awareness of biodiversity at the local government and community level.

TAOs and PAOs would have developed their capacity and implemented the new policy using the supporting tools (BHI and biodiversity database). The other primary beneficiaries, community-based organizations in Bang Khachao and Don Hoi Lot, would have then accepted the good practices proposed by the project to obtain the corresponding certification and access to premium markets.

During the project preparation grant (PPG) phase, the project team, led by BEDO and DLA and with the participation of the DMCR, visited the two sites three times in as many months and consolidated the project's logical framework, including indicators in consultation with local governments and CBOs.

ONEP participated in at least one meeting and the validation workshop, where also the RFD was present. The NGOs listed in the project document and the Pollution Control Department seem not to have been consulted during the PPG phase[28]. At the Local Project Appraisal Committee (LPAC) meeting in December 20015, UNDP, BEDO, ONEP (GEF focal point), Provincial Natural Resources and Environment Office (PONRE) and Province Administrative Organizations were represented by a programme specialist, director-general (and deputy), national focal point (GEF), director and local administrator officer respectively, all positions at the chief executive or management level. DLA, DMCR, and the Department of Fisheries were also represented in said meeting, albeit at the technical staff level.

Replication approach

The project was expected to generate a diverse set of practical experiences on integrating biodiversity into development planning, budgeting, and performance assessment at the local government level, in two different ecological and social settings. Together with the development of a national policy and guidance, the SLBT project would have enabled mainstreaming of biodiversity into local governments nationwide.

UNDP comparative advantage

Since the GEF pilot phase (1991-94) until GEF-7 (2018-22), a total of 39 national projects have been funded by GEF in Thailand with a cumulative grant amount of nearly 96 million US$. UNDP has implemented over half of the funds and almost two-thirds of the projects. Over 33 million US$ (35% of the total) have been allocated to biodiversity or multi-area projects, including biodiversity. UNDP has implemented 94% of the biodiversity funds and nearly 50% of the GEF biodiversity projects. UNDP is the GEF agency with more experience in the design and implementation of GEF biodiversity projects in Thailand. Through the implementation of 13 biodiversity projects since 2008, UNDP has established solid partnerships with MoNRE, BEDO, and ONEP.

Linkages between project and other interventions within the sector

The SLBT project was one of the three biodiversity mainstreaming projects funded under GEF-5. The other two projects were ***Maximizing Carbon Sink Capacity and Conserving Biodiversity through Sustainable Conservation, Restoration, and Management of Peat-swamp Ecosystems*** and ***Conserving***

[28] (BEDO, 2016)

Habitats for Globally Important Flora and Fauna in Production Landscapes (2015-2020). The three projects were designed to share the same theme of mainstreaming biodiversity using different entry points: landscape (peat swamp ecosystems), emblematic species (critical flora and fauna), and development actors (LGOs). GEF-5 projects implemented by ONEP have been facing significant challenges. They have been poorly rated by their respected midterm reviews. However, the project Conserving Habitats for Globally Important Flora and Fauna in Production Landscapes was improved after its MTR and received a satisfactory rating by its final evaluation in September 2019[29]. The three projects were expected to provide robust evidence to inform policy, especially into the 12th National Economic and Social Development Plan (NESDP), as well as coordinate their implementation through meetings among the implementation teams and share lessons learned, which did not take place.

ONEP implements with UN Environment a GEF-6 funded project, Integration of Natural Capital Accounting in Public and Private Sector Policy and Decision-making for Sustainable Landscapes (NCSRP). This project has similar objectives to SLBT, as it aims to mainstream biodiversity in the planning, budgeting, and monitoring processes of three provincial development plans (Chiang Rai, Chonburi, and Trat)[30]. There has not been any coordination, or even mention of SLBT or any GEF-funded biodiversity mainstreaming projects in the formulation of the NCSRP project.

The US$ 55 million global UNDP project BIOFIN has been implemented in Thailand since 2014[31]. BIOFIN *develops evidence-based Biodiversity Finance Plans and supports countries* (to) *implement finance solutions to reach their national biodiversity targets*[32]. In Thailand, BIOFIN has held workshops and produced reports on the policy context, expenditure review, and financial needs assessment. Currently, BIOFIN is preparing a finance plan for biodiversity in Thailand[33]. There has not been any coordination or information exchange between the SLBT and BIOFIN projects. In its 2018 policy assessment, BIOFIN dedicates a section to urban biodiversity, including Bang Khachao, without mentioning SLBT's or BEDO's role.

Management arrangements

The project was executed through UNDP's full National Implementing Modality (NIM) with the Biodiversity-based Economy Development Office (BEDO) as Implementing Partner (IP). The Department of Local Administration (DLA) under the Ministry of Interior (MoI) was designated as the Responsible Party (RP) for the development of the policy outcome (policy instruments and guidance) of the project[34]. However, the DLA did not engage in the implementation of the project until the end last year (2019), and its role had to be assumed by BEDO and project contractors. After the change of government in 2014, the new DLA leadership did not consider environmental concerns part of their responsibilities and priorities. During the local project appraisal committee (LPAC) in December 2015 (6 months after project approval), the crucial role of DLA and the co-finance commitment was reiterated. However, at the key LPAC meeting, DLA did not participate at the same management level as BEDO, being represented by a sole technical staff. Moreover, despite the important co-financial commitment, the project document was not signed by any representative from DLA.

[29] (Stokes & Worakul, 2019) (Ragavan & Worakul, 2019)
[30] (UN Environment, 2016)
[31] (BIOFIN-Thailand, 2018)
[32] (UNDP-BIOFIN, 2017)
[33] (BIOFIN-Thailand, 2017)
[34] (UNDP and BEDO, 2015)

The full NIM modality entails that UNDP's role is mostly reduced to project cycle oversight and project assurance. Still, UNDP staff also provides technical assistance to the IP through the annual Project Progress Review and project board meeting.

The project design established a Project Board (PB), and a Project Management Unit (PMU) within BEDO. Also, it foresaw two technical working groups in charge of the execution of each outcome, composed by DTCP, ONEP, DOPA, OPCD, DC and TAOs, DMCR, PONRE, and CSOs for outcome 1 and 2 respectively to provide the day-to-day coordination and administration. The PMU comprised a Project Manager (PM) and Project Assistant (PA), responsible for day-to-day operations and coordination of partners and consultants. At inception, the proposed technical team of the project document was replaced with two new entities at provincial and project sites level, i.e. Project Provincial Committee, and Local Working Groups for both provinces/project sites. Also, a technical working group within BEDO was established to support project implementation.

3.2 Project Implementation

Adaptive management (changes to the project design and project outputs during implementation)

The main implementation challenge faced by the project was the reluctance of DLA to assume its role as responsible partner. This reluctance was due to the turnover of DLA's management staff after the project's PPG[35]. To cope with this critical issue, the PMU actively engaged with local administrations at the pilot sites while continuously trying to organize a national level workshop with DLA[36]. In the meantime, BEDO assumed the role of the responsible party and used project funds to procure consultants to deliver the project's outputs[37].

Partnership arrangements (with relevant stakeholders involved in the country/region)

Except for BEDO and the TAOs and PAOs at the two project sites, virtually none of the management arrangements expected at project design came true. BEDO became the only project partner, but thanks to its pro-active engagement, the project managed to make decisive advances in most outputs. PMU selected consulting partners such as KPI and TEI that are well respected and widely recognized for their professional capabilities to cover for DLA's outputs (studies, policy statement, guidelines). The development of said tools by KPI, TEI, and others eventually led to DLA's engagement with the project.

Feedback from M&E activities used for adaptive management

The project proactively seek data required by its indicator framework, and consistently reported and planned according to its progress towards the targets[38], notwithstanding the weaknesses of the project's indicator framework.

The 13 midterm review recommendations were mostly accepted, including engaging the Ministry of Interior to get the attention of the DLA, strengthened the project's gender perspective, and the use champions to promote mainstreaming biodiversity among LGOs.

Project Finance and Co-finance

Finance

By the time of the final evaluation in February 2020, project delivery had reached 78% of the total GEF grant (figure 2). The project would deliver 90% of the full grant by project end in March, with funds committed for surveys, workshops, and the final evaluation[39]. Project financial execution has been according to UNDP rules. Management cost remained as budgeted, with a slight rise of 1%, driven by

[35] (SLBT PMU, 2017)
[36] (SLBT PMU, 2017) (SLBT PMU, 2018)
[37] (SLBT PMU, 2018)
[38] (SLBT PMU, 2017) (SLBT PMU, 2018) (SLBT PMU, 2019)
[39] (UNDP Thailand, 2017) (UNDP Thailand, 2018) (UNDP Thailand, 2019) (UNDP Thailand, 2020) (UNDP Thailand, 2020)

staff costs (figure 3), well below the average inflation rate of 4% annually during the implementation period[40].

To deliver outputs and monitoring results committed by DLA, changes were introduced in budget accounts, and allocation among outcomes (figures 3 and 4), as more funds had to be invested in company services and local consultants, particularly for outcome 1, at the expense of travel, equipment, knowledge products and individual contracts. I

Co-finance

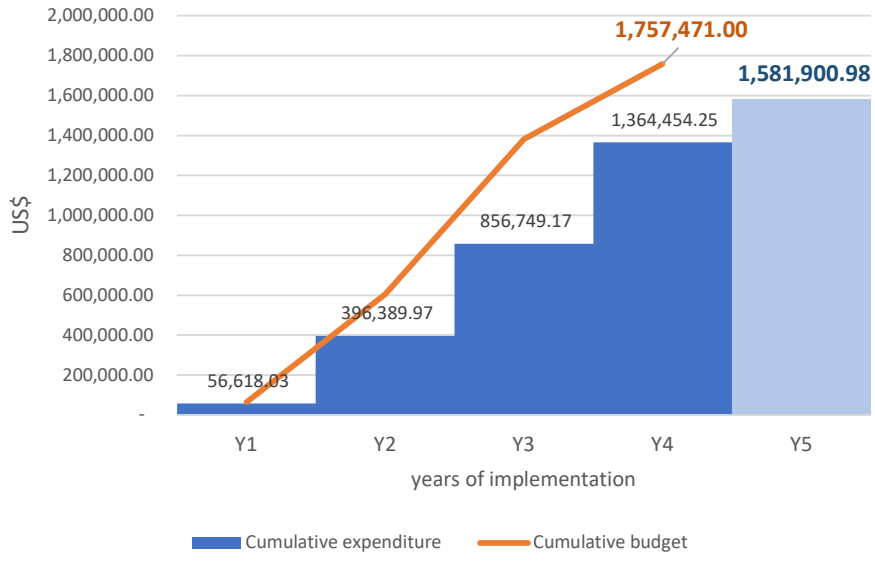
The DLA did not deliver the US$ 7,530,000 co-finance committed, as it did not participate in the project untill late 2019. However, since then, it has supported project activities with a financial contribution of US$ 4,250.

However, BEDO made essential contributions to the project beyond its role as the implementing agency. BEDO's in-kind co-finance delivery, which included staff time, office space, and equipment, is estimated at US$ 1.77 million.

Local government organizations, at the provincial and tambon level, also made significant in-kind financial contributions by allocating budget to environmental activities in support of the eventual implementation of the Biodiversity Health Index. Their contribution is estimated at US$ 1.34 million. Among project contractors, Thai Wetland Foundation contributed with a cash grant of US$ 5,600 in support of project activities

The UNDP committed US$ 30,000 TRAC funds (cash). These funds were delivered and covered technical assistance and administrative support by UNDP staff to the project (table 1).

Figure 2. Project delivery. 2020 AWP commits funds for the amount US$ 217,446.73, bringing total expenditure to 90% of the GEF grant. Projected 2020 expenditure in light blue.



[40] (World Bank, 2020)

Figure 3. Costs per outcome.

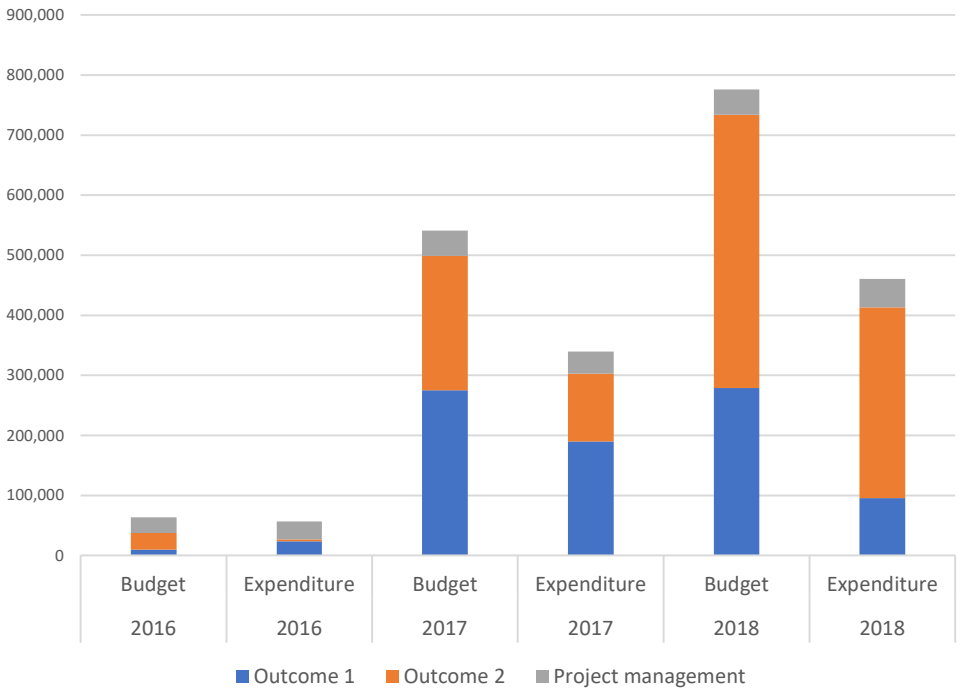


Figure 4. Budget and expenditure per account

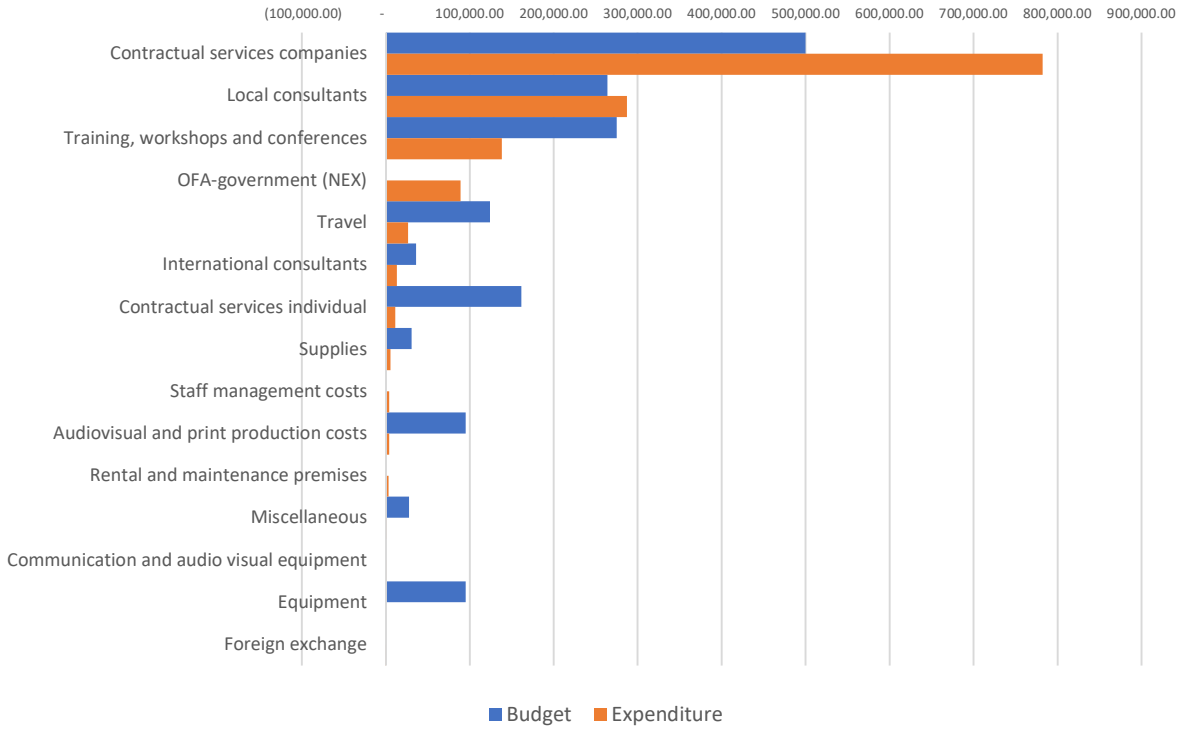


Table 1. Finance and co-finance table

Co-financing (type/ source)	UNDP (mill. US$)		Government (mill. US$)		CSOs (mill US$)		Total (mill. US$)	
	Planned	**actual**	**Planned**	**actual**	**planned**	**actual**	**planned**	**actual**
Grant	0.030	0.000	0.000	0.004	0.000	0.005	0.030	0.009
Credits	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Equity	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
In-kind	0.000	0.030	7.530	3.114	0.000	0.000	7.530	3.144
Non-grant Instruments	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Other Types	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	**0.030**	**0.030**	**7.530**	**3.118**	**0.000**	**0.005**	**7.560**	**3.153**

Monitoring and evaluation: design at entry and implementation (*)

The project's indicator framework comprised 15 indicators as listed in section "Baseline Indicators Established" (Project description, page 14). The indicators included area under management, the status of populations of indicator species, water quality values, the area under sustainable production, and the number of local government organizations applying the instruments developed by the project (BHI). For water quality and indicator species populations, the baselines were established during the PPG phase and the first year of project implementation, respectively. The project set or obtained the baselines for all indicators except for the endemic earthworm and proportion of clam harvesters certified in Don Hoi Lot. As described in section Analysis of LFA/Results Framework (page 19), these baselines could not be possibly determined.

The greatest challenge the SLBT project's PMU confronted was the absence of pre-existing regular monitoring mechanisms. In the absence of institutional monitoring arrangements, the project had to organize data collection through project contractors. Institutionalization of the gathering and dissemination of environmental information would enable the sustainable utilization of data collected in the future. The project's PMU has uploaded the results of biological monitoring to the national biodiversity database managed by ONEP: http://www.thaibiodiversity.org. However, functional mechanisms to link this repository to actual implementation of the BHI at local level need developing.

Nonetheless, the delay between the treatment (improved environmental management at the local level) and the response (improved habitats and population numbers), means that the monitoring information collected by the project at considerable expense cannot possibly show any effect of the project. Exact costs incurred during the setting of baselines and monitoring could not be determined as the PMU did not keep track of staff time and resources invested in these activities. However, the PMU qualitatively estimates that it allocated a significant part of staff time to these matters.

The project document allocated US$ 96,000 for monitoring and evaluation, equivalent to 5% of the GEF grant and nearly 60% of the project management budget. M&E budget included allocations for the inception workshop (10%), audits, midterm review, and final evaluation (30%) each. Budget allocation for the activities mentioned above was sufficient for their implementation.

The midterm review (MTR) was conducted as expected after the second Project Implementation Review in September 2018. The MTR encouraged the project to continue efforts to reconnect and engage with the DLA by establishing a working relationship with DLA's parent organization, the Ministry of Interior.

The MTR also spotted weaknesses in the indicator framework and gender strategy (see analysis of results framework/ indicators and mainstreaming sections). Regarding the indicator framework, the MTR recommended that the area under sustainable management should be qualified to enable attribution to the project. It further urged the substitution of *Glyphidrilus sp* for another indicator species[41]. Notwithstanding, the project management and board opted not to alter the original indicator framework, doubling efforts to gather missing biological and water quality data[42]. The PMU had to assume monitoring of indicators for which it had no technical capacity and were assigned to other organizations in the project document (see stakeholder list and planned stakeholder participation). Thus, the PMU contracted consultants to complete information on all indicators. Alternative species were monitored in substitution of *Glyphidrilus* sp., but not adopted as indicator species.

Any changes in water quality and biological indicators could not be attributed to project actions, as the project logic demanded that the intervention (biodiversity mainstreaming) precedes the effect (water quality and ecological response). Even positive changes, like the rise of shorebird number at Don Hoi Lot (conducted by the NGO Thailand Wetland Foundation on behalf of the project), cannot be attributed to project actions. However, it is important to remark that the decision to monitor all shorebirds solved the relevance problem of the only shorebird species of the indicator framework (*Numenius arquata*).

Given the shortcomings of the monitoring and evaluation system in terms of indicators at design into account (see also Analysis of LFA/Results Framework (Project logic and Indicators on page 21), the terminal evaluation rates the M&E design at project start-up and moderately unsatisfactory. However, considering that the PMU pro-actively sought information to complete the indicator framework and that project implementation monitoring, including audits and MTR were timely and efficiently conducted, the terminal evaluation rates the M&E Plan Implementation as satisfactory. The overall rating of the project's M&E is consequently moderately satisfactory.

UNDP and Implementing Partner implementation / execution (*) coordination, and operational issues

Implementing partner (BEDO)

The project's implementing partner, BEDO, fully committed to the success of the project even in the face of the severe challenges to its implementation. As described above, BEDO assumed alone the implementation of the project when the project responsible partner showed reluctance to engage. Eventually, BEDO succeeded in committing one local government organization and the DLA to support the mainstreaming of biodiversity in local government planning. After DLA and BEDO endorsement of the instruments, more LGOs are expected to adopt the BHI (see section effectiveness).

[41] (Holmgren & Worakul, 2018)
[42] (Yuberk & Cholsindusongkramchai, 2018)

Project implementation was done efficiently. Work plans were based on the original 4-year master plan but were reviewed and submit for approval to the project board at the beginning of every implementation year. Financial reporting and execution were also according to NEX rules and principles.

The PMU and the management of BEDO acted early, during the first year of implementation onward, to counteract the disinterest of DLA in the project. The PMU repeatedly attempted to reconnect with the leadership of its leading responsible partner, by engaging high-level officials in discussions and workshops. At the same time, the PMU actively engaged with the local government administration at the pilot sites to counteract DLA's absence. For the same purpose, the PMU contracted prestigious research and policy institutions (King Prajadhipok Institute, Thai Environment Institute, etc.) to develop the BHI and lay the ground for the eventual adoption of the instrument by DLA (see section effectiveness).

The project reports, both their narrative part and the rating by the implementing partner were frank and acknowledged the challenges encountered. The project's PIR accounted for project successes and failures of the PMU. Quarterly reports included information on project risks and mitigation strategies followed.

BEDO's leadership and resources supported the PMU's work and have promoted the inclusion of project products into the national policy framework (see section effectiveness). The project is aligned with and supporting of the implementation of the national biodiversity strategy and action plan. BEDO has committed to continue promoting the adoption of the BHI in the project's pilot local government organization beyond the end of the project (see country ownership in section 3 of this report).

The final evaluation rates the quality of execution by the implementing partner as highly satisfactory.

UNDP

UNDP is currently managing a portfolio of nine GEF-5 to GEF-7 projects, including the SLBT project. For the project cycle supervision of this portfolio, the UNDP engages human resources at the national level (program analyst and assistant) and the regional level (two RTAs).

Regarding the SLBT project, UNDP actively supported the PMU in its efforts to engage the DLA since the start of implementation. UNDP managed the project’s financial disbursements satisfactorily and supported the PMU in the revision and adjustment of annual work plans. Starting in the third project year (2018), UNDP officials met regularly with the PMU quarterly to discuss technical issues about the implementation of the project. UNDP officials also joint a monitoring field visit to the project sites together with the management of BEDO in 2018.

The final evaluation rates the quality of execution by the UNDP as satisfactory.

3.3 Project results

Overall results (attainment of objectives) (*)

The SLBT project is highly relevant for the conservation of biodiversity in the densely populated production and urban landscapes of the lower Chao Phraya basin and the coast of the Inner Gulf of Thailand. It supported national policy priorities and was framed within the UNDP country program document (CDP) and GEF-5 biodiversity objectives, also advancing towards the achievement of the Sustainable Development Goals (SDG) 2, 14, and 15.

The project set the stage for the mainstreaming of biodiversity into local government planning by producing the first applicable mainstreaming tools for local government in Thailand and promoting its enactment into national policy. However, due to a combination of design weaknesses (see section 3.1), and late engagement of the responsible partner, key targets have not been achieved.

Of the project's objective conservation targets, the goal of increase of area *under enhanced conservation security*, as the project document puts it, was not met. Changes in the protection status of 2.7% (Bang Khachao) of the targeted area were due to processes unrelated to the SLBT project, although supported by it. For population status, and environmental health, the SLBT project collected environmental information on shorebirds, coastal benthos, and water quality. While some of these indicators showed very positive results (healthy shorebird and benthos communities), they cannot be attributed to the project, as the project effect, the Biodiversity Health Index needs yet to be applied.

Due to the absence of the responsible partner during the first years of implementation, the mainstreaming instrument developed by the project, the Biodiversity Health Index (BHI), has yet to be implemented by local government organizations, which was the third development objective target. However, the project engaged actively with sub-district and provincial administration organizations, increasing their awareness of environmental issues and exhaustively preparing the ground for the application of the BHI, including by testing it on the target local administration organizations through a project contractor. Moreover, the SLBT project approached the local government using economic incentives for conservation, which was key to get the attention and support by local government officials and producers (farmers, fisherfolk) organizations. Still, only one sub-district local government organization has formally agreed to use the BHI in its next planning cycle. Yet, the project has come a long way to prepare the local government organizations at its pilot sites to implement it. If DLA and BEDO manage to secure endorsement for the BHI tool at the cabinet level, there is a good chance of the BHI being widely adopted by local government organizations in Thailand.

The project has also shown progress on social outcomes by identifying and supporting viable income-generating activities that are based on the sustainable utilization of biodiversity. However, the scale of adoption, in terms of participants and area, especially regarding fishery targets, have been below design expectations. Here, again, underestimation of transaction costs in dealing with multiple coastal actors in the project formulation and limited participation of government actors identified in the project document, such as the Department of Fisheries and the Department of Coastal and Marine Resources, conspired to undercut the efforts of the project's implementing partner BEDO and the project contractors.

Recognizing the project achievements, but also acknowledging its shortcomings in terms of completion of targets, the final evaluation overall rating is moderately satisfactory.

Relevance (*)

The project supports the implementation of the Integrated Master Plan on Biodiversity Management 2015-2021 (Thailand's fourth NBSAP). Specifically, the project supports the NBSAP's first strategy: *Integrate biodiversity values and management with participation at all levels*[43]. This strategy is linked to Aichi targets A2 on mainstreaming biodiversity values, and A3, on subsidies and incentives[44]. By supporting NBSAP/ Aichi targets, the project is fully aligned with the GEF 5 biodiversity strategy objective 2, mainstreaming biodiversity conservation and sustainable use into production sectors. Project support under this objective (Objective 2) included the strengthening of policy and regulatory frameworks and the production of biodiversity-friendly goods and services[45].

The project helps the achievement of the SDG target 15.9 (integrate ecosystem and biodiversity values into national and local planning). The project makes some contribution to SDG targets 2.4 (agricultural area under productive and sustainable agriculture), and 14.4 (regulate harvesting and end overfishing)[46], by promoting sustainable mango production and sustainable fisheries.

The project is part of the Programme area 3 of the 2012-2016 Country Programme (CP) for Thailand, aligned with Thailand's eleventh National Economic and Social Development Plan (NESDP) 2012-2016. Programme area 3 aimed to *strengthen the environmental policy framework, promote sustainable livelihoods through enhancing local economic development activities, diversifying livelihood options, increasing environmental security, and providing better access to natural resources, and support for the conservation of biodiversity ecosystems and natural landscapes* [47]. The project also fits with the 2016-21 CP priority of *Promoting Green and Inclusive Growth* that intends to provide support at community level, targeting areas most affected by environmental and biodiversity degradation[48].

The terminal evaluation rates the project as relevant.

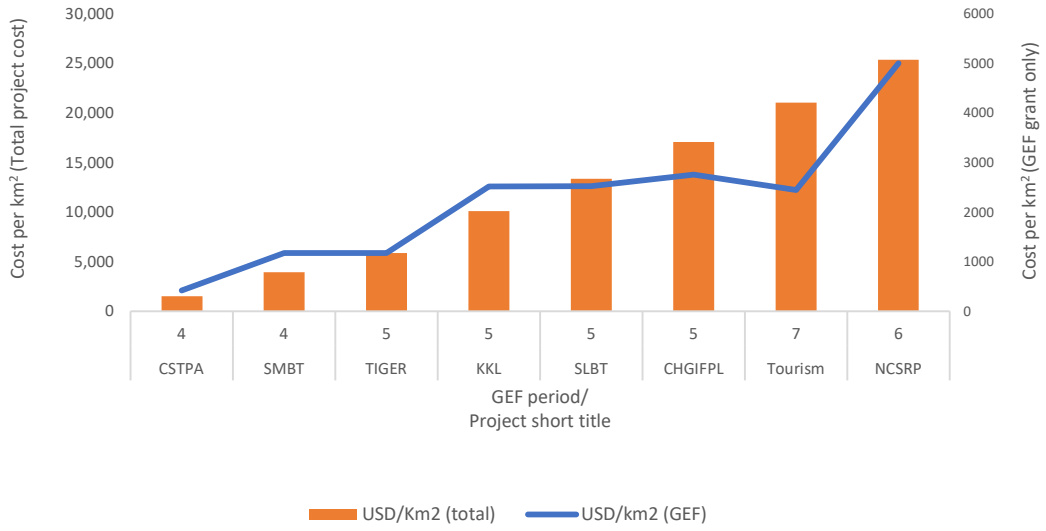
[43] (ONEP, 2014)
[44] (ONEP, 2019)
[45] (GEF Secretariat, 2012)
[46] (UN DESA, 2020)
[47] (UNDP Thailand, 2011)
[48] (UNDP Thailand, 2016)

Effectiveness & Efficiency (*)

Efficiency

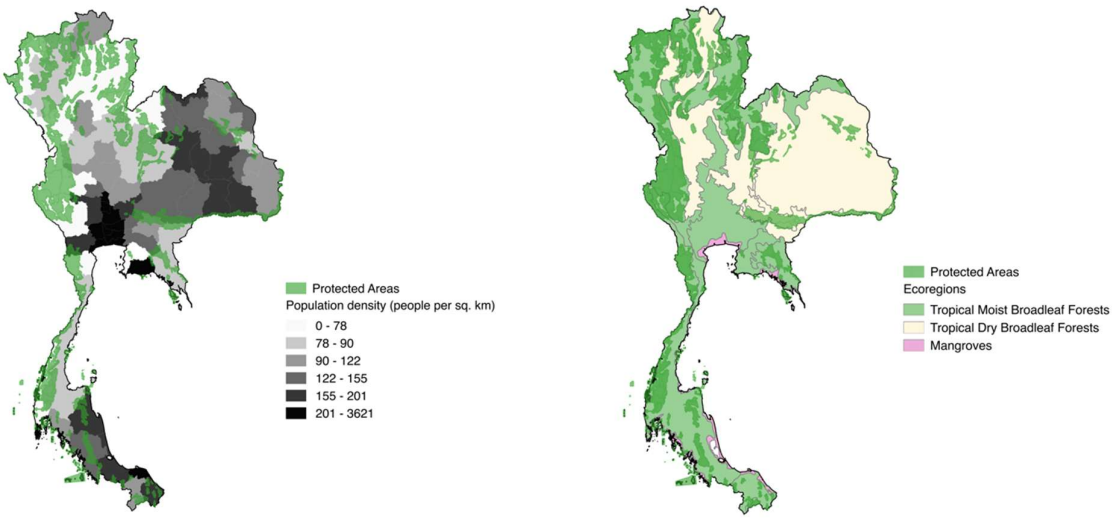
The terminal evaluation rates the project strategy's efficiency as satisfactory. The project strategy provided an investment per area similar to other GEF-5 biodiversity focal area projects in Thailand (figure 5). The cost per unit area has consistently risen since GEF-4 to GEF-7. Also, the project field structure was reasonably compact, with the PMU based at BEDO in Bangkok, and involving travel to project sites of less than a 100 km by road. Moreover, BEDO has attained the highest effectiveness and implementation ratings of all the GEF-biodiversity projects in Thailand.

Figure 5. Cost per unit area for GEF-4 to 7 biodiversity projects



Thailand has achieved Aichi target 11 on terrestrial protected areas by having declared 19% of its land area as protected (although only 2% of its marine area is protected). Most protected areas in Thailand cover the country's hilly northern borders (Thai highlands and Dawna range), interior ranges (Dangrek, Sankambeng, Petchabun, and Phu Phan ranges), and the southern Tenasserim range. Most protected areas (86%) belong to IUCN categories I and II and consist mostly of rain forest biome (figure 6). Natural areas in the Central Chao Phraya basin and the coast of the Gulf of Thailand have been intensively humanized and extensively degraded over the last century, but they still hold significant biodiversity values. These biodiversity values are the basis for major biodiversity-based economic activities (agriculture, fisheries, aquaculture, and tourism). Declaration of protected areas of categories I to III in this densely populated area would be problematic, expensive, and its enforcement likely challenged by most sectors of society. Thus, mainstreaming biodiversity in the service delivery of local government is the most efficient solution to preserve the still important biodiversity values (mangrove remnants, shorebirds, ichthyofauna, among others).

Figure 6. Protected areas in Thailand occur in the less densely populated mountain and hill country moist forest biomes, where enforcement of strict protection is easier than in the densely populated areas of the Chao Phraya basin and eastern plains[49].



Effectiveness

In this section we present the project accomplishments following the project's indicator framework. A result summary table is placed at the end of the section.

At least 69,618 ha of land and coastal area has biodiversity considerations mainstreamed into its management through development of regulations providing stricter management arrangement for land/coastal use within these areas to ensure the conservation of target species and habitats.

This indicator is identical to the first indicator for outcome 2. Following the project's theory of change, the adoption of the BHI by local government would have meant that their territory could be considered an area under enhanced conservation security. Although the participating LGOs did not yet adopt the BHI, one of the project sites has been declared as a protected area through processes not under the SLBT project. MoNRE declared the totality of the 1,891 ha. of Bang Khachao as an environmentally protected area in February 2019. The project has contributed to this process by facilitating discussions among community members, raising awareness about the benefits of protected areas, as well as incentives to maintain and expand the area under sustainable agriculture.

As for Don Hoi Lot (Samut Songkhram), 87,500 hectares are part of a Ramsar Site declared in 2001. However, this declaration does not entail any degree of protection equal or comparable to a protected area. The local Ramsar committee seems to be inactive. However, BEDO intends to continue the cooperation with the Department of Fisheries (DoF), initiated in the frame of the SLBT project. BEDO

[49] By the evaluation team with data from (Olson, et al., 2001) (UNDP, 2014) (GADM, 2018)

and DoF are to keep on working with fisherfolk organizations (clam harvesters) towards the adoption of a code or guidelines for sustainable fisheries.

The surface area of the Don Hoi Lot Ramsar site is wrongly reported in the project document and tracking tool (see annex 10, tracking tool). Moreover, out of the reported 67,799 hectares of the Don Hoi Lot Ramsar site, only 6,324 hectares are included within the territory of the four TAOs included in the project. Hence, the target area for the project should have been 6,324 hectares for Samut Songkhram.

The provincial office of Samut Songkhram intends to be declared Special Administration Province. Special Administration Provinces, like the Bangkok Metropolitan Administration and Pattaya city, have broader autonomy than normal PAOs. Considering that the current government of Samut Songkhram is supportive of environmental sustainability and conservation and sustainable use of biodiversity, the declaration as Special Administration entails an opportunity for endorsement of protected areas or areas under management and the adoption of the BHI.

The provinces of Samut Prakarn and Samut Songkhram use the Biodiversity Health Index as an annual performance measure for LGOs by DLA.

This indicator is closely related to two of outcome one indicators:

- Policy statement and guidance on inclusion of biodiversity considerations in local government development planning and performance assessment issued by MoI

- The two provincial administrative organizations of Samut Prakarn and Smut Songkhram and 10 of their TAOS use and meet BHI targets established within their Development Plans.

The project's theory of change demanded that the DLA would develop the policy statement and guidelines for the application of the BHI. However, the initial reluctance of the DLA forced the PMU to use contractors to produce these outputs. The King Prajadhipok Institute (KPI) developed policy recommendations and guidelines. The KPI is a prestigious institution in Thailand whose recommendations usually carry significant weight with the national administration. BEDO first submitted the policy paper prepared by the KPI to the permanent secretaries of the Ministry of Interior and Ministry of Natural Resources and Environment and then facilitated the commitment of DLA and local officials from the pilot sites during the project's final workshop in March 2020. Yet, only one TAO (Laem Yai in Don Hoi Lot) has adopted the BHI for its next development plan.

To facilitate the broader adoption of the BHI guidelines, BEDO will raise the issue to the National Committee on Biodiversity, from which it will go to the Cabinet for final approval and endorsement. Tentative dates for this process need yet to be defined. Moreover, BEDO, as deputy chair of the National Committee on the Biodiversity Act, has already embedded financing measures for biodiversity management, local government planning, and budgeting into the Act, which is expected to be passed this year (2020).

The BHI was designed by another prestigious project contractor, the Thailand Environment Institute (TEI). It is composed of measures of natural habitat, inventory of species, sustainable practices (fishery, agriculture), and local government environmental budget allocation. Additionally, another contractor, the Suan Dusit University, developed a model community development plan that mainstreams biodiversity together with a training module imparted to all participating LGOs (10 TAOs).

The BHI has been partially applied (without biodiversity indicators) by the KPI to evaluate the environmental expenditure of the 10 TAOs and 2 PAOs participating in the project. The evaluation's results included a biodiversity expenditure review that concluded that Samut Songkhram's biodiversity-related budget allocation is 800,000 Thai Baht (0.8% of total budget). Four TAOs in Samut Songkhram were evaluated. Around 2% of each TAO budget was allocated to environmental projects. But Bang Kaew TAO granted the significant amount of 77 million THB (15.9% of its budget) to its strategy for environmental protection and eco-tourism. Six TAOs in Samut Prakarn were evaluated. Less than 1% of each TAO's budget was allocated to environmental projects. Among six participating TAOs in Samut Prakarn, Bang Nam Phueng TAO has actively supported the growth of certified fruit (GI mango and orange) by providing a yearly budget for GI tree grafting and community-based nursery management.

According to the project document, the BHI's environmental parameters were supposed to be fed into a national database. The database was to be managed by ONEP, which in turn would have provided LGOs with the data they needed to evaluate their Biological Health Index. Although this institutional mechanism was not developed, BEDO has uploaded the results of the environmental monitoring conducted under the project onto the web repository http://www.thaibiodiversity.org.

Yet, it is currently unlikely that LGOs would be able to use that information or perform habitat or species monitoring without engaging specialists like the KPI or the Thailand Wetland Foundation. The limited capacities of LGOs were also noted by the DLA, which suggested that the application of the BHI would need cooperation from the Ministry of Environment, its provincial offices, LGOs, and the Ministry of Interior. The form of this cooperation is yet to be defined. Still, BEDO expects the support of King Prajadhipok's Institute (KPI) to put its training institute at the disposal of local and national for training using the course materials developed under the project.

No decline in the population of Number of populations of *Numenius arquata* (Eurasian Curlew) and *Glyphidrilus sp* (Flying earthworm)

Shorebird populations, including Eurasian curlew, have been monitored in Don Hoi Lot by the Thailand Wetland Foundation on behalf of the project since 2017. Populations appear healthy and stable. Shorebirds, mostly migratory, use salt ponds for food and rest. The project has supported a bird-watching tourism Programme that is starting to attract people, in cooperation with salt pond owners, who rent hides to bird watchers. There has not been any significant habitat conversion in Don Hoi Lot in recent years, nor is there any likelihood of further degradation of coastal mudflats and mangrove fringes.

The indicator species in Bang Khachao, the endemic earthworm *Glyphidrilus* sp., was never found in different surveys conducted on behalf of the project. This organism was only first discovered in the area in a survey conducted by the environmental NGO Green World Foundation in 2015.

Reduction in identified threats to pilot areas achieved through improved local development plans

This indicator consisted of four sets of targets, two for each project site. For Don Hoi Lot, the goal was the increase in the spatial density of razor clam (Solen regularis) and the improvement of water quality, measured by biological oxygen demand, pH, and total bacterial count (TBC) due to improved environmental management by sub-district level LGOs. Likewise, mainstreaming biodiversity in Bang Khachao should have resulted in improvement in the levels of water quality and led to a no increase in the built area.

To promote sustainable clam fishery in Don Hoi Lot, the project conducted preparation activities with the Department of Fisheries and leaders of conservation groups. These activities included one workshop to identify fisherfolk needs and training on the utilization of proper fishing gear, as well as the cultivation of oysters, mussels, and crabs. BEDO expects to continue cooperation with the Department of Fisheries to develop within a few years a voluntary code of practice subscribed by most harvesters (who would be certified), enforced mostly by peer pressure rather than fines or any other formal enforcement.

Current regulations in Bang Khachao prevent the expansion of the build area. Although new construction is ongoing, it occurs in formerly built blocks, and it does not significantly encroach on forest remnants or agricultural plots, active or abandoned. Those abandoned plots were the subject of a public buy-out and are under the care of the Royal Forest Department or community groups.

Water quality is low in Don Hoi Lot and especially Bang Khachao, on account of their position on the final stretches of two of the most critical watersheds of Thailand. Bang Khachao especially is exposed to Bangkok's wastewater, half of which still goes untreated. Water quality in the lower Chao Phraya Basin is classified as class 5, the worst water quality in Thailand. The deficient water quality explains why the values of dissolved oxygen, biological oxygen demand, and total coliforms in 2019 were worse than in 2016 and below the target of class three standards. Moreover, as temperature, tides, river flow, and other factors affect water quality, regular monitoring would be necessary to establish any change in condition.

Improvements in DLA's capacity development score.

Engagement of DLA in the project from inception would have guaranteed the development of its capacities for biodiversity management. An end-of-the project application of the scorecard was still pending at the time of the terminal evolution. It is yet possible that the involvement of the DLA with the project over the last few months could be linked to any positive changes in the score.

Scale of certified production and operations

The EOP target for this indicator was to have 80% of full-time razor clam harvesters in Don Hoi Lot certified and 70 ha. of certified mango production in Bang Khachao (from 3.4 hectares in 2015).

In Bang Khachao, the project-supported community conservation network from 6 TAO have prepared 1,000 mango saplings to be planted in private and public land amounting to 65 ha. of plantation area. The mango saplings belong to the local GI-certified variety, grown without pesticides, industrial fertilizers, and sound water management. Additionally, individual households with existing GI mango trees also grow more mango around their houses due to the high price and high demand for the product. Thammasat University conducted a study on behalf of the project that concluded that households involved in GI mango could raise their income by a fifth (ca. 19%). Even considering the initial investment needed, the cost-benefit ratio for the certified mango production is 6.86. Since demand is much higher than current and foreseeable production capabilities, a drop in prices due to increased production is improbable.

As discussed above, a certified razor clam fishery at Don Hoi Lot is still in its very early stages. Besides the yet incipient move to organize the fishery, the project has promoted sustainable tourism and local products. On behalf of the project, the Thammasat University and the Thailand Wetlands Foundation

developed some concepts for income-generating sustainable activities, including the birdwatching tourism discussed above. Another strong candidate as a flagship community product in Don Hoi Lot is shrimp powder. Don Hoi Lot is known for its shrimp paste, prepared from shallow benthonic shrimps of the genus *Acetes*, associated with mudflats and fished with push nets[50]. On behalf of the project, Thammasat University trained 32 fishers on how to process shrimp powder instead of traditional shrimp paste. Shrimp powder is currently more in demand than conventional shrimp paste by a growing middle-class who reside in modern condominiums/apartments, where the strong smell of traditional shrimp pastes has become an issue. Findings from post-training follow-ups show that 6.67 % of the respondents have started making shrimp powder and are earning a fifth over their regular income. However, the substantial initial investment needed for the production of shrimp powder discouraged almost all the participants initially engaged by the project.

[50] (Chan, 1998)

Results summary table and outcome ratings

Description of Indicator	Indicator components	Baseline Level	EOP target	Cumulative progress since project start	Achievement	Comments	Rating
Objective: To mainstream biodiversity conservation priorities into the performance management, development planning and budgeting systems of local government in Thailand.							**MS**
Hectares of landscape with enhanced conservation security	Bang Khachao	204	1819	1,891 ha. in BKC declared protected in process driven by ONEP.	100%	Weak link between project actions and protected area declaration. Protected area in production landscape needs mainstreaming biodiversity into governance and economic sectors for success	
	Don Hoi Lot	0	67799	67,799 ha are included in a Ramsar site. However, no protection granted	0%		
Number of provinces where the BHI is used as an annual performance measure for LGOs by the DOLA.		0	2	1. Biodiversity Health Index (BHI), 2. Policy statement and guidelines for BHI implementation at local level 3. Training and model community development plan including BHI 4. Declaration of commitment to BHI and mainstreaming by MoNRE and DLA	25%	10 TAOs evaluated by KPI using the BHI, with moderately good results. BHI to be adopted by DLA, but mechanism for implementation yet to be decided. Limited capacities of LGOs will be an issue.	
Natural populations at Bang Khachao and Don Hoi Lot	Eurasian Curlew.	595	595	1336	225%	Weak attribution to project	
	Flying earthworm	0	0	0	0%	MTR recommended removal of indicator. Organism not detected in the area.	
Outcome 1: Enabling framework for LGOs to plan, monitor and adapt land management for BD conservation							**MS**
Policy statement and guidance on inclusion of biodiversity considerations in local government development planning and performance assessment issued by MoI		0	1	1. Biodiversity Health Index (BHI), designedI to evaluate environmental performance of LGOs. 2. Policy statement and guidelines for BHI implementation at local level 3. Training and template/ model community development plan including BHI 4. Declaration of commitment to BHI and mainstreaming by MoNRE and DLA	100%	Commitment by DLA to policy statement developed by KPI	
Number of PAOs who are meeting the BHI targets established within their Development Plans		0	2		50%	10 TAOs evaluated by KPI using the BHI, with moderately good results. BHI to be adopted by DLA, but mechanism for implementation yet to be decided. Opportunities posed by new Town Planning Act, future Biodiversity Act and possible Special Administration status of Samut Songkhram	
Number of SAOs who are meeting the BHI targets in their Performance management agreements with the Office of the Provincial Governor		0	10				

Description of Indicator	Indicator components	Baseline Level	EOP target	Cumulative progress since project start	Achievement	Comments	Rating
Outcome 1: Enabling framework for LGOs to plan, monitor and adapt land management for BD conservation							**MS**
Improvements in capacity development indicator score for DLA for:	Environmental awareness	1	1.2	Assessment yet to be conducted	?	No information on how scorecard is to be applied Any changes in score at DOLA weak attribution to project	
	environmental policies	1	1.2		?		
	Environmental information for decision-making	1	1.2		?		
	Project/Programme me monitoring process	2	2.2		?		
Outcome 2: Local government development Programmemes based on biodiversity mainstreaming principles are demonstrated in two pilot areas							**MS**
Hectares of land for which participatory land/coastal management plans are in place	Bang Khachao (BK)	204	1819	1,891 ha. in BKC declared protected	100%	Weak link between project actions and protected area declaration. Protected area in production landscape needs mainstreaming biodiversity into governance and economic sectors for success	
	Don Hoi Lot (DHL)	0	67799	67,799 ha are being considered by to be declared protected	0%		
Reduction in identified threats to pilot areas achieved through improved local development plans	Increase in spatial density of *Solen regularis* in DHL	0.51±0.31/m^2	Any increase in density	No results yet	?	Workshop with fishers programmed and BEDO to support certification beyond implementation of period of the project	
	Water quality in DHL	DO: 5.49 mg/l BOD: 1.3 mg/l TCB: 7141 MPN/100ml	DO: 4 mg/l BOD: 2 mg/l TCB: 20000 MPN/100ml (Class 3 standard)	DO: 5.33 mg/l BOD: 2.5 mg/l TCB: 1,567 MPN/100ml	DO: 133% BOD: -25% TCB= 192%	DHL marine water's DO value consistent with ocean values. BOD values worse than baseline and class 3 standards. Coliform value conforming to class 2 standards. **Results cannot be attributed to project.**	
	Built area in BK	389.83	389.83	No changes	100%	The total area (green+built) only adds up to 1502.26 hectares **Weak attribution to project**	
	Green area in BK	1112.43	389.83				
	Water quality in Bang Khachao	DO: 1.90 mg/l BOD: 4.05 mg/l TCB: 10150 MPN/100ml	DO: 4 mg/l BOD: 2 mg/l TCB: 20000 MPN/100ml (Class 3 standard)	DO: 3.85 mg/l BOD: 2.75 mg/l TCB: 82500 MPN/100ml	DO: -4% BOD: -31% TCB=-313%	**Improvements regarding baseline but class 3 standards not achieved** for DO and BOD **and much worse coliform value**. **Results cannot be attributed to project, but to water quality of the Lower Chao Phraya (class 5).**	

Description of Indicator	Indicator components	Baseline Level	EOP target	Cumulative progress since project start	Achievement	Comments	Rating
Outcome 2: Local government development Programmemes based on biodiversity mainstreaming principles are demonstrated in two pilot areas							MS
Biodiversity Health Index score	Don Hoi Lot	No BHI yet adopted	Increase in score	No results yet	0%	BHI not yet applied in local government planning	
	Bang Khachao	No BHI yet adopted	Increase in score	No results yet			
Scale of certified production and operations	Number of certified harvesters of *Solen regularis* in Don Hoi Lot	0%	80%	The Project Management Unit has held workshop with Department of Fisheries and local fishers and aquaculture operators. A training is programmed on sustainable fishery and quality control with the expectation that fishers would voluntarily adopt best practices.	5%	Self-regulation challenging in open access context but there is hope that peer pressure and social control would be effective as fishers are more aware of negative effects of destructive practices and overharvesting	
	Certified mango production in Bang Khachao	3.4	70	Provincial Agricultural Office has organized a GAP standardized farming workshop to train 50 local Kung Bang Khachao growers who were responsible for 21.3ha of the area	93%	19% monthly income increase for 7 out of 20 participating farmers	
Number of project beneficiaries who are women).		0	275	No estimation yet	?	Gender consultancy on-going at time of final evaluation	

Country ownership

The project strongly supports BEDO's core values: developing local bioeconomic products and services and incorporating traditional knowledge to ensure sustainable uses. Proven through its experience in implementing the SLBT project, BEDO has been successfully embedded this value in the National Biodiversity Reform agenda, where it sits as a member of the reform committee. Although the project is not yet completed, BEDO has made a significant strategic move by including a provision in the newly drafted Biodiversity Act that LGOs are responsible for biodiversity management. The guidebook on "Local Biodiversity Management" developed by the project will be annexed to this Act.

Mainstreaming

1. Effects of the project on local populations

   The project has raised awareness of the economic benefits of biodiversity conservation among community members and local officials. More importantly, the project has promoted income-generating activities based on sustainable use of biodiversity, as described on page 39 (scale of sustainable production).

2. If the project objectives conform to agreed priorities in the UNDP country programme document (CPD) and country programme action plan (CPAP).

   The project conforms to agreed priorities in the CDP, as described on page 32 (Relevance).

3. Whether there is evidence that the project outcomes have contributed to better preparations to cope with natural disasters.

   Conservation of coastal ecosystems and wetlands has the potential to mitigate risks of floods and storms. The project has contributed to enhancing conservation of wetlands in Bang Khachao, and more indirectly, to mangrove forest conservation in Don Hoi Lot. However, the limited area affected is insufficient to significantly change climate risk in the lower Chao Phraya basin and the Inner Gulf of Thailand. However, should the BHI be widely implemented, it could promote the adoption of ecosystem-based adaptations (wetland and mangrove conservation) that would mitigate climate risk.

4. Gender issues

   The project document included guidelines to mainstream gender into project activities by accounting for different impacts on men and women and ensuring access of women to decision-making roles at community and LGO level. The MTR found that the project had not done enough to follow those guidelines. Therefore, it recommended emphasizing gender by engaging more women in project activities, especially in decision making roles, as well as collect sex-disaggregated data, and implement gender-responsive activities that benefit both women and men.

   In response to the MTR's recommendations, the project has engaged gender mainstreaming consultants from Thammasat University to 1) develop sex-disaggregated data in the context of

SLBT activities in both sites, and 2) conduct gender awareness-raising activities among project participants.

In developing sex-disaggregated data, community members (women and men) were engaged in discussions to reflect women's and men's specific tasks, access to knowledge and technology, access to and control over resources, and time spent throughout the value chain of project activities, such as GI mango farming and razor clam harvesting. The exercise used both quantitative and qualitative methods. Before the gender awareness-raising training, the consultant conducted a training needs assessment and developed a tailor-made training curriculum. The training used a simulation game where roles of women and men in the household and community were discussed and reviewed, leading to the collective understanding of the needs to ensure more gender equality /mainstreaming approach in community development planning and implementation.

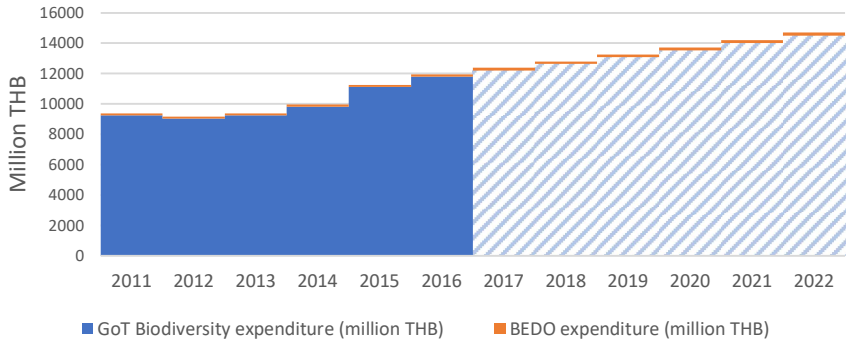
BEDO staff have participated in both exercises conducted by the consultants. Based on findings from these exercises, the consultants have prepared the project's Gender Action Plan. However, there is not sufficient time left to implement the plan. Yet, both UNDP and BEDO can benefit from the work of the consultants and use them as guidelines in designing and implementing gender mainstreaming in their future projects.

Sustainability (*)

Financial risks.

BEDO's budget has been stable for the last five years, representing about 1.3% of the total biodiversity-related government expenditure. In 2015, BEDO managed a budget of approximately 4.2 million US$. The SLBT project has amounted to approximately 9% of BEDO's annual expenditure. Biodiversity-related expenditure is projected to grow at the same pace as total government expenditure, between 3 and 4% yearly for the next 2 years. In this BAU scenario, BEDO should also see its budget rising alongside other core environmental agencies (figure 7). BEDO's projected budget for the period 2015-2021 would represent up to 70% of the estimated budget needs for biodiversity mainstreaming for the same period[51].

Figure 7. Actual and projected BEDO and Royal Government of Thailand (GoT) biodiversity-related expenditure (million THB). Last actual year is 2016. BEDO budget assumed to be 1.3% of total biodiversity-related expenditure, based on 2015 data.



[51] (BIOFIN-Thailand, 2017) (BIOFIN-Thailand, 2017)

BEDO, through UNDP, has also secured support from GEF-7. The new GEF project aims to mainstream biodiversity conservation into tourism development. It involves mainstreaming biodiversity at the local level in Petchaburi province (adjacent and to the Southwest of Samut Songkhram), besides developing a national biodiversity-based tourism strategy. Working with Petchaburi PAO and TAO would enable the use of instruments developed under the SLBT project. The project has a grant of US$ 2,639,726 (or US$ 1080 per square kilometre) and co-finance for an in-kind amount of US$ 20.1 million. Moreover, the project would count on financial and technical support from UNDP[52].

In the SLBT demonstration sites, however, sustainability and implementation of the project-developed solutions would need further support of BEDO and DLA to nurture the two "champion" TAOs already committed to the BHI and to accompany the process of expand mainstreaming to the other TAO.

For community-based solutions, financial sustainability is likely for GI mango and shrimp paste. However, in the latter case, the relatively high initial investment will be a barrier for its adoption.

Financial risks do not seem to threaten the sustainability of the project's result. Hence, the terminal evaluation rates the financial sustainability as likely.

Socio-economic risks

DLA is now convinced of the potential benefits of this process and its role in this process. DLA's engagement, together with committed LGOs (champions) won over by the project, may yet tip the balance towards a broad adaptation of the solutions developed by the project. However, awareness among TAOs is still limited, compounded by relatively low capacities to implement biodiversity mainstreaming. Joining forces with field offices of MoNRE could be necessary to tip the scales and expand the use of biodiversity mainstreaming instruments (BHI).

The limited capacities of local administration organizations at the tambon and province level make the socio-economic sustainability dimension moderately likely.

Institutional risks

Similar to socio-economic risks, the inclusion of the BHI into the country's regulatory framework would depend on the engagement on the one hand of the DLA and the Ministry of Interior and the LGOs themselves on the other. Thailand's current regulatory framework would allow for a seamless implementation of biodiversity mainstreaming at local government level, as long as it has the full support of MoI, DLA and MoNRE. Given the uncertainty on the actual mechanism for the implementation of the BHI, the terminal evaluation rates the institutional sustainability dimension as moderately likely.

Environmental risks

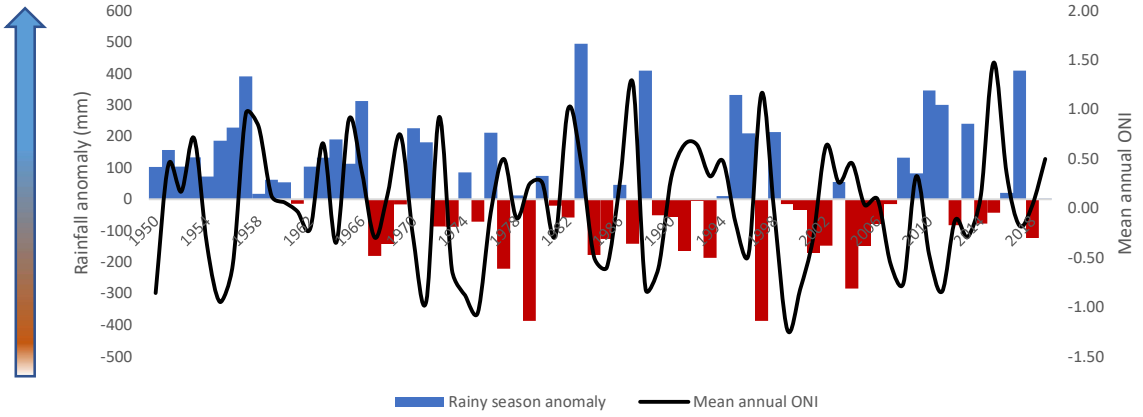
The extensive destruction and degradation of habitats and landscapes in the lower Chao Phraya watershed and the coast of the Gulf of Thailand have stopped and partially reversed since the late 1990s. Although the water quality situation at both sites is still dire, their biological values, e.g., bird

[52] (UNDP Thailand, 2019)

biodiversity, mangroves, and fishery, seem to be in relatively good health and no immediate danger of extinction or irreversible degradation.

Sea level rise in the delta of the Chao Phraya and estuary of the Mae Kholn (Kwae) rivers increases the risk of aquifer salinization, infrastructure damage, flooding and storm surges, and permanent inundation. Sea level rise is compounded by natural and human-driven subsidence[53]. The Bangkok metropolitan area has experienced subsidence related to growing demand for groundwater[54], of about a third of current annual global sea level rise[55]. In fact, community and local government representatives in Bang Khachao report increasing challenges for agriculture due to saltwater intrusion, although this may be related to the current drought (figure 8).

Figure 8. Rainy season (MJJASO) rainfall anomaly (regarding the 1971-2001 mean) and Oceanic Niño Index for Bangkok. Drought conditions started in 2019. El Niño years correspond to positive phases of ONI, which in turn correlates with less-than-average rainfall (negative anomalies)[56].



Droughts in Thailand are linked to positive El Niño-Southern Oscillation (ENSO) phases (El Niño years) (figure 8). ENSO is projected to become more extreme in the coming decades[57], increasing drought risks that would compound salinization problems derived from relative sea level rise.

The area around the mouth of the Mae Khlong river (Don Hoi Lot Ramsar site, Samut Songkhram) also experiences land subsidence, which combined with global sea level rise has caused the sea level to have risen locally by some 30 cm over the last 30 years[58], which has led to considerable erosion[59]. Given the current development of the area, more habitational and road infrastructure will be exposed to floods. Behind a stable mangrove fringe, the area is made up mostly of active and inactive aquaculture ponds. Abandoned aquaculture or ponds that become partially flooded could allow the mangrove fringe to migrate landwards with the rising sea level, thus continuing to protect the coast against erosion. CMIP 5 models project increases in precipitation over the next decades, with more intense rainfall, including

[53] (Oppenheimer, et al., 2019)
[54] (Hijioka, et al., 2014)
[55] (Higgins, 2015)
[56] Data from (Harris, et al., 2014) and (Huang, et al., 2017)
[57] (Collins, et al., 2019)
[58] (Sojisuporn, et al., 2013)
[59] (Duriyapong & Nakhapakorn, 2011)

extremes, with higher emission scenarios[60]. While this may compensate for salinization problems, it entails increased flood risks.

The projected rise of mean annual temperature of 1-2℃ by mid-century[61] means that green spaces in cities, where the urban heat island effect compounds the expected increased incidence of heatwaves[62], are of critical importance. Moreover, as partially a wetland, Bang Khachao could play an essential role in buffering against coastal and river floods[63], which will increase in frequency and intensity in the coming decades[64]. .

While climate change constitutes a threat for coastal ecosystems of the Inner Gulf of Thailand and the lower Chao Phraya basin, the threats for the remaining biodiversity values at both areas are not immediate and seem to be under reasonable levels. Hence, and for the next five years, the terminal evaluation rates the environmental sustainability dimension as likely.

Impact

The main impact of the project was to kick-start the process of biodiversity mainstreaming at the local government level. Although a previous project under GEF-4 had the same purpose, it focused mainly on the development of sustainable income-generating activities at the community level without aiming, like SLBT, to significantly strengthen the national policy framework. Although the actual impact is still nascent, there is a good chance of the biodiversity health index being adopted by more local governments in the next years, if political support by the DLA continues. The impact on this dimension is rated as significant.

At the community level, the project has caused an increase in the collective awareness of local communities on the importance of sustainable biodiversity management through their engagement in project activities, i.e., participatory BHI development, training on sustainable bioeconomic products management. There is potential for economic incentives for the biodiversity-friendly practices associated with GI mango production and, eventually, sustainable fishery products, and tourism services. While there have been significant effects at a very local level, the limited geographical scope and number of beneficiaries means that the rating for this impact dimension is negligible.

In terms of the mitigation of threats to biodiversity, the impact of the project is not yet significant. Biodiversity values at both project sites are stable are not under immediate danger. However, the process that the SLBT project has started may be decisive in raising awareness and biodiversity-friendly action among local government organizations in Thailand, if the challenges associated with limited capacities at that government level can be solved. The terminal evaluation rates this impact dimension as negligible.

[60] (Taylor, et al., 2012)
[61] (Taylor, et al., 2012)
[62] (Taylor, et al., 2012)
[63] (Nilubon, et al., 2016)
[64] (Hallegatte, et al., 2013) (Hinkel, et al., 2013)

4. Conclusions, recommendations & Lessons learned

Conclusions

The SLBT project design complies with the GEF biodiversity mainstreaming strategy. The project's results chain involved changes in local government planning and service delivery to account for impacts on biodiversity. Biodiversity mainstreaming would result in the mitigation of threats to biodiversity at the project sites. However, the project design was naïve regarding the transaction costs of involving numerous national government and non-government organizations in a chain of activities that needed precise and timely implementation to achieve the expected results. Some of the organizations, notably the Department of Pollution Control, were assigned roles in the implementation of the project without sufficient consultation. Moreover, the project design expected the development of synergies across the GEF-5 project portfolio, between SLBT and the projects implemented by ONEP, which did not come to fruition.

The project design's lynchpin was the engagement of DLA to mandate the inclusion of biodiversity indicators in the local government's performance evaluation and the commitment of the local government to accept this new requirement. However, the DLA could only fully engage with the project during the last year of implementation, and, by the time of the final evaluation, only two local government organizations were fully committed to including a biodiversity health index in their planning process. These challenges were due to changes in political leadership at the national level, together with reluctance by DLA to impose new evaluation requirements on yet unwilling local governments. LGOs, as it came out, were yet far from committed to accept responsibility for impacts on biodiversity. The project document, paradoxically, identified both factors, awareness, and interest in adopting new policies were as both project assumptions and risks simultaneously.

The project's indicator framework and monitoring strategy are consistent with the GEF-5 biodiversity strategy and, in principle, with SMART criteria. However, the project design's monitoring strategy depended on the actions of other government organizations to provide data and technical expertise. ONEP, in particular, was expected to have a prominent role in supporting the development of a database on biodiversity and other relevant environmental parameters that would then assist LGOs to prepare their biodiversity health index scores. When the expected coordination and synergies did not take place, BEDO had to account for the indicators through contracting project consultants. Compounded by the lack of relevance of some indicators, notably species and pollution indicators, the project's monitoring strategy became not very cost-effective. Moreover, the project's biological and water quality indicators underestimated the response time between improved management and ecological response and ignored externalities (upstream effects).

The project's implementing partner, BEDO, and its PMU acted decisively to bridge the gap between project design and the facts on the ground. BEDO assumed the role of virtually all project partners, completing the project outputs by engaging recognized research institutions as project contractors. While this strategy could not have possibly reached the ambitious goals set by the project design, it came a long way to set the basis for the successful mainstreaming of biodiversity at the local government level.

Implementation, work planning, monitoring and evaluation, and financial execution were implemented satisfactorily by UNDP and the project implementing partner (BEDO). Deviations from the original project budget in terms of account and annual expenditure were due to the necessary adjustments to the implementation realities faced by the project. The final evaluation, accounting for the efforts undertook by the implementing partner rates, the execution, coordination, and operation as satisfactory.

The project strategy is strongly aligned with national biodiversity policy, supported by the UNDP country Programme document and with strong links to the CBD strategic plan, Aichi targets, and the GEF-5 biodiversity strategy. The project strategy is also efficient in seeking to mainstream biodiversity in densely populated, profoundly transformed landscapes where "traditional" protected area declaration would be challenging to enforce. Moreover, the project effectively linked conservation objectives with local economic development targets by promoting GI-certified mango in Bang Khachao and initiating dialogues with fisherfolk towards a sustainable clam fishery in Don Hoi Lot.

The project did not meet its targets in terms of the depth of mainstreaming biodiversity into local government planning. By the end of the project, ten sub-district government organizations and two provincial government organizations have been evaluated once based on a biodiversity health index by a project contractor (KPI). A high-level meeting held last March (03/2020) confirmed the renewed commitment of the Department of Local Administration, together with BEDO, to adopt the policy changes crafted by the project and support their implementation on the ground. However, challenges remain as the project closes. Detailed implementation mechanism for the BHI evaluation has yet to be defined, and the gap between the new requirements and the capacities of TAOs needs to be bridged.

Moreover, the expected ecological benefits (water quality, habitat extent, species health), which were the indicators of project success, will only be detectable in some years after the actual implementation of the mainstreaming tools.

In the demonstration site (outcome 2), the project came a long way towards raising awareness and interest by local government organizations. Although the project only reached the commitment of one TAO for the inclusion of the BHI in its next planning cycle, it has sponsored the development of capacities through training and the preparation of the necessary tools.

At the community level, more aligned with BEDO's expertise and vocation, communities have benefited from training and the development of sustainable or environmentally friendly products that have an excellent chance to show local government and incentive to include biodiversity conservation in their planning processes. However, and, again, due to over-optimistic project design, weak indicators and the lack of support suffered by BEDO in the first years of implementation, none of the targets of outcome two have been reached. However, on account of the progress in awareness and support for increased levels of protection and development of sustainable production, the terminal evaluation rates this outcome as moderately satisfactory.

The final evaluation rates the overall results of the project as moderately satisfactory, consistent with the rating by both UNDP and BEDO in the project’s implementation reviews (PIRs). This rating does not make justice to the efforts undertaken by the implementing agency, BEDO, to steer this project towards a satisfactory end without much support from the main stakeholders during most of the implementation period.

The project's gender mainstreaming strategy was significantly strengthened as a result of the MTR recommendations. While the implementation of the said strategy began late, it has at least raised awareness on gender issues on communities in Bang Khachao and Don Hoi Lot and at BEDO itself.

The financial sustainability of BEDO seems guaranteed by its role within the government and the continued financial support of GEF. However, at the local level, continuous support for biodiversity mainstreaming depends strongly on the political commitment by DLA and the Ministry of Interior and the adherence of more champion LGOs to the biodiversity mainstreaming process. While the project has shown manifest financial incentives for biodiversity conservation, this may yet be too weak to bring

about a "critical mass" of support to tip the balance in favour of broad adoption of the primary tool developed by the project, the Biodiversity Health Index.

Climate change constitutes a risk for sustainable management of biodiversity that can be averted, at least partially by adopting ecosystem-based solutions, especially in coastal areas. The final evaluation rates the sustainability of the project as moderately likely because of the political will and awareness it has generated, but also the weakness of the adoption of biodiversity mainstreaming instruments and the potential impacts of climate change. Yet, there is a moderately good chance the project significantly contributed to starting mainstreaming biodiversity at the local government level in Thailand. Hence, the final evaluation rates its impact as significant.

Recommendations

Actions to follow up or reinforce initial benefits from the project

1. UNDP and BEDO should follow up on the formal commitment to the adoption of the biodiversity health index and its inclusion into local government planning and evaluation adopted at the national workshop on biodiversity mainstreaming held last March. A concrete roadmap must be formally agreed upon by the mains stakeholders, DLA/MoI and MoNRE, which can be connected to the new GEF-7 project in Petchaburi.

2. BEDO and DLA should continue to support its champion TAO (Laem Yai), which has adopted the BHI, and PAOs, (Samut Songkhram and Samut Prakarn), which could be adopting the BHI guidelines to provide practical examples to other LGO. This support entails also investing funds in developing the capacity of LGOs and DLA to implement the BHI, for instance, as suggested by DLA and BEDO, through the provincial structures of MoNRE and training capacities of KPI.

3. BEDO and the Department of Fisheries should continue efforts with the fisherfolk in Don Hoi Lot towards sustainable fishing practices. These efforts should likely involve more stakeholders, including tourism entrepreneurs, and the Department of Coastal and Marine Resources. Given the opportunities presented by its tourism potential, the adoption of a voluntary good practices code could show the way for similar agreements in other areas of the country, including the Petchaburi province focus of the coming GEF-7 biodiversity mainstreaming project.

4. BEDO and the DLA could consider, within the bounds of political propriety, encouraging the discussion of environmental and biodiversity goals in the political debate of the coming local elections, by showing local officials that people, and hence votes, are interested in measures taken to promote a healthy environment.

5. BEDO and the Thailand Wetland Foundation should ensure the promotion of birdwatching tourism, which may provide a necessary economic incentive for local government to continue monitoring biodiversity. The advance of community-based sustainable shrimp powder that has shown promising results if linked to a code of good practice for the *Acetes* spp. fishery, together with the ongoing efforts related to the *Solen regularis* fishery. BEDO support will be necessary for the newly developed products (shrimp powder) and services (birdwatching tourism) in Don Hoi Lot. Income-generating projects developed in Don Hoi Lot pose more challenges than the more established GI mango production in Bang Khachao.

Proposals for future directions underlining main objectives

UNDP and the implementing partners of future projects must ensure full commitment during implementation by all critical project partners or reform the project strategy. As commitment during PPG does not necessarily translate into engagement during execution, the signature of all key project partners at the project document and, additionally, a memorandum of understanding at project inception should serve to consolidate the promised support even in the event of changes in the administration.

Regarding biodiversity monitoring, BEDO should partner up with ONEP and DLA to maintain a functional database to manage the results of the biodiversity monitoring that the application of the BHI needs. Biodiversity monitoring does not belong to BEDO's primary competence and would require strong involvement by ONEP and the DMCR (in coastal areas and especially for fishery-related biodiversity). UNDP could support a more substantial involvement of these two agencies in the frame of the new GEF-7 project portfolio.

UNDP and MoNRE should partner up to link conservation measures to climate change adaptation benefits. This partnership should produce evidence for local officials on the benefits of low-regret ecosystem-based solutions like mangrove and gallery forest conservation against potential impacts of climate change, in this case, sea-level rise and rainfall extremes.

Best practices and lessons learned

The provincial working groups established by BEDO could constitute an effective way to mainstream project concepts and initiatives into local government organizational systems and ensuring continuity/sustainability of project results after the project ends.

Linking biodiversity objectives to social goals through income-generating benefits constitutes the best entry point for local government, usually more preoccupied with the immediate necessities of constituents than, in their perspective, the vague potential consequence of the loss of biodiversity.

Densely populated, deeply humanized landscapes like the lower Chao Phraya basin and the Gulf of Thailand are better suited for biodiversity mainstreaming into governance or productive sectors, rather than declaration as protected areas. In these circumstances, enforcement of protection is bound to be costly, contested, and, therefore, unlikely to be effective.

This project was compromised by the underestimation of the transaction costs of coordinating a large number of relevant stakeholders with responsibilities. The potential benefits of coordination, cooperation, and synergies should be carefully considered against the mounting costs of convincing an additional partner to assist with the project. The transaction costs should instead be incurred at the PPG phase, by actively involving the required partners, and securing formal agreements that clearly state the contribution and benefits for each party.

When including biological indicators, the costs of setting up a sustainable monitoring system (who should be in charge, origin, and allocation of funds, etc.) and the time needed for changes in management to obtain a response from habitats and species should be considered. Moreover, external effects, such as upstream effects on water quality, should be addressed rigorously. This project also underestimated the costs of setting up biodiversity monitoring, as well as the process, analysis, and management applications of monitoring data. Setting up even basic participatory monitoring of biological resources involves significant time and expenditure to mobilize communities and experts, as

well as the resources needed to select indicators, prepare the methodology and design the analysis and maintenance of the data generated.

5 Annexes

1. ToR
2. Itinerary
3. List of persons interviewed
4. Summary of field visits
5. List of documents reviewed
6. Evaluation Question Matrix
7. Questionnaire used and summary of results
8. Evaluation Consultant Agreement Form
9. Tracking tool

Signed Terminal Evaluation Final Report Clearance Form

(to be completed by the Commissioning Unit and UNDP-GEF RTA and included in the final document)

Terminal Review Report Reviewed and Cleared By:

Commissioning Unit

Name: Napaporn Yuberk, Prgramme Analyst
Signature:

_____ Date: 30 April 2020

UNDP-GEF Regional Technical Advisor
Name: Lisa Farroway, Regional Technical Advisor
Ecosystem and Biodiversity, UNDP-GEF
Signature:

_____ Date: 30 April 2020