



Fostering Water and Environmental Security in the Ma and Neun/Ca Transboundary River Basins and Related Coastal Areas

Part I: Project Information

GEF ID

10193

Project Type

FSP

Type of Trust Fund

GET

CBIT/NGI

CBIT **No**

NGI **No**

Project Title

Fostering Water and Environmental Security in the Ma and Neun/Ca Transboundary River Basins and Related Coastal Areas

Countries

Regional, Viet Nam, Lao PDR

Agency(ies)

FAO

Other Executing Partner(s)

IUCN

Executing Partner Type

GEF Agency

GEF Focal Area

International Waters

Taxonomy

Focal Areas, Influencing models, Stakeholders, International Waters, Learning, Freshwater, River Basin, Transboundary Diagnostic Analysis and Strategic Action Plan Preparation, Convene multi-stakeholder alliances, Demonstrate innovative approaches, Strengthen institutional capacity and decision-making, Communications, Strategic Communications, Awareness Raising, Public Campaigns, Behavior change, Indigenous Peoples, Civil Society, Community Based Organization, Academia, Non-Governmental Organization, Beneficiaries, Local Communities, Type of Engagement, Participation, Partnership, Information Dissemination, Consultation, Gender Equality, Capacity, Knowledge and Research

Rio Markers

Climate Change Mitigation

Climate Change Mitigation 0

Climate Change Adaptation

Climate Change Adaptation 1

Submission Date

4/5/2019

Expected Implementation Start

10/1/2021

Expected Completion Date

9/30/2026

Duration

60In Months

Agency Fee(\$)

760,000.00

A. FOCAL/NON-FOCAL AREA ELEMENTS

Objectives/Programs	Focal Area Outcomes	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
IW-3-5	Enhance water security in freshwater ecosystems through advance information exchange and early warning	GET	2,626,984.00	24,830,000.00
IW-3-6	Enhance water security in freshwater ecosystems through enhanced regional and national cooperation on shared freshwater surface and groundwater basins	GET	1,626,984.00	5,280,000.29
IW-3-7	Enhance water security in freshwater ecosystems through investments in water, food, energy and environment security	GET	3,746,032.00	9,031,211.00
Total Project Cost(\$)			8,000,000.00	39,141,211.29

B. Project description summary

Project Objective

To enable Viet Nam and Lao PDR to address freshwater resource management and ecosystem health in the transboundary Ma and the Neun/Ca river basins and coastal zones by creating an enabling environment for transboundary cooperation and action.

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing (\$)	Confirmed Co-Financing(\$)
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Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing (\$)	Confirmed Co-Financing(\$)
Component 1: Consolidating a common knowledge base	Technical Assistance	<p><i>Outcome 1: Consensus among countries on key transboundary concerns, including climate change and variability - reached through joint fact finding - strengthens transboundary cooperation and opens the way to coordinated remedial actions.</i></p> <p><i>Two TDAs with (one for each basin) corresponding Environmental Status Indicators submitted for endorsement to the Steering Committee.</i></p>	<p>Output.1.1 Science-based assessments of the current state of freshwater resources (surface and groundwater) and of their dependent ecosystems, including technical assessments (e.g. sediments, fisheries, biodiversity, and forest fire risk), governance and gender.</p> <p>Output 1.2: Comparison analysis of current trends and projected scenarios (Two (one for each basin) reports cleared by the PCU)</p> <p>Output 1.3 Evaluations of environmental flows at selected sites (Two reports cleared by PCU)</p> <p>Output 1.4 Transboundary Diagnostic Analysis (TDAs) (Two TDAs submitted to the SC for endorsement)</p> <p>Output 1.5 Agreement reached on a limited number of key Environmental Status Indicators (ESI) (One report presenting sets of indicators for each basin)</p>	GET	2,409,100.00	10,300,000.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing (\$)	Confirmed Co-Financing (\$)
Component 2: Facilitating transboundary cooperation	Technical Assistance	<p>Outcome</p> <p>2. Enhanced water security, environmental sustainability and forecasting capabilities in both basins and their coastal areas, achieved through the establishment of transboundary cooperation and information exchange frameworks and mechanisms.</p> <p><i>Shared vision and design of new permanent cooperation frameworks and mechanisms submitted for clearance to the SC</i></p>	<p>Output 2.1 Creation of <u>Joint Technical Committees</u> ? JTCs (Three JTCs are part of the new permanent cooperation frameworks submitted for SC clearance)</p> <p>Output 2.2 <u>A shared long-term Vision</u> (horizon 20 years) including the agreement on environmental quality (EQ) targets (one for each basin) and gender equality.</p> <p>Output 2.3 Harmonized <u>design of multi-purpose monitoring networks</u>, and joint monitoring and data-sharing protocols.</p> <p>Output 2.4 <u>Interim Bilateral Consultation/Coordination Committee</u> (IBCC) agreed upon and established.</p>	GET	645,976.00	3,200,000.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing (\$)	Confirmed Co-Financing (\$)
Component 3: Testing solutions on the ground	Investment	<p>Outcome</p> <p><i>3. Countries resolve to joint actions reinforced by testing on the ground environmentally sound land/water management approaches, policies, practices and technologies, and share results and experiences</i></p> <p><i>At least 4 pilot projects implemented</i></p>	<p>Output 3.1 Program of <u>pilot Demonstrations</u> selected on the basis of the results and findings of Component 1 (e.g. flood forecasting and community preparedness, fish-friendly irrigation expansion).</p>	GET	2,819,048.00	20,445,198.29

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing (\$)	Confirmed Co-Financing (\$)
Component 4: Leveraging commitment to action	Technical Assistance	<p>Outcome 4 <i>The process of reversing of degradation trends in the two basins galvanized as countries commit to sustain joint cooperation mechanisms and to undertake priority reforms and investments</i></p> <p><i>Two SAPs submitted for signature at ministerial level</i></p>	<p>Output 4.1 Countries establish ad hoc inter-ministerial committees (ICMs).</p> <p>Output 4.2 Two <u>Strategic Action Programs</u> (SAP) with horizon of 5-10 years, consistent with the Shared Vision.</p> <p>Output 4.3 A <u>partnership conference</u> consolidating international support for SAPs implementation</p> <p>Output 4.4 <u>National Action Plans</u> (NAP) for the Ma and Neun/Ca river basins translating regional priorities into national actions (to be implemented after SAP endorsement).</p>	GET	689,900.00	2,000,000.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing (\$)	Confirmed Co-Financing (\$)
Component 5: Strengthening Institutions and raising awareness	Technical Assistance	<p>Outcome 5.1</p> <p><i>The visibility and sustainability of project outcomes enhanced by the reinforcement of capacities of relevant national entities and of the interim transboundary cooperation body established as part of the project.</i></p> <p><i>At least 100 land/water administrators in each basin received training and attended SMs (at least 50% women to be targeted)</i></p>	<p>Output 5.1.1 <u>Sustained training of national staff</u> and of land/water administrators on key aspects of transboundary waters management, data analysis and monitoring, including gender issues.</p> <p>Output 5.1.2 <u>Awareness raising events</u> involving a broad range of stakeholders at the national, regional and global levels.</p>	GET	632,000.00	1,096,013.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing (\$)	Confirmed Co-Financing (\$)
5	Technical Assistance	<p>Outcome 5.2 Benefits from the global to the local levels accrue through the sharing and dissemination of Project experiences and lessons learned.</p> <p><i>10 events and 30 documents and 2 videos including on gender and water issues</i></p>	<p>Output 5.2.1 Dissemination of key project achievements.</p> <p>Output 5.2.2 Collaboration with IW LEARN. Full participation to GEF IW LEARN activities including IWCs, creation of a project website following IWLEARN standards, and preparation of experience notes.</p>	GET		
M&E	Technical Assistance	M&E system		GET	316,550.00	600,000.00
Sub Total (\$)					7,512,574.00	37,641,211.29

Project Management Cost (PMC)

GET	487,426.00	1,500,000.00
Sub Total(\$)	487,426.00	1,500,000.00
Total Project Cost(\$)	8,000,000.00	39,141,211.29

Please provide justification

PMC is slightly over at 6.5% of the technical components. The project is seeking more than normally allowable PMC costs because of a number of reasons: 1. The project is developing 2 sets of TDAs and SAPs for 2 shared river basins. It will work at regional level (to work with two countries), at

each country at national level and at sub-national level in two different river basins. This means the project needs to operate in a more complex institutional context compared to projects that are only producing one TDA and SAP. In absence of baseline regional institutional to build from, the project will need to spend more resources to build institutional buy in and support from partners at these different levels in the two basins. 2. This project being a large dual basin foundational TDA/SAP intervention, there is no well-established existing regional governance mechanism from which to build and leverage co-finance for the PMC. 3. Given that the project's key objectives are to develop two TDA and SAP, the team of experts for this is large and there is anticipation of high level of admin and finance expert support to a large technical team that will be undertaking several studies and assessments for this foundational project. In addition, bulk of Component 3 will be done through national government agencies/ partners by the Executing agency, as well as which will require strong support from procurement support expert to support for these to do necessary agreements and to monitor those agreements at national and two basin levels. The part time procurement officer will have an oversight for contracts (such as quotations management for transport, equipment, workshop field trips etc.), and liaising with internal IUCN procurement committee, HR etc. for internal policy control. 4. The project does need the budget for proposed office spaces, given the need to coordinate and provide space for large number of consultants, and to ensure neutrality of the space, as well as the need to support a main regional office in Hanoi, and a sub-office in Vientiane.

C. Sources of Co-financing for the Project by name and by type

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount(\$)
Recipient Country Government	Lao Xiangkhuang Province Government	In-kind	Recurrent expenditures	5,396,600.00
Recipient Country Government	Lao Huaphan Province	In-kind	Recurrent expenditures	467,198.29
GEF Agency	FAO	In-kind	Recurrent expenditures	332,138.00
Donor Agency	GIZ	Grant	Investment mobilized	8,004,779.00
Donor Agency	Wildlife Conservation Society	Grant	Investment mobilized	1,990,496.00
Donor Agency	IUCN	In-kind	Recurrent expenditures	900,000.00
Recipient Country Government	Vietnam MONRE	In-kind	Recurrent expenditures	50,000.00
Recipient Country Government	Vietnam MONRE	Loans	Investment mobilized	3,000,000.00
Recipient Country Government	Vietnam Monre	Public Investment	Investment mobilized	19,000,000.00
Total Co-Financing(\$)				39,141,211.29

Describe how any "Investment Mobilized" was identified

Viet Nam: Please note that the cofinance letter is under preparation. The dollar amount shown represents the approximate value of the components relevant for the project of the following ongoing and planned investments (total value USD 22,000,000): The co-financing will be through the following: ? The project ?Investigation and detection of groundwater in high mountainous and water scarcity areas? (2015-2023), which aims to (i) develop map of ground water resources; (ii) assess quantity and quality of groundwater resources that could meet requirements for domestic use; ? The project ?Identification of scientific

solutions, technologies and policies to manage and protect groundwater and to treat and supply clean water to high mountainous and water scarcity areas? (2015-2023). The project aims to develop proposal for scientific solutions, technologies and policies to manage and protect groundwater; and to propose suitable models for water treatment and supply in high mountainous and water scarcity areas; ? Vietnam Dam Rehabilitation and Safety Improvement Project (2016- 2022) which aims to improve the safety of targeted dams under the Government's Dam Safety Program to protect downstream communities and economic activities through priority investments and capacity enhancement. ? GCF GIZ program ?Lao PDR emission Reduction Program through improved Governance and Sustainable Forest Landscape management ? USD 8,004,779 (EUR6,700,000)

D. Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount(\$)	Fee(\$)
FAO	GET	Regional	International Waters	International Waters	8,000,000	760,000
Total Grant Resources(\$)					8,000,000.00	760,000.00

E. Non Grant Instrument

NON-GRANT INSTRUMENT at CEO Endorsement

Includes Non grant instruments? **No**

Includes reflow to GEF? **No**

F. Project Preparation Grant (PPG)
PPG Required **false**

PPG Amount (\$)
200,000

PPG Agency Fee (\$)
19,000

Agenc y	Trust Fund	Country	Focal Area	Programmin g of Funds	Amount(\$)	Fee(\$)
FAO	GET	Asia/Pacifi c	International Waters	International Waters	200,000	19,000
Total Project Costs(\$)					200,000.00	19,000.00

Core Indicators

Indicator 7 Number of shared water ecosystems (fresh or marine) under new or improved cooperative management

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Shared water Ecosystem	Ma, Ca/Song Lam			
Count	2	0	0	0

Indicator 7.1 Level of Transboundary Diagnostic Analysis and Strategic Action Program (TDA/SAP) formulation and implementation (scale of 1 to 4; see Guidance)

Shared Water Ecosystem	Rating (Expected at PIF)	Rating (Expected at CEO Endorsement)	Rating (Achieved at MTR)	Rating (Achieved at TE)
Ma Select SWE	1			<input type="checkbox"/>
Ca/Song Lam Select SWE	1			<input type="checkbox"/>
Ma Select SWE				<input type="checkbox"/>

Indicator 7.2 Level of Regional Legal Agreements and Regional management institution(s) (RMI) to support its implementation (scale of 1 to 4; see Guidance)

Shared Water Ecosystem	Rating (Expected at PIF)	Rating (Expected at CEO Endorsement)	Rating (Achieved at MTR)	Rating (Achieved at TE)
Ca/Song Lam Select SWE	2			<input type="checkbox"/>

Shared Water Ecosystem	Rating (Expected at PIF)	Rating (Expected at CEO Endorsement)	Rating (Achieved at MTR)	Rating (Achieved at TE)
Ma	2			
Select SWE				<input type="checkbox"/>

Indicator 7.3 Level of National/Local reforms and active participation of Inter-Ministeral Committees (IMC; scale 1 to 4; See Guidance)

Shared Water Ecosystem	Rating (Expected at PIF)	Rating (Expected at CEO Endorsement)	Rating (Achieved at MTR)	Rating (Achieved at TE)
Ca/Song Lam	1			
Select SWE				<input type="checkbox"/>
Ma	1			
Select SWE				<input type="checkbox"/>

Indicator 7.4 Level of engagement in IWLEARN through participation and delivery of key products(scale 1 to 4; see Guidance)

Shared Water Ecosystem	Rating (Expected at PIF)	Rating (Expected at CEO Endorsement)	Rating (Achieved at MTR)	Rating (Achieved at TE)
Ca/Song Lam	1			
Select SWE				<input type="checkbox"/>
Ma	1			
Select SWE				<input type="checkbox"/>

Indicator 11 Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female		25,000		

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Male		25,000		
Total	0	50000	0	0

Part II. Project Justification

1a. Project Description

The proposed project is the first bi-lateral GEF project between Lao PDR and Viet Nam. It is focused on two transboundary rivers that these countries share: the Ma and the Neun/Ca, which are adjacent, similar-sized basins with similar characteristics and similar water management challenges, see Table 1 and Figure 1.



Table 1: Ma and Neun/Ca River basin characteristics

	Ma River Basin	Ca/Neun River Basin
Origin	Viet Nam, ?i?n Bi?n province	Lao PDR, Huaphanh province
size	30,328 km ²	31,005 km ²
% of watershed located in Lao	40%	30%
% of watershed located in Viet Nam	60%	70%
Key Provinces in Lao	Huaphanh	Huaphanh and Xieng Khouang
Key Provinces in Viet Nam	?i?n Bi?n, Thanh H?a, S?n La,	Thanh H?a, Ngh? An, and Ha Tinh
Total population in watershed (2018)	Lao PDR: 221,937 Viet Nam: 3,625,914	Lao PDR: 299,421 Viet Nam: 4,346,574
Main ethnic groups	Lao PDR: Singmoun, Phong, Mouay, Hor, Eimain, Tai, Khmu, Hmong Viet Nam: Muong, Thai, Mong, Dao and Lao	Lao PDR: Hmong, Khmu, Phouthai, Tai, Leu, Erdou Viet Nam: Tay, Nung, Muong, Thai and Lao
Major landuse	Forest, rice, maize cassava, and pasture	Forest, rice, maize cassava, and pasture
Key protected areas	Lao PDR: Nam Et ? Phou Louey National Protected Area Viet Nam: Pu Hu Nature reserve and the Xuan Lien Nature Reserve	Lao PDR: Nam Xam National Bio-Diversity Conservation Area Viet Nam: Pu Mat National Park
Key challenges in upper basin	Floods, droughts, poverty,	Floods, droughts, poverty
Key challenges in lower basin	Floods, droughts, salinity intrusion	Floods, droughts, salinity intrusion

Figure 1: Map of Ma and Neun/Ca River basins

The Ma River Basin

The Ma River originates in the Himalayan foothills of the north-western Vietnamese province of Yên Bái, and reaches the South China Sea in the Vietnamese province of Thanh Hóa, forming the third largest delta in Viet Nam. The mainstream of the Ma flows for about 400 km. Its basin covers 30,328 km², of which 40% lies in Lao territory, and the remainder in Vietnamese. In Lao PDR, most of the basin territory lies in Huaphanh Province, while in Viet Nam it lies mostly in Thanh Hóa Province (48% - where it covers 98% of the province's territory), Sơn La (24%) and Yên Bái (16%), and the remainder in Hòa Bình and Nghệ An.

The largest tributaries of the Ma River include the Nam Et, the Chu (or the Nam Xam as it is called in Lao PDR), the Bô, and the Cù Chông. The Chu River is the largest tributary of the Ma River with a catchment area of 7,580 km², of which 3,010 km² belongs to Viet Nam. The Chu River originates from the Sam Nua mountainous area of Lao PDR with an altitude of 2,000m. The winding river meanders in rugged high mountains-- including Phu Nam (2,050m) and Phu Bo (1,455m) -- before entering Viet Nam. The southern reach of the Chu River is in the territory of Nghệ An province, and it flows into the Ma River in Giang district. The main river is 325 km long, of which 100 km flows within the territory of Viet Nam.

The river's configuration and meandering between the two countries gives it a unique transboundary typology: *Viet Nam and the Lao PDR are at the same time both upstream and downstream countries.* The Ma River originates in Tuan Giao district in Viet Nam in the Bon Kho mountain range at an elevation of 2,178 m. It leaves Viet Nam in Bô Bô, Song Ma district, and enters Bô Dan in Et District, Lao PDR. After flowing through the Lao districts Et, Xiengkhor, and Sop Bao, it re-enters Viet Nam at the border crossing of Ten Tan in Mường Lát District, Thanh Hoa Province.

Average annual rainfall in the Ma River basin (MRB) in the upper reaches of Lao PDR (Viengxay meteorological station) is between 1,400 mm to 2,500 mm and in Viet Nam between 1,100-3,100 with 80-90% of rainfall being observed during the rainy season (May to October). The average annual water volume of the entire Ma River system is 20.2 km³. The average annual flow rate of the Ma River in Lao PDR is 200 m³/s. Table 1 provides flow data from the three existing flow gauging stations on the Vietnamese side. A total of 12 hydrographic stations exist in Viet Nam along the Ma River network. Monitoring data show that the total flow in the Ma Upper Basin (to Song Ma) town is 4.0 billion m³ and the measured flow calculated to Muong Lat town is 7.16 billion m³. Therefore, it is possible to roughly estimate the total flow in the Ma River basin flowing from Lao PDR into Viet Nam at 3.16 billion m³. The middle and lower basin experiences an average annual rainfall over the whole region of 2,190 mm, the average annual flow is 18 billion m³, the annual average discharge is 25.3 l/s/km². In which, the outward flow is 3.9 billion m³ with an average discharge of 11.5 l/s/km². The total annual average flow in the Ma River basin is 18,109 m³ corresponding with the annual average flow of 570 m³/s. In the upstream reach of the Ma River in Xa La the total water flow is estimated at 3.82 billion m³. In Cam Thuy water flow is 10.41 billion m³, and in Hoi Xuan 8.01 billion m³. The area between Xa La and Hoi Xuan accounts only for 23.2% of the total flow of the basin. The reach between Hoi Xuan and Cam Thuy accounts for 2.4 billion m³ or 13.3% of the total basin flow. On the Chu River in Xuan Khanh flow is estimated at 4.42 billion m³ and at Cua Dat 4.03 billion m³.

The annual flow in the study area is relatively abundant but unevenly distributed throughout the year. Between 70 to 75% of the annual flow occur during the wet season. The three peak months account for

6.5 to 10% of the annual flow in the Ma River while the lowest flow typically occur in March. The flow during the driest month accounts only for 2 to 4% of the annual flow.

Table 2: Average annual flow in years at Ma River hydrographic stations (in m³/ s)

Monitoring station		Year	Jan	Feb	Mar	Apr	Mai	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Xa La	M	Q(6-08)	50,7	43,2	37,8	41,1	58,4	135,7	242,5	321,5	236,8	124,8	85,7	62,7	120,1
		k%	3,5	3,0	2,6	2,8	4,1	9,4	16,8	22,3	16,4	8,7	5,9	4,3	100,0
Car Thu	M	Q(5-08)	139,3	118,8	108,3	114,3	167,8	355,6	607,0	822,1	774,7	462,8	258,3	171,9	341,7
		k%	3,4	2,9	2,6	2,8	4,1	8,7	14,8	20,0	18,9	11,3	6,3	4,2	100,0
Cua Dat	C	Q(7-08)	54,8	44,8	40,1	41,4	75,4	117,6	156,2	245,9	324,2	246,6	125,5	72,0	128,7
		k%	3,5	2,9	2,6	2,7	4,9	7,6	10,1	15,9	21,0	16,0	8,1	4,7	100,0

* Lao PDR has no water flow monitoring stations while Vietnam is operating three.

Average annual evaporation is 700 mm. In recent years, heavier rainfall concentrates in shorter periods during the wet season. In 2019, this phenomenon caused in many places flash floods, which triggered landslides and damaged many villages.

The variation of rainfall creates challenges for many water users as rainfall varies dramatically over the course of the year. While the wet season is characterized by excessive water resources, the dry season has insufficient water to meet water supply to all water use sectors. In Viet Nam dry season flows are increased via releases from reservoirs. In the upper reaches, flow in most rivers is low and most small streams dry up during the dry season. Recent observations show that the length of the dry seasons have increased, which is attributed to climate change. In Lao PDR, shallow groundwater is the main source for household water supply and for maintaining the river flows during the dry season. However, the understanding of the current groundwater status in the Lao Sections of the Ma River basin is very limited. This has led to a call for further studies of groundwater resources in the target basins to provide the relevant evidence for effective conservation of groundwater recharge areas. More data/evidence would also inform more effective investments in water storage infrastructure to store water during the wet season. There is also an urgent need to improve the knowledge and skills on climate change adaptation for the local communities.

The Ma River flows into the South China Sea and its coastal floodplains define the increasingly industrialised and populated coastal areas south of the wider Hanoi area. The Ma River contains high loads of sediments. However, information and understanding of the exact volume of sediments and water quality in the Ma River in Lao PDR is limited. Recent groundwater studies in Viet Nam estimated the total amount of groundwater at 4,648,038 m³/day, the forecast resource for groundwater is 9,813,592 m³/day, the exploitable reserve of groundwater is 2,944,078 m³/day. The Center for Water Resources Investigation and Planning assessed in 2018 groundwater resources in Thanh Hoa Province and estimated a total use potential of 1,028,869 m³/day.

The Neun/Ca River Basin

The Nam Neun/Song Ca (NN/SC) basin is adjacent to the Ma River Basin (MRB). It rises on Mt Muong in the Northern Annamite Range in Lao PDR and then flows into Viet Nam, where it is known as the Song Ca. Its mainstream flows about 531 km to its mouth in Viet Nam's Ngh? An Province. The NN/SC basin covers 31,005 km², 70% of which lies in Viet Nam, and the remainder in Lao PDR. In Lao PDR, it is distributed between the provinces of Huaphanh and Xieng Khouang, while in Viet Nam its territory is distributed across Thanh H?a, Ngh? An, and Ha Tinh provinces. Its main tributaries are the Nam Mo, Huoi Nguyen, Khe Choang, Hieu, Giang, Ngan Sau, and the Ngan Pho.

As the adjacent Ma River, the Neun/Ca Rivers flows into the South China Sea and its coastal floodplains defines the important coastal area south of the wider Hanoi area.

Average annual rainfall in the NN/SC ranges between 1,100-2,500 mm and the majority of rain (80-85%) falls between May and October. The average annual water volume of the entire NN/SC is 27.5 km³. Timing of peak flows varies as one descends the basin, but average rainfall in highland areas can be as high as 1,400 mm a year and lowland can receive up to 2,300 mm a year.

In Viet Nam, the Nam Neun/Song Ca River flows through areas with heavy rain, such as Hieu, La, and Giang rivers. Monitoring shows that the total annual flow of the Ca River from Lao PDR to Viet Nam is 3.5 billion m³. This means that the combined flow of the Ca and the Ma Rivers from Lao PDR into Viet Nam is 10.85 billion m³. The middle and lower basin have an annual average annual rainfall of 2,190 mm maintain an average annual flow of 27.5 billion m³ and an average annual discharge of 36.5 l/s/km². The outward flow is 3.5 billion m³ with an average discharge of 10 l/s/km². The annual flow in the study area is relatively abundant but unevenly distributed throughout the year. In the flood season, the total flow accounts for 70 to 75% of the annual flow, the rest is the dry season. The three most exhausting months of the year account for 6.5 to 10% of the annual flow. The driest month flow of the year occurs in March. The flow of this driest month only accounts for 2 to 4% of the annual flow.

Table 3: Average flow distribution in at Neun/Ca River hydrographic stations (m³/s)*

Monitoring Stations	River	Period	Jan	Feb	Mar	Apr	Mai	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
Muong Xen	Nam Mo	1969-2015	27.1	22.2	20.4	21.3	37.2	74.5	128.5	171.7	148.6	87.3	48.2	33.7	68.4

Monitoring Stations	River	Period	Jan	Feb	Mar	Apr	Mai	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
Cua Rao	Ca	1960-2015	102	86.5	79.6	82.4	128	252	390	595	580	350	189	126	247
Yen Thuong	Ca	1968-2015	221	178	165	155	273	420	543	944	1378	1181	571	293	527
Dua	Ca	1959-2015	164	136	131	125	202	356	498	804	1096	824	380	213	411
Quy Chau	Hieu	1961-2015	39.9	33.7	29.9	30.2	55.6	86.1	81.9	120.1	173.5	150.8	82.2	51.1	77.9
Nghia Khanh	Hieu	1959-2015	52.0	43.3	38.9	39.7	73.0	109	116	191	327	284	124	75.7	123

* Lao PDR has no water flow monitoring stations while Vietnam is operating six.

Tributaries are mostly short and steep, flowing into the mainstream of the Ca River, with 44 tributaries, of which the Khe Tro is the smallest with 20 km² and the Hieu River the largest with 5,340 km² and a length of 228 km. The Hieu River originates in the mountainous region of Phu Hoat with a peak height of 2,452 m in Que Phong district. Its upper section flows through an area with high rainfall of 2,100 to 2,200 mm and continues through an area with annual rainfall of 1,500 to 1,800 mm before flowing into the Ca River at Cay Chanh junction. The Hieu River bed is narrow and sloping from Dua upwards. The Hieu River has big tributaries such as the Chang River, the Dinh River and the Sao River contributing to the middle of the lower section of the Hieu River. The La River is the second largest tributary after the Hieu River with a basin area of 3,210 km². The La River is the confluence of the Ngan Pho River and the Ngan Sau River.

The variability of rainfall triggered substantial investments in reservoirs to increase dry season flows. In the NN/SC, most storage is to be found in the subsurface. During the dry season and in the absence of rain, groundwater primarily supplies river flows. 76% of storage capacity in the basin is provided from this source. This has led to calls for the conservation and increase of this 'natural infrastructure' to store water for the dry season while also providing a wide range of other important ecosystem services for the densely populated coastal area. Recent groundwater assessments by the Center for Water Resources Investigation and Planning in Nghe An province in the Ca River basin identified 3 porous aquifers, 11 fractured aquifers, and 2 karst aquifers. The aquifers have been categorized as vulnerable with medium to high water levels. The combined potential exploitation potential has been estimated at over 3 million m³/day.

Population and poverty in the Ma and Neun/Ca River Basins

The upper catchment areas of both rivers, especially the highland areas in the Ma River and Neun/Ca River Basins have large ethnic minority populations. Huaphanh and Xieng Khouang Province (Lao

PDR) are home to 27 ethnic groups, including Lao Loum, Hmong, Khmu, Singmoun, Phong, Mouay, Phouthai, Eiman, and Khmu. Ethnic minorities (non-Lao-Tai, the country's largest ethnic group) make up about 70% of the population, including Hmong, Tai Dam, Tai Daeng and Tai Lue. In S^on La in Viet Nam, some 80% of the population is non-Kinh (the country's largest ethnic group), including Muong, Tay, Nung, Thai, Mong, and Dao. These ethnic minority communities experience higher than average levels of poverty. Huapanh, for example, is one of the poorest provinces in Lao PDR, with about 86% of the population living in rural areas (Census data 2015). For comparison, in Thanh H^a in Viet Nam, where just 17.6% of the population are non-Kinh, the 'extreme poverty' head count comprises 7% of the population. In contrast, Hⁱn Biⁿ Province in Viet Nam, where the Ma River originates, 81.6% of the population is non-Kinh and 48% of the population live in extreme poverty.

The understanding of the complex reasons for poverty and its relation to deteriorating environmental quality are limited in the two basins; changing trends in wild capture fisheries and sediment loads are not yet well understood, nor are the implications of climate change and sea level rise on the Ma and Ca River Deltas. Groundwater dynamics, extent and exploitation amongst numerous stakeholders and sectors is not yet well known.[\[1\]](#)¹

Livelihoods of communities in mountainous areas, especially ethnic minorities, rely heavily upon the natural resource base, such as swidden agriculture, non-timber forest products, and fishing. Around 42% of the population in the upper catchments dependent on the primary sectors of agriculture and forestry for income. The proportion of ethnic minority groups employed in industries, construction and services is limited, and tourism and related services in the region is underdeveloped. The average income per capita of ethnic minorities in Viet Nam is currently about 1.1 million VND/person/month (around USD 50), which is less than half of the national average. Within agriculture, maize and cassava are the two most important crops for the upper basin of the Ma and Ca Rivers. Productivity of both these annual crops is low as the practice involves slash-and-burn to fertilise, which is also causing serious erosion of arable land. Livestock is becoming a main source of income for households in mountainous areas and accounts for about 20-30% of total income. Raising buffaloes, cows, goats, pigs and poultry are the main domains of animal production.

Ecosystems, biodiversity and conservation priorities in the Ma and Neun/Ca River basins

Upper parts of both watersheds are dominated by evergreen mountain forest ecosystems; lower down, this transitions to evergreen lowland forest, before land use becomes dominated by agricultural systems. Both basins fall within the Sino-Himalayan subtropical forest biome, and the Indochinese moist tropical forest biome.

The highland areas of both river basins are in the Annamite mountain range, characterized by an important tropical seasonal forest cover of global relevance: the Annamite Range Moist Forests Ecoregion, which consists of two terrestrial ecoregions, the Southern Annamites montane forests and the Northern Annamites moist forests. The Annamite Range Moist Forests Ecoregion is ranked as one of the world's 200 most important bioregions.

The Annamite Forest is unique to Southeast Asia. The majority of the forest is located throughout Viet Nam, but it also extends into parts of Cambodia and Lao PDR. The forest runs approximately 685 miles up the coast of Viet Nam and into Lao PDR, and has an area of approximately 18,000 square miles. The Annamite Forest is appropriately named because of its proximity and relationship to the Annamese Mountains. The mountains separate the Mekong River and the South China Sea. The vast extent of the Annamese Mountains and Annamite Forest results in a wide variety of geological substrates. Limestone is the predominate bedrock on which the Annamite Forest erects itself. *Limestone is highly erodible and therefore results in a very rocky terrain including large areas of karst landscapes with their unique and endemic ecosystems and biodiversity. The high levels of perpetual rainfall in the region cut at the limestone topography and create a karst terrain with many caves, underground rivers, and stark cuts across the surface.* The aquatic systems created are home to a wide range of aquatic biodiversity, much of which is traditionally exploited for food. Both Lao PDR and Viet Nam have begun or are planning to develop several major hydropower schemes that will inundate large areas of habitat and provide ready access to intact forest areas, thus increasing the probabilities of further habitat degradation. Major illegal and legal logging and local and transboundary wildlife poaching and trade (Lao into Viet Nam) still occur.^{[2]²}

In Lao PDR, about 1,341 km² of the Ma River Basin (MRB) is officially gazetted protected area, concentrated in the upper parts of the basin and reflecting its high biodiversity values. In Viet Nam, 3,890 km² of the NN/SC basin, have protected status. The upper catchment includes on the Nam Et National Protected Area (NPA), Lao's largest protected area and home to a large number of endangered species including the last tigers of Indochina, gaur, and numerous primates, including the white-cheeked gibbon. Collaborative management and eco-tourism are being successfully explored for its potential to contribute to sustainable livelihoods of local communities.

The Ma and Neun/Ca River Basins display similar environmental and socio-economic values of regional and global importance, as well as similar degradation processes due to the many problems confronting the basins: hydropower reservoirs causing significant changes to flows in tributaries of both basins; deforestation and changes to forest cover impacting flows and sediment loads; increasing water withdrawals associated with demographic growth and rapid economic development affecting environmental flows; and emergency releases from dams during extreme water events contributing to flooding. The coastal flood plain created by the two rivers is affected by the excessive sediment and nutrient loads of the two rivers degrading surface and shallow marine waters, and by seawater intrusion due to over-extraction from the shallow coastal aquifers and to sea-level rise, posing serious threats to water supply for the rapidly expanding coastal populations.

Additional development pressures emerge from the expansion of irrigated[3]³ and non-irrigated agriculture, increasing flood and drought risks due to climate change, and increasing industry development and related water quality deterioration risks. From a systems perspective many of these processes are connected and likely to create trade-offs or synergies. Development in urban areas drives energy demands, which drive hydropower development and consequentially decline in forested area and inland fishery resources. In parallel, population growth is driving the demand for increased food production, realized either through agricultural intensification or through expansion. Additional water needs for irrigation coincide with hydropower related impacts on seasonal water flows. Increasing use of fertilizer and pesticides negatively impacts water quality and fisheries, which is then amplified by industrial development further downstream. Flood mitigation measures (e.g. diversion schemes, wetlands) can mitigate some of the potential issues or, conversely, further amplify them. Similarly, drought preparedness measures (i.e. increasing storage) are likely to create further trade-offs. This combination of upstream changes will impact on the ability to respond effectively to sea-level rise and salinity intrusion, which affects agricultural productivity, food production and the availability of safe drinking water in coastal settlements.

These combined dynamics impact on a range of ecosystem services, including fisheries, water availability and disaster risk reduction. Aforementioned drivers also impact on the high biodiversity values present in the two target basins either by deteriorating forests and wetlands or by changing water regimes. Sustainable development will require transboundary basin planning and management and jointly implemented action programmes.

Considering the transboundary context of the two target basins, development decisions and climate change adaptation investments will create cross-border trade-offs or synergies. Establishing coordination mechanisms for the Ma and the Neun/Ca River basins is paramount for their sustainable development, mainly involving the transboundary management of water (e.g. flood control), biodiversity (e.g. national park management and biodiversity corridors), forests, and fishery resources.

The development and climate change adaptation pressures in the Ma and the Neun/Ca River basins are typical of many transboundary basins in the developing world. Therefore, solutions developed in this project can be applied to numerous other basins in the Greater Mekong and beyond.

1) The baseline scenario and any associated baseline projects.

Institutional, Policy and Legal Context

The project will be supported by a range of institutional arrangements (e.g. policies, plans and legislation) in Viet Nam and in Lao PDR. These are presented below.

Lao PDR

The governance structure in Lao PDR is similar to the one described for Viet Nam with MoNRE coordinating central government initiatives for national policies, plans, strategies, and action plans for the management of natural resources, including water resources, and environmental protection. Water quality and biodiversity are two key focus areas. This mandate is held at the Provincial level by the Provincial Office of Natural Resources and Environment (PONRE) and at the District level by DONRE. The engagement of MoNRE, also an executing partner for the project, and its provincial and district level agencies is guided by the same remarks as made above for MoNRE Viet Nam.

The Ministry of Agriculture and Forestry has the main mandate for water utilisation in the agricultural sector as well as for forest management, including reforestation. The same mandate at the provincial level is held by PAFO, the Provincial Agriculture and Forestry Office, which has representation at the district level (DAFO). Aforementioned engagement recommendations for MARD in Viet Nam also apply to MAF and its provincial and district level offices.

In Lao PDR a new *Agriculture Development Strategy to 2025 and Vision to 2030* targets improved food security and eliminate hunger, enhance the competitiveness of agricultural commodities, and develop 'clean, safe and sustainable agriculture'. The strategy targets the achievement of SDG 1 (no poverty) and SDG 2 (no hunger) by implementing sustainable agricultural practices.

The *National Biodiversity Strategy and Action Plan (2016-2025)* defines biodiversity as a national heritage that makes substantial contribution to poverty alleviation. The plan aims to protect biodiversity and emphasizes the role of biodiversity and underpinning ecosystems to facilitate climate adaptation and mitigate disaster risks.

The related *Natural Resource and Environment Strategy (2020- 2025)* defines a vision and a strategic direction for the development and management of land resources, water resources, forests and biodiversity, and mineral resources. Land use master planning, improved pollution control, implementation of strict environment impact assessments, and participatory community level processes are listed as means to achieve the vision.

Echoing the intentions of aforementioned policies is the *National Agro-biodiversity Programme and Action Plan II (2015-2025)*, which aims to achieve food security, reduce poverty, and enhance the sustainable management and natural resources uses. The establishment of an effective policy environment and legal framework, and the improvement of organisational and technical capacity are outlined as two key outcomes of the programme. The programme states that Lao PDR's rich agro-biodiversity is not only important for agricultural activities by helping to maintain ecological services for nutrient cycles, soil moisture retention, pest and disease control and pollination. It also helps to sustain wider ecosystem services for the supply of water, energy, minerals and raw materials and wildlife conservation on which the business, transport, energy and tourism sectors are dependent.

Similar to developments in Viet Nam, also Lao PDR introduced a law on climate change and disaster risk related monitoring. Law No 36/NA on Meteorology and Hydrology is relevant as it prescribes the expansion and improvement of the network of meteorological and hydrological stations and the national warning center. It defines further that the management of the meteorological and hydrological database system shall be sustainable, continuous and integrated with regional and international systems. This lays out a basis for the transboundary monitoring and data sharing activities outlined in the project.

In addition to aforementioned policies, plans, and legislation, both countries have signed an MoU towards enhanced cooperation between the two Ministries of Natural Resources and Environment (see Annex M). This lays the foundation for transboundary initiatives as targeted by the project for the Ma and Neun/Ca River basins.

Viet Nam

The Ministry of Natural Resources and Environment (MoNRE) holds the main mandate for developing policies, plans, strategies and action plans for the management of natural resources, including water resources, and environmental protection. Water quality protection is a major focus within water resource management. The central ministry's role is duplicated at the lower levels of Governance: The Department of Natural Resources and Environment (DONRE) plays the key role in the management of natural resources and environmental protection at the province level. Major organizations under DONRE related to groundwater management include: Unit of Water and Mineral Resources; Unit of Meteo-hydrology and Climate Change; Unit of Environmental Protection; Unit of Land Management; and Unit of Natural Resources and Environmental Monitoring. At the district level, there is a Sub-DONRE. And at commune level there is a staff per commune responsible for land, water and environmental management. Some interests and concerns at DONRE include: Trans-boundary water needs and natural resources management; Effective basin planning; How to involve private sector and other stakeholders in water management; Environmental pollution due to too much chemical uses in agriculture, waste from industrial zones, domestic use and services; Reduction of natural wetland, mangrove forest and biodiversity; and inconsistent legal framework causing ineffective implementation. Participation of DONRE is important to carry out the project activities successfully because it has the main mandate and the staff in terms of land and water management in the target provinces; it can share data and information regarding to natural resources, environmental quality, land use, etc.; it has capacity to apply technology in management of natural resources and environment.

The Ministry of Agriculture and Rural Development (MARD) holds the mandate for water utilisation in the agricultural sector and in rural areas. The *Department of Agriculture and Rural Development (DARD)* plays an important role in the management of agriculture and development in rural areas at the province level. It has many divisions and centers to implement tasks and roles. Related to (ground)water use and management. The following divisions are most relevant for the project: Unit of Irrigation; Unit of Aquaculture and Fishery; Unit of Livestock and Veterinary; Unit of Rural Development; Division of Crop production; Unit of Forestry; Center for Rural Water Supply and Sanitation; Center for Agricultural Extension; and Center for Seed Production. Like DONRE, the district level agencies are Sub-DARD, and at commune level it has 1-3 staff per commune who are responsible for irrigation, agriculture, aquaculture, fishery, forestry and rural development. There are some pilot programmes to reduce rice production and DARD organisations focus on selecting alternative crops. These efforts demand more research to identify and test better strategies and technologies for alternative crops, which are more water use efficient and also marketable. Consequently, DARD is a very important partner in this project. It may be engaged in many ways: Provide technical and experienced staff; Implement and monitor demonstration projects and transfer of technology; Connect with farmers and private companies for better collaboration; Co-operate with their

current projects and programs (agricultural extension, new rural development, one commune - one product, etc).

Viet Nam made recently a few policy changes that are relevant for the project in the Ma and Neun/Ca River basins. The *Agricultural Restructuring Plan* (Decision No. 1819/QĐ-TTg) aims to make the agricultural sector more sustainable, more competitive, and improve farmers' life, thereby reduce rural poverty and protect the environment. The plan specifies for the agricultural sector annual target of 7-8% economic growth, which Viet Nam aims to achieve by improving and expanding irrigation and by improving natural disaster prevention.

Also important for the project is Viet Nam's *National Action Plan for the Implementation of the 2030 Sustainable Development Goals*. At the core of the plan is to eliminate hunger by 2030 and to manage all water resources sustainably.

The *National Program on REDD+ for 2016-2030* defines another important corner stone for activities in the Ma and Neun/Ca River basins. This program promotes sustainable agriculture and aquaculture, which do not cause any further deforestation. This plan targets sustainable options for climate adaptation for aquaculture, coffee, rubber, cassava crops and other commodities. The plan proposes field studies and the development of financial mechanisms to support and encourage the development of sustainable deforestation-free agricultural/ aquaculture production.

In regards to biodiversity, Viet Nam enacted the *National Strategy on Environment Protection*, which includes a vision until 2030. The vision can be useful for the visioning process of the project in the Ma and Neun/Ca River basins and includes

- to prevent and push back environment pollution, resource deterioration and biodiversity degradation;
- to improve quality of the habitat;
- to actively respond to climate change;
- to create fundamental conditions for a green economy, with low waste and low carbon, for the sake of the country's prosperity and sustainable development.

The *Intended Nationally Determined Contributions of Viet Nam* (INDC 2015) specify the following priorities: The National Climate Change Strategy has identified that priorities are food security, energy security, water security, poverty reduction, gender equality, social security, public health, livelihood improvements and the protection of natural resources.

These policies have culminated in a few critical changes in Viet Nam's legislation, in particular the new *Law on Hydro-meteorology* (No 90/2015/QH13), which specifies roles and responsibilities in the management and operation of monitoring networks, the development of forecasts, and the management of data and information. Considering the data sharing goals the project aims to facilitate between Lao PDR and Viet Nam, this law defines clear mandates and stakeholders for project engagement (as outlined in the stakeholder engagement plan).

Water use

Total water demand in Viet Nam's portions of the MRB was 3.9 km³ in 2015, up by 1.4 km³ from 2001. 92% of this demand is from agriculture, mainly rice (16% of land use) and vegetables (2%). Between 2001 and 2015, water demand from industry grew 23% a year. Over the same period, total water demand has grown about 3% a year. Studies predict that by 2030 water stress will increase to the highest level (*severe*) for the MRB, which is likely to substantially affect ecosystem services and irrigated agriculture on both countries. In the NN/SC some 3.3. km³ of water a year is affected by

pollution, which is an additional driver of water scarcity as it makes it unavailable for many uses. Incremental evapotranspiration by irrigated crops is 0.6 km³ per year. 72% of evapotranspiration is consumed by forests.

Data and information on historical and current water use in the Ma and Neun/Ca River basins in Lao PDR are sparse. The main source of water use for household level is from the gravity-fed water system. Water is rarely used from wells (shallow groundwater) and rivers because of the unreliable availability of groundwater, the increasing surface water pollution, and the annually drying-up of some rivers during the dry season. Some households use surface water from Ma and Neun Rivers for irrigating their small gardens. However, the government plans to substantially expand irrigation areas. Currently, a major water use is hydropower, as detailed further below. It is expected that climate change will lead to higher water demand in the future and a shortage of surface water due to high evaporation and increasing water pollution. This would increase groundwater abstraction in the Ma and Neun River basins. In the future, a good understanding of groundwater resources is required for robust planning and sustainable water resources management in both target basins.

In Viet Nam most people in the border areas depend for their domestic water needs on water directly extracted via gravity systems, gutters, gutters, wells, jars, tanks or directly from rivers, slits, streams, ponds, and lakes. The majority of these extractions remain untreated. Agriculture is the dominating water user and involve reservoirs for irrigation of rice and aquaculture, dams and weirs, and pumping stations extracting water from submerged channels or from rivers for irrigation purposes.

Water quality

Water quality in the Vietnamese part of the Ma River is very low as sample data collected at 40 locations show. They fail several of Viet Nam's water quality standards. This includes the upper and middle catchment but in particular the lower basin where the speed of urbanization and development of industrial production, agriculture, and construction has sharply increased. Consequently, the total amount of wastewater and solid waste produced in the area is also increasing. Wastewater remains mostly untreated and stems from residential and urban areas, industrial zones/clusters, fish production, fish processing facilities, and craft villages, and gets directly discharged into the Ma River. Over the past years, these loads have continued to increase. Consequently, the Lower Ma River is increasingly polluted and concentrations of BOD₅, COD, NH₄⁺, NO₃⁻, and grease exceed permitted limits (QCVN 08: 2008 / BTNMT B1 column) by factor 1.5 to 4. Unsurprisingly, pollution levels worsen during the dry season.

A recent water quality study by the Department of Water Resources Planning of Nghe An Province (DONRE 2017) in the Ca River basin estimates the total amount of wastewater generated in the upper basin at 12,315 m³/day, of which domestic wastewater and agricultural wastewater (livestock activities) account for 56.4% and 34.8%, respectively. Monitoring data shows for the middle basin that the total amount of wastewater is about 34,994 m³/day. Domestic wastewater and agricultural wastewater accounted also in this section of the Ca River for the majority with 60.2% and 31.6%, respectively. The amount of industrial wastewater generated in the area is about 2,400 m³/day, accounting for 7% of the total amount of wastewater. The study indicates for the lower basin that a total of 60,000 m³/day of wastewater is being disposed of in the Lower Ca River. Domestic wastewater accounts also here for the highest proportion (62.6%), followed by industrial wastewater (22.4%), agricultural wastewater (9.6%) and medical wastewater (5, 4%). Importantly, 6 industrial zones/clusters have been put into operation

in this area. The lower part of the basin has also the highest population density and highest socio-economic development rate of the Ca River basin.

Due to these pressures, water quality in the middle section of the Ca River has been deteriorating due to receiving untreated wastewater from industrial production, urban runoff, residential uses, and agriculture. TSS pollution in the Ca River from Do Luong dam to Cong Nam Dan 2 generally takes place regularly throughout the year. TSS content in November was surprisingly high compared to the annual average, exceeding the permissible limit by 6 to 10 times. Also, COD concentration often exceeds the permissible limit slightly and BOD5 concentration often exceeds the permissible limit by up to factor 2 (in wet and dry season). Ammonium pollution has occurred frequently in recent years, with pollution levels continuing to increase. The exception to the trend is the Cua Hoi area, where ammonium pollution peaked in 2011 and has since decreased. This section of the Ca River has no sign of Nitrate pollution. According to the monitoring results, the middle section of the Ca River contains excessive loads of Fe and Mn.

Land use

Large portions of both basins are located in upland areas, partially covered with forest. Natural forest area, however, has been declining over time, and is being replaced by monoculture (mainly Eucalyptus and Acacia, which are highly water consumptive species that negatively impact groundwater tables and dry season flows) and alley-cropped plantations. Deforestation often has an inverse relationship with the hydrography ? not least with associated land degradation, declining water infiltration, and soil loss. This causes wet season flows to increase and dry season flows to decrease, which accentuates upstream-downstream trade-offs and emphasizes the importance of managing the entire source-to-sea (S2S) system (S2S management is defined below). The commitments of both Governments made under the Paris Agreement will require improved forest management for greenhouse gas mitigation in the upper areas of both river basins. The Forest Carbon Partnership Facility started in 2018 a project on improved forest management in Lao PDR, which include the Ma and the Neun River basins (\$35 million until 2024). As the Ma and the Neun/Ca descend into Viet Nam's lowlands, land use transitions into agricultural landscapes dominated by paddy rice.

On Viet Nam's side of the two target basins agricultural land covers between 11.3% (Quang B?nh) and 38.9% (Dien Bien) of the Province areas in the basin, see Table 1. Forest land is still the largest portion ranging from almost 40% to 78%. Sloping land (over 15% angle) accounts for 70% of the total land area in Northwest Viet Nam where both target basins locate. Arable land for crops (mainly corn, cassava) account for 23% of the agricultural land. In a typical area of over 25% slope Landsat image shows twice the amount of land under agricultural production than designated by current land use status map of MONRE 2015. The research also shows that 30% of the sloping land is actually arable.

Table 4: LAND USES, VIET NAM (SOURCE: GENERAL STATISTICAL OFFICE, 2019)

unit: '000 ha

Province	Total land	Agricultural land		Forest land		Specialized land	Resident land
		Area	% of total	Area	% of total		
Xieng Bi	954.2	370.8	38.9	361.6	37.9	10.3	5.0
Sou La	1,412.4	364.8	25.8	623.6	44.2	42.4	8.6
Ho Bho	459.1	88.5	19.3	296.3	64.5	31.1	14.0
Thanh Ho	1,111.6	248.5	22.4	645.8	58.1	76.0	55.2
Ngh An	1,648.2	300.2	18.2	1,147.2	69.6	76.9	25.6
H Tbo	599.0	151.4	25.3	325.0	54.3	42.2	12.1
Quang Bho	799.9	90.1	11.3	626.7	78.3	31.0	6.3

On Laos's side of the Ma and Neun River Basins, agricultural land covers 5% and 7% of total basin areas, respectively, see Table 5. Forestland covers the largest areas of basin. In the Ma River Basin, the forest land (Bamboo, Broadleaf forest, deciduous broadleaf forest, evergreen broadleaf forest and shrub land) covers more than 52%. Regenerating vegetation is a classifier for more than 40% of the Lao side of the Ma River basin. Similarly, the forest land in the Neun River Basin also covers nearly 50% of the basin area with an additional 40% classified regenerating vegetation.

**TABLE 5: LAND COVER IN THE MA AND NEUN RIVER BASINS IN LAO PDR
(DEPARTMENT OF FORESTRY, MINISTRY OF AGRICULTURE AND FORESTRY, 2015)**

No	Code	Land Cover Types	Ma River Basin		Neun River Basin	
			Area (Km2)	%	Area (Km2)	%
1	11	Evergreen Forest	300.23	2.45	397.49	4.30
2	12	Mixed Deciduous Forest	5,882.51	47.97	3,998.44	43.27
3	13	Dry Dipterocarp Forest	1.52	0.01	0.01	0.00
4	14	Coniferous Forest	167.69	1.37	136.94	1.48

5	15	Mixed Coniferous and Broadleaved Forest	9.36	0.08	30.10	0.33
6	21	Bamboo	16.30	0.13	5.13	0.06
7	22	Regenerating Vegetation	4,925.18	40.16	3,729.74	40.36
8	32	Scrub	0.40	0.00		0.00
9	41	Grassland	322.43	2.63	271.80	2.94
10	51	Upland Crop	214.21	1.75	108.68	1.18
11	61	Rice Paddy	127.66	1.04	289.35	3.13
12	62	Other Agriculture	234.75	1.91	194.46	2.10
13	63	Agriculture Plantation	0.31	0.00	52.84	0.57
14	71	Urban	10.46	0.09	6.29	0.07
15	72	Barren Land and Rock		0.00	0.68	0.01
16	80	Other Land	2.88	0.02	2.13	0.02
17	81	Water	35.57	0.29	10.14	0.11
18		Unknow	12.58	0.10	6.41	0.07
Total			12,264.03	100.00	9,240.65	100.00

Infrastructural development

Both basins have substantial hydropower potentials. There are currently no dams in the Lao part of the MRB, although six (of 15 MW installed capacity or more) are planned. In the NN/SC, the Nam Neun 1 and 3 are currently under construction, while the Nam Neun 2 is planned. Additional dams are planned for the Nam Xam. In Viet Nam's portions of the MRB, there are nine dams with hydropower generation capabilities, the largest of which is the 180 MW Hoa Na, while the multi-purpose Cua Viet dam holds back a 33 km² reservoir, the basin's largest (see Table 1).

**TABLE 6: RESERVOIR PARTICIPATING IN FLOOD CONTROL IN MA RIVER BASIN,
VIET NAM**

Parameter	Unit	Reservoir										
		C?a ??	H?a Na	Xu?n Min h	B?i Th??n g	??ng V?n	Trun g S?n	Th?n h S?n	H?i Xu?n	B? Th?? c 1	B? Th?? c 2	C?m Th?y 1
Average discharge for many years	m ³ /s	115	94.63	122.2	113.5	95.8	244	235	221.5	325.47	332.4	340.77
Flow peak flood check	m ³ /s	18.9	8.126	11.93	3.953	5.952	13.4	13.05	13.16	14.45	14.65	10.38
Peak flood design	m ³ /s	13.2	5.703	8.312	3.85	4.841	10.4	10.41	10.49	11.45	11.6	7.23
Overall capacity (Wtb)	10 ⁶ m ³	1.45	569.35	8.1	7.6	5.2	348.5	4.82	63.38	16.96	44.18	14.836
(Whi)/ Useful capacity (Whi)	10 ⁶ m ³	793.7	390.99	0.71	2.74	2.1	112	0	7.73	3.26	12.68	0
/Installed capacity	MW	97	180	15	6	28	260	30	102	60	80	28.8

Irrigation infrastructure also has extensive and growing impacts that are equal to, and can exceed in some places, the impacts of hydropower. In Viet Nam's parts of the MRB more than 1500 small and medium reservoirs have been built for irrigation purposes with individual regulating capacity of 0.1 to 10 m³ and a combined storage capacity of 106 m³. Most reservoirs are located on small streams and branches, irrigating the land directly behind the reservoir. The largest reservoirs are Dong Ngu, Binh Cong, Dong Muc, Quat, Khang Concept, Tay Trac, Thung Bang, Cong Khe, Chup Mo, and Ho Bui. These large reservoirs that cover 250 to 1000 ha require technical design. Around 65% of all reservoirs cover only 5 - 100 ha and are self-constructed without technical designs. The status of all reservoirs is degraded. The largest dam on the basin is Bai Thuong on the Chu River, which is responsible for gravity irrigation for 49,613 hectares of the Southern Chu

River Delta (essentially the Yen River basin). Bai Thuong Dam has been repaired many times, the most recent time was from 1996 to 2000, which involved an overhaul of the dam and the solidification of canals. If rainfall patterns remain within current parameters, irrigation dams can play this role, however the increasing frequency and magnitude of extreme rainfall may overwhelm dam design parameters. Despite the flood control intention, increasing water storage capacity in other parts of the region often amplifies natural drought and flood peaks with detrimental consequences for ecosystems, agricultural production, downstream livelihoods and food security.

The Neun/Ca River basin has many reservoirs for irrigation, flood protection and hydropower. Data was not available for Lao PDR. On the Viet Nam side of the Neun/Ca River exist 1,434 reservoirs that aim to provide irrigation and domestic water supply for a designed area of 72,250.55 ha. Most of the reservoirs in the construction area have been degraded for a long time, involving the deterioration of roofs and drains, sedimentation of some reservoirs, leaking dams, overflowing points, and unstable focal points. The latest statistics of Ha Tinh Department of Irrigation shows that 20 reservoirs are at high risk and need urgent repair, of which eight locate in Huong Khe district: Dam Hau (Huong) Long, Dam Trang (Huong Thuy), Mo Bai (Huong Xuan), Con Song Lake (Phuc Trach), Khe Troi Lake (Phuc Trach), Khe Con Lake (Huong Giang) Ho Vo Lake (Huong Giang) and Ho Khe San (Loc Yen).

In the Ca River basin, there are currently 4 large hydroelectric reservoirs (see Table 2): Ban Ve Lake, Khe Bo Lake, Ban Mong Lake, Ngan Truoi Lake. The multi-purpose work of Ban Ve Lake is located on the upper reaches of the Nam Non River in the Ca River system and is the largest hydroelectric project in the North Central Coast, with an installed capacity of 320 MW, providing 1,084.2 million KWh/year. Construction on the Ban Mong reservoir in Yen Hop commune, Quy Hop district, Nghe An province was started in 2010. The reservoir has a storage capacity of over 235 million m³ and an installed capacity of 42 MW. As a multi-purpose dam it also supplies water for agriculture and is used for flood control in the lower Hieu River. The Ban Mong is one of the key irrigation investments towards improved socio-economic development of Western Nghe An Province. The Ngan Troi - Cam Trang multi-purpose irrigation project in Vu Quang district in Ha Tinh province has a storage capacity of 752 million m³ and was built from 14 June 2009 on. It has an installed capacity of 16 MW, which equals the combined installed capacity of all other existing hydroelectric dams on the Ha Tinh. In addition, on the mainstream of the Ca River, the Hieu River has many other hydroelectric projects, including Ban Kok 18 MW, Nhan Hac 45 MW, Khe Bo 100 MW, Sao Va 3 MW, Chau Thon 18 MW, Quang River 10 MW, Nam Poong 30 MW, and Nam Mo 18 MW.

TABLE 7: RESERVOIR PARTICIPATING IN FLOOD CONTROL IN CA RIVER BASIN IN VIET NAM

	Unit	River		
		B?n V?	Khe B?	Chi Kh?
Basin area	km2	8.7	14.3	15.38
Average flow over many years	m3/s	134	254	273
Flood flow test	m3/s	10.5	10.42	11.08
Design flood flow	m3/s	7.77	7.981	7.438
Overall capacity (Wtb)	106m3	1.834,6	97,8	33,49
Useful capacity (Whi)	106m3	1.383	17,2	-
Installed capacity (Nlm)	MW	320	100	41

Hydropower development is likely to influence fisheries-related food security concerns as migratory fish species are likely to lose their habitat. Most affected by this S2S trade-off are the poorest populations, mostly ethnic minorities. Currently, communities in Son La Province have Viet Nam?s highest level of malnutrition (34%) based on child stunting, according to Viet Nam?s National Institute of Nutrition. Dam safety has emerged as a top priority for Viet Nam?s government and \$18 million have been pledged to improve dam safety in the Ma River basin. *This project will collaborate with this activity and inform post-2020 investments (\$12m).*

Freshwater and coastal fisheries

Compared to other basins in the region only very few studies have focused on inland fisheries in the Ma and the Neun/Ca River basins. A World Bank study for the Ma River from 2008 indicates that more fish biomass and diversity prevail in the brackish water of the lowlands if compared with the upstream area. The total number of fish species is 1027 inland species, of which 36 species are listed in the Viet Nam Red Book as vulnerable or threatened. Fishermen in the freshwater parts of the basins depend on 45 commercial fish species while the coastal area lists 54 commercial species. With a strong cultural tradition of fish eating in the region, fish provide more than 50% of the protein intake of the local population. Many rivers, streams and lakes, and dams in the target basins provide favourable conditions for fisheries development. Traditional fishing of local people focused on wild fish in rivers and streams with only a few households raising fish in cages and ponds. Aquaculture is estimated to produce five to six times the amount of fish than wild catch, but is highly concentrated in lowland areas. Types of aquaculture includes self-created ponds, natural river and stream, and irrigation

reservoirs. However, productivity of these small-scale aquaculture systems is low. The Vietnamese Government encourages freshwater aquaculture in the upper basin, supported by an increasing number of available reservoirs; fish-cage farming is also encouraged. In low-lying areas the conversion of rice paddy into aquaculture is also occurring.

A number of present development strategies will have impacts on water flows, water quality and the health and productivity of these rich fisheries, affecting biodiversity as well as food security. Planned aquaculture extension investment amount to around nearly \$100m in the Ma River basin and around \$62 million in the Ca River basin. The overall value of fishery production remains low compared with other parts of the region and there is some potential for improving the region's fishery potential.

Industrial development

The upper basin areas in Lao PDR are not being targeted for industrial development. However, in Viet Nam large parts of the lowlands and coastal regions of both target basins are earmarked for substantial industrial expansion. The newly established Nghi Son Economic Zone, part of Viet Nam's strategy to create industry employment, lies in parts in the Ma River basin. Similar industrial parks have been approved for or already exists in the Ca basin, e.g. in Hoang Mai and in Thanh Pho Vinh. While Viet Nam's government implements green growth principles, it is critical to explicitly consider water quality implications of this development strategy. Ultimately, aforementioned surface and groundwater quality deterioration are likely to impact on fisheries, food safety and the availability of safe drinking water.

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Climate change

Climate change is expected to be one of the biggest drivers of hydrological transformation in the MRB, affecting rainfall, temperature, evaporation and water quality (including salinity intrusion). Future water scenarios (by the Ministry of Natural Resources and Environment, Viet Nam) show that flows through the system will tend to increase sharply, especially towards the end of the century. The greatest increase will be in wet season flows, signalling the possibility of major floods that severely impact economic development. The Ministries of Environment and Natural Resources of both Governments signed an MoU to coordinate climate change response strategies (see Annex M). Viet Nam's Government is planning to invest over \$170 million in improved flood protection across the two target basins.

Huaphanh and Xieng Khouang Provinces were heavily affected by the 2018 floods. The overall flood damage in Huaphanh Province in 2018 is estimated at about US\$ 397,700, while the flood damage in Xieng Khouang Province was about US\$ 170,400. The floods in 2018 destroyed many rural gravity-fed water systems, boreholes, dug wells, roads, hospitals, schools, irrigation systems, and other infrastructures. The exposure to climate change driven climate variability is mainly

increasing due to poor management of natural resources, deforestation, and soil erosion. In the context it is vital to improve the climate change resilience of communities in the Ma and Neun River basins.

In addition, on Viet Nam's side of the Ma river basin floods are becoming an increasing threat to communities. The five largest floods in the Ma occurred in 1975 (7,900 m³/sec), 2007 (6,720 m³/sec), 1973 (5,380 m³/sec), 1980 (4,230 m³/sec), and 1962 (4,040 m³/sec). Floods combined with land use change increases risks of flash floods. In 2005, 2006, 2007, 2012, and 2014, flash floods killed at least 15 people, destroyed thousands of houses and cause substantial damage to transport, water, and energy infrastructure.

Floods in the Ca River basin coincided but with different intensities, in 2007 (7,390 m³/sec), 1962 (6,530 m³/sec), 1980 (6,173 m³/sec), 1973 (4,330 m³/sec), and 1975 (3,043 m³/sec). More recent highly destructive floods occurred in 2007, 2010, and 2012 (damage: VND 966,850 billion). One of the causes of prolonged flooding is heavy and widespread heavy rainfall while watershed forests and protection forests are being lost, in particular due to urbanization diminishing riparian buffer zones and estuaries. Furthermore, economic development and the construction of roads and train tracks prevent natural flood drainage and prolong flood retention in affected areas. Flash floods are also in the Ca River an increasing threat. Incomplete statistical data show that over 70 flash floods and landslides occurred in Nghe An province between 1958 and 2016. Almost every year, flash floods occur in the province with increasing intensity. Over the past few years, flash floods damaged or destroyed thousands of houses and thousands of hectares of agricultural land, often causing damages in the tens of millions of dollars.

Droughts are another increasing climate change related adaptation challenge and drought management has become a high priority for the Governments of Viet Nam and Lao PDR. The drought of 2009 caused water levels in rivers to drop below historical levels. At the Ly Nhan hydrological station on the Ma River, water levels dropped to 3.06 m, which is 0.88m below the long-term average. At Cua Dat hydrological station on Chu River, the water level dropped to 2.41 m, which is 0.56m below the long-term average. At Kim Tan hydrological station on Buoi River, the water level dropped to 1.68m, 0.12 m below the long-term average. These developments required many investments to get water to serve the production of pumping stations, involving the extension of suction pipes, lowering suction tanks, dredging inlet gates or building temporary dams on small rivers such as Cau Chay, Mau Khe and Buoi Rivers. While these measures helped raising water levels for pumping stations temporarily, they cannot mitigate drought effects in the long run.

During 2010, a severe drought affected the entire North Central region, including the Ca River basin. According to data from Nghe An province, the area affected by drought was between 17,000 and 20,000 ha. Water levels in lakes dropped nearly to so-called dead water levels. In some places, the water level dropped to the lowest level on record, causing salinity intrusion long distances up the river network, which limited the ability to divert water into the fields and caused a substantial decline in agricultural production. Even more severe prolonged hot weather in 2015 destroyed large parts of the summer-autumn crop. Most reservoirs in the province ran down to 20-30% of their capacity. The drought seriously affected the production, people's life, and many socio-economics in the province to the point where the Nghe An Provincial People's Committee declared a state of emergency.

Proximity to the coast also represents a threat. Typhoons between January and August 2018 have killed some 70 people and caused US\$ 60.8 million in damage in Ngh? An, Thanh H?a and S?n La provinces. These include the Bebinca and Son Tinh typhoons. Sea-level rise is causing salinity levels in coastal aquifers and streams to increase, which poses a substantial threat to food security in coastal communities as soil productivity declines. Migration-related effects are likely to accelerate upstream deforestation and urbanization. Improved mangrove management and mangrove rehabilitation are being discussed as one ecosystem-based adaptation strategy for the coastal areas of both River deltas to reduce disaster risk and salinity intrusion. Such mangrove-focused strategy also provides an effective synergy between climate adaptation and Greenhouse Gas mitigation, which are both priorities of the Governments of Viet Nam and Lao PDR. The MoU both MoNRE?s signed in February 2019 emphasizes this priority and the Governments? understanding of transboundary cooperation (see Annex M).

South China Sea

The combined impacts of continuing development in the two basins, and of climate change on the social-ecological system of the South China Sea coastal areas, are anticipated to impact South China Sea water quality (e.g. nutrient loads), fish biodiversity and fish abundance, coastal habitats (e.g. mangroves, wetlands, fish refugia), and livelihoods (e.g. fisheries). Consequentially, the proposed project, and its S2S approach, will adopt the policy indicators developed under the GEF projects targeting the South China Sea,[4]⁴ as well as the economic valuation results, and nutrient modelling. Additionally, the SAP developed under foundational GEF South China Sea project will provide an additional starting point for focusing the activities of the present project.

Institutional and land/water governance aspects and barriers

Details on key national and provincial institutions that impact on water resources, environment, agriculture and development in the two river basins are provided in Section 2.

Across governments globally, the creation of silos is a persistent challenge to integrated natural resources governance. It is the intention of this project to create a collaborative framework capable of assimilating and integrating a variety of knowledge strands in support of integrated policy and decision-making for the Ma and the Neun/Ca River basins across the two riparian neighbours.

Both Viet Nam and Lao PDR have a multitude of implemented statutory policies, legal instruments and regulations governing water use, land use and landscape management, and infrastructural development. At present these are highly sectoral and geared to single sector objectives and are not designed for transboundary application, nor do they minimize S2S trade-offs, address ecosystem integrity or multi-sector and stakeholder resource use/demands. Besides commitments to the Mekong River Commission that are not related to the Ma and the Neun/Ca Rivers, neither country has any other transboundary river basin obligations at present. While there is interest in both countries to pursue river basin-based approaches to managing basins and landscapes, these do not currently have sufficient regulatory powers nor assigned budgets.

Institutional bottlenecks constitute a critical barrier for improved S2S management, as does siloed sectoral decision making, causing fragmentation and creating barriers for improved transboundary collaboration. In addition to this cross-sector challenge, decisions are largely made in the capital cities, decontextualized from local operating environment and challenges. Central Government decisions are particularly relevant to the Ma and the Neun/Ca River basins as both involve border areas and therefore national security concerns. This cross-scale challenge can be met by tailoring institutional solutions to accommodate local decision-making processes. Currently, the implementation of existing regulation is inconsistent and market opportunities supporting sustainable, integrated landscape management are underdeveloped, which in combination leads to suboptimal management of key S2S flows. There are experiences this project can build on. For instance, the Ministry of Natural Resources and Environment (Viet Nam) has experiences in the application of Payment for Environmental Services (particularly in the forestry sector), and Lao PDR is exploring similar strategies. Nevertheless, it will be paramount to improve capacity on the ground to deliver effective natural resource management at the landscape scale.

Importantly, on February 29, 2019, the Ministry of Natural Resources and Environment of the Socialist Republic of Viet Nam, and the Ministry of Natural Resources and Environment of the Lao People's Democratic Republic *signed a Memorandum of Understanding on Enhancing Cooperation* in which the two countries commit to jointly seek development assistance from various partners, including the GEF, to address three key transboundary sustainable development related issues: biodiversity conservation; climate change response; regional freshwater monitoring and prevention of climate related disasters (Annex M). The proposed project will represent a significant step in initiating MoU implementation.

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Associated Baseline Projects

While numerous projects, both GEF and non GEF, address marine and coastal issues in the Seas of East Asia, including in the Gulf of Tonkin where both project rivers discharge their water and sediment loads, *no initiative dealing with river basin management ? let alone transboundary management - has so far been undertaken by the countries, with GEF or other donors support, outside the Mekong River Basin*. The proposed project, while responding to countries' priorities, aims at filling this crucial gap in freshwater resources knowledge and management frameworks, a gap common to all the watersheds east of the Mekong River Basin.

Development assistance from development banks, NGOs, CSOs and bilateral donors - quite active in supporting the region's rapid socio-economic growth, particularly in Viet Nam - is mostly focused on infrastructural investments in energy production and urban development, biodiversity protection, rural development, forestry and climate change adaptation. Freshwater resources ? surface and groundwater, national or transboundary - have not been so far targets of major investments aimed at improving management or strengthening institutions.

The proposed project, adopting the S2S approach, will link with ongoing initiatives dealing with all those sectoral aspects, which play a role at the water nexus ? energy, food, ecosystems - and build a basis upon which to build transboundary cooperation, sound river basin management frameworks and strengthen water and environmental security. After 2020, Viet Nam's central and provincial governments will invest a total of \$842 million in the extension of irrigation and aquaculture, improved flood protection, water supply, drainage, hydropower, and dam safety, across both target basins. This project will inform the design, assessment and planning of a range of investments in flood protection (Ma: \$40 million; Ca: \$10 million), improved dam safety and advanced coordination of dam operation (Ma: \$12 million), expansion of irrigated agriculture (Ma: \$30 million; Ca: \$12 million), aquaculture (Ma: \$26 million; Ca: \$10 million). When conducting the Transboundary Diagnostic Analysis (TDA), this project will put a strong emphasis on cross-sector impacts working with the relevant stakeholders and fully engaging them in the project. The project will provide effective evidence and improve stakeholder relationships towards more sustainable basin management. This project will also collaborate with an ongoing investment in improved forest management and biodiversity (JICA loan funded and MARD implemented), which covers large parts of the project's target basins. While the total loan amounts to \$123 million this project can realistically influence around \$12 million. However, the engagement with this project provides a meaningful mechanism to upscale project findings. This project will also engage with the USAID-funded sustainable landscapes project, which locates in the target basins and aim for improved natural resource management and improved adaptive capacity. This project brings \$31 million into these sectors and will be an important collaboration, in particular for the TDA phase (~3 million). Additional government investments to mitigate the impacts of salinity are being planned and will also be at the core of this project's TDA and SAP.

Lao's National Agro-Biodiversity Programme and Action Plan II (NABP II, 2015-2025) will provide an \$18 million investment in ecosystem management and conservation. This investment includes the target area and will be funded through a range of different budgetary sources, including MAF, international conventions, multi-lateral and bilateral donors, NGOs, existing projects and programmes and the private sector. The three targeted outcomes are focused on governance, organizational and technical capacity, and management. This project will coordinate with NABP II activities in the Provinces of Houaphanh and Xieng Khuang (~\$10 million).

A recently approved FCPF project on improved forest management in Lao PDR includes the target basins and will provide MoNRE and MAF with \$35 million until 2024. These agencies were involved in the development of this PIF and will continue this engagement during the proposal development and implementation stage. This project aims to strengthen the Governance and planning component of the FCPF investment by providing TDA results on cross-sector impacts and provide a broader cross -sector platform for the forestry sector to engage with other agencies for improved basin planning. The collaboration will be focused on the FCPF investment in the Ma and Neun River basins (~\$11) although results will be scalable and benefit also other basins.

2) The proposed alternative scenario with a brief description of expected outcomes and components of the project and the project's Theory of Change.

Summary of Baseline Conditions

The Ma and Neun/Ca River Basins display similar environmental and socio-economic problems confronting the basins: hydropower reservoirs causing significant changes to flows in tributaries of both basins; deforestation and changes to forest cover impacting flows and sediment loads; increasing water withdrawals associated with demographic growth and rapid economic development affecting environmental flows; and emergency releases from dams during extreme water events contributing to flooding. The coastal flood plain created by the two rivers is affected by the excessive sediment and nutrient loads of the two rivers degrading surface and shallow marine waters, and by seawater intrusion due to over-extraction from the shallow coastal aquifers and to sea-level rise, posing serious threats to water supply for the rapidly expanding coastal populations. Additional development pressures emerge from the increasing flood and drought risks due to climate change, and increasing industry development and related water quality deterioration risks. Considering the transboundary context of the two target basins, development decisions and climate change adaptation investments will create cross-border trade-offs or synergies. *Establishing transboundary coordination frameworks for the Ma and the Neun/Ca River basins is paramount for their sustainable development.*

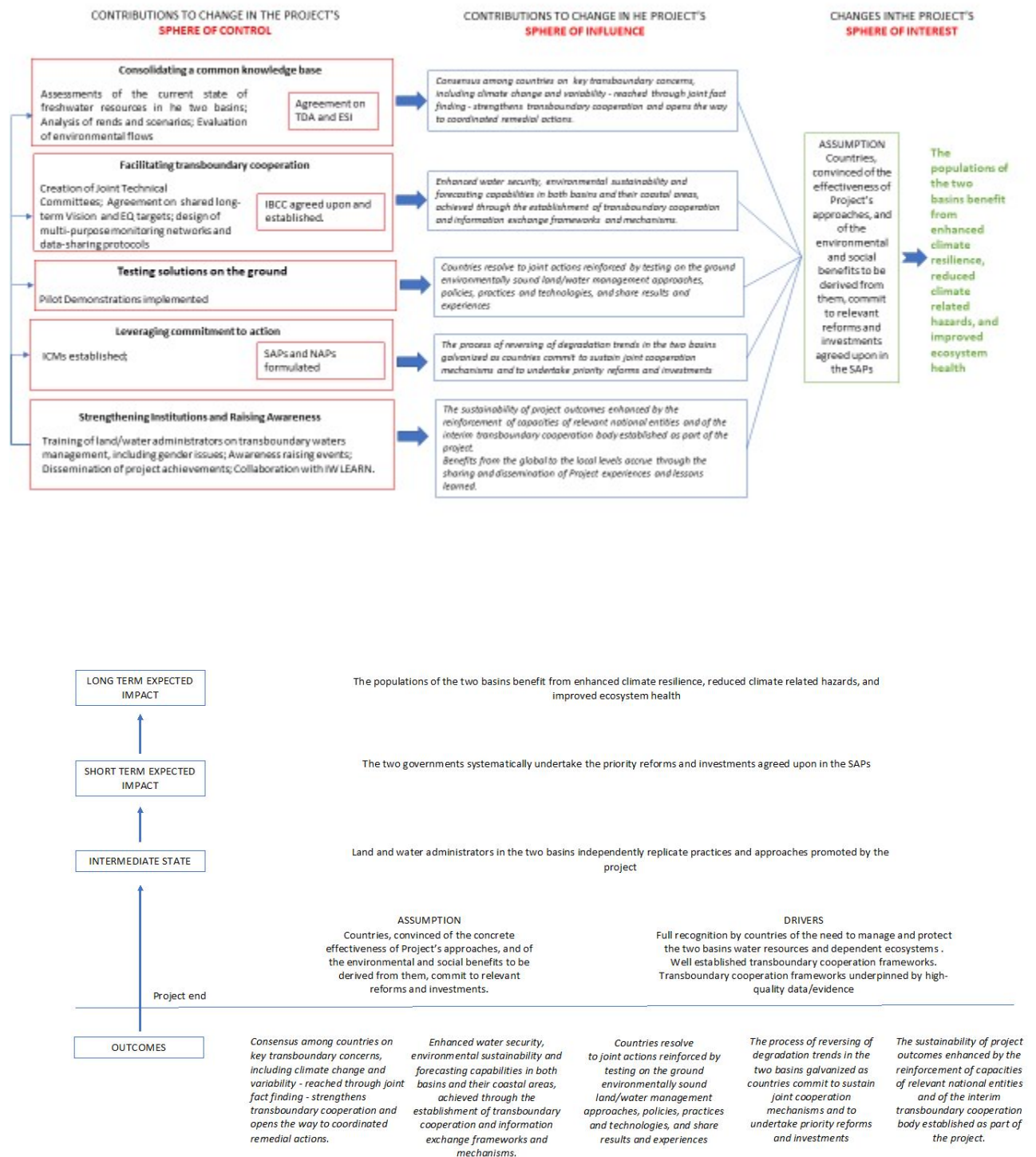
The 2019 'Memorandum of Understanding on Enhancing Cooperation' between the two countries that focuses on climate change impacts and on the 'prevention of climate-related disasters for sustainable development', provides the legal basis for identifying and implementing concerted measures targeting climatic resilience and transboundary issues of concern in the two basins and consolidating cooperation frameworks in basin management. While governments are planning important investments to face climatic hazards, only fragmented and sectoral sets of basic data exist so far and a science-based understanding, shared by the two riparian countries, of the two basins ecosystems and water nexus conflicts is lacking. Neither country has transboundary river basin obligations at present, besides the Mekong, nor structured and systematic technical cooperation frameworks on shared water resources between the two countries. Countries' plans and development strategies relevant for the two basins lack harmonization and common targets. Monitoring is so far sporadic and data sharing agreements do not exist.

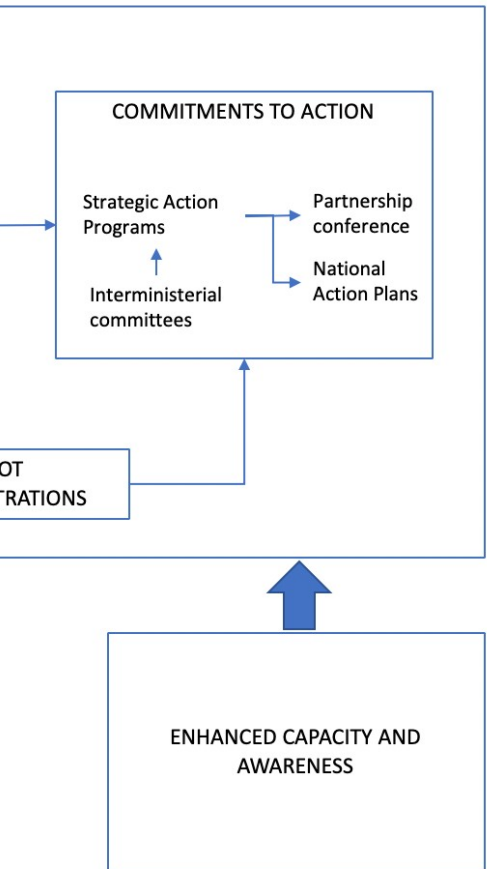
Theory of Change

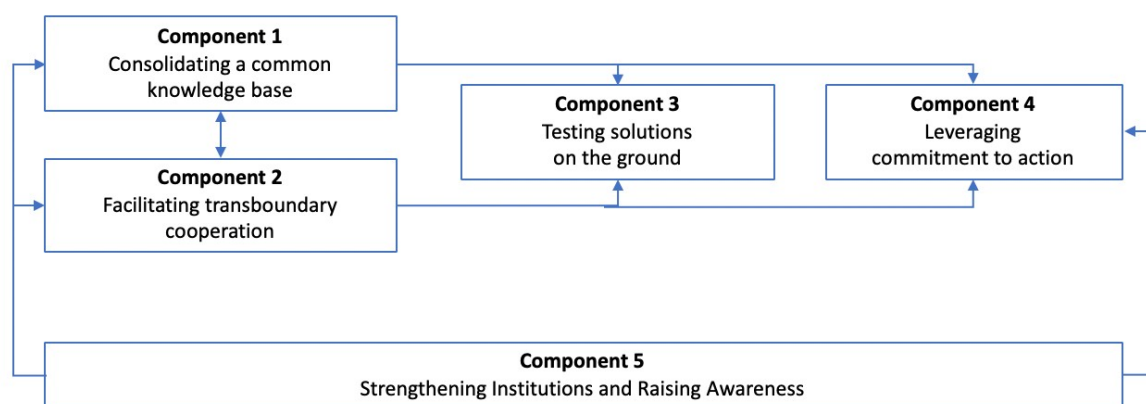
The Theory of Change at the basis of project design--as with many IW foundational projects 'assumes that fostering consensus on the main transboundary issues of concern, on a shared long-term vision, and on the priority reforms and investments needed to increase climate resilience and long-term sustainability, will enable the establishment of transboundary cooperation frameworks as the prerequisite for the systematic implementation of protection and mitigation measures.

The Theory builds on the notion that if the Transboundary Diagnostic Analyses (TDAs), the Environmental Status Indicators (ESI), and the Long-Term Vision for the two basins are endorsed by the countries' representatives in the Steering Committee; if bilateral cooperation frameworks and mechanisms are endorsed by governments and established; if Strategic Action Programs (SAPs) are signed by both countries, the policy reforms and investments that the two governments will undertake will effectively resolve transboundary concerns, enhance climate resilience, reduce climate related hazards, and improve ecosystem health for the benefit of the populations of the two basins.

Figure 2: Theory of Change ? from outcomes to impacts







Intervention Logic

The project is articulated into five components (Consolidating a common knowledge base; Facilitating transboundary cooperation; Testing solutions on the ground; Leveraging commitment to action; Strengthening institutions and raising awareness). All five components primarily respond to the overarching need for capacity building in basin management manifested by the countries. In addition, through the application of the TDA-SAP process, and by adopting a blend of regional mechanisms and of country-based demonstrations of good practices and technological solutions, the project will strive to establish transboundary cooperative frameworks. This approach has proven its high effectiveness in a number of International Waters foundational projects.

Main approaches adopted by the project

SOURCE TO SEA (S2S) MANAGEMENT

An S2S system includes the land area that is drained by a river system or systems, its lakes and tributaries (the river basin), connected aquifers and downstream recipients including deltas and estuaries, coastlines and near-shore waters, the adjoining sea and continental shelf as well as the open ocean. Water, sediment, pollutants, biota, materials, and ecosystem services key flows connect the sub-systems in the source-to- sea continuum and their geographies (Figure 1). An S2S approach consolidates analysis, planning, policy-making, and decision-making across sectors and scales. It considers the entire social, ecological, and economic system, from the land area that is drained by a river system to the coastal area and even the open ocean it flows into. (GEF STAP Policy paper 2016). The FAO approach to S2S seeks to prioritize key flows, and enhance/restore positive flows (e.g. biodiversity, ecosystem services and high-quality water) and reduce negative flows (e.g. pollution, sediments) across landscapes/seascapes.

RIVER BASIN MANAGEMENT

The river basin is a geographical area determined by the watershed limits of a system of waters, both ground and surface, flowing to a common terminus. Since its nature is not always constrained by a single political-administrative boundary but by a hydro-geographical one, the management of a river basin is expected to cover the management of other related resources within the basin. Given the interaction of the ecological system and civil society in a basin, sustainable basin-wide management also has to take into consideration anthropogenic activities that use or affect the water system extending the concept of river basin management (RBM) to include 'the management of water systems as part of the broader natural environment and in relation to their socio-economic environment'. Such an integration of socio-economic aspects into water management with a basin-wide approach paved the way for the implementation of IWRM. Nevertheless, while offering a new spatial context, Integrated River Basin Management (IRBM) also created the possibilities of 'problems of spatial fit' as the political territory no longer fits the functional space. The new area for actions of river basin is also vulnerable to 'not in my backyard' reactions or may suffer the 'Tragedy of the Commons' when common resource problems appear. Disparities between functional space and political territory can only be removed through the reorganization of political territories, or through functional cooperation among responsible jurisdictional authorities. (From 'River Basin Management in Vietnam', by Nguyen Phuoc Ngoc Ha et Al. 2013, modified)

THE WATER-FOOD-ENERGY NEXUS

The water-food-energy (WFE) nexus argues that these three sectors are inextricably linked and that actions in one area more often than not impacts one or both of the others. By perceiving and understanding these knock-on impacts, the 'nexus approach' seeks to 'manage trade-offs and to build synergies through our responses, allowing for more integrated and cost-effective planning, decision-making, implementation, monitoring and evaluation.' The WFE Nexus approach has strong potential as a vehicle to generating inter-sectoral collaboration, provided all sectors involved can agree upon goals, visions and values that integrate all components, thereby prompting integrated S2S planning and implementation.

Key Principles of the TDA/SAP Process?

Adaptive management can be defined as a systematic, rigorous approach for deliberately learning from management actions with the intent to improve subsequent management policy or practice. Simply put, the TDA/SAP adaptive management cycle involves assessing the problem (through the TDA), formulating a strategic plan with robust indicators (through the SAP), implementing the actions identified in the SAP and finally monitoring the outcomes, both short-term and long-term and adapting the plan accordingly.

The **Ecosystem Approach** is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way, and which recognizes that people with their cultural and varied social needs, are an integral part of ecosystems.

Sustainable Development underpins all GEF IW Projects. The goal of the International Waters focal area is the promotion of collective management for transboundary water systems and subsequent implementation of the full range of policy, legal, and institutional reforms and investments contributing to sustainable use and maintenance of ecosystem services.

Fundamentally, poverty is a denial of choices and opportunities, and a violation of human dignity. It is an aim of the TDA/SAP Approach to actively encourage **Poverty Reduction** or alleviation practices to be incorporated into the SAP development process to reduce the level of poverty in communities, regions and countries.

Gender Mainstreaming was defined by the United Nations Economic and Social Council in 1997 as 'a strategy for making women's as well as men's concerns and experiences an integral dimension of...the policies and programs in all political, economic and societal spheres so that women and men benefit equally and inequality is not perpetuated.' It is the intention of the TDA/SAP Approach to actively encourage gender-mainstreaming practices to be incorporated into the SAP development process to ensure that all individuals, male and female, have the opportunity to participate and benefit equally.

Climate Variability and Change is now an inescapable reality. Human activity is leading to ever increasing levels of greenhouse gas emissions and steadily compromising the natural resources needed to maintain the health of the planet. Climate change has been recognised as a significant driver (or root cause) of a number of transboundary problems in international waters. Consequently, the effects of climate change (in terms of cause and impact) need to be well understood during the TDA/SAP process to ensure that future interventions in GEF international waters projects are both resilient and adaptive.

Stakeholder Consultation and Participation can be defined as the process through which people with an interest (stakeholders) influence and share control over development initiatives and the decisions and resources that affect them. Stakeholders are any party who may - directly or indirectly, positively or negatively ? affect or be affected by the outcomes of projects or programs. Consequently, a wide range of stakeholders are involved in the TDA/SAP process. They can range from the Government, regulatory agencies, businesses, communities, civil society and NGOs.

COMPONENT 1: CONSOLIDATING A COMMON KNOWLEDGE BASE

Outcome 1

Consensus among countries on key transboundary concerns, including climate change and variability - reached through joint fact finding - strengthens transboundary cooperation and opens the way to coordinated remedial actions.

Under this Outcome, the main result will be the transboundary diagnostic analysis reports for each of the two shared river basins, and agreed corresponding Environmental Status Indicators endorsed by both governments. In order to achieve this Outcome, the following Outputs will be achieved:

Output 1.1

Science-based assessments of the current state of freshwater resources (surface and groundwater) and of their dependent ecosystems, including technical assessments (e.g. sediments, fisheries, biodiversity, and forest fire risk), governance and gender. The assessments will be conducted in the two basins and related coastal areas by the National Execution Teams (NET) under the lead of JTCs (see Output 2.1). It will adopt a methodology harmonized across the national segments of the basin in the two project countries and will focus on the surface and groundwater resources both unconfined and confined. It will aim at providing a systematic and homogenous review of the existing resource base and of its current state and utilization. The work will consist of the collection of information by national and regional expert teams. They will focus on:

- o The existence and spatial distribution of aquifers (and, in the case of transboundary aquifers, their mutual recognition by countries sharing them)^[5];
 - ? the current state (quality, quantity ? including sedimentation and determined using best-practice water accounting approaches) of the freshwater resources (surface and groundwater) and of their dependent ecosystems (lakes, wetlands, coastal lagoons, humid zones, inland fisheries);
 - o Uses of water: those based on formal rights, generally held by larger users (industry, large farms etc.); and also indications of the minor uses based on customary rights to abstract small quantities of water;
-

- ? impacts at both the transboundary and the national levels of floods (incl flash floods) and drought dynamics (incl. agricultural drought and forest fires) under current and likely future scenarios;
- ? point and non-point pollution sources and hotspots, with emphasis on nutrients;
- ? poverty, gender, and governance;
- ? driving factors of deforestation;
- ? status of climate change and biodiversity;
- ? competing water-food-energy-ecosystems uses and nexus dimensions.

In addition to the information derived from national and regional sources and expert networks, newly collected data from satellite image processing will in some cases be utilized to fill gaps in information coverage, complementing/extrapolating available information, producing projections and scenarios, and identifying parameters to be monitored over time.

This activity can utilise relevant FAO tools and methodology, including the FAO sourcebook on water accounting and auditing (<http://www.fao.org/3/a-i5923e.pdf>), the irrigation-focused MASSCOTE method (Mapping System and Services for Canal Operation Techniques; <http://www.fao.org/land-water/news-archive/news-detail/en/c/267321/>) and the complementing MASSMUS method (<http://www.fao.org/3/i3414e/i3414e.pdf>), FAO's Collect Earth tool (<http://www.fao.org/land-water/land/land-governance/land-resources-planning-toolbox/category/details/en/c/1026549/>) for land monitoring, and the FAO model MOSAICC for the assessment of climate change impacts on agriculture (<http://www.fao.org/in-action/mosaicc/en/>).

Output 1.2

Comparison analysis of current trends and projected scenarios.

Current climate change trends and existing development plans and strategies, with a particular focus on hydropower and irrigation, will be assessed against the imperatives of flood mitigation, drought preparedness and mitigation, protection of environmental values and of ecosystem services, and resolution of nexus conflicts, considering both national and transboundary implications.

Scenario development typically involves the following elements:

- (i) Characterization of the current situation, including gender issues, with a diagnosis of the starting state of the scenarios, focused on the focal issue or problem under consideration (water and climate adaptation in this case);
- (ii) Identification of major driving forces that represent the key factors, trends or processes that influence the situation, focal issue or decisions and that propel the system forward

and condition the story's outcome. Some of these forces are invariant (e.g. they apply to all scenarios) and to a large extent predetermined. Some of the driving forces may represent critical uncertainties, the resolution of which can fundamentally alter the course of events. These driving forces (or drivers, for short) influence but do not completely determine the future. Thus, while the initial state of the drivers is the same in all scenarios, the trajectory of the system follows a different course in each one; 130. Scenario analysis focuses on the areas of greatest uncertainty for a country or an operation, systematically develops several plausible alternative future environments in which the operation might be implemented, and determines how they would affect its success.

This structured approach to thinking about the future could help countries to make strategic choices in several ways: Managing risk; Building consensus for change; Augment understanding about the future; Monitoring progress and scanning changes in the environment. The project will strive to build capacity in the beneficiary countries in the development and use of scenarios as a water resources management tool in view of water nexus conflicts and growing climatic variability and unpredictability. It is expected that the results of this activity will provide valuable inputs to the SAP preparation process.

This activity can also build on the same set of FAO tools and methods as listed under Output 1.1, including FAO's MOSAICC model and FAO's Collect Earth tool.

Output 1.3

Evaluation of environmental flows at selected sites.

Attempts to define the critical environmental flows targeting selected ecosystems of particular value in the basins and coastal flood plains, considering the key development challenges being faced in both basins - hydropower, agricultural extension, industrial development, poverty eradication and eco-tourism. This will include, for example, analysis related to the water quality and quantity needed to sustain and restore vulnerable coastal environments (see page 21 for details).

Both countries emphasised during the project preparation phase their aspiration to maintain environmental flows while the economic development pressure in the upper and middle reaches of both basins is mounting to alleviate poverty levels. Consultations have revealed that pending development strategies are likely to increase water utilisation due to expansion of irrigation and hydropower investments. The countries did not select any sites yet for the evaluation of environmental flows as it was agreed to wait for the establishment of the JTCs. However, during the project preparation phase Lao PDR emphasised the relevance of biodiversity related indicators when conducting the environmental flow assessment in the two Lao provinces. Viet Nam highlighted similar aspirations

regarding environmental flows to protect aquatic biodiversity in the middle and coastal parts of both basins.

This activity will be able to build on FAO's MASSMUT method for the improved design of irrigation schemes to enhance environmental outcomes and FAO's ecosystem approach to promote the integration and coexistence of fisheries within irrigation systems (<http://www.fao.org/3/CA2675EN/ca2675en.pdf>).

Output 1.4

Transboundary Diagnostic Analyses (TDAs)

The process of jointly developing a TDA is important for countries so that they learn to exchange information and work together. This helps to determine the transboundary nature, magnitude, and significance of the various issues pertaining to water quality, quantity, biology, habitat degradation, or conflict. After the threat is identified, the countries can determine which issue or issues are priorities for action, relative to less significant issues and those of solely national concern. In addition, the root causes of the conflicts or degradation, and relevant social issues, are also included in the analysis so that actions to address them may be determined later. The science community from each country will be involved because the TDA is intended as a factual, technical document, and key stakeholders are expected to participate. A stakeholder identification or social analysis will be included in the TDA process. This process provides an opportunity for the countries to understand the linkages among the problems and the root causes of environmental issues in economic sectors. As a result, more holistic, comprehensive solutions may be identified to enable responding to many different conventions in a cost-effective manner. The TDA process allows complex transboundary situations to be broken up into smaller, more manageable components for action as specific sub-areas of degradation or priority 'hotspots' are geographically identified (with their specific problem and root cause) within the larger, complex system.

The TDA process will be based on the scientific findings of the assessments (Outputs 1.1, 1.2, 1.3) with special consideration of the impacts of climatic variability and change. It will be led by the JTCs and conducted according to the methodology developed for the IW Focal Area, through a systematic participatory and consultation process involving all stakeholders, ranging from local communities to major private sector actors. Socio-economic analysis and governance aspects will be central to the TDA process.

The TDA work will consist mainly of the following:

- **Training Workshop:** the work of the JTC will start with a workshop on the TDA process conducted by international expert in the conduct of TDAs.

- Collection of supplementary information: there will be the need to complement the information obtained through the Assessment with data on the water ? food- energy ? ecosystems nexus conflicts, and to hot spots of pollution. Special consideration will be given to actual data on increasing climatic variability and climate related disasters, and surface/groundwater related opportunities for increased sustainability, and resilience to climatic variability;
- Stakeholders consultations and participatory processes: the technical science-based synthesis of the situation in the countries will be presented and discussed with country officials, water user groups, industry, land planners, farmers, NGOs, and other concerned entities. TDA findings will be compared with perceptions of civil society and stakeholders, and possible solutions explored and jointly analyzed;
- Preparation of the TDA report, and endorsement process: the TDA team will consolidate all findings and agreed major issues of transboundary concern into the TDA document, prepared along the lines of the many similar GEF sponsored documents.

During the project preparation phase both countries highlighted the relevance of the TDA for the design of pilot projects and the formulation of strategic actions. However, both countries acknowledged differences in data availability as substantially less data and fewer studies are available for the Lao provinces Huaphanh and Xieng Khouang compared to the Vietnamese Provinces in the two target basins. During the project preparation phase both countries emphasised the relevance of the Ma and the Neun/Ca river basins for the national conservation and biodiversity strategies, and the need to understand the complexity of social-ecological dynamics for developing sustainable basin development plans. Designing in this context effective strategies for responding to increasing flood and drought risks was identified of paramount importance to both countries. Addressing droughts was a topic that gained relevance for both countries if compared to the initial PIF consultations. Consequently, Lao PDR requested adding forest fire risk and forest fire management to the scope of the TDA and the overall project.

This step can build on a wide range of FAO methods and tools, including MASSCOTE, MASSMUT, and the MOSAICC model. The project will aim to complete TDA early in the project, preferably by end of year 1 and at least by mid-term of the project to allow digestion of its content and then serve as the base for consultations and agreement on the Strategic Action Program. The project will ensure that the process strongly builds on available local experts/ institutional information in Viet Nam and Lao PDR. The execution agency will assemble a team of best suited local and international experts. TDA process will also be used as a process to build national capacities and for south-south cooperation between two countries.

Output 1.5

Agreement reached on a limited number of key Environmental Status Indicators (ESI). Agreement is reached for both basins among relevant governmental entities, the science community and all major stakeholders, on a limited set of indicators characterizing the status of the freshwater environment, including the baseline conditions/values ? as they emerge from the assessments and the TDAs, covering water quality and quantity, health of dependent ecosystems, governance and socio-economic factors including gender aspects. These indicators will allow to assess long-term impacts of human interventions and mitigation measures, and will stay in use beyond GEF- funded intervention.

Examples of ESI (from GEF, 2002):

- ? Improved (measurable) ecological or biological indices
- ? Improved (measurable) chemical, physical (including flow regimes), or biological parameters
- ? Improved recruitment classes of targeted fish species, diversity, or keystone species
- ? Demonstrable reduction of persistent organic pollutants (POPs) in the food chain
- ? Changes in local community income and social conditions as a result of improvements in environmental conditions
- ? Demonstrable recovery of key flagship species or values as a result of changed rule (operating) curves for dams or vegetative response from wetland re-inundation
- ? Increased stakeholder awareness and documented stakeholder involvement

The project will work with Joint Technical Committee to discuss and prioritize issues under this Output. During project preparation phase, stakeholder discussions emphasised the relevance of biodiversity indicators in the context of development pressures (e.g. irrigation expansion, hydropower) and climate change (e.g. droughts). The Governments of both countries agreed that this project would need to help protecting habitat loss for key species, including tigers. The specification of indicators can be guided by FAO's agro-ecology knowledge hub (<http://www.fao.org/agroecology/overview/our-work/en/>), the MASSMUT method, and IUCN's Key Biodiversity Area (KBA) protocol (<https://www.iucn.org/commissions/world-commission-protected-areas/our-work/biodiversity-and-protected-areas/key-biodiversity-areas>).

The project will ensure that the development of SAP makes use of these indicators to agree on quantifiable targets for stress reductions based on these indicators.

COMPONENT 2: FACILITATING TRANSBOUNDARY COOPERATION

Outcome 2.

Enhanced water security, environmental sustainability and forecasting capabilities in both basins and their coastal areas achieved through the establishment of transboundary cooperation and information exchange frameworks and mechanisms.

Under this Outcome, key result expected is the final shared vision for each of the river basins agreed between two countries and design of new permanent cooperation frameworks and mechanisms.

Output 2.1

Creation of Joint Technical Committees ? JTCs. The JTCs ? formed by national experts from the two project countries identified in consultation with the beneficiary countries? governments - will be established at the beginning of the project. They will be responsible for the execution of many of the project activities and will cover the following topics in both basins:

- (i) Assessments, TDAs, water-food-energy-ecosystems nexus, visioning process;
- (ii) Monitoring, information exchanges, indicators and early warning systems;
- (iii) Surface and groundwater governance.

The JTCs will operate based on terms of reference prepared by the PCU in consultation with National Coordinators, and approved by the PSC. They will have a balanced gender composition. It is expected that they will continue to function after the project end, as technical arms of the (I) BCC.

During the project preparation phase both countries agreed that the JTCs will be a critical dimension of the transboundary management approach for both target basins. The lead government partners also agreed that JTCs will need to comprise of technical experts from a wide range of disciplines and Ministries to cover the integrated assessment approach of this project. It is expected that these three JTCs will be part of the new permanent cooperation frameworks agreed by the end of the project between the two governments. The project will ensure strong participation of women and gender experts in the JTCs.

Output 2.2

A shared long-term Vision (horizon 20 years) including the agreement on environmental quality (EQ) targets and gender equality. The Visions, addressing the two basins, will be developed by JTCs and will have a 20-year time horizons. They will include agreed long-term targets for environmental sustainability. The Shared Visions for the management of the two basins will be developed through a multi- stakeholder process and adopted by the Steering Committee. This Shared Vision will include environmental quality targets (EQTs) and relevant indicators consistently with the Environmental Status Indicators established under Output 1.5. The informed consensus, strengthened by joint scientific fact-finding, reached as part of the TDA development process, will facilitate the agreement

on feasible environmental quality targets (EQTs). The project will ensure that the long term visions also include socioeconomic issues, including gender equality.

Output 2.3

Harmonized design of multi-purpose monitoring networks and joint monitoring and data-sharing protocols.

Lack of modern monitoring networks, including groundwater, has been identified during preparation as a major obstacle to sustainable water management. The project will hence engage in the design of a modern *multi-purpose* surface and groundwater monitoring networks taking into consideration the results of Component 1, the socio-economic conditions of the countries and network sustainability issues. The purposes of the network will be to provide information on:

- ? Freshwater trends (quality and quantity) in response to climatic fluctuations and water extractions;
- ? Aquifers and parts of aquifers subject to over-exploitation;
- ? Water quality conditions and trends in densely populated areas;
- ? Health of water dependent ecosystems and humid areas;
- ? Water related hazards: floods and droughts; pollution and salinization; lowering of the water table of aquifers;
- ? Interactions of surface and groundwater;

The networks should ensure a homogeneous, albeit sparse, coverage of the basins segments in each country. It will include both quantity and quality (salinity) detection systems. Pluviometers would need to be installed in all stations. Stations will include data loggers, and real time transmission of data (very remote areas, etc.).

The feasibility and sustainability of such networks will be pilot tested in each country, and a very limited number of stations will be acquired and installed. The new stations acquired as part of the project, will provide precise measurements of groundwater levels, temperature, conductivity and rainfall with reliable data loggers and utilize wireless data transmission, allowing safe collection of data in areas where wildlife or environmental hazards may pose safety risks.

The networks design - including monitoring protocols, real-time data exchange mechanisms, flood early warning systems and management plans - will be developed by JTCs in consultation with provincial and local administrations and communities. Approval of a formal data sharing protocol (such as an MoU) and so far information management systems will be responsibility of the SC.

This activity can build on FAO's monitoring method for water productivity WaPOR using remote sensing (<http://www.fao.org/in-action/remote-sensing-for-water-productivity/en/>).

Output 2.4

Interim Bilateral Consultation/Coordination Committee (IBCC) agreed upon and established.

The IBCC will cover both basins, and operate through periodic meetings and be formed by officials of the relevant ministries and governmental agencies. It will deal with issues of transboundary relevance pertaining to the management of the two basins, such as: monitoring information exchange and early warning, resolution of water nexus conflicts, coordination with other relevant projects, plans and initiatives, including the GEF supported ones. It will be established towards the end of the project, and be based on agreed upon TORs and be supported by a Secretariat. The PCU and the relevant JTC will be responsible for the formulation of the TORs, and for submission to the Governments for approval and adoption. **The project will also ensure strong participation of women in IBCC and in bilateral consultations.**

COMPONENT 3: TESTING SOLUTIONS ON THE GROUND

Outcome 3.

Countries resolve to joint actions reinforced by testing on the ground environmentally sound land/water management approaches, policies, practices and technologies, and by sharing results and experiences, and recommend solutions

Output 3.1

Program of pilot demonstrations selected on the basis of the results and findings of Component 1

Within the context of foundational projects -aimed at enabling transboundary cooperation among countries sharing a waterbody, and facilitate agreement on a program of joint management actions- Pilot Demonstrations are intended to provide multiple benefits to allow countries (i) to accrue direct experience on approaches, technologies, practices and organizational settings novel to the region and test their cost effectiveness and feasibility in the regional context, (ii) test cooperative arrangements, (iii) feed into the SAP formulation process.

The program of the pilot demonstrations will be developed by the JTCs and approved by the Steering Committee. It will be defined based on results and findings of Component 1, and the number of pilots will be limited to ensure feasibility and long-term sustainability. The work will be executed to the extent possible by joint teams, and the results and experiences gained through the pilots will be systematically shared between the two countries, and beyond.

This activity can build on FAO's assessment of incentives for ecosystem services in agriculture (<http://www.fao.org/in-action/incentives-for-ecosystem-services/en/>), FAO's guide to design nature-based solutions for agricultural water management and food security (<http://www.fao.org/3/CA2525EN/ca2525en.pdf>), and FAO's agro-ecology knowledge hub (<http://www.fao.org/agroecology/overview/our-work/en/>). It can also apply IUCN's Global Standard for Nature Based Solutions and the Restoration Opportunities Assessment Methodology (ROAM) (<https://www.iucn.org/theme/forests/our-work/forest-landscape-restoration/restoration-opportunities-assessment-methodology-roam>).

Examples for possible pilots have been discussed with stakeholders in Lao PDR and Viet Nam and might include a community-level flood early warning system, improved hydrographic stations, development of transboundary flood prevention plans with capacity building of most vulnerable communities, development of drought mitigation plans, and improved land cover planning with seed investment in reforestation and improved wetland management. However, these initial ideas need to be evaluated based on TDA findings and with consideration of the overarching need to build resilience to climate variability and change (see box below).

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The three Rs: key factors in climate change adaptation

Recharge - By adding water to the system, recharge contributes to water circulation. Recharge can come from the interception of rain and run-off water (natural recharge), from increased infiltration of natural processes by manmade interventions (managed aquifer recharge ? MAR) or can be a by-product of some other factor (i.e. inefficient irrigation or leaking pipes in water supply systems). There is a need therefore to manage natural recharge, apply artificial recharge and control incidental recharge.

Retention - Retention slows down the lateral flow of groundwater. This helps pond up groundwater and create a large wet buffer in the subsoil. Under such conditions, it is easier to retrieve and circulate water. With retention, the groundwater table is heightened. This has led to improved yields of rain- dependent agricultural areas. Some argue that in some cases it is better to control soil moisture from below than to provide surface irrigation water from above because of lower losses through evaporation and less development of salt crusts on the topsoil.

Reuse - The biggest challenge is making water revolve as much as possible. Scarcity is resolved not only by managing demand through reduction in use, but also by keeping water in active circulation.

Two processes are important in managing reuse. The first is *management of (non-beneficial) evaporation*. Water that evaporates ?leaves? the system and can no longer circulate within it. The second process is *managing water quality*. The possibility for reuse depends on the quality of the water, with different functions putting different demands on the water quality.

The following table shows the criteria that will be applied by the JTCs for the selection of the Pilot Demonstrations.

Pilot Project Title, and location			
Location		Planned duration:	
Estimate of costs		Co-financing	

RELEVANCE
Are the intended results likely to contribute to the achievement of the project goal and outcomes?
EFFICIENCY
Does the pilot intend to make use of / build upon pre-existing institutions, partnerships, data sources, synergies and complementarities with other initiatives, programs and projects etc. to increase project efficiency?
SUSTAINABILITY / REPLICATION AND CATALYTIC EFFECTS
Does the pilot present a strategy / approach to sustaining outcomes / benefits?
If funding is required to sustain pilot outcomes and benefits, are adequate measures / mechanisms to secure this funding in place?
Are there any financial risks that may jeopardize sustenance of pilot results and onward progress towards impact?
Are there environmental factors, positive or negative, that can influence the future flow of pilot benefits?
Will the pilot contribute to policy changes?
Is there sufficient level of ownership by the main national and regional stakeholders necessary to allow for the pilot results to be sustained?
MANAGEMENT, EXECUTION AND PARTNERSHIP ARRANGEMENTS
Have the capacities of partner(s) been adequately assessed?

Specify the roles and responsibilities of internal and external partners
RELATIONSHIPS WITH THE PROJECT CONTEXT
Is the pilot consistent with the findings of the TDA of the Neum Ma/Ca Project?
MONITORING
Demonstrate that baseline data collection has been satisfactory/adequate

The project will ensure that pilot activities benefit women and men equitably leading towards a closing of the gender gap.

COMPONENT 4: LEVERAGING COMMITMENT TO ACTION

Outcome 4

The process of reversing of degradation trends in the two basins galvanized as countries commit to sustain joint cooperation mechanisms and to undertake priority reforms and investments.

Output 4.1

Inter-ministerial committees (IMCs)

These national committees ? established for the purposes of the project or by supporting and enhancing existing equivalent bodies ? will focus on the harmonization of existing frameworks, and lead the SAP formulation process. So far both countries have created inter-ministerial groups to coordinate urgent and critical developments in other areas, such as the Mekong Delta in Viet Nam. For the target basins inter-ministerial coordination bodies have not yet been created apart from planning processes at the province level. Approaches such as ?Source to Sea? are being piloted at inter-provincial level in the Vu Gia-Thu Bon River Basin^[1] in Vietnam but not yet in other regions. Experience with the S2S approach needs to be raised to the Ministerial level through the IMCs.

[1] <https://www.iucn.org/news/viet-nam/202006/source-sea-management-a-case-study-solid-waste-flow-vu-gia-thu-bon-river-basin>

Output 4.2

Strategic Action Programs (SAP) with horizon of 5-10 years, consistent with the Shared Vision.

Once the priority transboundary concerns along with their root causes in the sectoral activities of each country will be identified in the TDA, the countries will collaborate in determining the actions they will take collectively and nationally to address those priority concerns. Their responses will be expressed in two Strategic Action Programs, one for each basin. The actions may consist of policy, legal, and/or institutional reforms and investments on both multi-country and national levels. They will be developed by each country, through national inter-ministerial committees with participation by stakeholders at the national and subnational levels, and compiled and agreed upon at the multi-country level. The development of individual national action plans (NAP), which incorporate the reforms and investments into national economic development plans, will describe the commitments by individual collaborating countries in response to the regional SAPs they have produced.

The two SAPs will have a time horizon of 5-10 years, will be consistent with the Shared Vision and address basin governance and main issues of transboundary concern, including climatic variability and change. The SAPs will be formulated by the JTCs in consultation with the ICMs and on the basis of the results of the TDAs, of stakeholder consultations, of the experience gained with pilot projects. They will be reviewed/approved by the IBCC and national IMCs, and endorsed at minister level. Focus will be on cooperative actions related, amongst others, to hydraulic/irrigation infrastructure and hydropower generation schemes, nutrient pollution, erosion control, integrity of freshwater/coastal ecosystem services and fisheries. The SAP will be signed by at least one Minister from each country. The project will ensure strong incorporation of gender issues in the visions and SAPs.

Output 4.3

Partnership conference consolidating international support for SAPs implementation

This event, organized after the formulation/approval of the SAPs, with broad participation of stakeholders, donors and IFIs, will consolidate international support for the implementation of the priority actions. The main goal will be the attainment of funding (from both national/international funding sources) for not only NAPs implementation, but potentially also the continued operation of the IBCC (secretariat), other relevant and permanent institutional mechanisms established by the project, and the continued functioning of the piloted basin monitoring systems. NAPs will also strongly consider gender equality while cross-sectoral coordination process strengthens gender mainstreaming

Output 4.4

National Action Plans (NAPs) for the Ma and Neun/Ca river basins translating regional priorities into national actions (to be implemented after SAP endorsement).

The NAPs for the Ma and Neun/Ca river basins will reconcile the regional priorities enshrined in the Visions and the SAPs with the national ones, translating them into national actions.

COMPONENT 5: STRENGTHENING INSTITUTIONS AND RAISING AWARENESS

Outcome 5.1

The sustainability of project outcomes enhanced by the reinforcement of capacities of relevant national entities and of the interim transboundary cooperation body established as part of the project.

Under this Outcome, at least 100 land/water administrators in each basin are expected to receive training and SMs (at least 50% women to be targeted).

Output 5.1.1

Sustained/long-term training of national staff and of land/water administrators on key aspects of transboundary waters management, data analysis and monitoring, including gender issues.

The training component of the project will be aimed at land/water administrators and deal with key aspects of transboundary waters management, e.g.:

- o Data collection, analysis and management using modern ICTs;
- o Development of scenarios of water futures with a focus on climate variability and change (for example using the IIASA approach to interactive scenario building);
- o S2S management, Integrated Water Resources Management and Integrated Coastal Zone Management;
- o Groundwater governance and management, including groundwater vulnerability mapping;
- o Gender-transformative natural resources management;
- o Principles, and experiences gained globally from the application of key directives, conventions and guidelines, including: UNECE Water Convention, EU Water Framework Directive (WFD) and Groundwater Daughter Directive; UN Non-Navigational Uses Convention; UNGA Resolution on the Law of Transboundary Aquifers.

As far as possible, the project will support the use of innovative, remotely sensed and freely available data sources and building comparative capacities in each country to access and analyse such

information. This could also greatly complement DRR capacities. In addition, when establishing environmental status indicators (component 1.5), these will be cross-checked and that monitoring systems are in place to assess changes/progress of these over time. The project will build on lessons and experience from past FAO-GEF project 'Groundwater Governance: A Global Framework for Country Action' to support activities related to groundwater governance and management.[1]The project will ensure that the training participants are gender-balanced including at least two dedicated training on water and gender

[1] <https://www.un-igrac.org/news/groundwater-governance-global-framework-action>

Output 5.1.2

Awareness raising events involving a broad range of stakeholders at the national, regional and global levels

These events will present the Project's progress to a broad range of stakeholders at the local, national, regional and global levels. Stocktaking Meetings will be held annually with the participation of all project stakeholders, implementing and executing agencies and bodies, the GEF Secretariat, development assistance providers, ongoing complementary projects, MEAs focal points. Innovative means of communicating with ethnic or marginalized communities will be explored and implemented as appropriate.

The social assessment during project implementation will be used to identify what media are best to raise awareness ? e.g. to reach communities radio, school materials, and oral media (theatre etc.) are sometimes more effective (also given the high prevalence of non-literate in the region).The project will ensure gender balanced Stocktaking Meetings (SM), and tailored awareness raising programmes aimed at women, men and youth.

Outcome 5.2

Benefits from the global to the local levels accrue through the sharing and dissemination of Project experiences and lessons learned.

Output 5.2.1

Dissemination of key project achievements

Dissemination will occur through the organization of workshops, conferences, webinars and other online tools, and through the publication of key documentation, hydro-geological and other maps, translated into regional languages.

Output 5.2.2

Collaboration with IW-LEARN Full participation to GEF IW-LEARN activities including IWCs, creation of a project website following IWLEARN standards, and preparation of experience notes.

Collaboration will involve the creation of project web site following IW-LEARN standards, the publication of Experience Notes, and the full participation to GEF IW conferences and other IW LEARN activities. 1% of the project GEF budget will be allocated to this output. The project will support at least 10 dissemination events and experience notes / documents / videos, including on gender and water issues.

3) Alignment with GEF focal area and/or Impact Program strategies;

The project is fully consistent with the long term goal of the International Waters focal area, i.e.: the promotion of collective management for transboundary water systems and subsequent implementation of the full range of policy, legal, and institutional reforms and investments contributing to sustainable use and maintenance of ecosystem services.

The project is consistent with the International Waters Programming Directions for GEF 7, Objective 3: *Enhance water security in freshwater ecosystems.*

The GEF7 IW Strategy states that ?? IW support in freshwater basins will focus on three areas of strategic action: 1) advance information exchange and early warning (see Output 2,3); 2) enhance regional and national cooperation on shared freshwater surface and groundwater basins; and, 3) invest in water, food, energy and environmental security?. All three areas are covered in the proposed project.

Moreover, the project adopts the Source to Sea approach promoted by the GEF STAP, and focuses on an area indicated by TWAP as a likely future hotspot for ?? nexus dimensions aggravated by increasing severity of floods and droughts intensified by increasing climate variability and change (e.g. rising sea levels), population growth, urbanization and associated increasing needs for food and energy. Cooperation on water is an imperative in these regions to support the need for water, food, energy, and ecosystems security and related dimensions for each nation?.

4) Incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing;

The project adds the multi-country and multi-basin dimensions needed to reform and harmonize present national policies and physical plans, and address the transboundary implications of the shared nature of the resource. This regional dimension will require shared recognition of the system

boundaries (in line with the ecosystem approach), the establishment of multi-country mechanisms for information sharing and cooperation on common issues such as climatic hazards mitigation, and the enhancement of regional awareness and stakeholder involvement, all of which is incremental with respect to the 'baseline' represented by the fragmented, mostly single-country approach presently adopted by the countries sharing the two transboundary basins and associated aquifer systems.

Neither Lao PDR or Viet Nam are currently ready to fully appreciate the international and the domestic benefits that will accrue from the implementation of integrated, conjunctive management of surface and groundwater, or from the adoption of S2S and nexus approaches. Without the facilitation of the GEF, the countries will continue to implement fragmented and poorly coordinated water resources exploitation/development policies that do not take into systematic consideration the advancements in scientific understanding of the characteristics of these transboundary systems, nor the transboundary implications of their interconnected and shared nature, thereby exacerbating conflicts among users, threatening water security and the integrity of dependent ecosystems. Without the GEF project, transboundary cooperation will remain insufficient for tackling basin challenges and achieving the SDGs. Consequently, without this GEF project the MoU may remain largely unimplemented. Without GEF resources the Ma and the Neun/Ca River basins will not learn systematically from global experiences and may not establish a learning process between both target basins and cross-sector coordination improvements within each country. Also, climate change issues are likely to remain insufficiently integrated in basin planning processes. Therefore, the regional benefits that the project will accrue will be derived from the improved protection and sustainability of significant transboundary freshwater resources and related ecosystems, bringing about improvements in the overall stability and water security in the region.

The table below summarizes project increment and contribution from cofinance.

Project Component	Baseline	Project increment	Contribution from cofinance

1	<p>Both Lao and Viet Nam have indicated their interest to jointly work on the freshwater sector through Memorandum of Understanding on Enhancing Cooperation? However, efforts in cooperation have been sporadic and not particularly targeted at 2 rivers that the countries share. Data on relevant issues of the shared river Basins exist with institutions in each country ? but there are no mechanisms for harmonization , prioritization nor sharing of data to make joint decisions or plans that benefit both countries. Limited information exists on current trends and projected scenarios, including climate change impact scenario. Ecosystems in both basins threatened by water nexus conflicts, especially as transboundary environmental concerns are not strongly reflected in natural resources management and development plans in watersheds for the shared rivers.</p>	<p>The project will support actions to build capacities, confidence and consensus between the two countries on key transboundary concerns, including climate change and variability - reached through joint fact-finding - strengthens transboundary cooperation and opens the way to coordinated remedial actions. Without project support, the countries may not undertake comprehensive joint assessments of the river basins they share.</p> <p>GEF Investment: 2,427,752 USD</p>	<p>The primary contributions are from work by Vietnam MONRE?s work on dam safety/ Investigation and detection of groundwater in high mountainous and water scarcity areas planned in the two shared river basins within the geographies that fall in Vietnam. In addition, cofinance will also be contributed through</p> <p>IUCN?s River governance dialogue work/</p> <p>Total cofinance: 10,300,000 USD</p>
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2	<p>Both countries, as members of ASEAN and as part of the Mekong River Basin do have experience of partnership of a number of relevant development, environment (including water resources) management but neither country has transboundary river basin obligations at present for the two rivers that they alone share with each other.</p>	<p>The project will ensure enhanced water security, environmental sustainability and forecasting capabilities in both basins and their coastal areas achieved through the establishment of transboundary cooperation and information exchange frameworks and mechanisms through establishment of three joint technical committee between experts from both countries to learn and share from each other, leading to A shared long-term Vision (horizon 20 years) including the agreement on environmental quality (EQ) targets. The plan will be supported through multi-purpose monitoring networks, joint monitoring, and data-sharing protocols. The project will facilitate the creation of Interim Bilateral Consultation/Coordination Committee (IBCC). These will help facilitate strong cross-border cooperation for effective management of the two river basins and water resources.</p> <p>GEF Investment: 776,600 USD</p>	<p>The primary contributions are from work by Vietnam MONRE's work on dam safety/ Investigation and detection of groundwater in high mountainous and water scarcity areas, and project Identification of scientific solutions, technologies and policies to manage and protect groundwater and to treat and supply clean water to high mountainous and water scarcity areas planned in the two shared river basins within the geographies that fall in Vietnam. In addition, cofinance will also be contributed through IUCN's River governance dialogue work.</p> <p>Total cofinance: 3,200,000 USD</p>
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3

Both countries implement a wider range of development, natural resources and water resources management/development programmes independently. Innovations are not shared and no testing has been done of approaches and tools that are available from beyond the countries would benefit both river basins.

The project will support countries to pilot a range of approaches by

testing on the ground environmentally sound land/water management approaches, policies, practices and technologies, and share results and experiences. This is expected to showcase the advantage of joint work whilst longer-term visions and actions plans are also being developed through Vision and SAP.

GEF Investment: 2,819,048 USD

The project will be supported by a number of investments in Community engagement, capacity development, natural resources management and M&E work being done by partner organizations such as the WCS, IUCN and GLZ.

FAO CSA agroforestry/ irrigation management

MONRE landscape/ forest restoration are some other cofinance for this Component. Particularly noteworthy will be the GCF GIZ program ?Lao PDR emission Reduction Program through improved Governance and Sustainable Forest Landscape management ? USD 8,004,779 (EUR6,700,000)

The project will also be cofinanced by Provincial governments of Huaphanh (Province Development Plan (incl. Capacity building program; Xam River Basin Management phase 3; Land title assessment program; Nam Peun River basin management plan; and water quality monitoring) ? USD 467,198.29 . Additionally, from Lao's Xiengkhouang Province: Province Development Plan will also cofinance, including Len2 project (?Strengthen the capacities of institutions to establish

4	Countries? actions in the two basins lack long term guiding plan, strategic vision and transboundary coordination mechanism.	<p>The process of reversing of degradation trends in the two basins galvanized as countries commit to sustain joint cooperation mechanisms and to undertake priority reforms and investments through development and signing of Two Strategic Action Programs (SAP) with horizon of 5-10 years, consistent with the Shared Vision that will also be used as a tool for resource allocation by each government as well as for fund raising from partners. The SAP will be built using global best practices as supported by the GEF, but will be tailored to local needs and priorities.</p> <p>GEF Investment: 804,500 USD</p>	<p>This will be supported by IUCN's work on biodiversity conservation, as well as particularly Vietnam MONRE's investments in forest restoration and sustainable landscape management.</p> <p>Total cofinance: 2,200,000 USD</p>
5	Land and water administrators in the two basins lack experience in transboundary aspects and are in need of significant capacity building	<p>The project will support strengthening institutions, raising awareness and capacities. The project will also ensure that the global community also benefit from lessons from this project through engagement in IW Learn.</p> <p>GEF Investment: 538,000 USD</p>	<p>This will be supported by IUCN's work on biodiversity conservation, as well as particularly on river dialogue as well as FAO's work on next generation of irrigation management.</p> <p>Total cofinance: 1,296,013 USD</p>

5) Global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF);

The project will accrue global environmental benefits in a number of ways, first by fostering cooperation among countries sharing transboundary water systems, i.e.: the overarching goal of the International Waters focal area, and fostering water and, more broadly, environmental security. This will be achieved by striving to reverse the present trends in overexploitation of the resource by

adopting the basin/ecosystem approach and introducing conjunctive surface and groundwater management practices; reconciling conflicts among water users and uses at the water-food-energy-ecosystems nexus with focus on hydropower production and irrigation; introducing coordinated mitigation mechanisms for climatic hazards; halting the degradation of physical habitats such as wetlands, mangroves, estuaries, flood plains.

The project will support the achievement of global benefits in other GEF focal areas, through the protection and conservation of freshwater biodiversity in the two basins (including a number of endangered amphibians and several endangered mammals, see page 21), sustaining fish stocks in both rivers, the promotion of sustainable land management, and the mainstreaming resilience to climate variability and change into water resources and land management.

Finally, the project will support the achievement of SDGs Targets 5.5 (women empowerment); 6.3, 6.5 and 6.6 (reduce water pollution, foster transboundary cooperation, protect aquatic ecosystems); 13.1 (strengthen climate resilience); 15.1, 15.5 (restoration of freshwater ecosystems, halt loss of biodiversity).

6) Innovativeness, sustainability, potential for scaling up and capacity development[6]⁶ . ?

While adopting the well tested process for setting the foundations and the enabling environment for cooperation and joint action among countries sharing a water body, recommended by the International Waters focal area strategy (the TDA ? SAP process, which has proven effective in many GEF ?foundational? projects), the proposed project presents two additional and major innovations:

- o The Transboundary Diagnostic Analysis (TDA) that will be conducted as part of the project, will embrace a comprehensive cross sectoral approach analysing freshwater resources in their entirety (surface and groundwater), and under many perspectives of utilization and interactions and under different future climatic scenarios. This approach is a response to the priorities set forth by the GEF-7 IW Strategy on overall water security.
- o Another innovation is the broad geographic scope of the project, encompassing two adjacent and similar transboundary basins, with complex upstream ? downstream implications, and embracing an important section of the coastal zone of Northern Viet Nam.

The sustainability of project outcomes, and their broader uptake, will be strengthened by the recently signed MoU between the Ministries of Natural Resources and Environment in Lao PDR and Viet Nam. The MoU specifically mentions joint GEF-funded actions in water resources management. As the project envisages continuation of some of the committees and bodies that have been established to support the project, it is assumed that these will be low cost and will be largely borne by the respective governments. However, the SAP will also call for a financing strategy to support such bilateral work,

and these will be discussed with both governments and will be a key issue for the project's exit strategy.

Based on the outcomes of the TDA, the project will develop an innovative monitoring scheme to introduce

- ? a flood early warning system,
- ? improved flood monitoring and flood management,
- ? improved management of cascading reservoirs, and
- ? improved drought management systems.

These innovations will build on innovative remote sensing solutions and involve new and tested ICTs. This could involve sensor-based flow monitoring updating smart phone users in vulnerable communities and at respective management authorities. Considering the cascade of reservoirs in the transboundary context of both focus rivers, reservoir managers could also receive improved and faster updates to minimize risks to communities and infrastructure.

Given the impacts of Covid19 pandemic on the ability of executing agencies to operate fully on ground, the project will also have to undertake innovative and adaptive management of the project until COVID19 is under control in both countries. These may include:

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1. Innovating in the use of remote work and online interactions as well as use of remote data collection and processing capacities
2. Ensuring appropriate adaptation in project implementation timelines to allow time for local situations to be right for different project activities
3. Ensuring appropriate monitoring of beneficiaries' context and adapting/innovating approaches to best fit the context.

[1] Knowledge on Vietnamese portions of the basins is typically better than on the Lao portions.

[2] Viet Nam and Lao PDR are currently negotiating bilateral trade Agreement with the EU ? the Forest Law Enforcement, Governance and Trade Voluntary Partnership Agreement (FLEGT VPA), supported by FAO. The agreement will ensure improved forest governance, address illegal logging and promote trade in verified legal timber products from Viet Nam to the EU and other markets.

[3] Ma river basin: Currently there are 175,133ha under irrigation. The planned expansion of irrigated land is of 215,952 ha, with 197,308 of paddy rice, 856ha of perennial crop, 5,922 ha of sugar cane, 5,299ha of flood plain cultivated land, and 6,567ha of aquaculture. The expansion of 123% is substantial and would require an investment \$360 m.

Ca River basin: presently 138,221 ha are under irrigation. This is supposed to increase to 226,077 ha, which will require investments of around \$300 m (Data available for Viet Nam only).

[4] The foundational project: 'Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand?', and its follow-up SAP implementation projects, 'Establishment and Operation of a Regional System of Fisheries Refugia in the South China Sea and Gulf of Thailand?' and 'Implementing the Strategic Action Programme for the South China Sea?.'

[5] The imperative of making aquifers 'visible' requires that each aquifer system is, to the extent possible, represented *two dimensionally* on a map. Such a map contains its approximate boundaries, and recharge and discharge areas including dependent ecosystems, and *three dimensionally* in geologic cross-sections of the subsurface, indicating the approximate geometry of the aquifer, its varying depth, its relations with aquitards and aquicludes, the major tectonic discontinuities and preferential permeability pathways and barriers.

[6] System-wide capacity development (CD) is essential to achieve more sustainable, country-driven and transformational results at scale as deepening country ownership, commitment and mutually accountability. Incorporating system-wide CD means empowering people, strengthening organizations and institutions as well as enhancing the enabling policy environment interdependently and based on inclusive assessment of country needs and priorities.

- Country ownership, commitment and mutual accountability: Explain how the policy environment and the capacities of organizations, institutions and individuals involved will contribute to an enabling environment to achieve sustainable change
- Based on a participatory capacity assessment across people, organizations, institutions and the enabling policy environment, describe what system-wide capacities are likely to exist (within project, project partners and project context) to implement the project and contribute to effective management for results and mitigation of risks.
- Describe the project's exit / sustainability strategy and related handover mechanism as this will be appropriate.

1b. Project Map and Coordinates

Please provide geo-referenced information and map where the project interventions will take place.

Please describe the project sites and provide geo-referenced information and map where the project interventions will take place.

The Ma River Basin

The northernmost extreme of the Ma River Basin lies at 21.612421, 103.108372, while its mouth is at 19.784456, 105.931949.

Neun/Ca River basin

The northernmost extreme of the Nam Neun/Song Ca river basin lies at 19.995592, 104.392022, while its mouth is at 18.761130, 105.762523.

1c. Child Project?

If this is a child project under a program, describe how the components contribute to the overall program impact.

No

2. Stakeholders

Select the stakeholders that have participated in consultations during the project identification phase:

Civil Society Organizations Yes

Indigenous Peoples and Local Communities Yes

Private Sector Entities Yes

If none of the above, please explain why:

Please provide the Stakeholder Engagement Plan or equivalent assessment.

The full project document's Annex I2 provides an overview for the stakeholders involved during the project preparation phase and what has been planned for the project execution phase. The engagement process included

- One regional inception workshop on 1 Aug 2019 attended by 24 stakeholders from Lao PDR and Viet Nam (excl. PPG team and FAO) (gender ratio: 5 women, 19 men);

- Two national inception workshops in Lao PDR; Xiengkhouang workshop on 16 Oct 2019 attended by 18 stakeholders (7 women) and Houaphanh workshop on 18 Oct 2019 attended by 15 stakeholders (6 women);
- Five national inception workshops in Viet Nam; Hoa Binh workshop attended by 10 stakeholders (5 women), Son La workshop on 1 Oct 2019 attended by 10 stakeholders (3 women), Dien Bien workshop on 2 Oct 2019 attended by 9 stakeholders (3 women), Thanh Hoa workshop on 22 Oct 2019 attended by 11 stakeholders (4 women), Nghe An workshop on 23 Oct 2019 attended by 12 stakeholders (2 women);
- Around 18 face-to-face meetings with central Government agencies in Lao PDR;
- Around 7 face-to-face meetings with province Government agencies in Lao PDR;
- Around 14 face-to-face meetings with central Government agencies in Viet Nam;
- Around 9 face-to-face meetings with central Government agencies in Viet Nam;
- Three national validation workshops in Lao PDR between 15 Feb and 11 Mar 2020, each attended by 11-14 stakeholders (4-6 women);
- One regional validation workshop (online format due to COVID-19) on 17 March 2020 attended by 28 stakeholders from Lao PDR and Viet Nam (excl. PPG team and FAO) (gender ratio: 7 women, 21 men);
- One operational partner selection panel meeting on 4 June 2020 (online format due to COVID-19) attended by 7 key government stakeholders (5 Lao PDR, 2 Viet Nam) and FAO. (5 women, 9 men.)
- One regional meeting on implementation arrangement with the lead government agency stakeholders, FAO and IUCN (online format due to COVID-19) on 6 November 2020 attended by at least 3 government stakeholders, FAO and IUCN. (6 women, 7 men.)

In addition, provide a summary on how stakeholders will be consulted in project execution, the means and timing of engagement, how information will be disseminated, and an explanation of any resource requirements throughout the project/program cycle to ensure proper and meaningful stakeholder engagement

Stakeholder Engagement Plans

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Lao PDR

The project's PPG phase has involved local communities, ethnic minorities, and civil society organizations extensively during the project preparation stage and will continue to do so during project implementation and into the transboundary diagnostic process for both river basins. Furthermore, the project will conduct extensive field work to understand the livelihood and gender dimension on the ground, which will involve interviews and focus group discussions in many villages in the upper catchments, which are dominantly populated by marginalized ethnic minorities. The proposed visioning process will involve CSOs and include the voice of villagers by conducting household surveys and village level focus group discussions.

Institution/Organization	Description	Engagement
Department of Water Resources, Ministry of Natural Resources and Environment, Lao PDR	Government agency with the main mandate for water management in Lao PDR	Primary stakeholders and project executing agencies. (This builds on and strengthens the recently signed MoU between both MoNREs, see Annex M.)
Department of Disaster Management and Climate Change, Ministry of Natural Resources and Environment, Lao PDR	Government agency responsible for developing policies, plans and guidelines for disaster risk management and disaster management.	
Department of Agricultural Land Management, Ministry of Agriculture and Forestry, Lao PDR	Government agency responsible for crop choice, approval of agricultural expansion and irrigation planning.	
Department of Livestock and Fisheries and Forestry, Ministry of Agriculture and Forestry, Lao PDR	Government agency with the mandate to develop policies and plans for livestock, fisheries and forests.	

National Agriculture and Forestry Research Institute, Ministry of Agriculture and Forestry, Lao PDR	Government agency with the mandate to provide technical support for agricultural and forest related development.	Will provide technical expertise to the project final design and during project implementation taking the lead on particular project activities.
Department of Energy Policy and Planning, Ministry of Energy and Mines, Lao PDR	Government agency responsible for policies and plans for hydropower development.	
Department of Economic Affairs, Ministry of Foreign Affairs, Lao PDR	Government agency with the mandate to guide transboundary negotiations.	Will support the transboundary dialogue and facilitate the cross-sector discussion.
Province Departments of Natural Resources and Environment, Huaphanh and Xieng Khouang Provinces, Lao PDR	Province Government Agency responsible for the management of natural resources and the protection of the environment.	Will provide on-the-ground support to project design and implementation. Will also be periodically engaged based on stakeholder engagement plan (e.g. workshops and meetings).
Province Departments of Agriculture and Forestry, Huaphanh and Xieng Khouang Provinces, Lao PDR	Province Government Agency responsible for planning and monitoring in agriculture and forestry.	

In this respect the Stakeholder Engagement (SE) plan of the project aims to ensure that all project beneficiaries and stakeholders are consulted on, and meaningfully participate in, project design,

implementation and establish a means by which insiders and outsiders can communicate and learn from each other so that in the end.

Stakeholder Engagement will be an on-going process throughout the life of a project. Engagement is a term used to describe the multitude of ways in which members of the stakeholder can interact with the project and be involved in decision-making processes. Participating stakeholder has played a key role during the PPG phase and will continue to be the main *modus operandum* during the execution phase, including when defining management and mitigation actions which may be needed to address any negative impacts that could arise from project-supported interventions, including changes in access to and use of water and related resources. There is no right way to conduct an engagement process. Nevertheless, the SE aims to achieve this overarching objective based on the following four core principles:

- 1) All stakeholders will be approached in the spirit of constructive collaboration and made aware of the project's purpose and potential benefits to participating stakeholders. It will be made clear at the outset that communities have the option to refuse to participate.
- 2) All project beneficiaries, regardless of their difference group or social status, shall be engaged in a culturally relevant way on the basis of a free, prior, and informed consultation (FIPC) aimed at establishing Broad-based and sustainable multi-stakeholder and Community Support for the project.
- 3) The stakeholder engagement process will take account of gender and ethnic differentiation to ensure that project implementation, including consultations, is inclusive and carried out in the appropriate language(s). Communication throughout the project cycle will use appropriate information, education, and communication (IEC) materials to respond to issues of language and ethnicity, literacy / illiteracy, gender, and social vulnerability.
- 4) All project-affected people will have the opportunity to participate and benefit from the project through participation in the preparation and implementation of project Action Plans.

Lao Legislation defines mechanisms for public participation at the local, regional and central levels. This involves attending public consultation meetings or hearings, the right to comment on the development of legal documents and their implementation progress, typically through a public website, official reports or formal submissions.

During the execution phase, the project will engage with the following stakeholder groups:

- ? Government: Line ministries in the capital, officials at the provincial and district level and community-based organization.
- ? Development Partners: Multilateral and bilateral development partners in the Basin.

- ? Civil Society Organizations: International non-profit organizations, local non-profit associations, academia and research groups.
- ? Private Sector: Representatives from the business sector, small and medium enterprises.
- ? Community Based Organization: Village organization unit, and local people.

The engagements process will include both face-to-face meetings as well as online/web-based platform to enable participation by a wide range of stakeholders. The structure of face-to-face meetings will allow plenary presentations and discussions and, if needed, small group discussions, and reporting with a neutral facilitator. For online engagement, an online survey, will be available to people interested to participate who may not be invited.

The engagements with Government, private sector, and development partners will be conducted in require language with simultaneous translation if needed. The engagements with provincial, district officials, civil society organizations and other local groups will be conducted in Lao and Ethnic language simultaneous translation if needed.

Viet Nam

In Viet Nam, following general principle that has been practiced worldwide, before submitting feasibility study for an appraisal, the EIA report of the investment project must be consulted with the communities in the project area. The Law on Environmental Protection 1993, 2005 of Viet Nam also indicate the requirement for practicing public consultation principle with specific provisions.

Most recently, the amended 2014 Law on Environmental Protection already had regulations on public consultation for EIA reports. Subsequently, on February 14, 2015, the Prime Minister issued Decree 18/2015/ND-CP on environmental protection planning, strategic environmental assessment, environmental impact assessment and plans for environmental protection.

From July 2019, the provision will be more specific in accordance with the guidance of Decree 40/2019 / ND-CP "Amending and Supplementing some Articles of Decrees that Guiding for Implementation of The Law on Environmental Protection". It stated that: "During the implementation of the environmental impact assessment, the project owner must conduct consultation with the People's Committee of the commune, ward or township (hereinafter collectively referred to as the commune-level People's Committee) where the project is implemented. The organization and community are directly affected by the project's environmental issues (wastewater, emissions, dust, solid waste, hazardous waste, subsidence, landslides, sedimentation, noise and pollution, biological form) must be consulted to minimize the adverse impacts of the project on the quality of environment and biodiversity."

Regarding public policy, the stakeholders are the people, agencies, organizations, businesses, consulting organizations and independent experts. The consultation organization in the public policy cycle says in general, and in public policy making in particular, that it is the state's responsibility to ensure the right to participate in state and social management, to participate in discussions and recommendations to state agencies on grassroots issues, local and national of citizens is provided for in the 2013 Constitution.?

Stakeholders to be affected, directly or indirectly, by the outcomes of the Project implementation	Stakeholders that participate in the Project implementation	Stakeholders being able to influence and decide on the Project implementation or use project outcome for decision making
<p>The project affects the entire basins and related coastal areas therefore all residents along rivers catchments and forest areas are stakeholders.</p> <p>Vulnerable social groups (the elderly, ethnic minorities, the disabled, women and children)</p> <p>Governmental related agencies from ministry to local levels</p> <p>Social organizations (WU, FU?)</p> <p>Non-governmental organizations (NGOs) operating at the local, regional, national and international level (including environmental organizations)</p> <p>Local mass media</p>	<p>Central Project Management Project Staffs, Provincial project Management staffs, FAO staff, Provincial technical, NGOs, Research organization, Technicians,</p>	<p>State Government</p> <p>Provincial governments</p> <p>MONRE and its agencies</p> <p>MOTC</p> <p>MARD</p> <p>EVN</p>

Based on the action required to formulate the proposed project in the Ma and Neun/Ca Transboundary River Basins the below steps and method for stakeholder analysis and participation during project formulation in selected provinces have been applied and practiced

Steps	Consultation topic	Consulted Agencies	Form of consultation
Context analysis, development forecasts and problem identification	<ul style="list-style-type: none"> - Analysing and assessing river water resources contexts related to the uses for economic development, livelihood and energy development; -Identify environmental and economic issues to be addressed; - Review economic - social, food security - changes 	<ul style="list-style-type: none"> - Experts, -Consulting organizations; -Other organizations; -State agencies, officials, civil servants, public employees ... 	<ul style="list-style-type: none"> - Organize meeting with technical agencies, inception workshop with related stakeholders? representative - Direct interviews - Questionnaires
Formulate ideas and identify goals for project interventions	<ul style="list-style-type: none"> - Proposing initiatives to solve environment and sustainable livelihood issues; -Proposing activities to promote environmental protection and better management for water resource of river basin in the provinces 	<ul style="list-style-type: none"> - Experts, - Consulting organizations; -Other organizations such as provincial Science Association, Ethnic Committee, Farmer Unions - Related state agencies, officials, public employees.... 	<ul style="list-style-type: none"> - Organize meeting with technical agencies, inception workshop with related stakeholders? representative - Direct interviews - Questionnaires
Identifying direction and options for interventions	<ul style="list-style-type: none"> - Proposing directions, ways - "scenarios" to cope with environmental and management issues and achieving identified project objectives; - Evaluation and selection of proposed options; 	<ul style="list-style-type: none"> - Experts, -Consulting organizations; - Other organizations such as provincial Science Association, Ethnic Committee, Farmer Unions - Related state agencies, officials, public employees.... 	<ul style="list-style-type: none"> Organize meeting with technical agencies, inception workshop with related stakeholders? representative Prioritized proposed interventions options

Develop and propose activities/measurement to achieve goals of project	Proposing groups of activities to solve current issues and achieve project goals: - Propose of activities on strengthening state management to serve the implementation of the projects; - Group of activities for mobilizing, managing and using resources for water basin development; - Group of activities for livelihood development that support for project objective ...	- Experts, - Consulting organizations; - Other organizations such as provincial Science Association, Ethnic Committee, Farmer Unions - Related state agencies, officials, public employees.... -Individuals farmers	Organize meeting with technical agencies, inception workshop with related stakeholders? representative Prioritized proposed interventions activities
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The inception workshops and site visits revealed stakeholder interest, expectations and concerns, and heled designing a participation process and approaches for the project execution phase. The project has identified the following interests and concerns raised by key stakeholder groups:

Stakeholder group	Key expectations	Key concerns	Recommendation
National and provincial governments	<p>Project will improve the harmonized development between economic growth, energy and environmental protection that being translated into National, provincial development plans.</p> <p>Livelihood development for ethnic minorities groups</p> <p>Information used for national reporting and decision making.</p> <p>Data and information used for weather and climate related predictions</p>	<p>Environmental deterioration; Negative impact from Hydro Power Plant to livelihood of Ethnic groups.</p> <p>Environmental Monitoring system is inadequate</p> <p>Data quality and control</p> <p>Budgetary constraints</p>	<p>Enhancing information and data of rivers basin for supporting policy making and management decision</p> <p>Improving rural living standards especially for ethnic minority communities.</p> <p>Sustainable livelihood development for ethnic minorities in the mountainous area</p> <p>Biodiversity and marine aquaculture protection in coastal areas</p> <p>Awareness raising for all levels</p>

Social organizations (Farmer Union, Women Union, Youth Union...) and Ethnic Committee	Development for ethnic minorities communities and indigenous knowledge protection Income generation for farmers Accessing to public service of vulnerable groups	Less lowland for agriculture Climate change lead to severe flash flood or drought Soil erosion Forest protection	Communities preparedness to landslide or flash flood Livelihood development for ethnic minorities
Ethnic minorities groups and farmer individuals	More livelihood development opportunity to interact with project and their concerns	Impacts of their livelihood practice to environment. Less chance to participate in the project	Ensure that there is ethnic minorities mainstreaming in communication campaigns, livelihood development programmes
Private sector (hydropower)	Better management of water resource and open space	Water regulation for energy and for agricultural development as well as flooding control	Active participating in water regulation and monitoring.

During the inception workshop for the full project, the project team will further detail the stakeholder engagement plan. The focus will be on characterizing the composition and role of communities in the basin, particularly the design and creation of the basin groups as proposed under Figure 3, including FPIC processes. As the project moves toward the development of implementation strategies, in component 3, a detailed Environment and Social Management System (ESMS) assessment will be carried out on the proposed pilot activities.

The project will continue to employ the following engagement methods and activities:

Institution/ Organization	Characteristics	Level of Involvement [1]	Role in Project
National Level			
<i>Ministry of Natural Resources and Environment (MONRE)</i>			

<p>Department of Legislation (DOL)</p> <p>MONRE</p>	<p>? Provides legal bases on the effective protection, development, management and conservation of cross border river basins</p> <p>? Recommend policies and programs on cross border river basins</p> <p>? Communication and information development</p>	5	<p>? National focal point for MONRE in the GEF Project therefore will lead executing partners</p> <p>? Technical leadership for policy development</p> <p>? Provision of expertise for Project implementation activities and coordination</p> <p>? Coordinates with other implementing partners</p> <p>? Project implementation and financial reporting</p> <p>? National and international communication and information sharing</p>
<p>Department of International Cooperation (ICD)</p> <p>MONRE</p>	<p>? Building international cooperation strategy of the natural resource and environmental protection</p> <p>? Identify strategic cooperation orientations, focusing on cross border river basin management.</p>	3	<p>? Participation in national consultation and policy development</p> <p>? Provision expertise for cross border collaboration</p> <p>? Support for setting up the legal documents for transboundary cooperation in river basins</p>
<p>Department of Water Resources Management (DWRM),</p> <p>MONRE</p>	<p>? Setting up the transboundary water cooperation mechanism</p>	4	<p>? Participation in national consultation and policy development</p> <p>? Provision expertise for cross border collaboration</p>

Viet Nam and Meteorological and Hydrological Administration (VMHA)	<p>? Government Agency responsible for Meteorological and hydrological monitoring and forecasting.</p> <p>? Research and recommend policies and measures related to water quantity and quality</p>	5	<p>? Participation in national consultation and policy development</p> <p>? Provision expertise for cross border river basin management</p> <p>? Research framework development for provinces of the project</p>
Environment Administration (AE), MONRE	? Government Agency responsible for the protection of the environment, including endangered species, and the sustainable management of ecosystems, incl. wetlands.	4	<p>? Participation in national consultation and policy development</p> <p>? Provision expertise for cross border river basin management related on ecosystem and endangered species</p>
Institute of Meteorology, Hydrology, and Climate Change (IMHEN) - MONRE	<p>? Government agency responsible for and providing climate change projections.</p> <p>? Research and recommend policies and measures for climate and river management</p>	5	<p>? Participation in national consultation and policy development</p> <p>? Provision expertise for cross border river basin management</p> <p>? Research framework development for provinces of the project</p> <p>? Sharing information on Meteorology, Hydrology for research and management</p>
Ministry of Agriculture and Rural Development (MARD)			

<p>Directorate of Water Resources (DWR),</p> <p>Ministry of Agriculture and Rural Development (MARD)</p>	<p>? Government agency responsible for developing policies and planning</p> <p>? Implementation and maintenance of irrigation infrastructure.</p> <p>? Setting up policies on irrigation management</p>	3	<p>? Participation in national consultation and policy development</p> <p>? Provision expertise for cross border river basin management related to irrigation water and irrigation schemes</p>
<p>General Department of Disaster Prevention and Control (GDDPC),</p> <p>MARD</p>	<p>? Government agency responsible for the development of policies, regulation and plans for the prevention of natural disaster prevention and control.</p>	3	<p>? Participation in national consultation and policy development</p> <p>? Provision expertise for cross border river basin management related to disaster management</p> <p>? Support for communities-based disaster risk prevention</p>
<p>Institute of Water Resources Planning (IWRP)</p> <p>MARD</p>	<p>? Government agency responsible for providing the technical support for water resource planning.</p> <p>? Research and policies recommendation on water resources management</p>	5	<p>? Provision expertise for cross border river basin management</p> <p>? Research and policies recommendation on water management and planning for cross border river basins</p> <p>? Support province agencies in water planning and sharing information</p>
<p>Viet Nam Academy for Water Resources (VNWRA),</p> <p>MARD</p>	<p>? Government agency responsible for providing the technical support for water resources management and disaster risk reduction.</p> <p>? Research and policies recommendation on water resources management</p>	5	<p>? Provision expertise for cross border river basin management</p> <p>? Research and policies recommendation on water management and planning for cross border river basins</p> <p>? Support province agencies in water resource management</p> <p>? Sharing information and new technologies on water uses</p>

Directorate of Fisheries (DF), MARD	? Government agency responsible for policies, regulation, and management of capture fisheries and aquaculture.	3	? Participation in national consultation and policy development ? Provision expertise for cross border river basin management related to fishery management ? provision information on specialty species and support aquaculture development
Administration of Forestry (AF) MARD	? Government agency with the mandate to provide the technical support for forest management and forest protection.	5	? Participation in national consultation and policy development ? Support for forest protection in boundary area and collaboration ? Support forestry communities-based management
Ministry of Industry and Trade (MOIT)			
General Directory of Energy, Ministry of Industry and Trade (MOIT)	? Government agency responsible for the development of policies and plans for energy related investments.	3	? Participation in national consultation and policy development ? Support collaboration on energy development and planning ? Provision energy development strategy for provinces
Ministry of Foreign Affairs (MOFA)			
Department of Southeast Asian - South Asian - South Pacific Affairs, Ministry of Foreign Affairs (MOFA)	? Government agency with the mandate to guide transboundary negotiations.	2	? Participation in national consultation and policy development ? Will support the transboundary dialogue and facilitate the cross-sector discussion.
Ministry of Planning and Investment (MPI)			

Department of Science, Education, Natural Resources and Environment	? Government agency responsible for management over planning and investment for natural resources and environment; coping with climate change; low emission development, green growth	2	? Participation in national consultation and policy development ? Will support and emphasize for the implementation of the project ? Support in socio-economic development
Ministry of Finance (MOF)			
Department of International Relation	? Coordinating to build integration negotiation plans, consulting ideas with ministries and agencies in negotiating, signing treaties and international agreements.	2	? Participation in national consultation and policy development ? Will support the transboundary dialogue and facilitate the cross-sector discussion.
National CSOs: Viet Nam River Network (VRN), Sustainable Agriculture and Environment Development, VRCR: Viet Nam Red Cross Union, Some NGOs under Viet Nam Union of Science and Technology Associations (VUSTA): TBC	? Various CSOs that focus on sustainable development in the two target basins. ?	4	? Will provide on-the-ground support to project design and implementation. ? Will also be periodically engaged based on stakeholder engagement plan (e.g. workshops and stocktaking meetings) ? Support provinces agencies for research and recommendation policies for basin development
2.2 Provincial Level			
Department of Natural Resources and Environment (DONRE), Son La, Hoa Binh, Dien Bien and Thanh Hoa provinces (Ma river) Thanh Hoa, Ngh? An, and Ha Tinh Provinces (Ca river)	? Province Government Agency responsible for the management of natural resources and the protection of the environment.	5	? Will provide on-the-ground support to project design and implementation. ? Will also be periodically engaged based on stakeholder engagement plan (e.g. workshops and meetings). ? Conducting pilot activities at the project sites ? Project implementation and reporting ? Coordinating other implementing agencies in the province

Departments of Agriculture and Rural Development (DARD) Son La, Hoa Binh, Dien Bien and Thanh Hoa provinces (Ma river) Thanh Hoa, Ngh? An, and Ha Tinh Provinces (Ca river)	? Province Government Agency responsible for planning and monitoring in agriculture and rural development.	5	<p>? Will provide on-the-ground support to project design and implementation.</p> <p>? Will also be periodically engaged based on stakeholder engagement plan (e.g. workshops and meetings).</p> <p>? Conducting pilot activities at the project sites</p>
Department of Planning and Investment (DPI) Son La, Hoa Binh, Dien Bien and Thanh Hoa provinces (Ma river) Thanh Hoa, Ngh? An, and Ha Tinh Provinces (Ca river)	? Provincial management on planning and investments	3	<p>? Will provide on-the-ground support to project design and implementation.</p> <p>? Will also be periodically engaged based on stakeholder engagement plan (e.g. workshops and meetings).</p>
Department of Industry and Trade (DIT) Son La, Hoa Binh, Dien Bien and Thanh Hoa provinces (Ma river) Thanh Hoa, Ngh? An, and Ha Tinh Provinces (Ca river)	? Provincial management on energy and industry development (hydro power management, processing industry?)	4	<p>? Will provide on-the-ground support to project design and implementation.</p> <p>? Will also be periodically engaged based on stakeholder engagement plan (e.g. workshops and meetings).</p> <p>? Adjustment and Planning of energy development under environmental protection</p>
<p>Provincial Women Union, Farmer Union, Youth Union, and Ethnic Committee</p> <p>Son La, Hoa Binh, Dien Bien and Thanh Hoa provinces (Ma river)</p> <p>Thanh Hoa, Ngh? An, and Ha Tinh Provinces (Ca river)</p>	<p>? Social organizations responsible for social affairs, social network and mobilization</p> <p>? Recommendation and implementation of development activities</p>	5	<p>? Will provide on-the-ground support to project design and implementation.</p> <p>? Participating in awareness raising events, livelihood strategies, land use change, and land management.</p> <p>? Pilot activities on livelihood development on project sites</p>

Ethnic minorities community groups, individual households		5	? Household survey and village focus group discussions to support TDA and SAP. ? Livelihood activities, risk perceptions, and likely behavioural responses and ? Participation in livelihood development activities.
3. OTHER STAKEHOLDERS			
Donor organizations (e.g. GEF, DFAT, AWP, World Bank, ADB, JICA, SWaM, SIDA)		5	Will be invited to annual Stocktaking Meetings.
International NGOs (e.g. Flora and Fauna International, WWF, Oxfam, IUCN)		4	Will be invited to the annual Stocktaking Meetings
Alliance for Water Stewardship	Recognizes best practice water management by industry	3	Facilitate private sector engagement

Donor organizations (e.g. GEF, DFAT, AWP, World Bank, ADB, JICA, SWaM, SIDA)		5	Will be invited to annual Stocktaking Meetings.
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The project will ensure making available information of the project to the public so that the environmental and social risks and impacts associated with the project, as well as opportunities provided by the project will be informed properly to all stakeholders. This will enable project data, information can be used for decision makers as well as supporting policy building process in Ma and Ca/Neun river basins provinces.

On an ongoing basis, the project will have a routine disclosure and consultation on the project's environmental and socio-economic performance including grievances and other new emerging issues on the project. The disclosures will be done to all stakeholders? thorough project briefs or annual reporting through brochures. While providing this disclosure, the project will also provide:

- An update on the Project achievements and how its contributing to enhancing transparency in reporting for river basins management in the country
- An overview of the stakeholder engagement process and how affected parties can participate and provide feedback through meeting or other avenues;

- Project impacts on development and how the government is using the project data to enhance the livelihoods of the ethnic people at the same time conserve the environment and report and forecast on river basins water management and climate change related events.

The project will also ensure providing stakeholder groups with effective feedback and updates. Meeting and implantation progress summaries will be sent in the required languages to the participants and will be posted on the engagement website and information boards in the responsible office and target villages. And participants have right to comment, feedback, and join adapted future project action plan, implementation mechanism, monitoring, evaluation, and reporting.

[1] Level 5: agencies/organizations that directly implement Project (e.g. MONRE)

Level 4: agencies/organizations that contribute to the direct implementation of the project (e.g. MARD)

Level 3 agencies/organization that provide support for project implementation (e.g. MPI, MOF)

Select what role civil society will play in the project:

Consulted only; Yes

Member of Advisory Body; Contractor;

Co-financier;

Member of project steering committee or equivalent decision-making body;

Executor or co-executor;

Other (Please explain) Yes

CSOs will be engaged in the TDA to ensure local knowledge is integrated within the process and invited to all SAP workshops to contribute to the strategic action planning. CSOs will also be involved in the design and implementation of pilot projects. They will invited to the annual stakeholder workshops.

3. Gender Equality and Women's Empowerment

Provide the gender analysis or equivalent socio-economic assesment.

Gender mainstreaming has been the primary methodology for integrating a gender approach into environment and development efforts. It is defined by the UN Economic and Social Council (ECOSOC) as: "...the process of assessing the implications for women and men of any planned action, including legislation, policies or programs, in any area and at all levels. It is a strategy for making the concerns and experiences of women as well as of men an integral part of the design, implementation, monitoring and evaluation of policies and programs in all political, economic and societal spheres, so that women and men benefit equally, and inequality is not perpetuated. The ultimate goal of mainstreaming is to achieve gender equality.?? ?

Gender equality is central to the Food and Agriculture Organization of the United Nations' mandate to achieve food security for all by raising levels of nutrition, improving agricultural productivity and natural resource management, and improving the lives of rural populations. FAO can achieve its goals only if it simultaneously works towards gender equality and supports women's diverse roles in agriculture and rural development. Gender equality is not only an essential means by which FAO can achieve its mandate, it is also a basic human right. To achieve its gender equality objectives, FAO adopts gender mainstreaming internally in all its work. Specific to water resources management, FAO uses the Gender Passport (2012) which is currently being updated under a new project funded by the Government of Australia. The updating process is extensive and strong links with this project will be assured by FAO as IA. All FAO field programmes and projects systematically examine and address women's as well as men's needs, priorities and experiences as part of the development of policies, normative standards, programmes, projects and knowledge building activities, so that women and men benefit equally and inequality is not perpetuated. FAO's team of gender specialist spread across the Organization will provide specific technical gender inputs throughout project implementation.

Gender Analysis

Viet Nam has been recognized by the Ministry of Labor as the Southeast Asian country with the best record in eradicating the gender gap over the last 20 years. The position and status of Vietnamese women has improved since the 1950s, but traditional attitudes which support discrimination and gender inequality persist. Men still dominate public life, while women (and children) are still largely and exclusively responsible for domestic tasks. Viet Nam now ranks 91st out of 157 countries in UNDP's Gender Development Index, and 50th out of 93 countries in the Gender Empowerment Measure, with high rates of adult literacy for men and women, and little difference between boys and girls in school enrolment. At national level, women comprise nearly 26% of National Assembly representatives, and 12.5% of Ministers and 9% of Vice-Ministers are women. At the local level, only one in five members of commune People's Councils are women. The Viet Nam Gender Assessment 2006 and other recent overviews indicate several issues that require particular attention:

- ? the position of ethnic minority women and girls in accessing health, education and economic opportunities;
- ? the persistent gender stereotyping in textbooks, perpetuating gender inequalities;
- ? the need for greater recognition of women's roles in the agricultural sector;

- ? progress in the number of women in decision making has been slow and inconsistent (lack of improvement in women participation in decision making)
- ? labor (e.g. disproportionate burden of unpaid/low paid work for women; wage gap between men and women; women are the main and sometimes only worker in agriculture)
- ? there are still weaknesses in the legal framework, e.g. imbalanced retirement age, women's names on land use certificates still not fully achieved, etc.
- ? divorced and single female headed households are particularly affected by high and rising food and energy costs rise;
- ? migration is continuing to increase, exposing women to exploitation, abuse and trafficking.

Those issues are still relevant, yet they will need to be updated during project execution (Component 1). Viet Nam's National Assembly Committee for Social Affairs concluded that since the approval of the Law on Gender Equality that was passed in 2006 and came into effect in 2007, positive changes have been seen in public awareness of the issue of gender equality. However, food and energy costs rose sharply in 2008, just before the global economic crisis hit, and divorced and single female headed households were particularly affected by that. The challenges are further compounded by consequences of climate change, for example in terms of migration of both men and women.

While **Lao PDR** has engineered impressive economic growth during the last decade, human development objectives, including gender equality have not advanced in parallel with the economic progress. A better balancing of economic growth and social development indicators is essential for inclusive and sustainable growth. The gender equality gap has narrowed in all three levels of education enrolment in Lao PDR, but challenges persist in education completion. Two key determinants drive the patterns of gender inequity in education: 1) girls are more likely to be kept at home due to safety concerns and household responsibilities, especially if the secondary school is far from home, and 2) parents do not put the same value on education for girls as they do for boys, especially if this view is part of their tradition, or if the parents are poor, or have little or no education.

When the Gender Disparity Index is calculated for primary and secondary school attendance in different socio-economic groups and locations, the widest gap in gender equality is found among children from rural areas without road access, children from the non-Lao-Tai groups, children of uneducated mothers and children of families in the poorest quintiles. This gap is much larger in secondary education: for example, in the appropriate age group of the poorest quintiles, 66 girls attend secondary school for every 100 boys.

An equal share of men and women make up the working population, but women generally occupy the lower rungs of the labor market. Women are relatively more excluded from formal sectors and the social protection that this entails. Some 64% of workers in the elementary occupations and 63% of

those classified as service, shop and market sales workers are women. Men account for the majority of civil servants, professionals, technicians and other sectors. Although women have significant roles in agriculture, they have less access to and control of farming inputs and credit. In 2010, women accounted for only 23% of all employers, more often of small enterprises, rather than medium to large firms. Women undertake multiple roles and begin working at an earlier age, which affects their well-being. According to a study from 2012/13, women spent almost 30 per cent of their time on unpaid domestic and care work, while the same figure for men was only 5 per cent. Across all ages and locations, the proportion of economically active girls is substantially higher than that of economically active boys. In 2017, Lao PDR had one of the highest proportions of women (27.5%) in national parliaments, well above the world average. However, the proportion of women in other decision-making institutions within the Government is still low (5% as of 2012).

UN agencies, under the lead of UNFPA and UN Women, continue to collaborate in their support to develop national legal and planning frameworks around gender equality and women's empowerment. Moreover, the UN has contributed to empowering national institutions to better implement and monitor these laws, strategies and actions plans, such as the National Strategy on the Advancement of Women and the National Action Plan on Elimination of Violence against Women and Children.

Despite some of these positive developments in Lao PDR, the rapid economic development is also introducing additional risks for women and girls as emphasized by a recent FAO study (2018) on gender in Lao PDR. Evidently, the influx of foreign investment in rural areas of Lao PDR has increased human trafficking risks due to "a combination of factors, including (1) land tenure insecurity, (2) lack of employment options, (3) limited access to loans, markets and natural resources, and (4) effects from commercialized agriculture, including increased investment by foreign-operated agribusinesses." The increase of cash crop investments and migration have triggered a rising number of "bride kidnappings", which are linked to Chinese agribusiness investments in rural Lao.

The shift towards cash crops and farm labour is also reducing the availability of non-timber forest products, which reduces families' food security in many communities. Pressure on women's time is also increasing by cash crop investments. According to the Lao Statistic Bureau (2015) gendered time commitments for unpaid work are still very unequal. In remote rural areas 83.5% of women's and girls' time is unpaid (men: 34.8%) and in other rural areas 69.9% (men: 32.1). This figure improves for more urban areas (women: 35.1%; men: 13.1%).

Mainstreaming and Integrating Gender

Long-term improvement in the access of women to leadership roles in water management will require cultural change. Recognizing this needed shift, and given the context explained above, the project will adopt a multifaceted approach to gender:

1) *Mainstreaming gender in project execution* - Balanced gender participation in project execution activities will be ensured, including in working groups, the project management unit, text drafting teams etc. Gender consideration will be mainstreamed in all documents produced by the project, and particular attention will be paid to gender in monitoring and reporting activities. The project will work to ensure a balanced participation among men and women in the overall stakeholder involvement strategy and in consultation workshops, and will support both women's and men's contributions individually, rather than assuming that both groups will benefit equally from gender-neutral development interventions.?

2) *New specialized training package* - the Project will utilize the existing staff training platform within MoNRE Viet Nam to develop a new curriculum, operational practices, and methods for trainers and trainees.

The overall aims of this package are:

? to establish best practice for staff training and workplace practices underpinning greater access for women to leadership and decision-making roles;

? to develop a curriculum and approach to training that supports best practice within current water management organizations encouraging greater access and equal opportunity for women to leadership and decision-making roles.

? To provide tools for the rapid assessment of the gender landscape in areas to receive training for use in adapting and styling training efforts.

The Project will engage with the internal training (professional development) units in relevant agencies to gain a direct pathway for mainstreaming new curricula and tools that encapsulates the key components of a proactive, gender focused philosophy and approach.

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3) *Integration of the gender perspective into water policies* - The development and harmonization of supportive policy and legislative frameworks and institutional capacity building aimed at ensuring that the gender perspective is successfully incorporated into national and international water governance, policy, and activities, will be a major objective of the project. This will be promoted by conducting, as part of the TDAs, Gender Analysis of the water sector in project countries, including:

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? identifying gaps in equality and developing strategies and policies to close those gaps;

? considering gender issues in the mapping and analysis of water resource use;

- ? promoting women's participation in awareness raising training activities;
- ? supporting for educational activities, on topics such as the environment, energy, and decision-making in general;
- ? involving women's organizations: while the responsibility for implementing a gender approach does not rest solely with women's organizations, they are natural vehicles for promoting gender equality at the local as well as the national level.
- ? particularly in rural communities and minority ethnic groups present in the upstream sections of the two basins, the project will carry out the collection of sex-disaggregated water data, following the methodology promoted by IW LEARN.

Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment?

Yes

Closing gender gaps in access to and control over natural resources; No

Improving women's participation and decision making Yes

Generating socio-economic benefits or services or women Yes

Does the project's results framework or logical framework include gender-sensitive indicators?

Yes

4. Private sector engagement

Elaborate on the private sector's engagement in the project, if any.

This project, as with many GEF-funded projects, will need to tackle the management of transboundary resources in the face of an increasingly restrained financial environment. Engaging the private sector is one pathway to relieve pressure on funders and governments, and provide leverage to achieve its transboundary objectives.

In the Project area, hydropower developers are usually private companies (so-called Independent Power Producers). Insofar as managing water flows, and providing flood control, engaging with these companies (and the agencies that oversee them) will be essential to the success of the project.

The tourism sector is driven by many small businesses and is gaining momentum in the upper basins. Agricultural extension investments are largely government driven but often engage the private sector.

This project will organize as part of the TDA-SAP process private sector roundtables that will involve mainly hydropower, tourism, forestry, and agriculture. This will generate multiple benefits. Firstly, it will create an improved connection between private sector investments and the formal basin planning

processes for the Ma and the Neun/Ca River basins. This will provide the planning process with up-to-date information on investment strategies and more detailed data than currently available. Finally, many trade-offs are expected to eventuate between private sector actors, something widely neglected or addressed indirectly by Government imposed regulation. The project will provide opportunities for dialogue between the private actors in the basins.

Increased private sector engagement will also be considered through FAO's new partnership with the Alliance for Water Stewardship Asia-Pacific. FAO has an ongoing project with IKEA in Viet Nam on sustainably forestry ? and links with this project will be made where appropriate. In addition, the FAO-EU Forest Law Enforcement, Governance and Trade (FLEGT) Programme works in both Viet Nam and Lao PDR to reduce and eventually eliminate illegal logging from the timber supply chains of these countries. The Programme, through its grant support mechanism, works with government, civil society and private sector organizations in both countries to improve forest governance and encourage sustainable forest management and trade; the project will draw links to the FAO-EU FLEGT Programme where possible.

Behaviour change interventions can create improvements and enterprise led solutions can reinforce the changed behaviours, actions and activities through an improved economic return that reinforces and embeds change.

5. Risks to Achieving Project Objectives

Elaborate on indicated risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, the proposed measures that address these risks at the time of project implementation.(table format acceptable):

In the section below, key risks to the project have been elaborated as well as proposed measures that address these risks at the time of project implementation.

Description of risk	Impact[1]	Probability of occurrence	Mitigation actions	Key Responsible party
Lack of sustained political support to establishing transboundary cooperation frameworks.	Low	Low	The project will adopt a step by step progressive approach to building mutual trust based on joint fact finding and consultative processes. It will build upon, and support compliance to the MoU recently signed between the two beneficiary countries.	IUCN and respective government focal agencies in Lao and Vietnam

Limited interest or involvement by target stakeholders, local communities and the inhabitants of the two basins.	Medium	Low	The risk will be addressed throughout project implementation through systematic communication with local communities and other stakeholders, and through their involvement in the Annual Stocktaking Meetings.	IUCN and respective government focal agencies in Lao and Vietnam
Climate change increases hydrological risks including flood, drought and salinization of aquifers.	Medium	Medium	Climate change, both in terms of potential impacts and viable adaptation measures, will be an explicit focus of the TDA-SAP process	IUCN and respective government focal agencies in Lao and Vietnam

<p>COVID19 pandemic related impacts on the internal and international travel, operation of government/ partners/ project; health impacts on general population as well as economic impacts nationally and locally</p> <ol style="list-style-type: none"> 1. Reduced financial (co-financing) support from Government, development partners, and private sector, due to limited overall funding availability resulting from the COVID-19-related economic downturn, and/or the reorientation of available funding to actions directly related to COVID-19 2. Government expenditure and prioritization of different programs and sectors, including agriculture, food security and natural resources might change. 3. Closure of offices, transport etc. will delay launch of project and its implementation. 4. Potential or partial disruption of food system supply chains, such as logistics 5. Increased losses and spoilage in high value commodities/perishables (fish) 6. Disruption of demand for products and markets, due to temporary closure of hotels and restaurants 7. Higher dependence on natural ecosystems, as people who lose employment and income from other sectors depend more on coastal and other ecosystems for their livelihoods, thereby increasing pressures on 	<p>H</p>	<p>If there are changes in cofinance, then partners to work closely to seek alternative options for co-financing and ensure continuity of resource allocation to ongoing initiatives in project target areas.</p> <p>It is anticipated that the project scope will help to support the Government's response to COVID-19 through its focus on food security and livelihoods diversification of vulnerable communities in coastal areas already impacted by climate risks and hazards. However, project activities will be further discussed with the Government to ensure that emerging priorities and responses, as a result of the pandemic, are well reflected in the project's target areas during implementation, especially under Component 3.</p> <p>It is likely that periodic closures of transport and offices as well as restrictions on organizing meetings/ training with large number of people will impact project implementation. Therefore, the project will institute local mechanisms such as local facilitators / work with local partners to ensure that some work can continue on the ground. Detailed planning will be done with the government operational partners to mobilize their field offices and others and the project will ensure that all recommended safe practice are followed by the project team and by communities where the project is working.</p> <p>Provide advice to farmers and government to meet immediate food needs</p> <p>Conduct socio-economic impact assessment (as part of baseline assessment for TDA) to inform the project implementation</p> <p>Ensure close collaboration with private sector entities and logistic companies to understand emerging barriers related to the pandemic and establish feasible options</p> <p>Support producer organizations in linking with export markets and encourage use of online markets</p>	<p>Project executing agency, IUCN and FAO</p>
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Covid-19 :

Both target countries have made good progress in managing the pandemic at national level so it is anticipated that the series of required national meetings can be implemented as planned in the near future. Transboundary meetings (including regional PMU meetings) can be organized using hybrid national on-site meetings, connected online to ensure bilateral dialogues and discussion. IUCN has teams in each country and will be able to support this coordination. The project implementation will follow the rules and guidelines from the respective health agencies of both countries when operating, including recommended measures, such as wearing masks, social distancing and use of online meetings, when necessary. Staff who are traveling often will be tested regularly. As part of the meeting dialogues, especially at basin level, the programme will insert short and targeted capacity building sessions on Covid-19 pandemic management and health safeguards, as recommended at national level.

At the programmatic level, the development of the TDA and the SAP will include a cross-cutting approach on post-Covid green recovery, identifying and valuing the role that natural ecosystems in the basin have played in ensuring the resilience of communities during the pandemic (e.g. provision of goods for consumption and trade). The TDA and SAP will develop investment solutions to strengthen green recovery and resilience, to better include Nature-based Solutions as a key approach in local planning. This will encourage all sectors, including agriculture, forestry, energy, infrastructure and water, to use science-based evidence to reduce impacts on biodiversity and integrate the value of nature more effectively in business models and decision-making. Financial mechanisms should provide a return to ecosystems and land owners to ensure the provision of ecosystem services, and to better manage landscapes to achieve both conservation targets and economic opportunities, as well as many other benefits to society.

[1] H: High; M: Moderate; L: Low.

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6. Institutional Arrangement and Coordination

Describe the institutional arrangement for project implementation. Elaborate on the planned coordination with other relevant GEF-financed projects and other initiatives.

6. Institutional Arrangements and Coordination.

6.a Institutional arrangements for project implementation.

The International Union for Conservation of Nature (IUCN) will have the overall executing and technical responsibility for the project, with FAO providing oversight as GEF Agency as described below. IUCN will act as the lead executing agency and will be responsible for the day-to-day management of project results entrusted to it in full compliance with all terms and conditions of the Operational Partnership Agreement (OPA) signed with FAO. As Operational Partner (OP) of the project IUCN is responsible and accountable to FAO for the timely implementation of the agreed project results, operational oversight of implementation activities, timely reporting, and for effective use of GEF resources for the intended purposes and in line with FAO and GEF policy requirements.

IUCN's major responsibilities are:

1. Management: set up and operationalize the Regional Project Management Unit (PMU) to be based in Vientiane or Hanoi, oversee all project activities, liaise with FAO and coordinate with other development partners, set up and operationalize the National and Regional Project Steering Committees (NPSCs/RPSCs), handle technical and financial reporting, facilitate national and transboundary coordination across multiple stakeholders.
2. Technical: play lead technical role on the TDA/SAP to ensure that these processes and outputs meet GEF standards, integrate the latest knowledge and expertise into the TDA/SAP and pilot projects so that they are mutually reinforcing, provide direct technical expertise on water governance and on nature-based solutions including FLR and EBA, design and lead training programmes in both countries.
3. Procurement: recruit CTA, National Coordinators, and other positions described in the prodoc, contract technical partners and individual consultants needed to deliver successful TDA/SAP and pilot projects, and ensure compliance with FAO and GEF guidance as well as IUCN procurement rules.

In addition to playing the lead management and procurement role, IUCN will provide technical expertise in the following areas: water governance and policy, hydrology and water management, biodiversity, and landscape restoration and ecology. IUCN will source this expertise from existing in-country and regional staff. The ability to 'buy into' existing capacity enhances IUCN's contribution in terms of both technical expertise and value for money.

Annex Q includes TORs for PMU positions that IUCN is responsible for.

IUCN's executing experience and capacity

IUCN has recent and ongoing experience and capacity to implement and execute GEF projects and transboundary dialogues in the Mekong Region.

1) In Myanmar, IUCN is the GEF Partner Agency in charge of implementing a project entitled 'Reversing Myanmar's forest degradation and deforestation and restoring forest landscapes through local multi-stakeholder co-management' between 2016 and 2024. This project is part of The Restoration Initiative (TRI) programme. The overall programme goal is to contribute to the restoration and maintenance of critical landscapes to provide global environmental benefits and enhanced resilient economic development and livelihoods, in support of the Bonn Challenge.

Programme Components:

Component 1. Policy Development and Integration

Component 2. Implementation of Restoration Programs and Complementary Initiatives

Component 3. Institutions, Finance, and Upscaling

Component 4. Knowledge, Partnerships, Monitoring and Assessment

2) IUCN is also acting as a GEF Partner Agency in charge of implementing a regional peatlands project entitled 'Sustainable Management of Peatland Ecosystems in Mekong Countries' between 2016 and 2023. The project is being executed in the 3 countries of Myanmar, Cambodia, and Laos. The Lao executing partners include DWR and the LNMC in MONRE. The goal of the project is to sustainably manage peatland ecosystems in the target countries and to conserve biodiversity and reduce greenhouse gas (GHG) emissions, by:

1. Expanding the network of protected peatland ecosystems in the countries in line with Aichi Target 11;
2. Strengthening the capacity for sustainable peatland management at local, national and sub-regional levels; and
3. Strengthening the management of peatland in existing protected areas to demonstrate sustainable management of peatland to conserve biodiversity, reduce GHG emissions and strengthen sustainable livelihoods for local communities.

The project has a complex partnership arrangement which contributes to the ASEAN Programme on Sustainable Management of Peatland Ecosystems 2014-2020 (APSMPE) endorsed by Environment Ministers in 2013, the ASEAN Agreement on Transboundary Haze Pollution (AATHP), and ASEAN Peatland Management Strategy 2006-2020 (APMS).

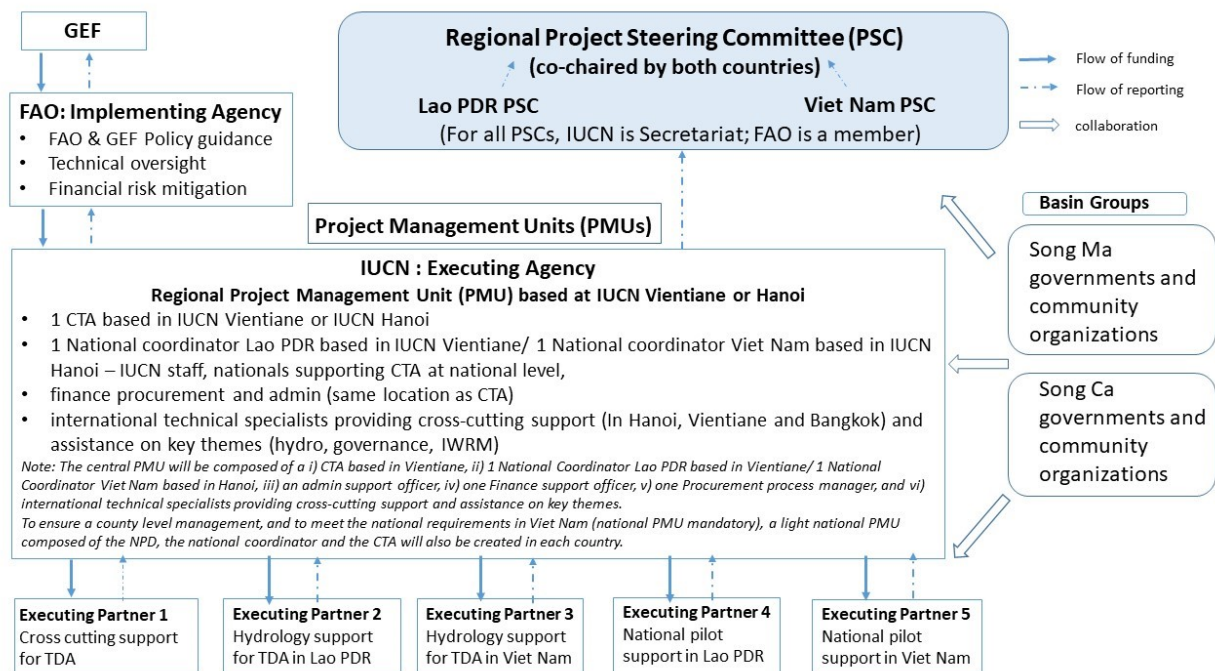
Component 3 implementation modalities

DWR Lao PDR has requested IUCN to manage Lao PDR's allocation of Component 3 funds for the pilot projects. However, DWR, through the RPSC, will determine how these funds are programmed.

DLA is currently assessed by FAO as eligible to contract with for-profit service providers only. Since this could be a major constraint on pilot project implementation, IUCN will retain Viet Nam's allocation of Component 3 funds until such time as DLA is assessed by FAO as being eligible to contract with both for-profit and non-profit organizations, at which point, FAO will contract directly with DLA subject to RPSC endorsement. Until such time, DLA, through the RPSC, will determine how these funds are programmed.

The project organization structure is as follows:

Figure 3: Project's organizational structure



The governments will designate a National Project Director (NPD). Located in DWR, Lao PDR, and in DLA, Viet Nam. The NPD in each country will be responsible for coordinating the activities with all the national bodies related to the different project components, as well as with the project partners. Coordination will be assured through the formation of a National PSC (NPSC) in both Viet Nam and Lao PDR with membership of key central and provincial government agencies. The NPD in each country will chair the NPSC. The project will support the NPDs and NPSCs by covering administrative support and office running costs.

The NPD (or designated person from lead national institution) will co-chair the Regional Steering Committee (RPSC) on alternating appointments between the two governments, which will be the main governing body of the project. The RPSC will approve Annual Work Plans and Budgets on a yearly basis and will provide strategic guidance to the Project Management Team and to all executing partners. The PSC will be comprised of representatives from the national and relevant provincial governments of Lao PDR and Viet Nam; FAO and IUCN. The members of the RPSC will each assure the role of a Focal Point for the project in their respective agencies. Hence, the project will have a Focal Point in each concerned institution. As Focal Points in their agency, the concerned RPSC members will: (i) technically oversee activities in their sector; (ii) ensure a fluid 2-way exchange of information and knowledge between their agency and the project; (iii) facilitate coordination and links between the project activities and the work plan of their agency; and (iv) facilitate the provision of co-financing to the project.

The Chief Technical Advisor (CTA) appointed for this project by IUCN will be the Secretary to the RPSC. The RPSC will meet at least twice per year to ensure: i) Oversight and assurance of technical quality of outputs; ii) Close linkages between the project and other ongoing projects and programmes relevant to the project; iii) Timely availability and effectiveness of co-financing support; iv) Sustainability of key project outcomes, including up-scaling and replication; v) Effective coordination of government partner work under this project; vi) Approval of the six-monthly Project Progress and Financial Reports, the Annual Work Plan and Budget; vii) Making by consensus, management decisions when guidance is required by the CTA of the PMU hosted at IUCN.

A Project Management Unit (PMU) will be co-funded by the GEF and established within DWR. The main functions of the PMU, following the guidance of the Project Steering Committee, are to ensure overall efficient management, coordination, implementation and monitoring of the project through the effective implementation of the annual work plans and budgets (AWP/Bs). The PMU will be composed of a i) CTA based in Vientiane, ii) 1 National Coordinator Lao PDR based in Vientiane/ 1 National Coordinator Viet Nam based in Hanoi, iii) an admin support officer, iv) one Finance support officer, v) one Procurement process manager, and vi) international technical specialists providing cross-cutting support and assistance on key themes.

To ensure a county level management, and to meet the national requirements in Viet Nam (national PMU mandatory), a light national PMU composed of the NPD, the national coordinator and the CTA will meet regularly to discuss implementation arrangements in each country.

The CTA and the two NCs at PMU will be in charge of daily implementation, management, administration and technical supervision of the project, on behalf of the Operational partner and within the framework delineated by the RPSC. They will be responsible, among others, for:

- i) coordination with relevant initiatives;
- ii) ensuring a high level of collaboration among participating institutions and organizations at the national and local levels;
- iii) ensuring compliance with all OPA provisions during the implementation, including on timely reporting and financial management;
- iv) coordination and close monitoring of the implementation of project activities;
- v) tracking the project's progress and ensuring timely delivery of inputs and outputs;

- vi) providing technical support and assessing the outputs of the project national consultants hired with GEF funds, as well as the products generated in the implementation of the project;
- vii) approve and manage requests for provision of financial resources using provided format in OPA annexes;
- viii) monitoring financial resources and accounting to ensure accuracy and reliability of financial reports;
- ix) ensuring timely preparation and submission of requests for funds, financial and progress reports to FAO as per OPA reporting requirements;
- x) maintaining documentation and evidence that describes the proper and prudent use of project resources as per OPA provisions, including making available this supporting documentation to FAO and designated auditors when requested;
- xi) implementing and managing the project's monitoring and communications plans;
- xii) organizing project workshops and meetings to monitor progress and preparing the Annual Budget and Work Plan;
- xiii) submitting the six-monthly Project Progress Reports (PPRs) with the AWP/B to the PSC and FAO;
- xiv) preparing the first draft of the Project Implementation Review (PIR);
- xv) supporting the organization of the mid-term and final evaluations in close coordination with the FAO Budget Holder and the FAO Independent Office of Evaluation (OED);
- xvi) submitting the OP six-monthly technical and financial reports to FAO and facilitate the information exchange between the OP and FAO, if needed;
- xvii) inform the PSC and FAO of any delays and difficulties as they arise during the implementation to ensure timely corrective measure and support.

The project will ensure that coordination will be assured across the envisioned National PSC (NPSC) and interministerial committee. The National PSC in both Viet Nam and Lao PDR will feature membership of key central and provincial government agencies and lead government agencies involved in the project are expected to brief their Ministers regularly on project progress.

The Food and Agriculture Organization (FAO) will be the GEF Implementing Agency (IA) for the Project, providing project cycle management and support services as established in the GEF Policy. As the GEF IA, FAO holds overall accountability and responsibility to the GEF for delivery of the results. In the IA role, FAO will utilize the GEF fees to deploy three different actors within the organization to support the project (see Annex J for details):

- ? the Budget Holder, which is the FAO Regional Office for Asia and the Pacific for this regional project, will provide overall oversight of project execution;
- ? the Lead Technical Officer(s), drawn from across FAO will provide oversight/support to the projects technical work in coordination with government representatives participating in the Project Steering Committee;
- ? the Funding Liaison Officer(s) within FAO will monitor and support the project cycle to ensure that the project is being carried out and reporting done in accordance with agreed standards and requirements.

FAO responsibilities, as GEF agency, will include:

- ? Administrate funds from GEF in accordance with the rules and procedures of FAO;
- ? Oversee project implementation in accordance with the project document, work plans, budgets, agreements with co-financiers, Operational Partners Agreement(s) and other rules and procedures of FAO;
- ? Provide technical guidance to ensure that appropriate technical quality is applied to all activities concerned;
- ? Conduct at least one supervision mission per year; and
- ? Reporting to the GEF Secretariat and Evaluation Office, through the annual Project Implementation Review, the Mid Term Review, the Terminal Evaluation and the Project Closure Report on project progress;
- ? Financial reporting to the GEF Trustee.

6.b Coordination with other relevant GEF-financed projects and other initiatives.

The project will build on the strong presence and extensive portfolio of agricultural projects of FAO in the region, and establish coordination mechanisms with other relevant GEF and non-GEF financed initiatives, in particular through their participation to the Annual Stocktaking Meeting foreseen in Component 5. The table below shows the large GEF IW portfolio in SE Asia, which is however exclusively directed to transboundary Large Marine Ecosystems, and coastal area issues.

<p>IW GEF projects ? ongoing or under preparation - involving Lao PDR and/or Viet Nam</p>
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Title	Agency	Status	Objectives/Results
FSP: Implementing the Strategic Action Programme for the South China Sea (Viet Nam only)	UN Env.	Implementation	To assist countries in meeting the targets of the approved Strategic Action Programme (SAP) for the marine and coastal environment of the South China Sea (SCS) through implementation of the National Action Plans in support of the SAP, and strengthening regional co-ordination for SCS SAP implementation.
FSP: Reducing Pollution and Preserving Environmental Flows in the East Asian Seas through the Implementation of Integrated River Basin Management in ASEAN Countries.	UNDP	In preparation	To improve integrated water resources management, reduce pollution loads from nutrients and other land-based activities, sustain freshwater environmental flows and reduce climate vulnerability through demonstrations and replications, planning and strengthening of integrated river basin management in selected countries in the East Asian Seas
FSP: Scaling up the Implementation of the Sustainable Development Strategy for the Seas of East Asia	UNDP	Implementation	To catalyse actions and investments at the regional, national and local levels to rehabilitate and sustain coastal and marine ecosystem services and build a sustainable coastal and ocean-based economy in the East Asian region, in accordance with the Sustainable Development Strategy for the Seas of East Asia (SDS-SEA).
PFD: Scaling Up Partnership Investments for Sustainable Development of the Large Marine Ecosystems of East Asia and their Coasts (Viet Nam only)	WB	Implementation	The goal of the program is to promote sustainable development of large marine and coastal ecosystems of the East Asia and Pacific Region and improve livelihoods of local populations by reducing pollution of and promoting sustainable marine fisheries, ICM and ecosystem-based management.
PFD: Reducing Pollution and Rebuilding Degraded Marine Resources in the East Asian Seas through Implementation of Intergovernmental Agreements and Catalysed Investments	UNDP	Implementation	To rebuild and sustain coastal and ocean ecosystem services across the East Asian Seas region through the scaling up of partnerships, capacities and investments at the regional, country and local levels

The following figure shows the preliminary institutional organization of the project, revolving around three main functions: supervision (technical and administrative); project steering and decision-making during implementation; execution of project activities

7. Consistency with National Priorities

Describe the consistency of the project with national strategies and plans or reports and assessments under relevant conventions from below:

NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc.

Lao PDR

The 8th Five-Year National Socio-Economic Development Plan (2016-2020) of Lao PDR identifies three key outcomes to be sought by the plan. The third of these is "Natural resources and the environment are effectively protected and utilized according to green-growth and sustainable principles; there is readiness to cope with natural disasters and the effects of climate change and for reconstruction following natural disasters". To achieve this, the plan deploys various strategies, that include the management of water resources based on IWRM principles in "10 priority river basins for development" that includes the Nam Ma and the Nam Sam (or Nam Xam "a tributary of the Ma, called the Chu in Viet Nam), "and other small basins where appropriate." It also calls for the development of forest management, restoration and protection plans for the Nam Et-Phou Louy protected area, and reiterates Lao PDR's long-standing commitment to "achieve forest cover over 70% of the total country area, by restoring natural forests on 1.5 million ha and planting trees on 35,000 ha of protected and conservation forests."

Lao PDR is in the consultation stage of a new National Water and Water Resource Management Strategy. This project aims to feed into a wide range of goals listed in the Strategy, which are outlined in Annex O.

Viet Nam

Viet Nam's Five-year Socio-economic Development Plan (2016-2020) has, as its sixth objective "Actively cope with climate change, prevent and cope with natural disasters, enhance the management of natural resources and environment protection." To address this, the plan seeks to "Protect the water sources, construct the infrastructure to utilize effectively and economically water resource " Strengthen the organizational structure, forces, operating mechanism with synchronous measures to protect and develop forests; especially in the coastal protection forest, watershed forests, special use forests (SUF), nature conservation and biodiversity".

Viet Nam's National Water Resources Strategy 2020 (MONRE 2006) states as its strategic goals to protect, effectively exploit and sustainably develop national water resources on the basis of integrated and unified management of water resources in order to meet the water demands of people, to foster the social and economic development, to ensure defence, security and environmental protection during the period of modernization of the country. See Annex P for a summary of the National Water Resource Strategy. The strategy explicitly aims to prevent and minimize any harmful effects caused by water; to foster cross-sector coordination of water used that promote sustainable development; to improve the effectiveness of transboundary cooperation and ensure the harmony of interests between countries sharing water resources with Viet Nam.

The Ma and Ca Rivers are among the 5 largest basins and are two of 9 international rivers Viet Nam shares with Lao PDR. The Viet Nam Government considers the Ma and Neun/Ca River basins as highly important for developing transboundary water management agreements and conventions with Lao PDR that improve transboundary water management and leads to sustainable water resources extraction and protection. Viet Nam

S Government partners (e.g. MoNRE and MARD) have emphasized that the support from international organizations such as GEF and FAO in this project will help Vietnam to ensure and foster water and environment security of these two important river basins in the central region of Viet Nam.

In 2012, Viet Nam introduced a new water law. This new legislation defines a series of principles that need to be applied in cooperation, management and development of transboundary river basins: Respecting the independence, sovereignty, territorial integrity and interests of countries sharing the same water resource; Ensuring fairness, rationality and sustainable development in the exploitation and use of transboundary water resources; Not to prejudice the rights and interests of countries sharing the same water resources in accordance with international treaties to which the Socialist Republic of Viet Nam is a signatory; Complying with the provisions of Vietnamese law, international law and relevant international treaties.

The Law also states that Viet Nam expands cooperation with other countries, foreign organizations and international organizations in basic surveys, protection, exploitation, use and development of water resources, training of officials and employees, scientific research on water resources, prevention, combat and overcoming of harmful effects caused by water.

Viet Nam encourages and cooperates in exchanging information relating to transboundary water resources; coordinating research and making planning on protection, exploitation and use of transboundary water resources; coordinating in the prevention, fighting and overcoming of harmful effects caused by water; facilitate the management and implementation of projects related to transboundary water resources.

This project will strengthen the MoU the MoNREs of both countries recently signed (see Annex M) and the TDA/SAP activities will contribute to all three transboundary cooperation foci Viet Nam and Lao PDR agreed on: flood disaster risk management, climate adaptation, and biodiversity conservation.

Compliance with the 2030 Agenda, and major MEAs

Lao PDR and Viet Nam have committed to the implementation of the *UN Sustainable Development Goals*, which include as its sixth goal the availability and sustainable management of water and sanitation for all. Other relevant SDGs are SDG15 on terrestrial systems, SDG 12 on addressing sustainable production, SDG 13 on combating climate change, SDG 16 on peace, justice and strong institutions, and SDG 17 on partnerships for the goals.

The project, by supporting sustainable water resources management and the protection of dependent ecosystems, will also contribute to the compliance with the provisions of major MEAs, all interlinked through the S2S flows.

In 2014, Viet Nam ratified the UN Convention on the Law of the Non-navigational Uses of International Watercourses; Lao PDR has not yet ratified the Convention.

UNCCD

Viet Nam ratified the UNCCD in 1998. For Viet Nam, combating desertification is mainly to address deforestation, land degradation, and drought. Implementation of the UNCCD needs to focus on (a)

implementing programmes/projects to prevent deforestation, soil erosion, shifting sand dunes, land salinization/acidification; (b) reclaiming degraded land; (c) sustainable land use and water resources use; and (d) forecasting and preventing drought and flood?. These international commitments define an important basis for planning in the Ma and the Neun/Ca Rivers due to the importance of forest ecosystems. Lao PDR ratified the Convention in 1996. In Lao context, desertification refers to the land degradation and seasonal drought caused by inappropriate land use practices such as slash and burn agriculture, deforestation, overgrazing, etc. Lao PDR is confronting with land degradation, soil erosion and seasonal drought which are some forms of desertification?. Similar to Viet Nam, the ratification of the UNCCD defines a critical foundation for land use planning and forest conservation in the upper Ma and Neun/Ca River basins.

UNFCCC

The Government of Lao PDR ratified the UNFCCC in 1995, the Kyoto Protocol in 2003, and signed the Paris Convention in 2016. In 2008, Lao PDR joined the REDD+ efforts as one of the first countries to join the Forest Carbon Partnership Facility. It acknowledges the importance of forests in addressing climate change in its Nationally Determined Contribution. In the context of the Ma and the Neun/Ca River basins important incentive mechanisms can be developed that link back to UNFCCC mechanisms. Viet Nam ratified the UN Climate Change Convention already in 1992 and signed the Kyoto Protocol in 1998. Viet Nam was one of the initial nine national programs under REDD (2009-2012) and has since continuously stepped up its efforts under REDD+. Recently, the Government ordered a stop to all conversion of natural forests in the Central Highlands and endorsed the second national REDD+ Action Program (2017-2030). Similar to Lao PDR, incentive mechanisms can be developed that connect better to global initiatives such as REDD+.

CBD

The Government of Lao PDR acceded to the International Convention on Biological Diversity (CBD) in 1996 and committed itself, as part of its obligations as party signatory, to developing a national biodiversity strategy. Viet Nam became a signatory to the Convention in 1994. Viet Nam's first National Biodiversity Action Plan (NBAP) was approved by the Prime Minister in 1995.

The project will also support achievement of the Aichi Targets. The Lao Government is in particular focused on loss of natural habitats (Target 5), fisheries management and ecosystem-based approaches (Target 6), sustainable management of agriculture, aquaculture and forestry areas (Target 7), and pollution, including from excess nutrients (Target 8). It is also relevant to Target 1 that addresses awareness raising and knowledge exchange, and to Targets 14-15 on ecosystem restoration, safeguarding and resilience. Viet Nam's National Biodiversity Strategy to 2020, with a vision to 2030, is an integral part of the country's Socio-Economic Development Strategy (2011-2020). The country intends to protect and sustainable use biodiversity resources to provide the basis for Viet Nam's sustainable development in the current context of climate change. The latter aims to address, primarily, Aichi Strategic Goals B (reduce direct pressures and promote sustainable use), C (improve biodiversity status by safeguarding ecosystems, species and genetic diversity) and D (enhance benefits to all from biodiversity and ecosystem services). Viet Nam's Biodiversity Law (2008) marked an important milestone for conservation that identified the principles and priorities of biodiversity conservation at all levels, from national and ministerial to local levels, creating the legal basis for local community involvement in the conservation of natural resources through new mechanisms of co-management and benefit-sharing.

The project will also contribute to the two countries commitments towards cooperative water resources management in the Mekong River Basin and beyond (including related ASEAN commitments). The project will ensure necessary linkages with the UNWC and the opportunities provided by the ASEAN Working Group on Water Management and the MRC to disseminate and upscale results and lessons learned.

8. Knowledge Management

Elaborate the "Knowledge Management Approach" for the project, including a budget, key deliverables and a timeline, and explain how it will contribute to the project's overall impact.

The KM strategy of the Neun/Ca and Ma River Basins project will be closely aligned with the overall vision, objectives and identified priorities of the organizations leading the Ma and Neun/Ca project, the FAO and the Global Environment Facility.

In adherence to FAO's Knowledge Strategy (2011) the project will:

- ? Follow the priorities expressed by the Governments of the Lao PDR and Viet Nam;
- ? Effectively disseminate data and information to all relevant stakeholders;
- ? Be results-focused and focused on the development plans of the Ma and the Neun/Ca River basins;
- ? Implement an innovation-focused process and design evidence-based pilots accordingly;
- ? Employ a highly participatory approach to generate new knowledge in the transboundary context of the two target basins;
- ? Will connect stakeholders from both countries and across relevant stakeholder groups;
- ? Will conduct effective capacity building to ensure long-term improvements of basin planning and to institutionalize cooperation mechanisms;
- ? Aim to employ innovative technologies (e.g. remote sensing) to mitigate current pressures (e.g. floods and droughts) and protect natural resources (e.g. water quality, forests) to improve water and environment security in both target basins;
- ? Aim to be ?technology neutral? to ensure solutions are not bound to specific technologies but rather remain flexible, which implies that this project will have a strong focus on improving the institutional coordination mechanisms for the transboundary context of the Ma and Neun/Ca River basins.

The KM guidelines and the policy recommendations emanating from the GEF-7 replenishment, calling for ??increasing attention to learning and knowledge exchange in GEF projects and in outreach to recipient countries?, and the IW: LEARN project have been considered when developing the present strategy.

The strategy will be based on two critical activities:

1. the capture and documentation of explicit (technical and codified information) and tacit knowledge (intangible assets intended as human and intellectual capital);
2. their dissemination amongst the intended audiences and stakeholders.

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The project will implement an integrated approach to leverage and systematically share knowledge assets generated by the project with the intended beneficiaries and audiences. In doing so, the strategy will aim to maximize the project?s impact by strengthening operational coherence, harnessing synergies and pooling resources, including time; and inform policy makers and key stakeholders of the benefits arising from the project interventions.

The strategy will aim to maximize the project?s impact by:

- ? Leveraging and systematically sharing knowledge assets generated Project with the intended beneficiaries and audiences;
- ? Strengthening the science-policy interface and influencing decision making through data and information sharing, capacity building, and regional stakeholder engagement;

Key Products and milestone events

- o A web-based knowledge hub comprised of a data and information management system (with both public and restricted access) and a combination of visualization tools to serve the project?s needs will be implemented by the PCU. The platform will host: 1) a project management/coordination/communication tool; 2) visualization tool(s) to display digitalized representation of data through GIS and other suitable means; and 3) a database for raw/primary data (part of Output 5.2.2)
- o The annual Stocktaking Meetings (SM) are major regional events organized by the PCU in cooperation with country representatives and will take place on a rotation basis in the two project countries. The meeting will involve: Governments of the participating countries, the implementing and executing agencies, the GEF Secretariat and Independent Office of Evaluation (IOE), Convention Secretariats, as well as major regional and global NGOs, representatives of those Mekong Commission and of other

countries of the region, as well as bilateral and multi-lateral donors and IFIs, and major private sector actors, water users, tourism associations and the fishing industry. Representatives of faith-based leaders, women's organizations, youth organizations, media specialists, among other relevant groups will also be invited to participate in these events, following a dedicated stakeholders' analysis. The SMs will provide an opportunity to highlight the project's activities implementation advancement, progress towards impacts and problems encountered, and to engage with a broad audience of peers and stakeholders sharing similar objectives within the overarching goal of achieving environmental security in two Basins. The SM will be an occasion for face-to-face knowledge exchanges, south-south and north-south learning, and promotion of the broader adoption of the project's approaches and solutions. (part of Output 5.1.2).

- o The project will be featured in all relevant GEF events and activities involving the IW focal area. The biannual GEF International Waters Conference (IWC) organized by the International Waters Learning and Resource Exchange Network (IW: LEARN) Project is one of the landmark events where the project will present results and achievements (part of Output 5.2.2).

- o In terms of visibility, the project will be presented in a holistic and coherent way (i.e. clear vision statement and positioning, visual identity, logo design, etc.).

- o The PCU will ensure that: (i) different types of scientific publications are prepared by the various to provide technical information about the scientific achievements of the Project, and to stimulate replication of successful practices and encourage regional and global dialogue. A number of Experience Notes (short case studies) will be produced and disseminated through IW: LEARN channels and the project website. The format of these Experience Notes is standard (<https://iwlearn.net/documents/experience-notes>).

9. Monitoring and Evaluation

Describe the budgeted M and E plan

This section describes the budgeted M & E plan including a timeline of planned Monitoring and Evaluation Activities, expected dates of submission of Terminal Evaluations and any Mid-Term Reviews, a budget, and roles and responsibilities.

The project will ensure transparency in the preparation, conduct, reporting and evaluation of its activities. This includes full disclosure of all non-confidential information, and consultation with major groups and representatives of local communities. The disclosure of information shall be ensured through posting on websites and dissemination of findings through knowledge products and events. Project reports will be broadly and freely shared, and findings and lessons learned made available.

As per GEF monitoring and reporting requirements, the following are critical parts of the M&E plan:

Inception Workshop and Report: A project inception workshop will be held within two months after the project document has been signed by all relevant parties to, amongst others:

- a) Re-orient project stakeholders to the project strategy and discuss any changes in the overall context that influence project strategy and implementation.
- b) Discuss the roles and responsibilities of the project team, including reporting and communication lines and conflict resolution mechanisms.
- c) Review the results framework and finalize the indicators, means of verification and monitoring plan.
- d) Discuss reporting, monitoring and evaluation roles and responsibilities and finalize the M&E budget; Identify national/regional institutes to be involved in project-level M&E; discuss the role of the GEF OFP in M&E.
- e) Update and review responsibilities for monitoring the various project plans and strategies, including the risk log; Environmental and Social Management Plan and other safeguard requirements; the gender strategy; the knowledge management strategy, and other relevant strategies.
- f) Review financial reporting procedures and mandatory requirements, and agree on the arrangements for the annual audit.
- g) Plan and schedule Project Steering Committee meetings and finalize the first-year annual work plan.

The Project Manager will prepare the inception report no later than one month after the inception workshop. The inception report will be cleared by the Implementing Partner, the FAO-GEF Regional Technical Adviser, and will be approved by the PSC.

GEF Project Implementation Report (PIR): The Project Manager, Implementing Partner and the FAO-GEF Regional Technical Adviser will provide objective input to the annual GEF PIR covering the reporting period July (previous year) to June (current year) for each year of project implementation. The Project Manager will ensure that the indicators included in the project results framework are monitored annually in advance of the PIR submission deadline so that progress can be reported in the PIR. Any environmental and social risks and related management plans will be monitored regularly, and progress will be reported in the PIR.

The PIR submitted to the GEF will be shared with the PSC. FAO will coordinate the input of the GEF Operational Focal Point and other stakeholders to the PIR as appropriate. The quality rating of the previous year's PIR will be used to inform the preparation of the subsequent PIR.

- Lessons learned and knowledge generation: Results from the project will be disseminated within and beyond the project intervention area through existing information sharing networks and forums. The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to the project. The project will identify, analyse and share lessons learned that might be beneficial to the design and implementation of similar projects and disseminate these lessons widely. There will be continuous information exchange between this project and other projects of similar focus in the same country, region and globally.

- GEF Core Indicators: The project will use the GEF7 core indicators and report against them during MTR and final evaluation.

Independent Mid-term Review (MTR): An independent mid-term review process will begin under the overall responsibility of the project Budget Holder after the second PIR has been submitted to the GEF, and the MTR report will be submitted to the GEF in the same year as the 3rd PIR. The MTR findings and responses outlined in the management response will be incorporated as recommendations for enhanced implementation during the final half of the project's duration. The terms of reference, the review process and the MTR report will follow the standard templates and guidance prepared by the FAO IEO for GEF-financed projects. As noted in this guidance, the evaluation or review will be 'independent, impartial and rigorous'. The consultants that will be hired to undertake the assignment will be independent from organizations that were involved in designing, executing or advising on the project to be evaluated. The GEF Operational Focal Point and other stakeholders will be involved and consulted during the mid-term evaluation or review process. Additional quality assurance support is available from the FAO-GEF Directorate. The final MTR report will be available in English and will be cleared by FAO-GEF Regional Technical Adviser, and approved by the PSC.

Terminal Evaluation (TE): As per the FAO policy on evaluation, the FAO Office of Evaluation (OED) will conduct a final evaluation of the project, to be launched within six months prior to the actual completion date of the project. It will aim at identifying project outcomes, their sustainability and actual or potential impacts. It will also have the purpose of indicating future actions needed to assure continuity of the process developed through the project. FAO Office of Evaluation will conduct the evaluation in consultation with project stakeholders and the donor, and share with them the evaluation report which is a public document. The Project Manager will remain on contract until the TE report and management response have been finalized. The terms of reference, the evaluation process and the final TE report will follow the standard templates and guidance prepared by the FAO IEO for GEF-financed projects. As noted in this guidance, the evaluation will be 'independent, impartial and rigorous'. The consultants that will be hired to undertake the assignment will be independent from organizations that were involved in designing, executing or advising on the project to be evaluated. The GEF Operational Focal Point and other stakeholders will be involved and consulted during the terminal evaluation process. Additional quality

assurance support is available from the FAO-GEF Directorate. The TE report will be publicly available in English on the FAO OED's website.

Final Report: The project's terminal PIR along with the terminal evaluation (TE) report and corresponding management response will serve as the final project report package. The final project report package shall be discussed with the PSC during an end-of-project review meeting to discuss lesson learned and opportunities for scaling up.

Mandatory GEF M&E Requirements and M&E Budget

Mandatory GEF M&E Requirements and M&E Budget

GEF M&E requirements	Primary responsibility	Indicative costs to be charged to the Project Budget ^[1] (US\$)		Time frame
		GEF grant	Co-financing	
Inception Workshop and reports	IUCN Government Partners, FAO	20000	20,000	Within two months of project document signature Reports Within two weeks of inception workshop
Standard FAO monitoring and reporting	PMU Implementing Partner	None	None	Quarterly, annually
Monitoring of Core Indicators and indicators in project results framework	PMU Implementing Partner	20000	20,000	Annually

GEF M&E requirements	Primary responsibility	Indicative costs to be charged to the Project Budget ^[1] (US\$)		Time frame
		GEF grant	Co-financing	
GEF Project Implementation Report (PIR)	Project Manager Implementing Partner FAO-GEF Coordination Unit	None	None	Annually
Execution agency (IUCN)/ PMU Supervision missions	PMU	60000		Regularly
Learning and exchange mission with stakeholders / site visit	PMU	30,000	10,000	Annually
Project Steering Committee meetings	Project Steering Committee Project Manager Implementing Partner	None	30,000	At minimum annually
Monitoring of ESS and management plans	PMU	20000		
Mid-term GEF Tracking Tool	Project Manager	0	20,000	Before mid-term review mission takes place.
Independent Mid-term Review (MTR) and management response	FAO Budget Holder in collaboration with Implementing Partner, PMU and FAO-GEF Coordination Unit	65,000	10,000	Between 2 nd and 3 rd PIR.
Terminal GEF Core Indicators	Project Manager	0	20,000	Before terminal evaluation mission takes place
Independent Terminal Evaluation (TE)	FAO OED, in collaboration with Implementing Partner, PMU and FAO-GEF Coordination Unit	65,000	10,000	At least six months before operational closure

GEF M&E requirements	Primary responsibility	Indicative costs to be charged to the Project Budget ^[1] (US\$)		Time frame
		GEF grant	Co-financing	
Terminal Report	PMU and FAO	6,550	0	At least one month before operational closure
TOTAL indicative COST		USD	140,000	
Excluding project team staff time, and FAO staff and travel expenses		316,550		

^[1] Excluding project team staff time and FAO staff time and travel expenses.

^[1] Excluding project team staff time and FAO staff time and travel expenses.

10. Benefits

Describe the socioeconomic benefits to be delivered by the project at the national and local levels, as appropriate. How do these benefits translate in supporting the achievement of global environment benefits (GEF Trust Fund) or adaptation benefits (LDCE/SCCF)?

Global Environmental benefits

The project will accrue global environmental benefits targeted by GEF's work in international waters, and related to transboundary concerns, including:

- Increased cooperation between Lao and Viet Nam to reduce threats to international waters (SDG 6.5);
- Reduced pollution load in international waters from nutrient enrichment and other land-based activities (SDG 6.3);
- Restored and sustained freshwater and coastal ecosystems goods and services, including globally significant biodiversity, as well as maintained capacity of natural systems to sequester carbon (SDG 6.6);
- Reduced vulnerability to climate variability and climate-related risks, and increased ecosystem resilience (SDG 13.1).

Socio-economic benefits

In Lao PDR, the Ma and Neun/Ca River basins are home to the poorest communities of the country and receive few economic development opportunities. Concurrently, climate change is increasing the vulnerability of many livelihoods, which is very likely to increase poverty even further. The robust

assessment of water resources and the development of sustainable strategies and action plans will provide a viable basis for future investments and foster sustainable development.

In Viet Nam, the Ma and Neun/Ca are the fourth and fifth largest river basins, jointly covering nearly 12% of the country. Both basins are densely populated and the economy in the basins' provinces is developing strongly. By promoting water security (SDG 6.4) in the Ma and Neun/Ca River basins the project will ensure substantial benefits to communities in the river basin and to the country in terms of:

- ? Enhanced food production (SDG 6.4, SDG 2.3);
- ? Improved resource efficiency in consumption and production, and economic growth decoupled from environmental degradation (SDG 8.4)
- ? Reduced migration pressure;
- ? improved hydrological monitoring systems that will provide effective early warning to ensure the safety of people's lives in the context of floods and landslides (SDG 13.3);
- ? Improved water quality and human health (SDG 6.3);
- ? Improved livelihoods and decent water dependent rural jobs in the basins and related coastal areas (SDG 8.5);
- ? Improved access of women to economic resources, as well as access to ownership and control over land/water (SDG 5.A).

The issue of ensuring strong and immediate socioeconomic benefits to local communities is expected to be paramount under the context of global COVID19 pandemic and its socioeconomic impacts in both participating countries. Viet Nam and Lao PDR have both reported lower levels of COVID19 infections than most countries in the world. However the impact of the pandemic on the local and national economies has been significant, related to the collapse of tourism, the losses to the hospitality industry and factory shutdowns. In addition, internal and external factors associated with COVID-19 has affected the complex web of agricultural supply chains, affecting input suppliers, producers, collectors, processors and consumers. Food supply and demand disruptions and market and business uncertainties put a strain on the supply chains while posing multiple threats to food systems. Vulnerable groups, including the poor, mothers and children, the elderly, the unemployed and returning migrant workers, face real food security issues.

The project's TDA process can help identify issues that can also be relevant to both governments to plan actions to support local livelihoods and economies. This can also help identify potential issues that can be planned to prevent similar pandemics from arising through improper human-wildlife interactions and ways to work cooperatively between countries to address mitigation of similar pandemics in future.

11. Environmental and Social Safeguard (ESS) Risks

Provide information on the identified environmental and social risks and potential impacts associated with the project/program based on your organization's ESS systems and procedures

Overall Project/Program Risk Classification*

PIF	CEO Endorsement/Approval	MTR	TE
High or Substantial			

Measures to address identified risks and impacts

Elaborate on the types and risk classifications/ratings of any identified environmental and social risks and impacts (considering the GEF ESS Minimum Standards) and any measures undertaken as well as planned management measures to address these risks during implementation.

The overall project risk rating is High Risk, as the two transboundary river basins that the project is supporting TDA/SAP also includes on ?on the ground? work under Component 3: Testing solutions on the ground. As these river basins include protected areas, the planned pilots have the potential to be adjacent to protected areas or impact protected areas. The project does not currently have specific plans for this Component. Given the trigger of High Risk, as required by FAO's ESRM policy, a draft TOR has been prepared for Strategic Environmental and Social Assessment (SESA), which has been uploaded in the Document section for this project (please see attached doc).

Risk identification	Risk Classification	Risk Description in the project	Mitigation Action (s)	Indicators	When

Risk identification	Risk Classification	Risk Description in the project	Mitigation Action (s)	Indicators	When
Presence of legally designated protected areas in the project region	High	Given that legally designated protected areas exist within the two river basins of Ma and Ca Rivers, any on-the ground work supported by the project under component 3 might impact protected areas and biodiversity. In addition the SAP might also impact overall biodiversity conservation of the river basins.	<p>As noted earlier, the project will undertake more detailed SESA to ensure more strategic view on biodiversity impacts of the project.</p> <p>The TDA/SAP process will mainstream biodiversity conservation in it ? both in and outside protected areas. The project?s work on environmental flow and Environmental Status Indicators (ESI) are also expected to strengthen overall biodiversity conservation of the two river basins.</p> <p>For specific pilots under Component 3, the FAO ESRM assessment will be used again to ensure that these are NOT triggered, once they are confirmed and agreed by the governments during project implementation.</p>	<p>SESA report available through disclosure mechanisms of government, FAO and IUCN</p> <p>TDA includes assessment on biodiversity related issues and priority issues are reflected in SAP as well as in longer term vision</p> <p>Environmental and Social assessment against planned pilots and detailed risk mitigation measures available through disclosure mechanism</p>	<p>By year 1 of the project</p> <p>By project?s year 4</p> <p>From year 2 onwards till project end</p>

Risk identification	Risk Classification	Risk Description in the project	Mitigation Action (s)	Indicators	When
The project may operate in some areas where major gender inequality prevails	Moderate	At that time of inception, the gender analysis will inform the project about any gender imbalance.	The project includes specific actions to support gender mainstreaming. These include the implementation of a gender action plan and specific outputs to support gender equality.	Gender Action Plan fully implemented	Throughout the life of project
Presence of indigenous people (IP) in the project area	Moderate	<p>The project may work in areas where indigenous peoples live.</p> <p>Pilot Projects sites (Component 3) will be determined during project implementation. If IP?s are present then they will be identified and engaged.</p>	<p>An IP engagement plan will be developed to ensure IP?s are identified and engaged.</p> <p>The aim of the project is to involve all water resources users in management.</p> <p>.</p>	IPP plan endorsed and implemented	To be completed during project implementation

Supporting Documents

Upload available ESS supporting documents.

Title	Module	Submitted
Draft TOR Strategic Environmental and Social	CEO Endorsement ESS	
Annex I1	CEO Endorsement ESS	

ANNEX A: PROJECT RESULTS FRAMEWORK (either copy and paste here the framework from the Agency document, or provide reference to the page in the project document where the framework could be found).

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Objective: To enable Viet Nam and Lao PDR to address freshwater resource management and ecosystem health in the transboundary Ma and the Neun/Ca river basins and coastal zones by creating an enabling environment for transboundary cooperation and action.							
Component 1: Consolidating a common knowledge base							
Outcome 1: <i>Consensus among countries on key transboundary concerns, including climate change and variability - reached through joint fact finding - strengthens transboundary cooperation and opens the way to coordinated remedial actions.</i>	<i>Number of TDAs and the Environmental Status Indicators (ESI) endorsed by the countries? representatives in the Steering Committee.</i>	<i>The project will be the first joint effort to implement the 2019 Memorandum of Understanding on Enhancing Cooperation in the freshwater sector.</i>	<i>Finalization of the assessment of the two basin's water resources current state and projected scenarios, as well as the evaluation of environmental flows.</i>	<i>Two TDAs with (one for each basin) corresponding Environmental Status Indicators submitted for endorsement to the Steering Committee.</i>	<i>Project Publication Minutes of the relevant SC meeting approving TDAs</i>	<i>Effective involvement by target stakeholders, local communities and the inhabitants of the two basins reached throughout project implementation</i>	<i>National executing partners and Joint Technical Committees</i>

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output.1.1 Science-based assessments of the current state of freshwater resources (surface and groundwater) and of their dependent ecosystems, including technical assessments (e.g. sediments, fisheries, biodiversity, and forest fire risk), governance and gender.	Number of comprehensive reports on Water Resources of the two basins, that include technical and socioeconomic assessments, including gender assessment	Only fragmented and sectoral sets of data exist so far and no sex-disaggregated data available	Two assessment reports cleared by the Joint Technical Committees	Two assessment reports cleared by the PCU (one for each river basin).	Project Publication	Effective support from national scientists, local communities, other stakeholders and administrative bodies	National executing partners and Joint Technical Committees
Output 1.2 Comparison analysis of current trends and projected scenarios	Number of reports on water future scenarios - considering CC and existing plans/strategies - and related hazards and their likely impacts on ecosystems and people (men, women and the youth)	Governments are planning important investments to face climatic hazards	Two reports (one for each basin) on water future scenarios cleared by the Joint Technical Committees	Two (one for each basin) reports cleared by the PCU.	Project Publication		

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output 1.3 Evaluations of environmental flows at selected sites.	Number of reports on environmental flows for key freshwater dependent ecosystems completed.	Ecosystems in both basins threatened by water nexus conflicts	Two reports cleared by Joint Technical Committees	Two reports cleared by PCU	Two reports published		
Output 1.4 Transboundary Diagnostic Analysis (TDAs).	Two TDAs of the focus basins endorsed by the countries? representatives in the Steering Committee	Lack of consideration of transboundary environmental concerns	Two draft TDAs prepared by the Joint Technical Committees	Two TDAs submitted to the SC for endorsement	Two TDAs published	Sustained political support to the TDA process	Joint Technical Committees
Output 1.5 Agreement reached on a limited number of key Environmental Status Indicators (ESI).	Number of report on agreed ESI, harmonized across the two basins, adopted by the two riparian countries.	Environmental indicators are novel to the region	Joint Technical Committees prepare proposal for ESI	One report (presenting sets of indicators for each basin)	Minutes of the relevant SC meeting		

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Component 2: Facilitating transboundary cooperation							
Outcome 2. <i>Enhanced water security, environmental sustainability and forecasting capabilities in both basins and their coastal areas, achieved through the establishment of transboundary cooperation and information exchange frameworks and mechanisms.</i>	<i>Bilateral cooperation frameworks and mechanisms endorsed by governments and established.</i>	<i>Neither country has transboundary river basin obligations at present, besides the Mekong.</i>	<i>Design and TORs of new cooperation mechanisms prepared by the Joint Technical Committees.</i>	<i>Shared vision and design of new permanent cooperation frameworks and mechanisms submitted for clearance to the SC</i>	<i>Minutes of the relevant SC meeting</i>	<i>Sustained political support to establishing transboundary cooperation frameworks.</i>	<i>National Executives, Partners, Joint Technical Committees and the PCUs</i>
Output 2.1 Creation of <u>Joint Technical Committees</u> ? JTCs.	Three JTCs (assessments and TDAs, monitoring and indicators, freshwater governance, acting in both basins) established by the two Governments	Structured and systematic technical cooperation framework on shared water resources between the two countries do not exist	All three JTCs are fully operational, which include strong participation of women and gender experts	Three JTCs are part of the new permanent cooperation frameworks submitted for SC clearance	Governments Acts appointing expert members of the JTCs	Countries possess expertise to cover all necessary fields	NA

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output 2.2 <u>A shared long-term Vision</u> (horizon 20 years) including the agreement on environmental quality (EQ) targets and gender equality.	Number of long term Vision (incl. gender equality) and EQ targets for the two basins - prepared by the JTCs	Countries' plans and development strategies relevant for the two basins lack harmonization and common targets	Two long term visions (incl. gender equality) and corresponding EQ targets submitted to the SC for approval	Two vision and corresponding EQ targets (one for each basin) inform the SAPs for focus basins	Minutes of the relevant SC meeting	Enduring political commitment to the cooperation process	JTCs and the PCU
Output 2.3 <u>Harmonized design of multi-purpose monitoring networks</u> , and joint monitoring and data-sharing protocols.	Two monitoring networks ? one for each basin - covering surface and groundwater, and their dependent ecosystems in the two basins ? prepared by the relevant JTC	Monitoring is so far sporadic and lacks transboundary harmonization. No data sharing agreement exists.	Draft design of the monitoring networks and data sharing protocols ready for first review by governments	Monitoring design and data sharing protocols submitted to the SC for approval.	Minutes of the relevant SC meeting	Countries willing to share data on status of water resources	JTCs and the PCU

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output 2.4 <u>Interim Bilateral Consultation/Coordination Committee (IBCC)</u> agreed upon and established.	The TORs of the IBCC, including its modus operandi and its Secretariat approved by governments, and IBCC established with strong participation of women	The 2019 Memorandum of Understanding on Enhancing Cooperation? will serve as the framework within which the IBCC will be established.	Draft TORs of the IBCC ready for first review by governments	The TORs of the IBCC submitted to governments for approval	Governments act establishing the IBCC	Sustained political support for transboundary cooperation	JTCs and the PCU

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Component 3: Testing solutions on the ground							
Outcome 3. <i>Countries resolve to joint actions reinforced by testing on the ground environmentally sound land/water management approaches, policies, practices and technologies, and share results and experiences</i>	<i>Number of pilot demonstration projects implemented</i>			<i>At least 4 pilot projects implemented</i>	<i>Final reports of pilot projects</i>		
Output 3.1 Program of <u>pilot Demonstrations</u> selected on the basis of the results and findings of Component 1 (e.g. flood forecasting and community preparedness, fish-friendly irrigation expansion).	Agreement on the selection and design of the pilot demonstrations reached	<i>The water resources management approaches and practices that the project will test on the ground are new to the region</i>	<i>Pilot projects under implementation and benefiting women and men equitably leading towards a closing of the gender gap</i>	The program and the design of the pilots approved by the SC	Minutes of the relevant SC meeting	<i>Countries reach consensus on the typology and location of the pilots during the first year of the project implementation</i>	<i>JTCs and Country Execution Teams</i>

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Component 4: Leveraging commitment to action							
Outcome 4 <i>The process of reversing of degradation trends in the two basins galvanized as countries commit to sustain joint cooperation mechanisms and to undertake priority reforms and investments</i>	<i>Strategic Action Programs (SAPs) signed at minister level in the two countries</i>	<i>Countries? actions in the two basins lack strategic vision and transboundary coordination</i>	<i>Two SAPs being drafted based on TDA findings and shared Vision</i>	<i>Two SAPs submitted for signature at ministerial level</i>	<i>Final two SAPs documents published</i>		<i>IBCC, ICMs, JTCs and PCU</i>
Output 4.1 Countries establish <u>ad hoc inter-ministerial committees</u> (ICMs).	ICMs established in each country, and operational, with strong participation of women	Lack of consideration in countries? planning of the water-food-energy-ecosystems nexus	ICMs established with strong participation of women	ICMs actively engaged in the drafting of SAPs	Minutes of ICMs meetings	<i>Project development strengthens political commitment to transboundary cooperation</i>	IBCC, country execution teams, and PCU

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output 4.2 Two <u>Strategic Action Programs</u> (SAP) with horizon of 5-10 years, consistent with the Shared Vision.	SAPs completed	Lack of transboundary coordination in basin management	Two SAPs being drafted based on TDA findings and shared Vision, that include strong socioeconomic considerations, including gender equality	Two SAPs signed by at least one Minister in each country	Final two SAPs documents published	<i>n</i>	IBCC, ICMs, JTCs and the PCU
Output 4.3 A <u>partnership conference</u> consolidating international support for SAPs implementation	Number of Partnership Conferences held to support SAPs implementation	NA	NA	Conference completed	Agenda and conclusions of the conference	NA	IBCC and PCU

[illegible]

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Outcome 5.1 <i>The visibility and sustainability of project outcomes enhanced by the reinforcement of capacities of relevant national entities and of the interim transboundary cooperation body established as part of the project.</i>	Number of government institutions in Lao PDR and Viet Nam trained on TDA/SAP related priorities on water resources management that have included SAP priorities in their work plans.	<i>Land and water administrators in the two basins lack experience in transboundary aspects</i>	NA	<i>At least 100 land/water administrators in each basin received training and attended SMs (at least 50% women to be targeted)</i>	<i>Report of training activities, and SM minutes</i>	<i>Project management able to raise interest of targeted groups</i>	PCU
Output 5.1.1 <u>Sustained training of national staff and of land/water administrators on key aspects of transboundary waters management, data analysis and monitoring, including gender issues.</u>	Number of gender-balanced training courses held during the project lifetime, including dedicated training on water and gender.		5 courses held	10 courses held, 2 of these focused on water and gender	Modules and reports of training courses		PCU

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output 5.1.2 <u>Awareness raising events</u> involving a broad range of stakeholders at the national, regional and global levels.	Number of gender balanced Stocktaking Meetings (SM), and tailored awareness raising programmes aimed at women, men and youth	NA	2 SMs held	4 SMs held	SMs report		PCU
Outcome 5.2 <i>Benefits from the global to the local levels accrue through the sharing and dissemination of Project experiences and lessons learned.</i>							
Output 5.2.1 <u>Dissemination of key project achievements.</u>	<i>Number of dissemination events and experience notes / documents</i>	NA	<i>5 events and 10 documents</i> <i>1 videos</i>	<i>10 events and 30 documents</i> <i>2 videos</i>	Project website		PCU, JTCs

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output 5.2.2 Collaboration with IW LEARN. Full participation to GEF IW LEARN activities including IWCs, creation of a project website following IWLEARN standards, and preparation of experience notes.	/ videos, including on gender and water issues						

ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

GEFSEC Review comment	Response
Component 1: output 1.5 is well noted to develop agreed key environmental status indicators. Please aim to encourage that the SAP process makes use of these indicators to agree on quantifiable targets for stress reductions based on these indicators - as applicable.	The purpose of Output 1.5 is indeed to provide effective definitions of indicators for the SAP process. We will ensure that quantifiable targets will be defined, agreed on, and applied during the SAP process. This has been noted under 1.5.
TDA: In project design and developing an overall work plan, assure that the TDA remains a step in the process to underpin the SAP which in itself may prioritize further detailed studies. As a guide point: the TDA should best be finalized before/by midterm to allow digestion of its content and then serve as the base for consultations and agreement on the Strategic Action Program.	We plan to have the TDA finalized after one year to allow pilot projects and SAP process to be implemented timely and effectively. This has been noted under Output 1.4.

<p>Please assure that the TDA process includes to build on and use (and with that possibly strengthen) local scientific capacity.</p>	<p>The execution will heavily draw on local experts in Viet Nam and Lao PDR. The execution agency will assemble a team of best suited local experts, which we are in the process of identifying already. International experts will fill critical gaps and will also be important to bring international best practices and build local/national capacities. This has been stressed under Output 1.4.</p>
<p>In terms of 'designing multi-purpose monitoring networks' (2.3): we would strongly suggest during project design to also consider innovative, remotely sensed and freely available data sources AND building comparative capacities in each country to access and analyse such information. This could also greatly complement DRR capacities (See MoU between countries and the voiced need for this). In addition, when establishing environmental status indicators (component 1.5), please cross-check and assure that monitoring systems are in place or being designed to assess these over time.</p>	<p>This has been noted in 5.1.1</p>
<p>Pilots (component 3.1): in the draft PIF there has been some indication of possible focus areas for these pilots which is now omitted. While this is acceptable at PIF stage, by endorsement there needs to be an agreed manual indicating e.g. the type and scope (\$\$ range) of the pilots, criteria for selection of the pilots, and a process for selection and approval of proposals for pilots. Agreement on this should be assured during project preparation to allow timely implementation during the project.</p>	<p>It is important that the choice of the pilots be made by countries based on the findings of the TDA process, and through extensive SE. main criteria for the selection are presented in Annex H.</p>
<p>Please reconsider during design whether the output on a Shared Vision (2.2) is better placed in component 2 or 4. Conversely, the IMCs may t better in component 2.</p>	<p>There has been consensus that the visioning process be linked with the IBCC and the TDA, while ICMs enter into play during SAP</p>
<p>NAPs: Please note that NAPs could be free-standing documents or developed as annexes to the SAP.</p>	<p>The early stages of the SAP will define this issue. It will depend on the wo countries and are likely to be developed as free-standing documents.</p>

Training and awareness raising (component 5): Please avoid a series of 'one off' training events which often do not create lasting uptake and capacity enhancement. Second, in terms of dissemination: please assess what media/formats are best to reach which target groups in the countries. There seems to be a focus on on-line tools which still have limited reach in the countries where access to and use of these technologies vary greatly. The social assessment during project design should contribute to identify what media are best to raise awareness ? e.g. to reach communities radio, school materials, and oral media (theatre etc.) are sometimes more effective (also given the high prevalence of non-literate in the region).	Noted under 5.1.2
SAP adoption/endorsement: the PIF states that it will be signed at "ministerial level". In the project document/endorsement stage, please be explicit and clear that this means signature of at least one Minister from each country.	Done
During project design/by ENDORSEMENT: Please highlight in the project design the benefits of private sector engagement in the TDA and the SAP process and to encourage engagement during later SAP implementation. The private sector and AWS may also have an important contribution in the design, nuance and/or implementation of component 3/pilots/solutions.	Noted and has been reflected in project design.
Please expand in more detail during project design (i.e. by ENDORSEMENT), including consideration of connection to South China Sea LME, particularly the UNEP project on SAP implementation.	
Please provide a budget at CEO endorsement submission. Please recall that PMC cannot be used to finance: (i) Government staff salaries; (ii) Salaries and fees for GEF Agency staff or consultants; (iii) Purchase of vehicles; and (iv) M&E activities which should be under M&E component budget.	Noted and has been reflected in the project design.
Please assure and show cofinance for PMC related/budgeted activities. This is to ensure and demonstrate country ownership as well as sustainability and continuity post project closure.	Noted
Please also recall and note that Agency staff who are performing GEF-specific project cycle management services and corporate activities should be financed from Agency fee, but not to be budgeted out of the project GEF financing under project components/activities.	Noted

By ENDORSEMENT: Please provide a revised LOE for Viet Nam. The table in the letter should simply state the entire GEF IW amount for the whole project (note: splitting the amount evenly is unlikely; in this case many of the activities (such as including the TDA and SAP process) are truly regional.	The letter is under preparation.
Responses to Germany Comments	
While the Ma and Neun/Ca rivers are not a river within the Mekong River Basin, the existing legal and institutional framework for cooperation provided by the 1995 Mekong Agreement and the Mekong River Commission (MRC) can provide important support and guidance for the management of the Ma and Neun/Ca rivers. Germany encourages to consider whether the project ? and in particular the TDA/SAP process ? can be linked to and build on existing basin management work of the MRC (e.g. its State of the Basin reporting process and its process for developing the Basin Development Strategy).	The project builds on experience of the MRC which is one of the most relevant transboundary water management agencies in Asia. Much of the structure and design principles applied by the MRC to the lower Mekong basin will be highly valuable to the TDA/SAP process in the Ma and the Neun/Ca Rivers.
Likewise, section 7 (on national priorities) should also consider countries' commitments to cooperative water resources management in the Mekong River Basin and beyond (including related ASEAN commitments). This would not only increase the effectiveness of the project and improve consistency of basin management approaches in the region, but also contribute to strengthening the MRC as the regional water management institution. Moreover, this could contribute to an endorsement of the TDA at a higher level than the envisaged technical level and thus increase its acceptance at the policy level in both countries.	We added these commitments as we hope that the outcomes of this transboundary project in the Ma and the Neun/Ca basins will provide valuable and influential lessons for how Lao PDR and Viet Nam operate under the MRC.
Under output 1.1, Germany suggests to strengthen important water uses and water use plans (namely hydropower and irrigation) as they drive the overall state of the basin and its resources (and will increasingly do so in the future).	Information on these water use sectors is provided in the background and the baseline sections.
Under output 1.3, not only coastal ecosystems and their environmental flow needs should be considered, but also ecosystems along the river before it reaches the sea.	This project takes a whole-of-basin perspective and will equally or more focus on ecosystems and environmental flows in the upper and middle catchments. We adjusted the text under output 1.3 accordingly.

Concerning output 2.1 (joint technical committees), 2.4 (IBCC) and 4.1 (interministerial committees), Germany recommends to specify the exact institutional set-up of the committees. It remains unclear whether they are established on a temporary basis (only for the implementation of the project) or whether there is an intention to establish them for a long-term purpose (potentially leading to the establishment of a joint body between the two countries for the management of the transboundary rivers). Due consideration should be given to the role of these committees in the overall institutional structure of each country and ? from the beginning on ? to the process of establishing joint bodies by considering different legal, institutional and political factors (set-up, functional scope, legal personality, etc.).	The role of the JTC has been clarified in the organigram provided Section 6a, and briefly described in the Alternative Scenario section, together with the IBCC and ICMs. Their detailed functions will be defined by the countries as part of project execution. All these bodies will be established for the purposes of the project: however, the expectation is that, if they will be found effective, they might continue to operate during SAP implementation and beyond.
Section 2 (stakeholders) does not consider relevant bilateral donors active in Lao PDR or Viet Nam (but only multilateral donors and international CSOs). Germany would like to encourage a more careful stocktaking of existing initiatives in order to identify potential synergies, avoid overlaps and duplications and to ensure that bilateral activities and CSOs are informed about the project.	The PPG phase provided another opportunity for the two national teams in collaboration with all relevant line ministries to identify further initiatives in the two target areas. The initial list did not aim to limit the scope to multilateral donors but includes bilateral donors. Equally, international CSOs will be included in the participatory process as listed in the stakeholder list.
While acknowledging that, to a certain extent, outcome 3 (pilot demonstrations) will be based on the findings of outcome 1, Germany requests more information on these pilot demonstrations so that the allocated budget is planned realistically.	See response to GEFSEC similar comment: It is important that the choice of the pilots be made by the countries based on the findings of the TDA process, and through extensive SE. The main criteria for the selection are presented in Annex H.
In addition to the risks identified, Germany requests that the risk for economic development priorities in the short term to compete against the efforts to improve long-term environmental conditions should be given greater consideration.	The definition of risks for the PIF focused on risks to the project, which are by nature short term. However, the PD identifies risks for long-term environmental conditions (as well as social risks).
In addition to this IW focal area project, the FAO has submitted a PIF to the LDCF - with geographical overlap in the province of Houaphan - promoting landscape approaches and measures which may have an impact on the TDA/SAP/NAP and associated measures and investments. Germany would encourage the creation of synergies between the two projects and mechanisms to ensure a coherent approach between regional and national plans (including the national NAP).	<p>This initiative for the Ma and the Neun/Ca Rivers collaborates closely with other FAO initiatives in the region, which includes the investment mentioned in Houaphan province.</p> <p>Component 5 aims at creating cross-project synergies, in particular through carefully designed annual stocktaking events. This will provide an effective platform for relevant projects to interact and exchange lessons learnt, data, and cross-fertilize processes and networks.</p>
USA comments	

<p>10193 Fostering Water and Environmental Security in the Ma and Neun/Ca Transboundary River Basins and Related Coastal Areas; Regional, Asia/Pacific, Vietnam, Lao</p> <p>? Can the GEF please provide a breakdown of the relative funding directed to each country?</p>	<p>The project is primarily regional in nature, however, most of Component 3 will be on pilots at each country. The budget shows a breakdown of the funding for each country. The total budget estimated for national level pilots is 2,819,048 USD, which will be divided equally between Lao PDR and Viet Nam.</p>
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Responses to STAP Comments

Responses to STAP Comments			
2) the baseline scenario or any associated baseline projects	Does it provide a feasible basis for quantifying the project's benefits?	Additional quantification will be required.	The baseline scenario section has been completely revised and expanded and includes now a summary of all available data, which is the basis for specifying targeted project benefits.
3) the proposed alternative scenario with a brief description of expected outcomes and components of the project	Are the mechanisms of change plausible, and is there a well-informed identification of the underlying assumptions?	Assumptions, risks, and implementation mechanisms to learn and adapt should be elaborated as part of full project development. Note: Figure 1 Intervention logic not visible.	The full Project Document provides further detail on assumptions, risks, and implementation mechanisms in the respective sections. We hope all figures are now visible.
6) global environmental benefits (GEF trust fund) and/or adaptation benefits (LDCF/SCCF)	Are the benefits truly global environmental benefits, and are they measurable?	Appropriate to GEF IW focal area mandate. Biophysical aspects clearly measurable; institutional aspects require specification of progress indicators.	Institutional progress indicators have been specified as establishment of transboundary water management entities, resulting planning documents and national regulatory changes.

	What activities will be implemented to increase the project's resilience to climate change?	Appropriate integration of climate trends; will require further specification during full project development.	The project targets the improved resilience of communities in the Ma and Ca/Neun river basins to climate change. This will require the design of adaptation measures in the context of increasingly frequent and destructive floods and droughts on the basis of a robust set of climate scenarios to cover extreme possible futures. This approach has been explained in various sections of the Project Document, include in the Theory of Change.
7) innovative, sustainability and potential for scaling-up	Is there a clearly-articulated vision of how the innovation will be scaled-up, for example, over time, across geographies, among institutional actors?	IW:Learn integration noted, but otherwise no apparent plans for scaling within the countries and region; these would be good to specify	The strategic actions developed during the implementation of this project will be scalable, particularly as key solutions will be tested in Component 3 of this project. This will be communicated to stakeholders in other basins and through IW:LEARN in Component 5.
	Will incremental adaptation be required, or more fundamental transformational change to achieve long term sustainability?	Objectives suggest the need for transformation in basin-level planning and decision-making; not yet clear how this will be pursued and sustained after the project period. For example, will working groups be institutionalized after the project? How will pilots such as early warning systems be scaled up? How will the project catalyze follow-on investments?	The Project Document specifies that it is the goal of the project to establish the JTCs (Output 2.1) and the IBCC (Output 2.4) as long-term institutional mechanisms for transboundary water management. Within the two target basins the pilots will be scaled up through the SAP (Output 4.2) and the NAPs (Output 4.4) supported by financing targeted through the partnership conference (Output 4.3).

Stakeholders. Select the stakeholders that have participated in consultations during the project identification phase: Indigenous people and local communities; Civil society organizations; Private sector entities. If none of the above, please explain why. In addition, provide indicative information on how stakeholders, including civil society and indigenous peoples, will be engaged in the project preparation, and their respective roles and means of engagement.	What are the stakeholders? roles, and how will their combined roles contribute to robust project design, to achieving global environmental outcomes, and to lessons learned and knowledge?	Description of stakeholder roles appears inadequate to deliver innovation in design of interventions and transformation in institutional relationships. Requires significant attention during full project design, in the noted stakeholder engagement plan. This should also integrate plans for private sector engagement	This Section has been completely re-written with detailed stakeholder engagement plans. Private sector engagement is being discussed in Section 4. The Project Document also entails the stakeholder engagement matrix in Annex I2.
3. Gender Equality and Women's Empowerment.	Have gender differentiated risks and opportunities been identified, and were preliminary response measures described that would address these differences?	Yes, detailed consideration, but much of the background information appears outdated and not particularly focused on the project scope. Need to clarify more specific obstacles in relation to areas of project intervention.	Also this Section has been substantially expanded and updated. Annex N provides further in-depth details with the gender specific perspective of the results framework.

5. Risks.	Are the identified risks valid and comprehensive? Are the risks specifically for things outside the project's control?	Inadequate, and very preliminary.	The risk section was been expanded and updated as part of the project formulation process.
	Are there social and environmental risks which could affect the project?	No mention of institutional risks beyond high-level political will, nor aspects concerning scaling and transformational change. Discussion of barriers noted that key agencies "do not currently have sufficient regulatory power or adequate budget" but it is not clear how this risk will be mitigated	This risk has been added in the risk table
6. Coordination.	Are the project proponents tapping into relevant knowledge and learning generated by other projects, including GEF projects?	No indication of learning from other basin management projects, which is essential, particularly given the long record of application of the TDA-SAP approach within the GEF portfolio in other basins.	The Project Document explains now clearer that the project will follow the GEF's TDA-SAP process as outlined in the GEF TDA-SAP guidelines, which considers implicitly and explicitly lessons learnt from previous GEF projects. Additionally, Component 5 will allow for the effective communication with projects in other basins, for which IW:LEARN will be instrumental.
8. Knowledge management.	What overall approach will be taken, and what knowledge management indicators and metrics will be used?	Some appropriate elements indicated, but description is inadequate to assess. No indication of metrics.	This section has been completely rewritten and expanded during the project formulation phase.

ANNEX C: Status of Utilization of Project Preparation Grant (PPG).

(Provide detailed funding amount of the PPG activities financing status in the table below:

PPG Grant Approved at PIF: \$200,000			
<i>Project Preparation Activities Implemented</i>	<i>GETF/LDCF/SCCF Amount (\$)</i>		
	<i>Budgeted Amount</i>	<i>Amount Spent To date</i>	<i>Amount Committed</i>
ProDoc preparation incl workshop process	175,000	150,858	0
ProDoc preparation finalization process and fiduciary assessments of potential operational partners	25,000	12,716	36,426
Total	200,000	163,574	36,426

ANNEX D: Project Map(s) and Coordinates

Please attach the geographical location of the project area, if possible.

Please see previous section

ANNEX E: Project Budget Table

Please attach a project budget table.

FAO Cost Categories	Unit	No.	Unit cost	Component 1	Component 2	Component 3	Component 4	Component 5	PMC	M&E	Total GEF
5011 Salaries professionals (operationnal partner)											
Chief Technical advisor (PMU)	months	60	10,000	165,000	165,000		170,000	100,000	0		600,000
National coordinator Viet Nam (PMU)	months	60	4,000	84,000	72,000		60,000	24,000	0		240,000
National coordinator Lao PDR (PMU)	months	60	4,000	84,000	72,000		60,000	24,000	0		240,000
Admin support officer (PMU)	months	60	1,500	0	0		0	0	90,000		90,000
Finance support officer (PMU)	months	30	2,000	0	0		0	0	60,000		60,000
Procurement process manager (PMU)	months	3	6,000	0	0		0	0	18,000		18,000
International Water Governance and Policy engagement advisor (technical expert)	months	10	9,000	10,000	60,000		0	20,000			90,000
International Hydrology and water management advisor	months	10	9,000	81,000			9,000	0			90,000
International Biodiversity expert (technical expert)	months	6	8,500	51,000							51,000
Biodiversity expert Viet Nam	months	18	2,500	40,500			4,500				45,000
Biodiversity expert Lao PDR	months	18	2,500	40,500			4,500				45,000
Landscape restoration ecologist / NBS expert	months	6	8,500	48,450			2,550	0			51,000
5013 Consultants											
International Consultants											
Hydrologist - Flood engineer/modelling and management expert	months	12	9,000	102,600			5,400	0			108,000
Fisheries expert	months	6	8,500	48,450			2,550	0			51,000
ICT expert for flood early warning systems	months	12	9,000	102,600			5,400	0			108,000
Gender expert	months	12	9,000	102,600			5,400	0			108,000
Livelihood and field work expert	months	12	9,000	102,600			5,400				108,000
Socio-economic expert	months	12	9,000	102,600			5,400	0			108,000
Trainers for (a) Transboundary Water Management, (b) Water accounting, (c) community preparedness, (d) fish friendly irrigation, (e) landscape ecologist, (f) Nexus.	months	6	9,000					54,000			54,000
National Consultants											
Hydrology and flood/drought management expert (national consultant) Viet Nam	months	24	4,000	86,400			9,600				96,000

Hydrology and flood/drought management expert (national consultant) Lao PDR Nam	months	24	4,000	86,400			9,600				96,000
Social scientist / Ethnic group expert Viet Nam	months	24	3,000	64,800			7,200	0			72,000
Social scientist / Ethnic group expert Lao PDR	months	24	3,000	64,800			7,200	0			72,000
Agricultural drought management expert Viet Nam	months	18	3,000	48,600			5,400				54,000
Agricultural drought management expert Lao PDR	months	18	3,000	48,600			5,400				54,000
GIS modeller Viet Nam	months	18	2,400	38,880			4,320				43,200
GIS modeller Lao PDR	months	18	2,400	38,880			4,320				43,200
Village engagement expert	months	18	3,000	48,600			5,400				54,000
Village engagement team	lump sum	1	100,000	90,000			10,000				100,000
Gender expert Viet Nam	months	24	2,700	58,320			6,480				64,800
Gender expert Lao PDR	months	24	2,700	58,320			6,480				64,800
Environmental Economist Viet Nam trainees	months	9	3,000	24,300			2,700				27,000
Environmental Economist Lao PDR trainees	months	9	3,000	24,300			2,700				27,000
Sub-total national Consultants					0	0	0	0	0		0
5650 Contracts (Component 3 national pilots)											0
Pilot 1: Viet Nam	lump sum	1	510,000			510,000					510,000
Pilot 1: Lao PDR	lump sum	1	510,000			510,000					510,000
Pilot 2: Viet Nam	lump sum	1	460,000			460,000					460,000
Pilot 2: Lao PDR	lump sum	1	460,000			460,000					460,000
Pilot 3: Viet Nam	lump sum	1	439,524			439,524					439,524
Pilot 3: Lao PDR	lump sum	1	439,524			439,524					439,524
Audits and M&E											0
Audits and spot checks	Lumpsum	1	63,426					63,426			63,426
Inception workshop and Report (M&E part)	lump sum	2	10,000						20,000		20,000
M&E of Core Indicators and project results framework	lump sum	2	10,000						20,000		20,000
Execution agency (IUCN) Supervision missions	lump sum	1	60,000						60,000		60,000
Learning and exchange mission with stakeholders / site visit	lump sum	6	10,000						60,000		60,000
Monitoring of ESS, and management plans	lump sum	2	10,000						20,000		20,000

Mid-term Review (MTR)	lump sum	1	65,000							65,000	65,000
Independent Terminal Evaluation (TE)	lump sum	1	65,000							65,000	65,000
Terminal report		1	6,550							6,550	6,550
5021 Travel										0	0
(Lump sum) International travel	lump sum	1	140000	40,000	40,000		40,000	20,000			140,000
(Lump sum) National travel	lump sum	1	200000	70,000	50,000		50,000	30,000			200,000
(Lump sum) Travel for training/workshops and meetings	lump sum	1	167976	40,000	42,976		45,000	40,000			167,976
5023 Training										0	0
10 Training courses on transboundary waters management, data analysis and monitoring, including gender issues	workshops	10	16000	80,000				80,000			160,000
Transboundary engagement workshops	workshops	34	16,000	112,000	144,000		128,000	160,000			544,000
IW LEARN	lump sum	1	80,000					80,000			80,000
5024 Expendable procurement										0	0
Data (GIS, socio-economic, hydrology, ecology)	datasets	10	10,000	100,000							100,000
Integrated modelling framework, software	lump sum	1	20,000	20,000							20,000
6100 Non-expendable procurement										0	0
Computers and office equipment	units	4	4000						16,000		16,000
5028 GOE budget										0	0
PMU office	units	60	3,000	0	0	0	0	0	180,000		180,000
Office operational expenses (electricity, internet etc)/ contingencies	units	60	1,000	0	0	0	0	0	60,000		60,000
6300 Sub-total GOE budget				0	0	0	0	0	0		0
TOTAL				2,409,100	645,976	2,819,048	689,900	632,000	487,426	316,550	8,000,000

ANNEX F: (For NGI only) Termsheet

Instructions. Please submit an finalized termsheet in this section. The NGI Program Call for Proposals provided a template in Annex A of the Call for Proposals that can be used by the Agency. Agencies can use their own termsheets but must add sections on Currency Risk, Co-financing Ratio and Financial Additionality as defined in the template provided in Annex A of the Call for proposals. Termsheets submitted at CEO endorsement stage should include final terms and conditions of the financing.

ANNEX G: (For NGI only) Reflows

Instructions. Please submit a reflows table as provided in Annex B of the NGI Program Call for Proposals and the Trustee excel sheet for reflows (as provided by the Secretariat or the Trustee) in the Document Section of the CEO endorsement. The Agencies is required to quantify any expected financial return/gains/interests earned on non-grant instruments that will be transferred to the GEF Trust Fund as noted in the Guidelines on the Project and Program Cycle Policy. Partner Agencies will be required to comply with the reflows procedures established in their respective Financial Procedures Agreement with the GEF Trustee. Agencies are welcomed to provide assumptions that explain expected financial reflow schedules.

ANNEX H: (For NGI only) Agency Capacity to generate reflows

Instructions. The GEF Agency submitting the CEO endorsement request is required to respond to any questions raised as part of the PIF review process that required clarifications on the Agency Capacity to manage reflows. This Annex seeks to demonstrate Agencies? capacity and eligibility to administer NGI resources as established in the Guidelines on the Project and Program Cycle Policy, GEF/C.52/Inf.06/Rev.01, June 9, 2017 (Annex 5).