
**Terminal Evaluation of the
Global Environment Facility/UN Environment Project:
Development of Tools to Incorporate Impacts of Climate Variability
and Change, in Particular Floods and Droughts, into Basin Planning
Processes**



Evaluation Office of UN Environment

August 2019



Evaluation Office of UN Environment

This report has been prepared by independent consultant evaluators Peter Whalley and Chris Gordon and is a product of the Evaluation Office of UN Environment. The findings and conclusions expressed herein do not necessarily reflect the views of Member States or the UN Environment Senior Management.

Cover Picture: Infographic from the FDMT Project

For further information on this report, please contact:

Evaluation Office of UN Environment
P. O. Box 30552-00100 GPO
Nairobi Kenya
Tel: (+254-20) 762 3389
Email: unenvironment-evaluation-director@un.org

Terminal Evaluation of the GEF FDMT
(GEF ID Project number - 4533)
(Date 08/2019)

All rights reserved.

© (2019) Evaluation Office of UN Environment

ACKNOWLEDGEMENTS

This Terminal evaluation was prepared for the Evaluation Office of UN Environment by Dr Peter Whalley and Prof Chris Gordon, experts in International Waters, as the independent evaluation consultants. The report benefits from a peer review conducted within the Evaluation Office of UN Environment.

The Evaluation Office of UN Environment would like to thank the Floods and Drought project management unit team including Oluf Jessen, Katharine Cross, Peter Bjornsen, Raul Glotzbach, Bertrand Richaud and Lalita Rammont.

The Consultants would also like to thank all partners and other stakeholders that have freely contributed to the discussions and presented their views on the Global Environment Facility (GEF) Flood and Drought Management Tool (FDMT) project. They would also like to thank the facilitation and guidance provided by Martina Bennett from the UN Environment Evaluation Office.

Short biographies of the consultants

Peter Whalley is a physical chemist with considerable experience working on international environmental programmes acquired over the last 25+ years. He has been involved in over 20 GEF projects in the last 13 years in roles including project manager, expert, project designer and on multiple mid-term and terminal evaluations. He has undertaken evaluations for a range of organisations (UNDP, UN Environment, World Bank, Inter-American Development Bank, European Union).

Chris Gordon has been working on water and wetland issues since 1980 and has been associated with GEF projects since 1993. He has contributed to national and international policy in disciplines including Water, Biodiversity, Wetland Ecology, Environmental Science, and Climate Change. He has carried out Midterm and Terminal Evaluations for UNEP, FAO as well as assessing grant proposals for organisations such as DFID and UNDP.

ABOUT THE EVALUATION

Joint Evaluation: No

Report Language(s): English

Evaluation Type: Terminal Project Evaluations

Brief Description: This report presents the terminal evaluation of the GEF 'Development of Tools to Incorporate Impacts of Climate Variability and Change, in Particular Floods and Droughts, into Basin Planning Processes' implemented by UN Environment between 2014 and 2018. The project was designed to develop tools, methods and training programmes for river basin managers and water supply utility managers to be better informed about likely flood and drought events. The tools integrated data from multiple sources, including satellites, within a Decision Support System and were tested through multiple training and awareness workshops within three river basins to refine the approaches. The tools and associated guidance are operational and available for use by GEF International Waters projects, river basin organisations, water supply utilities and other agencies at regional, national and local levels.

Keywords: Floods, droughts, climate variability and change, Integrated Water Resources Management (IWRM), Water Safety Plans (WSP), Transboundary Diagnostic Analysis (TDA), Strategic Action Programme (SAP), Decision Support Systems (DSS), GEF.

Contents

1	Introduction	14
2	Evaluation Methods	14
3	The Project	16
3.1	Context	16
3.2	Objectives and components	17
3.2.1	Project Components	17
3.3	Stakeholders	18
3.4	Project implementation structure and partners	20
3.5	Changes in design during implementation	21
3.6	Project financing	22
4	Theory of Change at Evaluation	24
	Project goal and objective statements	24
	TOC outputs and outcomes	24
	Assumptions and Drivers	25
5	Evaluation Findings	28
5.1	Strategic relevance	28
5.1.1	Alignment to the UN Environments Medium-Term Strategy (MTS) and Programme of Work (PoW)	28
5.1.2	Alignment to UN Environment and GEF Strategic Priorities	28
5.1.3	Alignment to Regional, Sub-regional and National Environmental Priorities	29
5.1.4	Complementarity with Existing Interventions	29
5.2	Quality of Project Design	30
5.3	Nature of External Context	31
5.4	Effectiveness	32
5.4.1	Delivery of outputs	32
5.4.2	Achievement of direct outcomes	38
5.4.3	Likelihood of impact	41
5.5	Financial Management	43
5.5.1	Completeness of financial information	44
5.5.2	Communication between the finance and project management staff	45
5.6	Efficiency	45
5.7	Monitoring and Reporting	47
5.7.1	Monitoring Design and Budgeting	47
5.7.2	Monitoring Implementation	48
5.7.3	Project Reporting	48
5.8	Sustainability	49

5.8.1	Socio-political Sustainability	49
5.8.2	Financial Sustainability.....	51
5.8.3	Institutional Sustainability (including issues of partnerships)	51
6	Conclusions.....	53
6.1	Key Strategic Questions.....	55
6.2	FDMT Project Ratings	56
7	Lessons Learned.....	61
8	Recommendations.....	63
	Annex 1: TERMS OF REFERENCE	66
	Annex 2. INDICATIVE PLANNED BUDGETS.....	86
	Annex 3 - Links between the Project and Reconstructed ToC outcomes and outputs	87
	Annex 4: Persons involved in the Evaluation	89
	Annex 5: Documents consulted.....	91
	Annex 6: Consultants' Resume	92
	Annex 7: quality assessment of the evaluation report.....	93
	Table 1: FDMT Outcomes and Outputs at Endorsement.....	17
	Table 2: Stakeholders.....	19
	Table 3: Project Partners per Basin (summarised from FDMT Inception Report).....	21
	Table 4. GEF Financing of FDMT Project.....	22
	Table 5 FDMT Co-financing at CEO endorsement and completion	23
	Table 6. Financial Management Table.....	43
	Table 7. Key project milestones and dates.....	45
	Table 8. Evaluation Rating Summary	56
	Table 9. Lessons learned from FDMT project	61
	Table 10. Recommendations from FDMT project terminal evaluation	63
	Figure 1: The Institutional Framework and Implementation Arrangements of the FDMT Project	21
	Figure 2. GEF FDMT Reconstructed Theory of Change at Evaluation	27
	Figure 3. Representation of the capacity and complexity of the pilots	32
	Figure 4. Cover pages of Strategic Recommendation Documents.....	38
	Figure 5. Login to the FDMT portal since project closure.....	52
	Figure 6. New user registration since project closure	53
	Figure 7. GEF FDMT Links between project outcomes at endorsement and Reconstructed ToC Outcomes.....	87
	Figure 8. GEF FDMT Links between project outputs at endorsement and reconstructed ToC Outputs.....	88

List of acronyms and abbreviations

CEO	Chief Executive Officer (GEF)
DEPI	Division of Environmental Policy Implementation
DHI	DHI A/S (previously known as Danish Hydraulic Institute)
DSS	Decision Support System
EA	Executing Agency
EO	Evaluation Office
EU	European Union
F&D	Floods and Droughts
FAO	UN Food and Agriculture Organisation
FDMT	Flood and Drought Management Tools
FMO	Fund Management Officer
Gb	Gigabyte
GEB	Global Environmental Benefit
GEF	Global Environment Facility
GEUS	Geological Survey of Denmark and Greenland.
GIS	Geographical Information System
GWP	Global Water Partnership
HAI	Hydro and Agro Informatics Institute, Thailand
HII	Hydro Informatics Institute, Thailand (previously HAI)
ICPDR	International Commission for the Protection of the Danube River
ICT	Information and Communications Technology
INBO	International Network of Basin Organizations
IUCN	International Union for Conservation of Nature
IW	International Waters
IW:LEARN	International Waters: Learning Exchange and Resource Network.
IWA	International Water Association
IWC	International Waters Conference (GEF)
IWRM	Integrated Water Resources Management
JRC	Joint Research Centre (European Union)
KIWASCO	Kisumu Water and Sewerage Company
km	Kilometres
LVBC	Lake Victoria Basin Commission
M&E	Monitoring and Evaluation
MTR	Mid-term Review
MTS	Medium-Term Strategy
MWA	Metropolitan Waterworks Authority, Thailand
MWUWASA	Mwanza Urban Water and Sanitation Authority, Tanzania
NGO	Non-governmental Organization
NWSC	National Water and Sewerage Corporation, Uganda
OFID	OPEC Fund for International Development
ONEA	National Office for Water and Sanitation, Burkina Faso
OPEC	Organisation of Petroleum Exporting Countries
PC	Personal Computer
PCA	Project Cooperation Agreement
PIF	Project Identification Form
PIR	Project Implementation Review
PMU	Project Management Unit
PoW	Programme of Work
PPG	Project Preparation Grant

ProDoc	Project Document
PSC	Project Steering Committee
PWA	Provincial Waterworks Authority, Thailand
RBO	River Basin Organisation
SAP	Strategic Action Programme
SDGs	Sustainable Development Goals
STAP	Scientific and Technical Advisory Panel
TDA	Transboundary Diagnostic Analysis
TE	Terminal Evaluation
TM	Task Manager
ToC	Theory of Change
ToR	Terms of Reference
TT	Tracking Tool
UN	United Nations
UNEP	United Nations Environment Programme
UN Environment	United Nations Environment Programme
UNCCD	United Nations Convention to Combat Desertification
UNECE	United Nations Economic Commission for Europe
UNESCO	United Nations Educational, Scientific and Cultural Organization
USD	United States Dollar
VBA	Volta Basin Authority
WHO	UN World Health Organisation
WMO	World Meteorological Organization
WSP	Water Safety Plan
WWF	World Water Forum

Project Identification Table

IMIS number:	GFL-5060-2730-4D51		
Sub-programme:	Ecosystem Management and Climate Change	Expected Accomplishment(s):	SP-3 (Ecosystem Management)
UNEP approval date:	27/02/14	PoW Output(s):	311
GEF project ID:	4533	Project Type:	Full-sized project
GEF OP #:	1	Focal Area(s):	IW (International Waters)
GEF approval date:	27/03/14	GEF Strategic Priority/Objective:	IW -1 (Enhanced capacity for issues of climatic variability and change (and groundwater management)
Coverage - Country(ies):	Global	Coverage - Region(s):	Global
Expected Start Date:	26/05/2014	Actual start date:	26/05/14
Planned completion date:	26/05/18	Actual completion date:	30/11/18
Planned project budget at approval:	25,047,275 USD	Total expenditures reported as of [30/11/19]:	26,549,742 USD
GEF Allocation:	4,090,000 USD	GEF grant expenditures reported as of [30/11/18]:	4,084,900.24 USD
PPG GEF cost:	190,000 USD	PPG co-financing:	N/A
Expected FSP co-financing:	20,957,000 USD	Secured FSP co-financing:	21,357,762 USD
First Disbursement:	12/08/14	Date of financial closure:	TBC
No. of revisions:	1	Date of last revision:	04/18
Mid-term review/ evaluation (planned date):	05/16	Mid-term review/ evaluation (actual date):	10/17
Date of last Steering Committee meeting:	04/18	Terminal Evaluation (actual date):	03 - 09/19

Executive Summary

Introduction

1. A Terminal Evaluation for the Global Environment Facility (GEF) funded, UN Environment implemented project: 'Development of Tools to Incorporate Impacts of Climatic Variability and Change, in Particular Floods and Droughts, into Basin Planning Processes' has been undertaken as expected by the GEF and UN Environment.
2. This report presents the background to the project, the findings of the evaluation, and conclusions, lessons and recommendations. The project started in May 2014 and ended in November 2018. The Terminal Evaluation was conducted between March and October 2019.
3. The evaluation is designed to inform all stakeholders on the levels of achievement of the project, addressing the design, implementation and attainment of expected outcomes that will assist with the formulation of future projects and the sustainability/replication of the impacts. The purpose is: (i) to provide evidence of results to meet accountability requirements, and (ii) to promote learning, feedback and knowledge-sharing through results and lessons learned amongst UN Environment, the GEF, partner organisations and other interested stakeholders.
4. The project was implemented by UN Environment and co-executed through the DHI A/S¹ and International Water Association, with a Project Management Unit, shared between the executing agencies.
5. The project had global objectives to develop tools and methods to assist river basin managers and water utility operators to develop plans responding to extreme events (floods and droughts). The project utilised the input from three pilot basins (Volta River Basin, Lake Victoria Basin and the Chao Phraya River Basin, Thailand) to test and refine the tools and training approaches developed.

Findings

6. The evaluation report contains full details of the findings and a ratings table in the conclusions. The overall rating of this project as determined using the UN Evaluation Office Weighted Rating Tool is '**Satisfactory**'. This executive summary highlights the findings against the criteria given in the ToRs: the project is highly relevant to the UN Programme of Work (2014 -2015) and Medium-Term Strategy (2014 -2017), and to the GEF International Waters Integrated Water Resources Management projects. The assessment of outputs, outcomes and likelihood of impacts for effectiveness is rated as '**Satisfactory**' and all project outputs and expected project outcomes confirmed in the project inception report have been delivered. This project has prepared several high-quality assessments and strategic recommendation documents, as such, the likelihood of impact (based on UN Environment Evaluation Office's Excel tool) is rated as '**Likely**'. Issues of sustainability have also been rated as '**Likely**', as there is clear evidence that the use and development of the tools will continue if there is support of the project's co-executing agencies.

Conclusions

7. The project has delivered the endorsed objective and outcomes within budget and with a short no-cost extension. The project is highly relevant to UN Environment and to GEF International Waters programmes and the tools will benefit a range of agencies and

¹ Previously known as the Danish Hydraulics Institute

organisations working on river basin management and water supply. The Decision Support System and underlying methodology developed by the Project is of significant relevance and benefit to multiple organisations and agencies that are working with water management and supply under climate variability and change impacts.

8. The lack of project resources to enable the pilot basins to implement the use of the tools (rather than to test the tools and training approaches) was seen by the evaluators as an omission in the design. However, the inclusion in the project of implementation would have required additional budget and time. The pilot basins expected more from their involvement than 'testing and training' and this has certainly reduced 'national ownership' of the approach in Lake Victoria and Volta Basins.

9. The main conclusions to the key specific questions asked by the evaluation's terms of reference are:

- **Strategic Question 1: Uptake of Flood and Drought Management Tools.** The web portal is operational and supports the objectives of the project by providing access to tools and methodology. Multiple stakeholders commented on the clarity and ease of use of the portal that was effectively supported by training and awareness-raising. Within the pilot basins there was significant use of the portal and tools, this has continued post-project.
- **Strategic Questions 2: Use of Flood and Drought Management Tools.** In the Chao Phraya Basin in Thailand, the Hydro-Informatics Institute had received training enabling this national institute to train regional staff and provide assistance to national water supply organisations. In Lake Victoria Basin there has been some application of the tools at the level of the Commission and at the Kisumu water treatment works in Kenya. In the Volta River Basin, there has been the limited application of the tools at the basin level and for utilities on the water-safety planning tools. The project has undertaken multiple technical training workshops and awareness raising activities in the pilot basins with over 300 personnel attending technical training.
- **Strategic Question 3: Contribution of Flood and Drought Management Tools to other processes.** The project provided input to the draft update of the GEF Transboundary Diagnostic Analysis / Strategic Action Programme guidance manual. The tools have been (and are continuing to be) used by International Waters Association and the World Health Organisation to provide Water Safety planning assistance in other locations.
- **Strategic Question 4: Wider adoption of Flood and Drought Management Tools.** The Executing Agencies are continuing to support the awareness raising on the tools and ensuring the portal is maintained for the next 3-5 years. They are working with other agencies and organisations to further develop and apply the tools (including World Bank, World Health Organisation, United Nations Convention to Combat Desertification, and within UN Environment's World Situation Room) There has been little uptake (to-date) by GEF projects. There is a clear role for GEF Secretariat and the GEF Scientific and Technical Advisory Panel to ensure that the tools are integrated into future GEF projects and the project concept stage, supported by UN Environment.

10. **Lessons Learned**

- **Executing agencies must continually manage expectations of partners:** The three pilot basins played a valuable role in testing the tools and commenting on the training in the use of these tools, but did not have resources to implement the tools. Although this was specified in the project documents there has been some misunderstanding

by all the basins about the lack of resources they would receive. It is also important to continually revisit expectations of partners as the specific individuals in partner organisations change with time.

- **Assessment of the gender and social dimensions of decision support system tools that influence on the ground management options must be done as early as possible in the project implementation cycle:** A gender and social assessment was carried out during project implementation, leading to the development of a rapid assessment tool to address gender and social dimensions in flood and drought management for basin organisations and utilities. If this assessment had been carried out earlier, the tool could have incorporated gendered considerations into the fundamental design of the tools rather than as an add-on. Women's views on the use of Tools are very important due to their social responsibilities and the earlier in the project cycle that women can be fully involved and engaged in a project, the better they can contribute to the design of the project.
- **Care must be used in the wording of project documents as some project partners can have negative perceptions on the use of some words due to their own peculiar circumstances.** The interaction with project partners and other stakeholders highlighted the different states of readiness of the key institutions to accept 'recommendations' which had been pre-identified as 'strategic'. As a key function of the FDMT is to contribute to SAPs, the designations of recommendations as strategic is redundant.
- **Projects which have delivery of a decision support system tools as the main output must allow sufficient time within the project period for not just delivery but also for adequate rollout and trials by partners:** Tools developed by the project need to be completed with sufficient remaining time to enable adequate training of the intended users. The final development of tools/web portal was completed late in the project cycle, necessitating a short no-cost project extension. Projects that are meant to deliver decision support system tools for use by project partners should be designed/implemented in such a way as to deliver usable products and have sufficient time to enable training and feedback on the deliverables.
- **To ensure long term use and sustainability of decision support system tools, formal and informal involvement of technical/academic institutions who have training as part of their core business needs to be incorporated in project design:** At the pilot basins some organisations receiving the training and providing input to the refinement of the tools suffered from a relatively high turnover of staff. A process needs to be encouraged whereby end-users can benefit from on-going training to accommodate changes in personnel and to act as a means of refreshing the users' memory (especially when there is no 'implementation' of the tools planned). In future projects involving technical capacity development, It could be beneficial to consider the involvement of local/regional academic/research/capacity building partners. These organisations are well placed to provide on-going training supporting the long-term sustainability of the tools.
- **For basin specific tailored responses, decision support tools need to be continually updated and refined, which needs end-user control of the decision support system backend.** Stakeholders at the pilot basins expressed wishes to make the outputs (for example) more relevant to the specific needs of the basins. Future projects should enable software to be editable, or have clear explanations on the limitations of the software, to better manage the expectations of the stakeholders and reduce frustrations in the use of these tools. The lesson from this experience is also aligned to the importance of understanding better the end-users needs and applications.
- **The Timing of Mid-Term Review has important ramifications on the value of the review to influence the project implementation:** The mid-term review for the Flood and

Drought Management Tools Project was conducted very late in the project (last half of year 3 in a 4 year project). This clearly reduced the beneficial impacts of mid-term reviews in helping to guide the remaining part of the project.

11. Recommendations

- **Recommendation 1.** In future decision support system projects, gender analysis at project design stage must be a prerequisite for project funding, as gender is such a key component in project designs for sustainability. Where gender has not been explicitly analyzed in project design, it must be mainstreamed in project roll out through increased female consultation and participation, building on the experiences from other GEF IW projects available from GEF IW:LEARN. The floods and drought management tool that has been developed by the executing agencies is truly impressive, but it is the view of the evaluators that the relevance, quality and usefulness of the Project would have benefitted immensely from having gender issues embedded in the project right from the project design stage.
- **Recommendation 2.** There needs to be proactive promotion of use of tools by GEF International Waters projects, other GEF Focal Areas, to other UN Agencies and through the GEF IW:LEARN website. UN Environment is intending to utilise the Project's approaches within the 'World Situation Room' with regards to Waterbodies of Concern. UN Environment have a good opportunity to be able to provide training on the use of tools to support other UN agencies in their application. The project's Executing Agencies are actively working with other partners to further develop and exploit the tools from the project; there are two possible options though use of both is preferred:
 - Option 1:** UN Environment to consider additional 'clinics' at future GEF International Waters Conferences to present in small interactive groups (3-5 Project Managers, GEF Secretariat, other Agencies) the tools and their application.
 - Option 2:** UN Environment to ensure that relevant Task Managers are aware of the features and benefits of the Flood and Drought Management Tools for assisting with freshwater based projects by demonstrating to other GEF Focal Area projects involving water management (e.g. Biodiversity, Climate Change, etc.) how to use of the tools within their projects.
- **Recommendation 3.** It is strongly recommended that GEF International Waters update the Transboundary Diagnostic Analysis - Strategic Action Programme guidance with the Flood and Drought Management Tools. The Transboundary Diagnostic Analysis - Strategic Action Programme approach has been an integral part of GEF projects for over 20 years. Recent (draft) updates have included the reference to the use of tools developed by the project. Further development of the guidance should consider closer integration of the tools. UN Environment (through Task Managers) and with the co-operation of Executing Agencies, should investigate further options to promote the Flood and Drought Management Tools within the GEF Transboundary Diagnostic Analysis - Strategic Action Programme approach to facilitate the use of advanced basin analysis techniques developed by this project.

1 Introduction

12. A Terminal Evaluation (TE) for the Global Environment Facility (GEF) funded, UN Environment implemented project: 'Development of Tools to Incorporate Impacts of Climatic Variability and Change, in Particular Floods and Droughts, into Basin Planning Processes (FDMT)' has been undertaken as expected by the GEF and UN Environment. This report presents the background, findings, conclusions and recommendations against a specific set of criteria for the evaluation.

13. FDMT is a **global project** to develop tools and methods to assist river basin managers and water utility operators to develop plans responding to extreme events (floods and droughts). The approaches developed are also expected to assist GEF International Waters (IW) focal area integrated water resources management (IWRM) projects undertake Transboundary Diagnostic Analysis (TDAs) leading to regionally agreed Strategic Action Programmes (SAPs). In addition, the FDMT project developed tools to assist local water supply utilities prepare and manage their Water Safety Plans (WSP). Specifically, the project's objective was to develop a Decision Support System (DSS) and to provide training in three pilot basins to test the DSS and obtain feedback from the participants to improve the system.

14. The FDMT project was aligned at design, to the 2014 - 2015 UN Environment's Programme of Work (PoW) and the 2014 -2017 Medium-Term Strategy (MTS) with close links to the sub-programme on Ecosystem Management and Climate Change, and the expected Accomplishment SP3 (Ecosystem Management).

15. The project was implemented by UN Environment and co-executed through the DHI A/S (DHI) and International Water Association (IWA), with a Project Management Unit (PMU) distributed between the executing agencies.

16. The project was endorsed by the GEF Chief Executive Officer (CEO) on the 27th March 2013 and the project started in May 2014. The first disbursement was made in August 2014 with expected completion within four years, The GEF grant was 4,090,000 United States Dollars (USD) with a co-financing contribution of 21,357,762USD from project partners.

17. The project underwent a Mid-Term Review in October 2017 and was rated as Highly Satisfactory.

18. The TE is designed to inform all stakeholders on the levels of achievement of the project, addressing the design, implementation and attainment of expected outcomes that will assist with the formulation of future projects and the sustainability/replication of the impacts. The purpose is: (i) to provide evidence of results to meet accountability requirements, and (ii) to promote learning, feedback and knowledge-sharing through results and lessons learned amongst UN Environment, the GEF, pilot basin partner organisations and other interested stakeholders (presented in Section 3.3).

2 Evaluation Methods

19. The scope and focus of this Terminal Evaluation were defined by the evaluation Terms of Reference (ToR – Annex 2). This specified the evaluation methodology and criteria: Strategic Relevance, Quality of Project Design, Nature of External Context, Effectiveness, Financial Management, Efficiency, Monitoring & Reporting, Sustainability, and Factors Affecting Project Performance.

20. The ToR also provided four key strategic questions to be addressed by this evaluation of interest to UN Environment where the project is believed to have made a substantive contribution.

21. Strategic Questions 1: Uptake of FDMT tools.

- Is the Flood and Drought web portal operational and does it effectively support the overall project objectives?
- To what extent have the web portal and its web applications been utilized by target stakeholders?
- What are the reasons for successful/unsuccessful uptake of the web portal and how could it be improved for sustained usage and uptake?

22. Strategic Questions 2: Use of FDMT tools.

- To what extent have land, water and urban area managers been able to practically apply the methodologies and tools in their work without further training and support including beyond the end of the project?
- To what extent have the capacity building and training activities of the project helped to improve this application?

23. Strategic Question 3: Contribution of FDMT to other processes.

- To what extent and in what ways has the project contributed to the TDA/SAP process and informed the way target stakeholders undertake water safety planning in the pilot basins?

24. Strategic Question 4: Wider adoption of FDMT tools.

- To what extent have the tools and/or approaches been adopted and applied in basins other than the project's pilot and learning basins?

25. To guide and facilitate the evaluation, a Theory of Change (ToC) was reconstructed at inception and updated for this final report. The ToC captures the causal logic of the project intervention. The original project design had not developed a formal ToC to substantiate the links between the outputs, outcomes and impacts as this was not a requirement at the time of submission. A reconstructed ToC was prepared by the MTR.

26. Based on the evaluation criteria, the strategic questions presented in the ToR (presented above) and the ToC at evaluation inception², an evaluation matrix was prepared to identify the overarching questions to be asked during the project evaluation. The evaluation matrix was used to formulate questions to be posed to different stakeholder groups involved in the project (including, project staff, partners, the GEF Secretariat, etc.). These tools were agreed and presented in the inception report for this evaluation.

27. The approach to this terminal evaluation, articulated in an inception report, included the following:

- Desk review of key project documents, reports and outputs (summarised in Annex 4). The PMU provided a Dropbox with over 1000 files with over 1 GB of information, together with a list (> 250 items) of all the main output reports, presentations, workshops, steering committee meetings, etc. delivered by the project;
- The PMU identified 23 potential key stakeholders to be approached by the evaluators. Missions and interviewees were selected from this list on the basis of coverage of the lead partner organisations within the three pilot basins. Interviews were conducted in-person, via Skype® calls or by email. Additional stakeholders were identified as the evaluation process progressed, through recommendations made by interviewees or through the need to collect additional information. Within the pilot basins interviewees included a range of stakeholders including partners (e.g. Hydro-Informatics Institute, Thailand), target organisations (e.g. Water Resources Commission Ghana, Kisumu

² A ToC was not a requirement at the time of project design, so was not developed.

Water and Sewerage Company, Kenya) and participants from the training activities. The interviewees were selected by the organisations visited, but there was a gender balance in those involved.

- The PMU assisted, where necessary, with co-ordinating the meetings with partners as well as meetings with the PMU itself (Copenhagen and Bangkok), individuals were selected based on their availability and willingness to be interviewed.
- The selected interviewees came from pilot basins involved in the training and testing of the tools: Kenya - Lake Victoria (including Kisumu Water and Sewerage Company, Lake Victoria Basin Commission; Ghana - Volta River (including Water Resources Commission, Ghana Water Company Ltd); and, Thailand Chao Phraya River Basin (including the Metropolitan Water Authority and Hydro-Informatics Institute);
- In addition, the UN Environment (Nairobi) Task Manager (TM), Fund Management Officer (FMO) and Evaluation Office (EO) manager, as well as, the Freshwater Ecosystem Unit of UN Environment were consulted for additional insights on the project.
- A total of over 40 stakeholders responded to requests to provide information to the evaluators. Interviewees providing feedback on the FDMT project are summarised in Annex 3. Feedback from the interviewees was validated with evidence from other stakeholders where possible such as in the case of Ghana, with the National Disaster Management Organisation (NADMO) and the Volta River Authority. There was also follow-up on issues that required clarification with the PMU and other stakeholders as required.

28. All responses from interviewees were treated in confidence with anonymity maintained. As with all evaluations, a key limitation of the TE was the availability and willingness of interviewees to participate in discussions on the performance and impacts of the project, especially in situations where they had either retired or had moved to new organisations.

29. This evaluation report has been completed using the range of UN Environment guidance provided in the Criteria Rating description matrix and the recommended evaluation tools, including: Project Design Excel tool; Likelihood of Impact Assessment Decision Tree and the Weighted Ratings Excel Tool (see Annex 2 for references and web links to these tools).

3 The Project

3.1 Context

30. **Climate variability and change** is expected to lead to an increase in frequency and magnitude of flood and drought events. Strengthening the tools available for water managers by providing a user-friendly Decision Support System (DSS) supported by a suite of specific management tools supporting Sustainable development Goals (SDGs) is needed to assist GEF IW projects, river basin management organisations and water utility operators. The FDMT project was designed to improve the ability of land, water and urban area managers operating in transboundary river basins to recognize and address the management of floods and droughts, as part of the TDA/SAP, IWRM and WSP processes.

31. The four components of the project included the joint development, application and testing of a methodology with tools aimed at increasing the understanding of floods and droughts dynamics and their impacts at transboundary and national levels. However, the project design did not include the implementation of the Decision Support System (DSS) within the three pilot basins. Additional input to the tools' development, based on their first-hand management of basins and water bodies, was sought from stakeholders from the two

'learning basins' (the Nile and Danube River Basins) that have had previous familiarity at managing floods.

32. Developing a DSS with technical tools, providing guidance and recommendations, along with training technical personnel and managers was anticipated to improve the existing lack of adequate capacity and tools for addressing the impacts of the changing frequency and magnitude of floods and droughts among GEF eligible countries, transboundary basin organisations, water utilities, and other end users.

33. The Project was designed to contribute to GEF's IW Focal Area Strategy and Strategic Objective IW-1, in that it would enhance the capacity of river basin organizations (RBO), water utilities, and other end-users to sustainably plan and manage their water resources in a changing climate. Key to this was ensuring access to and availability of information and tools to apply the information in decision-making processes, which the Project aimed to facilitate.

3.2 Objectives and components

34. The project's long-term goal was presented in the Project Document as: To contribute to the global efforts being made to maintain acceptable levels of societal and ecosystem sustainability vis-a-vis growing climatic uncertainty and unpredictability.

35. The Project Objective was presented as: To improve the ability of land, water and urban area managers operating in transboundary river basins to recognize and address, as part of the TDA-SAP, IWRM plans and water safety plans processes, the implications of the increased frequency, magnitude and unpredictability of flood and drought events.

3.2.1 Project Components

36. At the time of CEO endorsement, the substantive project outcomes and outputs were as presented below. The table also presents information on the lead executing agency (-ies) for each output.

Table 1: FDMT Outcomes and Outputs at Endorsement

Outcomes	Outputs
Component 1: Development of Methodology and Tools	
Outcome 1.1 A methodology with DSS tools aimed at increasing understanding of F&D dynamics and impacts at transboundary and national levels, and including enhancement of commonly used decision support systems, fully developed jointly with pilot basins stakeholders	1) A methodology with DSS tools adopting a basin approach, including enhancements for decision support systems, that would allow the integration of F&D consideration into (i) the TDA/SAP GEF IW or equivalent processes, and (ii) IWRM plans and Water Safety plans (DHI & IWA). 2) Guidance materials for the application of the Methodology with DSS tools (DHI)
Component 2: Validation and testing at basin-wide level	
Outcome 2.1 Application of the methodology with DSS tools in the three pilot basins enables the integration of F&D consideration into the IWRM, TDA/SAP, Water Safety and other planning processes	1) Strategic recommendations for inclusion of flood and droughts consideration in IWRM, TDA, Water-Safety and other basin land and water planning tools in the 3 selected pilot basins (DHI & IWA)
Component 3: Validation and testing at local level	
Outcome 3.1	1) Downscaled methodology for integration of urban and (agro) industrial water users'

Outcomes	Outputs
Uptake of the methodology at lower administrative levels within basins enables water suppliers and regulators, (agro) industries and urban area managers to consider options for increased resilience and preparedness to F&D within broader basin context	perspectives and realities in floods and droughts planning at basin level (IWA & DHI). 2) Recommendations for updated plans, including investments, for utility water safety and urban drainage incorporating basin level constraints and outlooks (IWA).
Component 4: Capacity building and dissemination	
<p>Outcome 4.1 Experience and know how gained through the project is made available within the GEF system and beyond.</p> <p>Outcome 4.2 Global dialogue on water security and adaptation to climate variability and change enriched by the dissemination of/and awareness raising on project outcomes</p>	<p>1) Learning package including technical specifications and training materials for the application of the new methodology and tools (DHI & IWA).</p> <p>2) Experience Notes and other documents and audio-visual materials produced for IW LEARN dissemination mechanisms and website. (IWA)</p> <p>3) Communication materials developed for and participation in major water events: WWF, Water Week, GEF IWC 8/9, and IWA Conferences (IWA)</p>

(Source: Table B in CEO Endorsement Document)

37. During the project inception phase, the PMU added Component 0 (to address inception phase activities) and Component 5 (for project management activities including reporting, project steering committee meetings, evaluations, etc.) to assist with the overall project management. In addition, there were minor changes as noted by the MTR to the overall results framework.

3.3 Stakeholders

38. The UN Environment Project “Development of Tools to Incorporate Impacts of Climate Variability and Change, in Particular Floods and Droughts, into Basin Planning Processes” needs to be viewed as a global project developing tools for floods/droughts that were being tested in three basins as proof of concept. As such, the main stakeholders involved are global organisations and national basin/water authorities. Consequently, the project has had limited focus on communities and other similar stakeholders other than providing information of potential interest. At the design stage, there was broad consultation with a wide range of stakeholders and partners who were used to provide global data and information for the selection of the three target basins who were then not involved in the project delivery.

39. The project outputs were used at two scales, basin level for IWRM and at the local scale by organisations in charge of Water Safety Planning. Different types of stakeholders had to be involved at each end of the scale and a list is provided in the table that follows. At the local level, every component of the project has an aspect of stakeholder engagement as set out in the CEO Endorsement and the Project Documents. At this stage of the evaluation, noting the limitation that the project did not having funding for an implementation phase, the list of stakeholders is adequate.

40. During the evaluation, other stakeholder groups that could have been important but which were perceived as missing (such as academics and local NGOs who have an interest in disaster risk management and in water supply) were contacted to ascertain if they could have

had high influence and/or high impact on project outcomes and vice versa. These included WaterAid and professors of the Department of Earth Science³ as well as the Department of Geography and Resource Development of the University of Ghana.

41. There was additional consultation on transboundary IWRM, and identification of transboundary basin partners with the Global Water Partnership (GWP), the International Network of Basin Organizations (INBO) and International Commission for the Protection of the Danube River (ICPDR).

42. In accordance with the UN Environment’s guidance on stakeholder involvement in evaluations, it can be affirmed that the following stakeholders identified in project documentation as played a significant role in the implementation of the FDMT project.

Table 2: Stakeholders

Stakeholder Group	Interests and expected benefits from Floods and Drought tools
The GEF, IA and EAs	<ul style="list-style-type: none"> • The main stakeholders for project outcomes have been consistent in all project documentation, from the PIF submitted in November 2011 to date. • Acceptance of F&D methodologies and tools by GEF expected to trigger support for IWRM and DSS approaches in future IW projects • F&D methodologies and tools assist in prioritising funding and strategies for intervention on waterbody types.
Executing partners UN Environment – DHI, DHI, IWA	<ul style="list-style-type: none"> • Active involvement in the project providing expertise, data, models, etc. • Incorporating tools, such as hydrological Decision Support Systems (DSS) and water safety plans, into basin-level planning and management.
International / regional organisations Volta Basin Authority (VBA); Lake Victoria Basin Commission (LVBC)	<ul style="list-style-type: none"> • Down scaling the use of IWRM F&D methodologies and tools to the regional level, i.e., at the basin authority and commission scale. • Improved trans-boundary basin management
Country Level Burkina Faso <ul style="list-style-type: none"> • National Office for Water and Sanitation, Burkina Faso (ONEA); Ghana <ul style="list-style-type: none"> • Ghana Water Company Ltd 	<ul style="list-style-type: none"> • Use of methodology and the tools to integrate consideration of climatic variability and change into joint fact-finding and decision-making processes (TDA-SAP) among basin countries, • Implementation of the benefit-sharing approach in balancing of water uses, preventing conflicts

³ Scientists from the Department of Earth Science are co-Investigators in the Multiscale Flood Monitoring and Assessment Services for West Africa Project. It is based largely on the processing of remote sensing data and hydrological modelling. In Ghana, the project focuses on the flood vulnerable districts within the Black Volta Basin in Northern Ghana.

Stakeholder Group	Interests and expected benefits from Floods and Drought tools
<ul style="list-style-type: none"> • Water Resource Commission <p>Kenya Kisumu Water and Sewerage Company, Kenya (KIWASCO)</p> <p>Tanzania Mwanza Urban Water and Sanitation Authority, Tanzania (MWUWASA)</p> <p>Thailand</p> <ul style="list-style-type: none"> • Hydro and Agro Informatics Institute, Thailand (HAII)⁴ • Metropolitan Waterworks Authority, Thailand (MWA) • Provincial Waterworks Authority, Thailand (PWA) Thailand <p>Uganda</p> <ul style="list-style-type: none"> • National Water and Sewerage Corporation, Uganda (NWSC); 	<ul style="list-style-type: none"> • Improving the ability to mitigate the impacts of F&D on livelihoods and economic resource and assets. • Improved water security • Reduction in loss of livelihoods due to F&D
GEF IW projects	<ul style="list-style-type: none"> • Use of the F&D methodology and tools to assist with TDA/SAPs of other GEF IW projects and beyond

Source: Project Documents

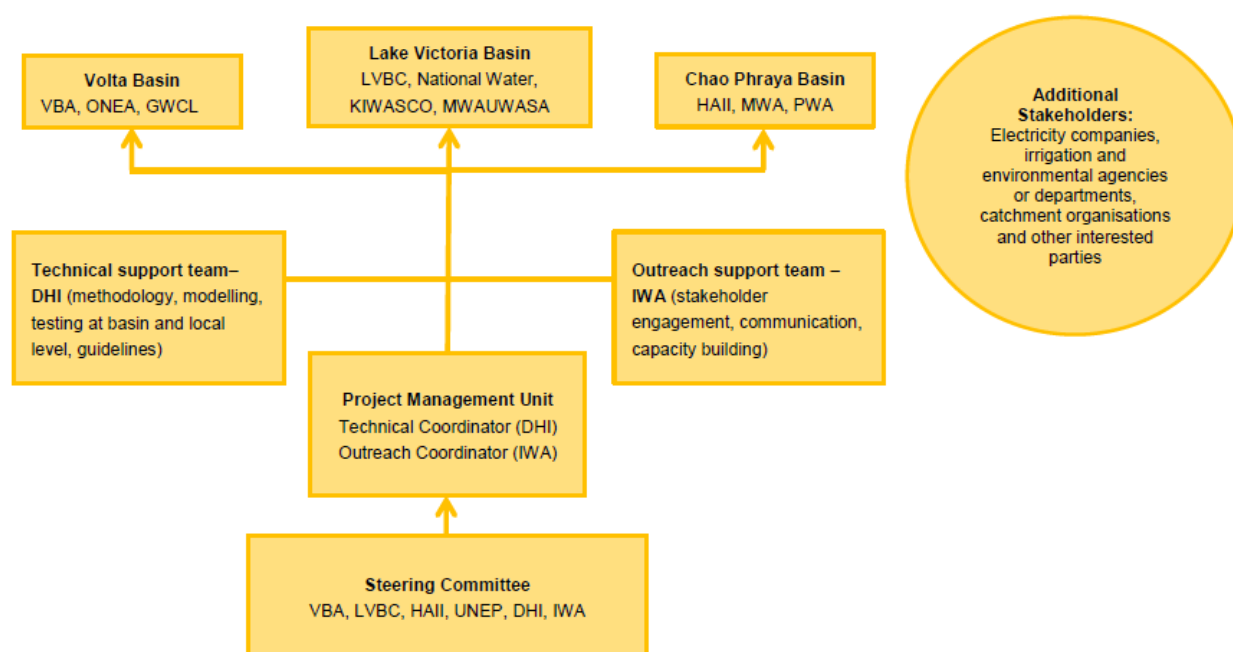
3.4 Project implementation structure and partners

43. The Project was implemented by UN Environment and jointly executed by DHI and IWA who were developing the tools, in collaboration with several regional and local/provincial agencies who are engaged in testing and validation of the methodologies and tools and beneficiaries of training. The latter agencies (PSC members in **bold**) can be divided into basin partners who were in charge of basin scale planning and response and water utility companies who were developing water safety plans. The basin scale entities were: Volta Basin: **Volta Basin Authority (VBA)**; Lake Victoria Basin: **Lake Victoria Basin Commission (LVBC)** and Chao Phraya Basin: **Hydro and Agro Informatics Institute (HAII)**, Thailand. The main water utility entities were: the Ghana Water Company Limited, Ghana; and National Office for Water and Sanitation (ONEA), Burkina Faso, the **Kisumu Water and Sewerage Company Limited (KIWASCO)**, Kenya as well as the Metropolitan Waterworks Authority (MWA), Thailand; and finally the Provincial Water Authority (PWA), Thailand. Other water utility organisations included the Mwanza Urban Water Supply and Sanitation Authority (MWAUWASA), Tanzania; and the National Water and Sewerage Corporation, Uganda.

44. Figure 1 provides an overview of the final operational structure of the project.

⁴ current name: Hydro Informatics Institute – HII

Figure 1: The Institutional Framework and Implementation Arrangements of the FDMT Project



Source: Project Inception Phase Meeting Report

45. The project executing partners worked closely with partners on the ground so as to get feedback to develop the decision support systems and to refine the front-end of the portal.

Table 3: Project Partners per Basin (summarised from FDMT Inception Report)

Basin	Executing Partners	IWRM Partners	WSP Partners
Chao Phraya	UN Environment – DHI, DHI, IWA	Hydro and Agro Informatics Institute (HAIL)	Metropolitan Waterworks Provincial Waterworks Authority
Lake Victoria	UN Environment – DHI DHI, IWA	Lake Victoria Basin Commission (LVBC)	National Water Uganda, Jinja KIWASCO MWAUWASA
Volta	UN Environment – DHI DHI, IWA	Volta Basin Authority (VBA)	ONEA, Burkina Faso Ghana Water Company Ltd

3.5 Changes in design during implementation

46. The major change to the project design during implementation that had an impact on project partners was the change from a desktop computer-based tool to an online web portal-based tool. The change was a result of the advances in ICT and available internet speeds. There seems to be no document that states the decision date for this change but by the start of the MTR on 1st April 2017, the web portal-based tool was being developed though only the Data and information and Indicator tools were functional at that time. However, by 31 July 2017, three other tools had been developed and were functional,

47. There were minor adjustments in all components due to the need to incorporate more training and the production of training materials since the adoption of the web-based tool.

48. A short no-cost project extension was requested by the PMU, following approval by the PSC, with agreement by the TM on 20th April 2018 to complete the testing of the Tool. The project ended on 30th November 2018. The Mid-Term Review also indicated that further support was needed in the practical application of the tools and the skills acquired to address flood and drought issues.

3.6 Project financing

49. The total cost of the Project (GEF funds and co-finance) was USD 21,357,762. However, the MTR states that the GEF contribution of USD4,090,000 along with the total pledged co-finance from the various partners of USD 21,357,762 resulted in a total project cost of USD26,554,842. All of the pledged co-finance (available details on co-financing is presented in Table 5) is in kind, except cash co-finance of USD100,000 from UN Environment-DHI. Moreover, all of the pledged in kind co-finance is attributed to various projects, some of them with a period of activity dating as far back as 2005, well before the FDMT project was developed (see Section 5.5 Financial Management and Annex, for more information on financing, budgeting and expenditure).

50. GEF project financing at inception and at completion is presented in Table 4 below.

Table 4. GEF Financing of FDMT Project

UNEP Budget Line	UNEP approved budget (USD)	Total cumulative expenditures November 2018 (USD)	Cumulative unspent balance November 2018 (USD)
PERSONNEL			
IWA	1,112,752.90	1,148,538.03	(35,783.03)
DHI	2,412,000.00	2,445,012.00	(33,012.00)
UNEP			
TRAINING			
IWA	363,212.00	321,755.60	41,456.40
DHI	40,000.00	9,032.00	30,968.00
UNEP			
EQUIPMENT AND PREMISES			
IWA	10,640.00	10,640.00	0.00
DHI			
UNEP			
MISCELLANEOUS			
IWA	56,395.00	56,714.61	319.31
DHI	10,000.00	8,208.00	1,792.00
UNEP	85,000.00	85,000.00	0.00
TOTAL	4,090,000.00	4,084,900.24	5,099.76

(Source: GEF-FDMT 2018 Semi-annual progress report Expenditure as 30-11-2018)

51. The FDMT project co-financing is presented in Table 5. The VBA component of co-financing is yet to be fully documented. Co-finance pledged by the various partners comprises mainly the cost of staff time or ongoing projects, which represent part of the baseline.

Table 5 FDMT Co-financing at CEO endorsement and completion

Co-financing (Type/Source)	Implementing Agency Own Financing (US\$)		Government (US\$)		Other* (US\$)		Total (US\$)	
	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
Private Sector								
IWI (in-kind)					2,919,842	2,919,842	2,919,842	2,919,842
DHI (in-kind)					11,277,000	11,278,670	11,277,000	11,278,670
GEF Agency								
UNEP (in-kind)	733,000	733,000					733,000	733,000
UNEP DHI* (cash)	100,000	100,000					100,000	100,000
National Government								
LVBC (in-kind)			3,000,000	3,000,000			3,000,000	3,000,000
VBA (in-kind)			3,785,000	2,838,750			3,785,000	2,838,750
ICPDR (in-kind)			650,000	487,500			650,000	687,500
Total	833,000	833,000	7,435,000	6,326,250	14,196,842	14,198,512	22,464,842	21,357,762

* UNEP -DHI presented as a GEF Agency in the CEO Endorsement Document

NB: All planned co-financing as presented at the time of CEO endorsement

4 Theory of Change at Evaluation

52. A Theory of Change (ToC) process was not completed at the FDMT project design stage as it was not a requirement at that time. A reconstructed ToC was prepared during the Mid-Term Review based on the final project goal, objectives, outcomes and outputs presented in the project results framework. For the Terminal Evaluation Inception Report another ToC was reconstructed as required by the Evaluation Office of UN Environment. The ToC from the Inception Report has been slightly revised for this final evaluation report. Normally, a ToC should be developed at the start of the project cycle by relevant stakeholders who together to look at the broad issues before narrowing down to the scope of a project with the aim of aligning the expected results, the strategies that can be worked out into what concretely needs to be done (activities) to make the expected outcomes happen, and who is best placed to do what.

Project goal and objective statements

53. In the MTR construction of the ToC, the Project's long-term impact is 'Improved water security and reduced risk to human health, livelihoods, and production systems from flood and drought, especially for communities most vulnerable to water related shocks', which is consistent with the Project's stated goal. While the outputs and reconstructed outcomes are achievable within the Project's timeframe, they are not in themselves enough to attain the long-term impact.

54. The ToC analysis uses the Project Document and CEO Endorsement Document formulation of the project goal: "to contribute to the global efforts being made to maintain acceptable levels of societal and ecosystem sustainability vis-a-vis growing climatic uncertainty and unpredictability". This goal evolved from the original in the PIF document that is, "combine, consider and address multiple priority stresses for individual water bodies with a view to optimizing water resources management".

55. The single project objective is to improve the ability of land, water and urban area managers operating in transboundary river basins to recognize and address, as part of the TDA-SAP, IWRM plans and water safety plans processes, the implications of the increased frequency, magnitude and unpredictability of flood and drought events. The long-term impact statement was: Improved water security and reduced risk to human health, livelihoods, and production systems from flood and drought, especially for communities most vulnerable to water-related shocks. This has been reformulated as: ***Climate-resilient basin management with improved systems for flood and drought that contribute to overall water security and of water utility operation.***

56. The reasoning behind the reformulation is this project is based on the GEF-5 International Waters Focal Area Strategy where integrated water resource management at the basin level is key and achieving water security in the face of global environmental change is the goal. The long-term goal of the project must, therefore, target basin management as its primary aim to conform with the IW Strategy. The reduced risk to health, livelihood and production systems are targets within the framework of basin management and Global Environmental Benefit (GEB).

TOC outputs and outcomes

57. The reconstructed ToC has also seen the reformulation of the output and outcome statements to aid a better understanding of the expected achievements of the project. In the interests of transparency, the links between the project and reconstructed ToC outcomes and outputs are presented in Annex 4 (Figure 7 and Figure 8 respectively, indicated by the arrows

linking the approved project's results framework and the reconstructed ToC's outcomes and outputs).

58. The reconstructed ToC showing the pathways from output to potential impact is presented in Figure 2. The ToC links the project outputs and outcomes and illustrates the considerable interconnectivity of the project's outcomes.

Impact pathways

59. The reconstructed ToC diagram (Figure 2) can assist with the evaluation's considerations towards the expected impact and the drivers/assumptions that are likely to contribute to or possibly impede the progress of the project. The FDMT project was designed to be a project of extremes, targeting too much water or too little water, considering local scales of < 1 km² to basin scales of > 400,000 km² and with levels of governance from transboundary basin authorities and commissions to managers of local water treatment plants. The reconstructed ToC identified three impact pathways towards the long-term impact through intermediate steps that targeted firstly GEF IW Projects and managers, then planners and managers in river basin authorities and then finally local level managers of utilities and regulatory authorities in charge of water safety planning.

60. The project objective, was aimed at addressing "the desire to improve the ability of land, water, and urban area managers in transboundary river basins to recognize and address, as part of the Transboundary Diagnostic Analysis/Strategic Action Programme (TDA/SAP), Integrated Water Resources Management (IWRM), and Water Safety Planning (WSP) processes, the implications of the increased frequency, magnitude, and unpredictability of flood and drought events'.

61. The impact pathways between project objective and long-term impacts are similar as would be expected for a project with just one objective but it appreciated that the intermediate states differ for each of the three main project target groups. The first group is the GEF IW transboundary river basin project level where project outputs would contribute to the identification of priority actions and how to use appropriate tools to integrate information on F&D events into the TDA/SAP GEF IW or equivalent processes.

62. The second group are the basin organisations (international, regional and local) where systems to integrate information on F&D events into IWRM operational and strategic plans at the basin level for various climate scenarios would make them more effective. Finally, managers in local water utilities would have appropriate tools to integrate information on F&D events into their water safety plans to ensure the supply of potable water.

63. All these are in the transition pathway from objective to impact and are needed to be achieved to result in the long-term impact of "Climate-resilient basin management with improved systems for flood and drought management that contribute to overall water security and of water utility operation".

Assumptions and Drivers

64. The assumptions presented in the project results framework have been examined within the ToC using the nested spheres of control, interest and influence approach. The following assumptions and risks are conceptualised as affecting the spheres of interest, influence and beyond. The risks and assumptions are based on the premise that there must be a willingness to act and the project cannot force actions to negate the risks. The assumptions and drivers are

given in Figure 2. These have been further refined following discussions with the PMU and the UN Environment Evaluation team.

65. There are two overarching assumptions, the first is the assumption that “Present understanding of future climatic scenarios, coupled with modern and broadly accessible monitoring and modelling tools, will allow the development of a flexible, generic methodological approach”; the tool can only function effectively if the underlying algorithms and models can deal with the climatic changes.

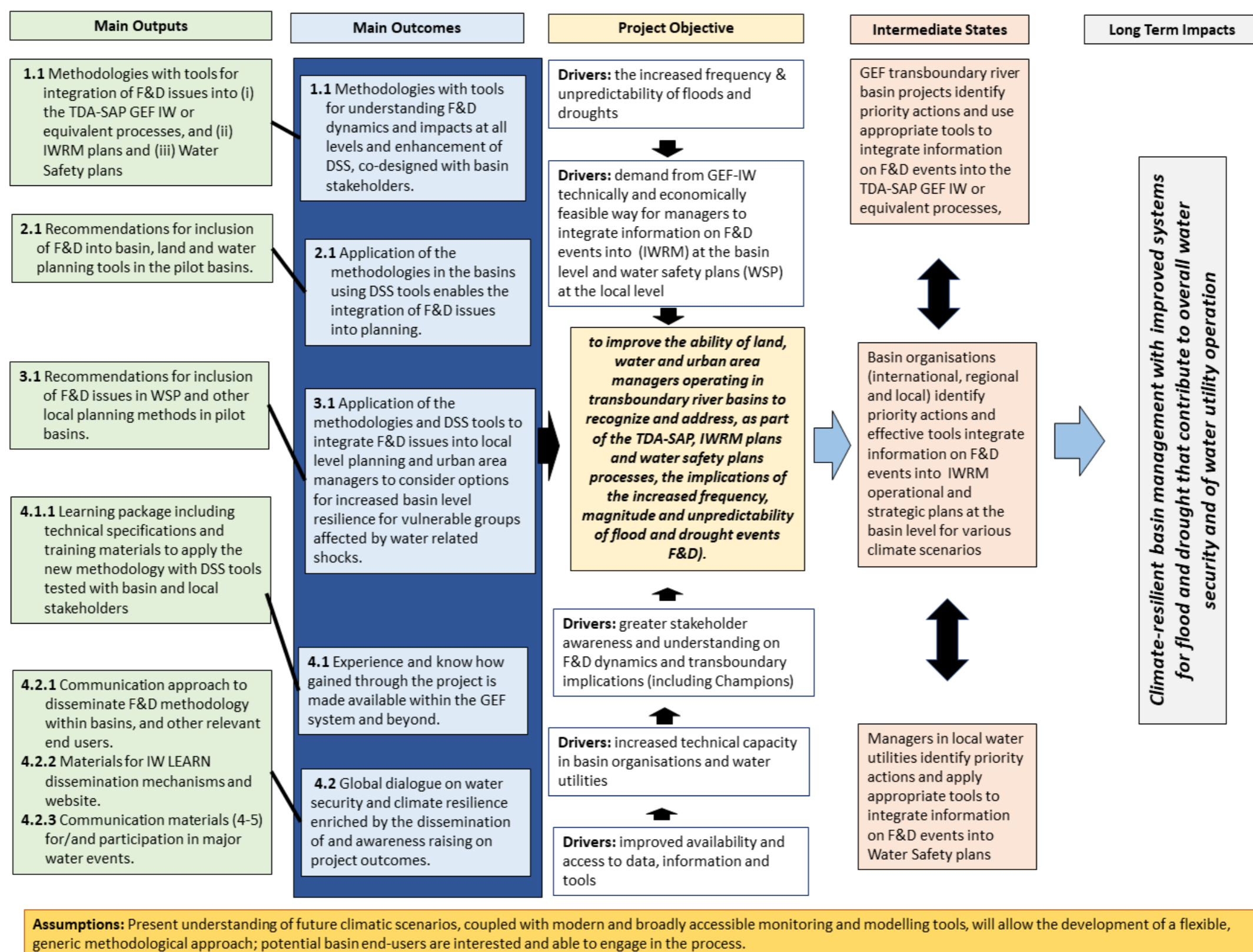
66. The second assumption was that “potential basin end-users are interested and able to engage in the process”. Perhaps the greatest risk factor would be the failure of GEF IW as the main end user, to actively promote and disseminate information on the FDMT and use for TDA/SAP of basins.

67. The assumptions can be further unpacked as follows: countries will accept the F&D methodology and tools and use them for planning; the international community including the GEF as well as basin organizations accept the tools and will embed the tools in decision-making and planning processes; multilateral and bilateral donors see the value in the F&D methodology and tools and will utilise results in their investments; managers and their technical staff have the willingness to apply the tools and skills; water utilities at the national level will embed the tools in decision-making and planning processes; and GEF Council will continue to support F&D management by assisting to trigger additional financial resources for investments in additional basins.

68. There are five main drivers for the project. The first is that there is increased frequency and unpredictability of floods and droughts (as given in the IPCC AR6 report) and the lack of effective tools to manage risks and assist in decision making , the second driver is demand from GEF-IW for technically and economically feasible ways for managers to integrate information on Flood and drought events into Integrated Water Resources Management (IWRM) at the basin level and water safety plans (WSP) at the local level.

69. The next driver is based on the fact that there is greater stakeholder awareness and understanding of flood and drought dynamics and the transboundary implications at the basin level including some individuals who are willing to act as “Champions” (Dr Jacob Tumbolto, VBA and 2iE, pers. comm.). This reflects the driver of increased technical capacity in basin organisations and water utility companies in general to use such tools and the final driver of improved availability and access to data, information and tools at the basin and the water supply utility level.

Figure 2 GEF FDMT Reconstructed Theory of Change at Evaluation



5 Evaluation Findings

5.1 Strategic relevance

5.1.1 Alignment to the UN Environments Medium-Term Strategy (MTS) and Programme of Work (PoW)

70. The FDMT project in developing methodologies and tools to assist 'Evidence-Based Policymaking' associated with floods and droughts is in-line with the UN Environment's 2014 - 2015 Programme of Work (PoW), and with the Medium-Term Strategy (MTS) (2014 -20171) at the design stage. The project's objectives have remained relevant to subsequent PoWs and MTS. Specifically, the programmes related to Climate Change, Ecosystem Management and Environment Under Review.

71. UN Environment's current Programme of Work includes significant support both to the development and application of IWRM and to building resilience to adverse environmental impacts, including floods and droughts. Under the Sub-Program on Ecosystem Management, UN Environment supports countries to identify and develop and test tools to strengthen ecosystems functioning for water regulation and purification services, particularly in developing countries (output #311 in the UN Environment Programme of Work, Ecosystem Management sub-programme).

72. The alignment to UN Environment's MTS and PoW is rated as '**Highly Satisfactory**'.

5.1.2 Alignment to UN Environment and GEF Strategic Priorities

73. The project is aligned with the **Bali Strategic Plan** by building capacity in the use of tools and methods underpinning the DSS in the pilot basins engaged in the testing and refining of the tools and training material.

74. The project design and implementation has facilitated **South-South Co-operation** through the active involvement of organisations in the three pilot basins (Lake Victoria, River Volta Basin and Chao Phraya River Basin). These basins were also represented at the Project Steering Committee meetings and participated at project sponsored events to encourage the sharing of experiences and providing feedback on the development of the tools.

75. South-South Co-operation has also been evidenced by HII with the transfer of training knowledge and skill on the tools, and HII providing training to a project in Myanmar on the Irrawaddy River.

76. The project was highly relevant to the GEF's International Waters priorities under GEF 5, 6 and 7, with a key focus on tools to strengthen basin management to respond to floods and droughts under climate variability and change threats. The tools were specifically aimed at providing assistance to GEF IW IWRM projects undertaking TDA/SAPs in transboundary river basins.

77. Under the current GEF 7 replenishment, the Project will contribute to the Environmental Security Impact program under the Sustainable Land and Water Management Global Environmental Benefits category. This impact programme focuses on preventive action that enhances environmental and water security at both national and regional levels as key to a stable and resilient planet.

78. The alignment to UN Environment and GEF priorities is rated as **'Highly Satisfactory'**.

5.1.3 Alignment to Regional, Sub-regional and National Environmental Priorities

79. The project is aligned with global concerns, and consequentially regional and national concerns, of climate variability and change and the increasing impacts of floods and droughts. The development of the tools, methods and training are closely linked to the expected priorities of river basin organisations and administrations at the transboundary and national levels (e.g. River Basin Management Plans, RBMPs), and water supply organisations with demands to implement water safety plans (WSPs) to protect water supplies at the local/municipality level.

80. The national strategy for flood management for Lake Victoria basin in Kenya stressed the need to establish a viable flood forecasting and warning system for the Lake Victoria Basin as far back as 2004, the FDMT has satisfied that need. Likewise, in Ghana, the Long-term Plan for the Economic, Social, Institutional and Environmental Transformation of Ghana (2018 – 2057) notes the importance of Disaster Risk Reduction (DRR) through use of early warning systems for flood as well as Integrated Water Resource Management in all water basins.

81. Although a global project, the FDMT involved three national and regional pilot basins to test and provide feedback on the tools developed and training provided. The project identified candidate basins during the project preparation phase and undertook detailed stakeholder consultation during the project inception phase.

82. The alignment with regional and national priorities is rated as **'Satisfactory'**.

5.1.4 Complementarity with Existing Interventions

83. As indicated above (section 5.1.1) the project was designed to complement the UN Environment's PoW and MTS. Under the sub-programme on Ecosystem Management, UN Environment supports countries to develop and test tools to strengthen ecosystem function for water regulation and purification services. Under the sub-programme on climate change, UN Environment supports countries in building climate resilience of vulnerable human societies, ecosystems and economies through increased understanding of multi-stressor interactions and the mobilisation of knowledge, capacities and integrated assessment results to support adaptation policy setting, planning and practice.

84. The project contributes to Sustainable Development Goals (SDGs) (indicated in the project design and presented by the project at the GEF IW Conference in Sri Lanka 2016), supporting the United Nations Development Assistance Framework (UNDAF).

85. The FDMT are, and will continue to be, beneficial to multiple organisations involved in IWRM and WSP activities. This includes River Basin Commissions and National river management organisations, addressing IWRM, other water-related agencies, for example: UN World Health (WHO), UN Economic Commission for Europe (UNECE), World Bank), and the on-going work of the two executing agencies responsible for this project (IWA and DHI). However, a key limitation to wider synergy with existing and projects on flood and drought planned during the FDMT project was not having continued engagement with the DRR, Cities Resilience and Land Use Land Cover Change communities after the inception meetings.

86. The FDMT project assisted DHI to provide support to a number of other initiatives such as Development of the Ayeyarwady Decision Support System and Basin Master Plan (2018 to 2021); Zambezi Water Resources Information System (ZAMWIS) Hydro-Meteorological Database and Decision Support System (DSS) (2016-2018); the United Nations Convention to Combat

Desertification Drought toolbox and the European Space Agency Crop Application (Myanmar). It is expected that a wide range of DHI projects will utilize the web-based portal for the coming years. These projects will ensure the long-term sustainability for basin organizations and ensure that the portal is maintained in operational mode.

87. Lastly, the project goals are complementary to the requirements of GEF IW projects activities through the TDA/SAP process. The complementarity of FDMT with existing interventions is rated as **'Satisfactory'**

88. The Strategic Relevance of the FDMT project is rated as **'Highly Satisfactory'**.

5.2 Quality of Project Design

89. The project was initially submitted for approval in a Project Identification Form (PIF) in December 2011 with four project components. The final GEF CEO Endorsement document was submitted in February 2014. At CEO Endorsement the project expected a total GEF budget of 4,090,000 USD with 22,464,842 USD from co-financing sources.

90. The project was encouraged by the GEF Secretariat as all IW projects were being closely linked with the impacts of climate variability and change. The FDMT was expected to contribute to the International Waters Focal Area portfolio of guidance for freshwater projects addressing issues of floods and droughts. The objective of the project presented above (...to improve ability of water managers to undertake TDA/SAPs, IWRM and water safety planning processes ...) is compatible with the expected outcomes of the four project components.

91. There were several comments made at the PIF stage by GEF Council members (Germany and France) and by STAP (GEF's Scientific and Technical Advisory Panel) that were responded to by the time of CEO Endorsement of the project.

92. The original concept for the project was to use GEF IW IWRM projects that were undertaking TDA/SAP activities to test the tools. At the time of endorsement, there were no appropriate IW projects planned to assist with the tool development, therefore three basins (Lake Victoria, Volta River and Chao Phraya) were selected due to their previous involvement in GEF IW projects or having recently experienced severe floods. This also broadened the scope of the concept away from a TDA/SAP assessment to more operational management tools.

93. The project designed during the PPG phase elaborated a detailed and clear Project Document with the outputs (tools, web-based resources, awareness raising and training) to be tested with the three pilot basins. The Project Document provided a comprehensive overview of the main features in the pilot basins (Appendix 15 of the Project Document), addressing the physical characteristics, hydraulic aspects, institutional arrangements and socio-economic characteristics, including nature of floods and droughts in the basin and the preparedness of the authorities. This appendix provides evidence for the selection of these basins in the piloting of the approaches to be developed by the project. A detailed stakeholder analysis within the three pilot basins was scheduled to be undertaken during the project inception phase.

94. The project was ambitious at many levels. Scale: the project objective was addressing large basin-level scale (e.g. Lake Victoria or Volta River) and the needs of water supply utilities interested in relatively small scales. Climate: The issues of both too much and too little water resulting from floods and droughts. Governance: Transboundary basins to water treatment plants. Capacity: From high-capacity technically well-resourced organisations (e.g. HII) to under-funded basin commissions.

95. The approved design of the project anticipated the use of a PC-based version of the DSS tools. Early in the implementation of the project, the PSC took the decision to move to a 'cloud-based' system that enabled the software to be centrally maintained (and databases updated). Whilst this avoided the need for users to have a hardware dongle (enabling the underlying DHI hydrological model to operate) there were some disadvantages from this evolution (issues over internet speed and bandwidth, utilities unable to use the WSP tool due to confidentiality aspects, ability of end-users to make modifications to reports, etc.). These are discussed in more detail later in this report. (Sections 5.3 5.8 and 6, effectiveness, sustainability and conclusions respectively).

96. The review of the project design was assisted through the use of the UN Environment Assessment Project Design Quality Excel sheet. Although no significant issues of concern in the design of the project were identified, the following weaknesses and strengths have been confirmed by the main evaluation.

97. Identified weakness of the design:

- As a global project to develop tools to assist GEF IW projects (and other stakeholders) address the issues of floods and drought management, the project included three pilots. However, the design did not have sufficient resources or time to enable these pilots to perform any practical implementation activities, although extensive training and awareness raising was undertaken on the use of software tools. Throughout the execution, this was identified as an issue that was raised with the PMU. The Mid-Term Review also indicated that the integration of the tools into basin and local planning was considered to be outside the scope of the project.

- A gender analysis was not undertaken during the project design on the role of women within floods/drought management. However, a gender and social assessment was carried out during project implementation, leading to the development of a rapid assessment tool to address gender and social dimensions in flood and drought management for basin organisations and utilities. The gender and indicator reports were also used to raise awareness of gender issues in the management of floods and droughts within the pilot basins.

98. An important strength of the project design was that the co-executing agencies (UN Environment-DHI, DHI and IWA) each had clear comparative advantages providing the technical guidance on the models/tool development (DHI) and IWA providing the lead on training and awareness raising.

99. The assessment of the Quality of Project Design undertaken during the inception phase of this evaluation and confirmed by the final report rated the project design as '**Satisfactory**'.

5.3 Nature of External Context

100. This **global** project had the objective to develop and test tools to facilitate the work of river basin managers and local water utilities operators to respond to extreme weather events - floods and droughts. The uptake of the tools and methods is largely dependent on the GEF IW portfolio of relevant projects and water utilities requiring them. There are no significant issues that impact the project's external operating context. Indeed, the expectations are that the use of the project's DSS will facilitate river basin and water utility managers to better adapt their management to extreme weather conditions.

101. The assessment of the Nature of External Context is '**Favourable**'.

5.4 Effectiveness

102. The project demonstrated an ability to ‘adaptively manage’ the project to respond to changing technological conditions (e.g. moving from the design concept of PC based software to web-based applications for tools) and introducing additional training as the result of the MTR, for example. The assessment of the effectiveness of the delivery of the outputs and achievement of outcomes is based on the reconstructed ToC (described in Section 4) and the specific project outputs identified in the results framework and reported in the 4th PIR 2018.

103. The role of a national or regional ‘champion’ was identified as an essential vehicle to encourage uptake and sustain the work of the project as exemplified in HII, Thailand and the VBA.

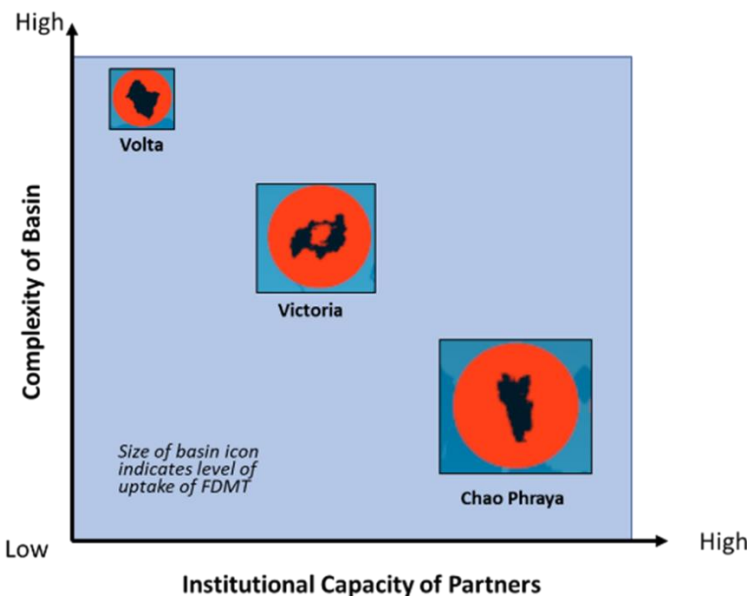
104. The three selected pilot basins form a continuum in terms of complexity of governance as well as competence to use the FDMT. This enabled the project to test and develop the tools for a variety of situations. Figure 3 gives a representation of the differing institutional capacities and complexities of the pilot basins to illustrate the comparative range that was used to test the tools and the training approaches.

5.4.1 Delivery of outputs

105. The 2018 PIR reported that by the 2018 FY, the main technical outputs of the project had been completed. The six-month project no-cost extension was requested to accommodate a need to build the capacity of key stakeholders around the methodology and technical applications of the FDMT and use of the web-based portal. The remaining time was used to finalise training material.

106. The evaluation is presented below addressing the achievements of the ToC outputs associated with the four technical components: Component 1: Development of Methodology and Tools; Component 2: Application and testing at the basin-wide level; Component 3: Validation and testing at the local level and Component 4: Capacity building and dissemination.

Figure 3. Representation of the capacity and complexity of the pilots



ToC Output 1.1 Methodologies with tools for integration of F&D issues into (i) the TDA-SAP GEF IW or equivalent processes, and (ii) IWRM plans and (iii) Water Safety plans

107. The 2018 PIR reports that the methodology and tools for integration of F&D issues into both the TDA-SAP GEF IW or equivalent processes, and IWRM plans and Water Safety plans had been completed and that the online Flood and Drought Portal had been finalised with a methodology and package of technical applications. This is evidenced by an active web link to an operational portal (<http://www.flooddroughtmonitor.com/home>). During the project extension, there were additional consultations through training and meetings with stakeholders to ensure the relevance and applicability of the applications in supporting basin and local planning approaches.

108. The methodology for including flood and drought in planning was presented to key stakeholders (presented in Section 3.3). The drought aspect was based on warning and risk components. The warning component could be used to prepare for current or future drought hazards. The risk part was a combination of drought hazard and vulnerability providing an assessment of locations with increased risk for drought impact. The flood methodology focused on flash floods with components for i) identification of potential areas and ii) flash flood warning through an updated flash flood index.

109. The methodological and technical applications have been tested in the 3 pilot basins with basin organisations and utilities by the key stakeholders (see Section 3.3). Other relevant stakeholders were invited to the tool development workshops, for example, national agencies for disaster and risk management.

110. Over the Project period, there were three stakeholder consultation workshops and during project implementation, over 20 training sessions (of 3+ days) were held in the pilot regions with an additional five awareness seminars for a range of interested stakeholders. Interviews with basin and water utility stakeholders indicated that these have assisted with raising national and regional awareness of the tools/methods for IWRM and WSP in the pilot basins and have also strengthened ownership of the FDMT approach.

111. The key learning was the need to have the assessment of the gender and social dimensions of flood and drought management earlier in the process so that it could have contributed more to the design of the project and of the tools. The change in technology from stand alone desktop computer to a web-based portal should have been presented to the participants of the initial inception meetings to ensure transparency. The assessment of the ToC Output 1.1 is fully delivered.

ToC Output 2. 1 Recommendations for inclusion of F&D into basin, land and water planning tools in the pilot basins.

112. Two 'Strategic' recommendation documents have been delivered through continued interaction with basin level stakeholders by update calls and as-needed consultations for stakeholders to better understand how the project can address their needs for inclusion of flood and droughts into existing basin, land and water planning tools in the pilot basins. The recommendations also enhance the ability of water managers in transboundary river basins to recognize and address the implications of the increased frequency, magnitude, and unpredictability of flood and drought events arising from climate variability and change.

113. Throughout the project period, the project participated in over 20 international meetings/workshops to engage with project stakeholders and external stakeholders to share and benefit from their experiences and knowledge on what to address and consider in the development of the methodology and associated tools (e.g. World Water Forum in March 2018, IW LEARN twinning event in May 2018). Some of these meetings where the FDMT was presented are not reported in project documents, such as the 21st International Association for Hydro-Environment Engineering and Research held in Yogyakarta (2-5th September 2018; presentation by Ticha Lolupiman, *et al.*)

114. The PMU initiated internal discussion on the scope of the strategic recommendations. The focus of DHI would be on basin level recommendations while the focus of IWA would be on local (water utility) level recommendations. However, some input had been provided by both executing agencies on the development of the recommendations at basin level.

115. The FDMT Inception report (Section 2.4.3) was very clear on what would not be covered in the project. The project would support short- to long-term planning, but would not support real-time operation. This includes real-time flood forecasting or optimisation of daily operation within reservoirs or irrigation schemes. The developed system might, however, contain links to other systems capable of real-time operation and forecasting.

116. The change from the desktop to a web-based portal created a system that was near-real time. This was a positive development for the long-term. However, some stakeholders seemed to have failed to grasp this. The inclusion of the FDMT into basin planning in the lifespan to the project was dependent on the policy and planning cycles as well as how the tool could integrate with other DSS and tools that were in development in country or basin.

117. The interaction with project partners and other stakeholders highlighted the different states of readiness of the key institutions to accept 'recommendations' which had been pre-identified as 'strategic'. Future engagements for IW tool development should include a scoping mission that would include information on the semantics and understanding of terms so as to avoid what some could see as 'loaded language'. As a key function of the FDMT is to contribute to SAPs, the need to have strategic recommendations is redundant. The assessment of Output 2. 1 by the evaluation is 'delivered'.

ToC Output 3.1 Recommendations for inclusion of flood and drought issues in WSP and other local planning methods in pilot basins

118. There has been continued interaction with water safety planners through workshops, training sessions and as-needed consultations to better understand how the project could address the needs of water utilities for inclusion of the FDMT into basin, land and water planning tools in the pilot basins. A report was finalised by IWA (undated project report 'Strategic Recommendations for Climate Smart Water Utilities Using the Flood and Drought Portal in Planning'), therefore this output has been delivered. The recommended methodology and identified technical applications have been applied in some water utilities in the pilot basins. The methodology has also been applied by the Ghana Water Company in other basins to inform water safety plans.

119. The final year technical training were all held (eight), and more targeted follow up training were held on the basis of stakeholder interest Lake Victoria Basin: MWAUWASA – 12-16 November 2018, Mwanza, Tanzania (led by IWA); NWSC – 19-23 November 2018, Kampala, Uganda (led by IWA); Volta Basin: ONEA – 27-28 November 2018, Ouagadougou, Burkina Faso

(led by IWA): Chao Phraya Basin: MWA – 3-4 December 2018, Bangkok, Thailand (led by HII). The option for follow up training has been provided to the stakeholders to address key applications of interest from the Flood and Drought Portal. Through an upcoming OFID funded project, further engagement beyond the project timeframe will be established with water utilities to further apply the technical applications from the Portal.

120. A final event was held Nairobi in 2nd October 2018. The event “Planning for Floods and Droughts: Reflections and Future Opportunities” brought high level representatives together to discuss the ongoing transition towards using data tools solutions in water management, with perspectives and lessons learned from project stakeholders and partners and beyond. Through several sessions at the GEF 9th International Waters Conference (5-8 November 2018) in Marrakesh, Morocco, the project was able to engage with a wider audience to share and benefit from their experiences and knowledge on transboundary basin management.

121. The project has produced 10 webinars in the project period with a further three planned post-project. These will continue to be a useful channel to improve the understanding of the relevance of the technical applications for planning and decision making. The last webinars were carried out in October and November 2018 around the following topics: Climate resilient water safety planning; In 2019, three webinars were produced on climate smart utilities and climate resilient water utilities (22 January, 28 March and 20 June.)

122. The lessons that apply at the pilot basin scale are also valid for local level planning by water safety. The peer to peer learning between water utilities in the Chao Phraya and Volta basins assisted in the development and application of relevant methodology and tools. Output 3.1 can be said to have been ‘delivered’.

ToC Output 4.1.1 Learning package including technical specifications and training materials for the application of the new methodology with DSS tools is tested with basin officials and local stakeholders

123. Pilot basin official and local stakeholders have been trained on the latest functionality of the technical applications in the Flood and Drought Portal. The learning package and all the training material is available through the Portal.

124. A consolidated learning package with technical specifications and other training material was finalised and made available on the project website, with other related learning materials (e.g., webinars, videos, guidance documents, etc.). This should ensure that with in-house mentorship by partners, capacity building should continue beyond the project timeframe.

125. Awareness workshops have been held in each pilot basin with the purpose of discussing the value of smart water management solutions and tools. The applicability of these solutions and tools to effectively prepare and respond to current and future water challenges within the context of climate change impacts is key to their sustained use. Participation by partners in regional and international events should continue to further raise the awareness of the benefit of smart water management solutions and the opportunity to further profile the Flood and Drought Portal as a possible solution to strengthen planning around floods and droughts in transboundary basins.

126. Training materials were updated for each training to ensure relevance. This included a step-by-step guide on the application of the tools and of the functionality of the DSS. The Learning package encompassed technical specifications, manuals, guidance and video tutorials/demonstrations workshop reports, as well as webinars.

127. The training material on floods and drought that have been developed by DHI and IWA is truly impressive, Output 4.1.1 has been 'delivered'. Basin stakeholder interviews confirmed quality and value of the training received. However, in the context of some African countries where web access is problematic and bandwidth is very slow and expensive, it would have been useful to have clearly dated soft copies of the materials on optical media such as compact discs to provide alternate access. The training materials also have a place as supplementary information for use in tertiary cycle institutions. The FDMT project could have benefited a wider (and younger) stakeholder base if there had been proactive engagement with universities.

ToC Output 4.2.1 Communication approach developed to disseminate F&D methodology within pilot basins, GEF basins, and to other relevant end users.

128. A comprehensive communication strategy was developed and a live document was continually updated (version 6 was in 2018) on a regular basis to ensure its usefulness during project implementation. As the project moved forward, new audiences and stakeholders were identified, more content (i.e. project outputs, communication material, etc.) was developed. The strategy was also updated to ensure continued relevance (e.g., type of communication material, target audience and to engage with stakeholders, media outreach, events and the work plan). The Project issued newsletters that were released every 3-4 months during the project period and included updates from the project and key stakeholders⁵.

129. The project organised several awareness workshops for decision makers on the DSS for the Volta and Chao Phraya Basins:

- Volta Basin – 30 September 2015 – Accra, Ghana: As part of the WSP Africa Network meeting, the project organised an awareness workshop to enhance the understanding of the value of a DSS for planning
- Chao Phraya Basin – 23 November 2015 – Bangkok, Thailand: High-level symposium with about 200 participants from national and international institutes to address the value of a DSS to help integrate information about floods, droughts and future scenarios into planning processes.
- Volta Basin – 12 February 2016 – Accra, Ghana: Focused on decision-making processes and the importance of data for planning.
- Chao Phraya Basin – 6 June 2018 - Bangkok, Thailand: A forum (with approximately 100 people) for institutions to showcase and discuss the Thai vision on flood and drought management from different perspectives, as well as showcasing the complete Flood and Drought Portal
- Lake Victoria Basin – 2 October 2019 – Nairobi, Kenya: Workshop (40 people) highlighting the ongoing transition towards using data tool solutions in water management, with perspectives and lessons learned from the FDMT project.

130. An infographic series has been finalised addressing transboundary planning, water utility planning, drought monitoring and flood monitoring (all infographics are available on the project website⁶). A Youtube® animation has also been completed that addresses the project and the key output⁷. The animation is available with English, French and Thai subtitles.

5 <http://fdmt.iwlearn.org/en/about-the-project/newsletter>

6 <http://fdmt.iwlearn.org/resources/infographic>

7 <https://www.youtube.com/watch?v=ZyvwZQaZyG4>

131. The infographics are good in their design, in that they have strong messages clearly depicted. It was not clear who the target audience for these infographics were from the content as there was a mix of very simple messages on IWRM and more complex messages on the FDMT in the same infographic. Future GEF-IW projects need to make sure that the information in outreach products is pretested with a representative sample of the target audience before finalisation. Output 4.2.1 has been delivered.

ToC Output 4.2.2 – Materials produced for IW LEARN dissemination mechanisms and website.

132. The project website has been updated and expanded through the IW:LEARN platform⁸. The website was continually updated with new information, blogs, news, events and other communication material as the material was being produced. The website is mainly in English, general project information is available in French and Thai, although after the migration to the new platform this did not continue. An important element is the use of other communication material (social media videos, infographics, etc.).

133. A series of how-to videos have been finalised providing video tutorials on the functionality of the technical applications. All how-to videos are available on the FDMT YouTube channel and on the project website⁹.

134. Two IW:LEARN experience notes are available sharing the experience of the project on stakeholder engagement and how the project has supported water utility and the efforts of water safety planners to be more climate resilient. The experience notes are both available on the project website¹⁰.

135. The Workshop report from IWA World Water Congress in Brisbane Australia is available via the project website. All information is made available on the project website and on IW:LEARN website.

136. The training material is mainly accessed through the web access and as indicated earlier, bandwidth is very slow and expensive in some parts of the world, so it would have been useful to have soft copies of the materials on optical media such as compact discs to provide alternate access.

137. The ToC output 4.2.2 – Materials produced for IW LEARN dissemination mechanisms and website - has been delivered.

ToC Output 4.2.3 Communication materials (4-5) developed for and participation in major water events

138. The project staff and staff of Partner organisations had attended over 20 major water events and the project has produced a vast number of communication products (over 100) suitable for such events. These include information sheets and videos for use at regional events by stakeholders. The infographics on Transboundary planning, Water utility planning, Drought monitoring and Flood monitoring have also been adapted into posters, which have been used at

8 <http://fdmt.iwlearn.org>

9 <https://www.youtube.com/playlist?list=PLQPXJm39N5brNdVgeFSOuZOifqkdgJ0Ku>

10 <http://fdmt.iwlearn.org/resources/experiencenote>

regional and international events. The material was updated when requested by stakeholders to ensure relevance. All material is added to the project website¹¹.

139. The FDMT is effectively a DSS to minimize risk to disasters. Though there was marked engagement at international conferences that focused on water safety, basin and city resilience, the wider stakeholder base in the Disaster Risk Reduction arena seemed to have been ignored. This is perhaps because of the GEF-IW focus.

140. The Evaluation Criterion Ratings Descriptions Matrix was used to assess the overall delivery of outputs rated as **'Satisfactory'**.

Figure 4. Cover pages of Strategic Recommendation Documents



5.4.2 Achievement of direct outcomes

141. The achievement of outcomes as derived from the project outputs are clear as there was a direct link in the TOC between the two. The five identified drivers and the assumptions are still valid in the TOC, with the exception of the assumption that: countries will accept the F&D methodology and tools and use them for planning without any added inducement, or further training.

142. The effectiveness of outcomes has been assessed using the reconstructed ToC and achievement towards project outcomes presented in the 2018 PIR. This has been supplemented with stakeholder discussions and presentations. Further evidence of project outcomes can be

¹¹ <http://fdmt.iwlearn.org/resourcesMethod>

deduced from Figure 6 and 7 below which indicate the number of hits on the project website as continually increasing.

143. The ToC has been reconstructed with five direct outcomes linked to the seven main project outputs. The ToC and project outputs all had a direct link to the long-term impacts and project objective as shown in Figure 4. All project outputs were delivered in full as planned in the project results framework. The project results framework detailed the expected targets of the five project outcomes. All project outcomes link to the reconstructed ToC Outcomes and the Intermediate States as depicted in Figures 2 and 4 above.

ToC Outcome 1.1 Methodologies with tools for understanding F&D dynamics and impacts at all levels and enhancement of DSS, co-designed with basin stakeholders

144. Consolidated and idealized planning methodologies for drought and WSP have been developed and tested. A number of tools have been developed. Those in operation include: the Data portal and the Indicator tool. The different tools have formed the basis of support to the various planning processes at the basin and local levels.

145. Input from the stakeholders at meetings was used to further develop the methodological approach. The training with utilities in Thailand demonstrated that these utilities (MWA and PWA) do desire to better understand how they can apply the tools and use the information.

146. Methodologies for IWRM associated planning and WSP were developed. The basin planning application is available to users to create and evaluate basin plans, linking this to water resource models. The methodological approaches were validated and tested within the three pilot basins (with at least 3 basin end-users) (basin organisations). The PMU engaged in further consultation with water utilities to define a clearer approach of how the project can support their planning and in particular how climate information at the catchment level can be used before the project end.

147. ToC Outcome 1.1 Methodologies with tools for understanding F&D dynamics and impacts at all levels and enhancement of DSS, co-designed with basin stakeholders is assessed as **'partially achieved'**.

ToC Outcome 2.1 Application of the methodologies in the basins using DSS tools enables the integration of F&D issues into planning

148. The tools have been applied to different degrees with the project partners and stakeholders in their planning processes. To ensure that this outcome is sustained, the project has also provided additional guidance on how to integrate the tools and the tool outputs into basin planning and operations on the web. During the evaluation site visit to Kisumu, a workshop organised on Risk Assessment was being undertaken for middle management level decision makers where the FDMT was being used as training material.

149. Continued stakeholder engagement through Skype calls, training and individual stakeholders' meetings (e.g. with each water utility) established a working environment for how the FDMT technical applications could be applied and integrated into utility planning.

150. ToC Outcome 2.1 Application of the methodologies in the basins using DSS tools enables the integration of F&D issues into planning is assessed as **'achieved'**.

ToC Outcome 3.1 Application of the methodologies and DSS tools to integrate F&D issues into local level planning and urban area managers to consider options for increased basin level resilience for vulnerable groups affected by water-related shocks.

151. The WSP application is the key entry point for water utilities, applications available to enhance the resilience of their WSP process. Some of the water utilities are applying them e.g., at Kisumu and Ghana Water Company Ltd.

152. The use of the FDMT as a planning tool must go hand in hand with practical and pragmatic systems and structures to respond effectively so as to protect facilities as given in the water safety plans. The plans alone cannot solve the situation.

153. It was noted that just like the basins authorities, utilities were at different levels with regards to their WSP status (some have already developed and are implementing WSP while others are in the process of initiating the WSP), therefore they have different uses for the WSP tools being developed. The specific utilities in the target basins also had limited capacity to analyse climate data (as opposed to their mandate that covers water data) so needed clear in-country guidance on how to use the outputs of the FDMT in operation and planning.

154. One barrier to the delivery of this outcome in Ghana (and in Kenya), is that the Ghana Water Company is seeking to establish Water Safety Planning as a statutory requirement under Ghanaian law. This requires a Legislative Instrument to be passed by Parliament. At the time of this evaluation, the Draft Bill was under preparation by the Attorney General's Department.

155. ToC Outcome 3.1 Application of the methodologies and DSS tools to integrate F&D issues into local level planning and urban area managers to consider options for increased basin level resilience for vulnerable groups affected by water-related shocks is assessed as '**achieved**'.

ToC Outcome 4.1 Experience and know how gained through the project is made available within the GEF system and beyond.

156. A YouTube channel with 14 how-to videos or video tutorials/demonstrations were prepared to provide guidance on the key functionality of the FDMT. The videos are available on the project website¹² and some have been viewed up to 85 times as of 31st July 2019. All material is made available on the Flood and Drought Portal as well as the IW:LEARN website. Unfortunately, there is no way of knowing from visitor count numbers who the visitors are.

157. GEF-IW and UN Environment have indicated that they will proactively push the FDMT as a DSS for GEW-IW projects, with the tool being part of the TDA/SAP training module. This would ensure the sustainability of the FDMT project outputs and ensure the technical applications developed are used in planning beyond the timeframe of the project.

158. ToC Outcome 4.1 Experience and know how gained through the project is made available within the GEF system and beyond is assessed as '**achieved**'.

¹² <http://fdmt.iwlearn.org/resources/videos> or through the video channel playlist: <https://goo.gl/FyJ8Dv>

ToC Outcome 4.2 Global dialogue on water security and climate resilience enriched by the dissemination of and awareness raising on project outcomes.

159. The project took part in a number of international and regional events including those organised by IWA, GEF IW:LEARN and international meetings on climate-smart and climate -resilient cities. The GEF IW:LEARN experience notes have addressed the experiences with stakeholder engagement and how the project has supported utility efforts to be more climate resilient¹³.

160. Attribution at the global level to a specific project is always contentious, a quick web scan of recent literature on Floods and Droughts indicates that there have been at least 20 'Special Issues' of journals containing peer reviewed articles on Flood, Drought Water Scarcity and Water Security in the past five years . This seems to be an increase over the previous five-year period.

161. The overall achievement of project outcomes is rated as '**Satisfactory**'.

5.4.3 Likelihood of impact

162. This evaluation has adopted a number of approaches to measure effectiveness: i) clear evidence in published or quoted documents, webinars and infographics of the FDMT project outputs that contribute to outcomes and intermediate states; ii) assessment of intermediate states and assumptions and drivers presented in the reconstructed ToC; and iii) use of UN Environments Assessment of Likelihood of Impact Decision Tree (Excel tool)¹⁴. As described in the consultant's ToR, the evaluation assesses the project's likelihood of the intended, positive impacts becoming a reality. The approach followed a 'likelihood tree' from direct outcome to impacts, taking account of whether the assumptions and drivers identified in the reconstructed TOC held true.

163. The project's objective was 'to improve the ability' of water managers (basin and local utility) through the development and testing of tools to assist with addressing flood and drought events. The project has delivered tools and tested these in three pilot basins to validate the approach, including the training given. The validated tools and associated training/awareness raising material is available for use by other basin or water supply utility managers.

164. As stated earlier, this is a project with potential global level impact on future GEF-IW TDA/SAP projects. The project has been presented at multiple international events and there has been direct country to country contact through the pilot basins. The project has had direct contact with national water utility stakeholders and basin representatives and the co-executing agencies are continuing to promote the FDMT to other users at basin and utility levels.

165. The reconstructed ToC identified three critical intermediate states on the pathway to the overall project impact (redefined in the reconstructed ToC as 'Climate-resilient basin management with improved systems for flood and drought contributing to overall water security and of water utility operation'), including:

- **Basin organisations** (international, regional and local) identify priority actions and effective tools integrate information on F&D events into IWRM operational and strategic plans at the basin level for various climate scenarios. The consultants consider this intermediate step as **being facilitated** by the GEF Secretariat through IW projects and **being supported**

13 <http://fdmt.iwlearn.org/resources/experiencenote>

14 https://wedocs.unep.org/bitstream/id/74a99e70-063a-46a5-a0a0-b7e7b67d1a94/12_Likelihood_of_Impact_Decision_Tree_17.04.18.xlsx

(through other financing sources) by the co-executing agencies (DHI and IWA) in upscaling and replication activities in other projects (see Sustainability, section 5.8).

- **GEF transboundary river basin projects** identify priority actions and use appropriate tools to integrate information on F&D events into the TDA-SAP GEF IW or equivalent processes. The consultants acknowledge that the update of the TDA-SAP guidance is under the responsibility of other actors and that dissemination of the FDMT was disseminated in November 2018 (at the end of this project) to other GEF IW project managers. Efforts by this project to reach other IW projects also included the participation of FDMT at twinning events and through the GEF Experience Notes prepared. The consultants consider this intermediate step as **in progress**.

- **Managers in local water utilities** identify priority actions and apply appropriate tools to integrate information on F&D events into Water Safety plans. There is much synergy with other actions undertaken within UN Environment, the 2030 Agenda for Sustainable Development and other UN bodies such as WHO. IWA with the support of their members and, for example, WHO, are continuing to promote and actively develop the WSP tool. Whilst this is being encouraged by IWA/WHO, the evaluators assess this intermediate step as **needing further attention** within UN Environment – see Recommendations, Section 8).

166. Use of the UN Environment's Assessment of Likelihood of Impact Decision Tree tool to estimate the likelihood of impact of the project lead to a result of **'Likely'** focusing on the utilisation of the FDMT methodologies and assessments in all situations. The range results from different states of readiness of basin authorities and water safety, regarding the internet infrastructure and the connectivity of their institutions.

Key factors affecting effectiveness– Governance and Management

167. In delivering the project outcomes and outputs of FDMT, the PMU was essential in coordinating project activities and delivering significant validation of the cross-cutting synthesis reports with the support (through additional and unreported co-financing) from partners. The co-executing agencies and partners have also significantly contributed to the overall success of this project.

168. The PMU, although highly effective at coordinating the activities of the components and driving the completion of the project, was not in a position to restructure budgets to enable the additional project needs as expressed by partners and stakeholders' outputs to be delivered. This was because the budgets had been agreed at the start of the project between UN Environment and the lead co-executing organisations, apart from the fact that these needs were beyond the initial scope of the project.

169. During the visits by the evaluators to the pilot basins, the project partners praised the dedication and communication responsiveness of the PMU. The partners acknowledged the extra efforts from UN Environment, DHI and IWA as well as the PMU staff.

170. Project supervision through the PSC was effective involving core partners, UN Environment, DHI and IWA and the PMU. Four PSC meetings were held; the dates of the PSC meetings are given in Section 5.5. The project has effectively encouraged the use of FDMT tools and web-portal within multiple projects and agencies (WHO, FAO, World Bank, UNCCD, etc.).

171. Both the EAs have actively promoted the approach to encourage replication /upscaling through global meetings and working with the agencies above. The uptake by the GEF has been relatively limited. The tools have been included in the draft revisions to the TDA/SAP guidance manuals but as yet there has been no direct use by other GEF IW IWRM projects. However, it is

noted that the final results presented at the GEF IW Conference in November .2018 was at the conclusion of the project and there has been little opportunity for the FDMT approach to be integrated into other IW projects. Of the three GEF IW project managers interviewed regarding the FDMT outputs, only one was integrating the tools into a GEF pilot activity and the other project managers were ‘unaware’ of the FDMT project. This remains a significant challenge for the UN Environment and the GEF.

172. The overall effectiveness of the FDMT project is rated as ‘Satisfactory’.

5.5 Financial Management

173. The executing partners are familiar with the financial management processes and tools that GEF IW projects use. As to be expected, there were no significant problems encountered in the financial management of the project.

174. The project utilised the UN Environment finance reporting formats to manage the project budgets. Project budgets were not routinely presented or reported to the PSC according to project components/outputs. Annex 3 presents information taken from workplans for the initial and final years of the projects according to components, indicating no change at this level of information.

175. Financial information was presented by email for approval by PSC members (according to minutes of the meetings). A final year request for a no-cost extension was approved by the PSC again by email and changes to the final workplan accepted by the task manager.

Table 6. Financial Management Table

NON-GEF AND GEF PROJECTS			
Financial management components:		Rating	Evidence/ Comments
<ul style="list-style-type: none"> Completeness of project financial information¹⁵: 			
Provision of key documents to the evaluator (based on the responses to A-G below)		HS	PMU provided access to Project outputs, workshop and management documents
A.	Co-financing and Project Cost’s tables at design (by budget lines)	HS	In Project Document at CEO Endorsement
B.	Revisions to the budget	HS	Provided at project extension
C.	All relevant project legal agreements (e.g. SSFA, PCA, ICA)	S	Available from PMU
D.	Proof of fund transfers	S	Available from PMU
E.	Proof of co-financing (cash and in-kind)	S	Available from PMU / PIR and semi-annual reports
F.	A summary report on the project’s expenditures during the life of the project (by budget lines, project components and/or annual level)	S	Available from PMU by budget line as as annual statements
G.	Copies of any completed audits and management responses (<i>where applicable</i>)	S	Available from PMU

¹⁵ See also document ‘Criterion Rating Description’ for reference

NON-GEF AND GEF PROJECTS			
Financial management components:		Rating	Evidence/ Comments
H.	Any other financial information that was required for this project (list):	N/A	N/A
Any gaps in terms of financial information that could be indicative of shortcomings in the project's compliance ¹⁶ with the UN Environment or donor rules		No	N/A
Project Manager, Task Manager and Fund Management Officer responsiveness to financial requests during the evaluation process		HS	The PM, TM and FMO all made themselves available
<ul style="list-style-type: none"> Communication between finance and project management staff 		HS	There was close collaboration with the key project management team as most were situated in the same office
Project Manager and/or Task Manager's level of awareness of the project's financial status.		HS	
Fund Management Officer's knowledge of project progress/status when disbursements are done.		HS	
Level of addressing and resolving financial management issues among Fund Management Officer and Project Manager/Task Manager.		HS	
Contact/communication between by Fund Management Officer, Project Manager/Task Manager during the preparation of financial and progress reports.		HS	
Overall rating		HS	

5.5.1 Completeness of financial information

176. The PMU reported the overall co-financing of the FDMT project as presented in the PIF. The co-financing was mostly in-kind, but 100,000 USD was provided by UN Environment -DHI in cash. However, this did not take account of the considerable time provided by the pilot basin partners in testing and being trained in the use of the tools. Their involvement provided important feedback on the finalisation of the tools and it is unfortunate that this considerable time input was not quantified.

177. All financial reports required by the evaluation appear to have been completed in a timely and comprehensive manner with appropriate sign-off by authorised signatories. The records have been archived using an intuitive record keeping system.

178. The project's and UN Environment's records are comprehensive and detailed on financial issues. Where required, project partners provided audit statements indicating compliance with international fiduciary management. There were no audit issues raised either by DHI and IWA during the project period

¹⁶ Compliance with financial systems is not assessed specifically in the evaluation. Nevertheless, if the evaluation identifies gaps in the financial data, or raises other concerns of a compliance nature, a recommendation should be given to cover the topic in an upcoming audit, or similar financial oversight exercise.

179. The Executing Agencies (DHI and IWA) provided requests for cash advances supported by the expected budget reports, expenditure reports and annual financial statements to the UN Environment FMO as agreed.

180. Audits were undertaken by the Executing Agencies (DHI and IWA). These did not identify any significant issues in regard to financial management.

181. The assessment of the completeness of financial information is rated as **'Highly Satisfactory'**.

5.5.2 Communication between the finance and project management staff

182. All parties involved (FMOs in UN Environment's Science and Ecosystem Divisions and the PMU) reported that there was good communication. This was militated by the close physical proximity of parties in the UN Environment Office.

183. There was some staff turnover at the PMU, but this does not seem to have had an impact on the running of the project.

184. The assessment of communication between finance and project staff is rated as **'Highly Satisfactory'**.

185. The overall assessment of Financial Management was **'Highly Satisfactory'**.

5.6 Efficiency

186. The FDMT project efficiency was assisted by the work undertaken in the project preparation grant phase with the undertaking of detailed assessments of the three pilot basins, and the subsequent involvement of key stakeholders from the basins during the formative inception phase of the project.

187. The key milestones from PIF submission to project completion are presented in Table 7.

Table 7. Key project milestones and dates

Project milestone	Date
PIF submission to GEF Secretariat for review	4th May 2011
PIF Approved	1st February 2012
GEF CEO Endorsement	27th March 2014
PCA	May 2014
Project Start	16th May 2014
1st Disbursement	12th August 2014
Project Inception Meeting	23-24th November 2014
1st PSC	1-3rd March 2015
2nd PSC	30th March - 1st April 2016
3rd PSC	5 - 7th April 2017
4th PSC	3-4th October 2018

Project milestone	Date
MTR	April - October 2017
Planned completion	26th May 2018
Actual completion	30th November 2018

188. Following the GEF CEO endorsement, the Implementing Agency (UN Environment) and the Co-executing Agencies (DHI and IWA) concluded a tri-partite Project Co-operation Agreement (PCA) within two months. The project started in May 2014 with an inception meeting held November 2014 including key representatives of the three pilot basins: Volta Basin Authority (VBA), Lake Victoria Basin Commission (LVBC) and Hydro-Informatics Institute (HII)¹⁷.

189. The project benefited from the co-execution agencies jointly providing the PMU, with each organisation leading where they had comparative advantages; DHI was responsible for leading on the methodology, testing the tools at the basin level and training guidelines and IWA responsible for stakeholder engagement, communications, capacity building and testing of the tools at the utility/local level.

190. The project's efficiency was also supported by the 'train the trainers' actions (in Thailand) which resulted in the capabilities of the IHH experts to provide training to basin managers in Vietnam and Myanmar. In addition, the adaptive management changes to the project resulting in the evolution of PC based software to cloud-based web applications for the tools had benefits to the global applicability of the FDMT approach. Although this transition did present some issues that prevented water supply utilities from fully utilising the WSP tools as operational security required that sensitive information could not be stored on external servers (see section 5.3).

191. The cost-efficiency of the project was achieved through a number of key approaches adopted:

- The co-execution by equal partners (DHI and IWA) with noted expertise and wide networks of experienced contacts and the joint responsibility for the PMU for specific activities linked to their expertise;
- Utilising previous experience from DHI (e.g. on the hydrological model applications, indicators, etc.) and IWA (water utilities and their use of water safety plans, communications, etc.);
- Linking the tools and the DSS approach to the GEF TDA-SAP approaches;
- Working closely with GEF IW:LEARN and disseminating the FDMT approaches through the GEF conferences and Twinning meetings (where GEF IW projects share their experiences), and through the IWA's network of members operating water utilities and engaged international partners (e.g. WHO).

192. In addition to the gender-specific output in component 1, the project did record sex-disaggregated data from workshops and meetings (e.g., for the technical training 236 men and 77 women participated).

193. The project delivered all formal reports (PIRs, financial reports, etc.) as planned and on-time (see section 5.5) and undertook a significant number of capacity development (to over 300 participants) and awareness raising activities in the three pilot basins. In addition, the project

¹⁷ Previously known as Hydro and Agro Informatics Institute, HAI

participated in a number of global and regional meetings, workshops and conferences (see section 5.4) that assisted with the dissemination of the project's tools and methodology.

194. The Mid-Term Review (MTR) was completed in October 2017 - over three years since the project started (the planned MTR was expected in mid-2016). This late MTR had consequences in completing the recommendations of the review (specifically increasing the number of training workshops in the pilot basins). The PMU identified responses to all the MTR recommendations and confirmed that these had been all implemented.

195. The project required a 7.5-month no-cost extension for the completion of the tools and the delivery of the final capacity development workshops and dissemination of results (including the active participation of the project in the IW Conference in Marrakesh in November 2018). This no-cost extension was approved by the PSC members by email in March 2018 and a request sent to the UN Environment Task Manager on 20th April 2018, with an updated work plan and revised budget for the project extension. A detailed overview of deliverables was also provided and linked to the work plan outputs, activities and tasks.

196. The Efficiency of the project is rated as '**Satisfactory**'.

5.7 Monitoring and Reporting

5.7.1 Monitoring Design and Budgeting

197. The project document provides a standard summary of the expected workplan (Annex 5 of the Project Document) monitoring and reporting activities (Section 6 of the Project Document) together with a clear breakdown of the main costs (Annex 7 of the Project Document) with the roles and responsibilities presented in Annex 8 (of the Project Document) for all monitoring and evaluation (M&E) and reporting requirements. The monitoring and evaluation (M&E) details are presented clearly at the design stage and include project reporting through a Project Steering Committee (PSC), technical and financial reporting (e.g. through Project Implementation Review (PIR) reports to the GEF), mid-term review and terminal evaluation.

198. The project results framework presented in the Project Document provides clear information on the expected outcomes/output indicators and targets. As noted by the MTR, the wording of the outcome indicators is more 'output' oriented and focused on the delivery of specific products or outputs: e.g. 'Methodology, guidance and training materials available' (indicator for outcome 1.1). In addition, some targets were not appropriate at the outcome level (e.g. Recommendations for integrating floods and droughts in TDA/SAPs and IWRM plans developed in three pilot basins - target in Outcome 2.1) that could have been strengthened by an indicator of the approval of methods, recommendations, etc. of the results of the project. The results framework was slightly modified in the inception phase and the changes accepted at the inception meeting. No further changes were documented in the results framework.

199. The Project Document indicates that the GEF IW Tracking Tool was not required for this global tool-methodology development project (Project Document Annex 14).

200. The project design included gender-specific activities (e.g. Activity 3.1.1 - see section 5.4.1 and the reporting of meetings was expected to include disaggregated data on participants sex (e.g., included in the M&E plan in the Project Document).

201. The Project Documents presented a costed M&E plan, as required by the GEF. The budget identified (85,000 USD) is relatively low cost for this size of project however the planned M&E actions have been completed as specified (see below).

202. The assessment of project monitoring design and budgeting is rated as **'Satisfactory'**.

5.7.2 Monitoring Implementation

203. The planned monitoring activities defined in the Project Document were completed by the PMU with the required inputs from the UN Environment Task Manager (TM).

204. A detailed project inception phase included significant stakeholder engagement and analysis within the pilot basin to understand the roles and needs of the different partners at the pilot level.

205. The project results framework was used to report progress and issues requiring additional attention (e.g. progress on the tool development) in the annual PIRs. The PIRs were considered by the TE consultants to be representative of the project's progress and the overall delivery of the project's objectives and expected outcomes.

206. Sex-disaggregated data was collected in-line with the project result framework indicators and targets. No specific tools were used to assess this data in reports. Data on female/male participation in project activities was indicated in the minutes or reports of specific meetings. In addition, reports on the role of women and men in water management were prepared for each of the pilot basins.

207. The Mid-term Review (MTR) was held in the third year of a four-year project and acknowledged by the PMU as being later than planned. The PMU provided a detailed spreadsheet of the recommendations and actions/responses by the two executing agencies. The recommendations made by the MTR were implemented (reported by the PMU and confirmed by the evaluator) including activities that needed adaptive management changes to the budget for training activities (as indicated in section 5.3).

208. Project Steering Committees (PSC) meetings were completed every year (see Table 7) with the final PSC in October 2018 (at the end of the no-cost extension). Minutes/reports of the PSC meetings were clear and concise. The assessment of Monitoring Implementation is rated as **'Satisfactory'**.

5.7.3 Project Reporting

209. The FDMT project has completed all formal 'project reporting' (PIRs, six-monthly reports, financial reporting, etc.) as required. Progress reports (6-monthly) were completed as expected. In addition, reporting of finances were conducted on a quarterly basis by IWA and DHI (see section 5.5). Progress reports (PIRs and six-monthly) were comprehensive and informative. Ratings on the project performance were mostly satisfactory (or higher) with a few moderately satisfactory ratings where delays had been encountered. Actions and responsibilities to address (potential) problems were clearly undertaken as the project delivered the expected outputs with just a short project extension.

210. The project has also reported to stakeholders (including decision makers) on the project's achievements and the use of tools. These activities have reached significant numbers of potential users and agencies. A full discussion of these outputs is included in section 5.3.

211. The assessment of project reporting is rated as **'Satisfactory'**.

5.8 Sustainability

212. The FDMT was a global project to develop tools and methodologies to enable basin-wide and water utility managers better respond to floods and droughts resulting from increasing climate variability and change impacts. The project was designed to have input from three pilot basins that were to assist with testing of the tools and training programmes developed. Whilst the pilot basins personnel who participated in the training and awareness activities were supported (flights and accommodation) at these events but there were no resources available to support their time. The sustainability of the project outcomes is considered from both the global perspective (uptake of the tools elsewhere) and at the pilot basin levels, noting the design of the project did not provide resources for the implementation of the tools within the pilots.

5.8.1 Socio-political Sustainability

213. The FDMT project development stage provided the identification of the three pilot basins for future involvement in the testing of the tools through training and awareness raising events, this was supplemented with the detailed stakeholder engagement in each pilot during the inception phase to detail the partners and their roles in the project.

214. The FDMT have focused more on sustainability plans than preparing a project exit strategy to identify means to support the FDMT tools and portal in the longer-term.

215. Specific pilot basin actions that have improved the socio-political sustainability of outcomes include:

- Chao Phraya Pilot
 - Inter-sectoral/-ministry participation in a number of awareness raising events including representatives, of metrological institutes, water supply utilities, irrigation/agriculture authorities, disaster response agencies, etc. are aware of the benefits from process and tools developed;
 - The IHH reported that in addition to the use of the tools by the MWA and PWA, the results provide by IHH are used by the Royal Rain Agricultural Department (with responsibility for seeding rainfall) and the Agricultural Extension Services for flood and drought-prone regions;
 - Clear demands for the FDMT tools in Bangkok by MWA as main water abstraction point is potentially at risk from saline intrusion at low flow (drought) periods. The tools allow for the consideration of management actions to minimise these risks (e.g. release of water from storage reservoirs upstream);
 - MWA indicated that there were plans to upscale the use of the FDMT tools in combination with other GIS-based actions across Thailand;
 - IHH noted that there was a growing interest in the flood management tools with insurance companies in Thailand;
 - A key point raised by stakeholders in the Chao Phraya basin was the importance of ensuring that the same technical personnel continued to be involved in FDMT tool training, coupled with the adequacy of sufficient human resources with appropriate GIS/IT skills. MWA and HII also noted the high quality of the training that was provided by the PMU.
- Lake Victoria Basin

- The existence of an established body for Lake Victoria, the Lake Victoria Basin Commission (LCBC) which has a programme of regular meetings as part of its work programme made regional uptake of the tool comparatively smoother.
- Peer-to-peer learning among Commission members was an opportunity to spread awareness and knowledge on the tool in the region.
- LVBC indicated that there is capacity and competence in the basin countries to work on the backend of the tool, but to do this they would need to be granted access by DHI.
- LVBC indicated that the hosting of the FDMT fell within their mandate, but to host effectively logistic issues such as licence fees, power supply and a fast and reliable internet connection would need to be funded,
- The Kisumu Water and Sewerage Company Limited (KIWASCO) is using the FDMT materials and approach as material in their broader training on Water Safety and Risk Management, for all their managerial staff.
- KIWASCO see the tool as part of a broader programme (supported by IWA and WHO) on Climate Resilient Water Safety Planning to Improve Water Supply and Public Health.
- A Kenyan National Water Safety Committee would take up the mantle of future training on the FDMT to ensure country-wide coverage.
- Volta River Basin
 - Stakeholders from the Volta Basin Authority appreciated the value of the tool for the TDA/SAP process. They, however, pointed out that the Volta TDA and SAP had been carried out in the recent past and the FDMT would be useful for the next round of planning.
 - The Ghana Water Company Limited (GWCL) has the FDMT as integral to the draft Ghana Water Safety Plan which is going through governance processes that would lead to its adoption. The lack of a gazetted Water Safety Plan has slowed down the roll-out of the FDMT.
 - In Ghana, but outside the Volta basin, the GWCL has used the FDMT approach to prepare draft Water Safety Plans for the Brimsu Water Treatment plant that partially supplies Cape Coast.

216. At the global level, the socio-political sustainability of the FDMT outcomes will be dependent on the demand for tools to address impacts of climate change and the support of key regional and global institutions (see section 5.8.3). At the basin level, the ongoing support is highly dependent on 'champions' in the region. This was very strong in Thailand with HII having clear technical and regional competences, together with adequate financial and staff resources, to further apply the tools. At the LVBA and VBA, the resources of the commissions (financial and staffing) do not appear to be enough to maintain the use of the tools and to further upscale or replicate the approaches developed without significant and specific external support. Some of the support needed is a result of the differing operational environments that exist, as in some countries ensuring a reliable supply of electricity or access to the internet needs to be put in place for the tool to be operational and useful.

217. The Socio-Political Sustainability is rated as '**Likely**'.

5.8.2 Financial Sustainability

218. The two co-executing agencies have committed to providing on-going support for a limited period for the FDMT outputs. DHI has indicated that it will support the web-portal and the operation of the tools for the next 3-5 years (the portal is hosted on a DHI server). IWA has indicated that it will continue to raise awareness within its constituents on the tools and, in particular, the Water Safety Plans application. IWA is continuing to seek funding and partners to further develop the WSP tool (e.g., with WHO) so as to further exploit and refine the tool.

219. Longer-term support will be required for the further upgrade to the system and support to enquiries. The original concept was that the FDMT tools would be piloted through GEF IW IWRM projects undertaking, for example, TDA/SAP development. At the time of design there were no appropriate projects in the pipeline and the PPG phase identified the three basins on the basis that two had completed a TDA/SAP (Lake Victoria and Volta River) and the Chao Phraya would have interests in floods and droughts management tools following recent floods (and close pre-existing co-operation between DHI and HII). A key future source of support will be from future GEF IWRM projects and it has been important that the FDMT have publicised the tools effectively at GEF IW Conferences. It will be important that UN Environment and particularly the GEF continue to encourage the uptake of the use of these important tools for IWRM and TDA/SAP activities. Equally important is the on-going awareness raising that IWA is providing to its members and seeking opportunities to work with other agencies.

220. Current and planned support to financially sustain the use of the tools through the following actions:

- DHI is working with other agencies to continue the application of the tools in World Bank projects in Myanmar (with HII) and Zambesi River and the development of drought risk toolbox for UNFCCC (together with World Bank, FAO and JRC);
- IWA is working with WHO with OPEC¹⁸ Funds for International Development (OFID) to help increase the functionality of the WSP tool to develop climate resilient plans which will be an evolution of the current tool by integrating additional data;
- GEF IW IWRM projects: The planned UN Environment Amazon SAP implementation project has participated in FDMT presentations and has included the use of the tools in an intervention based in Guyana that will continue the support for the portal and tool use.

221. The assessment of Financial Sustainability is rated as **'Likely'**.

5.8.3 Institutional Sustainability (including issues of partnerships)

222. As indicated above, the two executing agencies have indicated their willingness to keep supporting the web-portal (DHI) and the awareness raising within the IWA members. The MTR report highlighted the important role that UN Environment, GEF Secretariat and the GEF STAP could play in promoting the use of the tools within the GEF IW community and to other agencies (e.g. WHO, UNECE, UN-Water, etc).

223. HII has received additional training from DHI on the use of the tools and this has been used to enable HII to provide training to river basin managers in the Irrawaddy in Myanmar for a World Bank supported initiative. Through this 'train-the-trainers' approach, the project has enhanced the institutional sustainability of the tools and their use;

¹⁸ Organisation of the Petroleum Exporting Countries

224. In the longer-term, there is a need to identify a more appropriate mechanism for maintaining the tools/portal other than through *ad hoc* project support (see section 5.8.2), for example using planned of existing functions within UN Environment. This could be initiated through UN Environment 'World Situation Room' (known previously as UNEP Live), managed through the Science Division, is developing a 'Waterbodies of Concern' databases and will be utilising the FDMT, according to the PMU, indicating the level of risk with respect to floods and droughts and potentially offer a stable institutional setting for at least some of the tools developed;

225. The project's outcomes are linked to strong organisations with stable governance arrangements. Outcomes 1 and 2 are closely aligned with the remit of UN Environment and supported through the UN Environment - DHI partnership. This will be further supported through GEF IW projects (and guidance) and the work of HII illustrated above. Outcome 3 is aligned with the remit of WHO and IWA, and the members of IWA who will benefit from the on-going dissemination of the results from the use of the WSP related tools.

226. The PMU has recorded analytic information on the access and use of the FDMT since the project ended in November 2018. As an indication of the continuing use by users of the tools and the demand by new potential users the following figures give an indication of the demand and sustainability (coupled with DHI and IWA's support and promotion of the FDMT) of the achievements of the project (Figure 5 and Figure 6). There were also over 1000 logins recorded to view the demonstration between November 2018 and March 2019.

Figure 5. Login to the FDMT portal since project closure

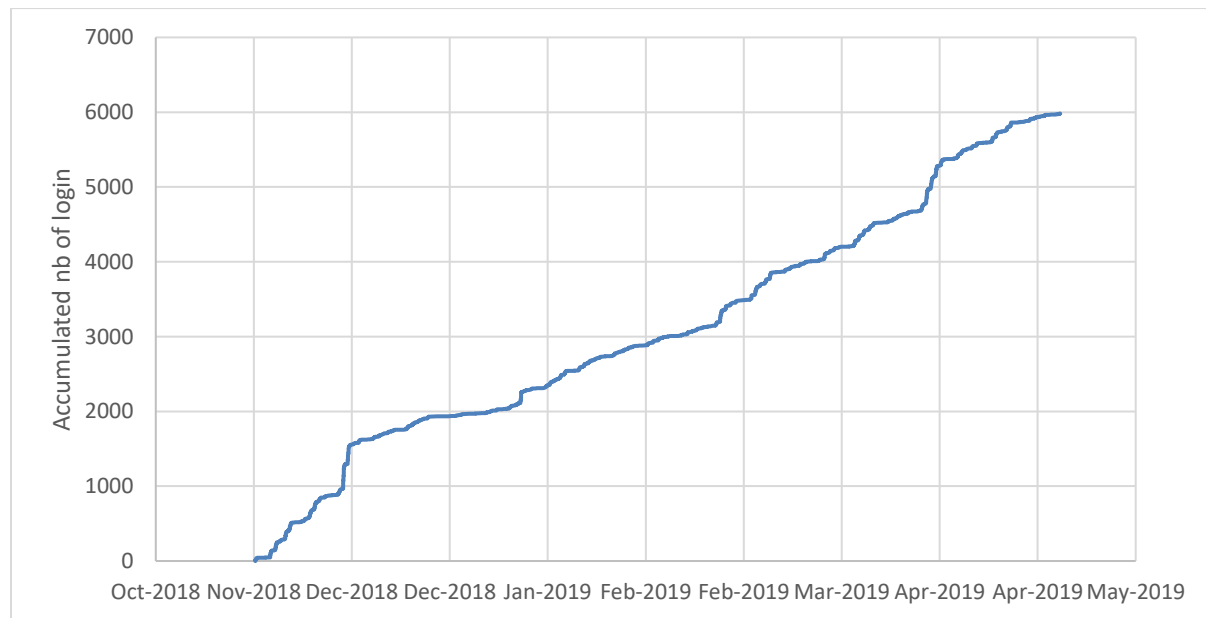
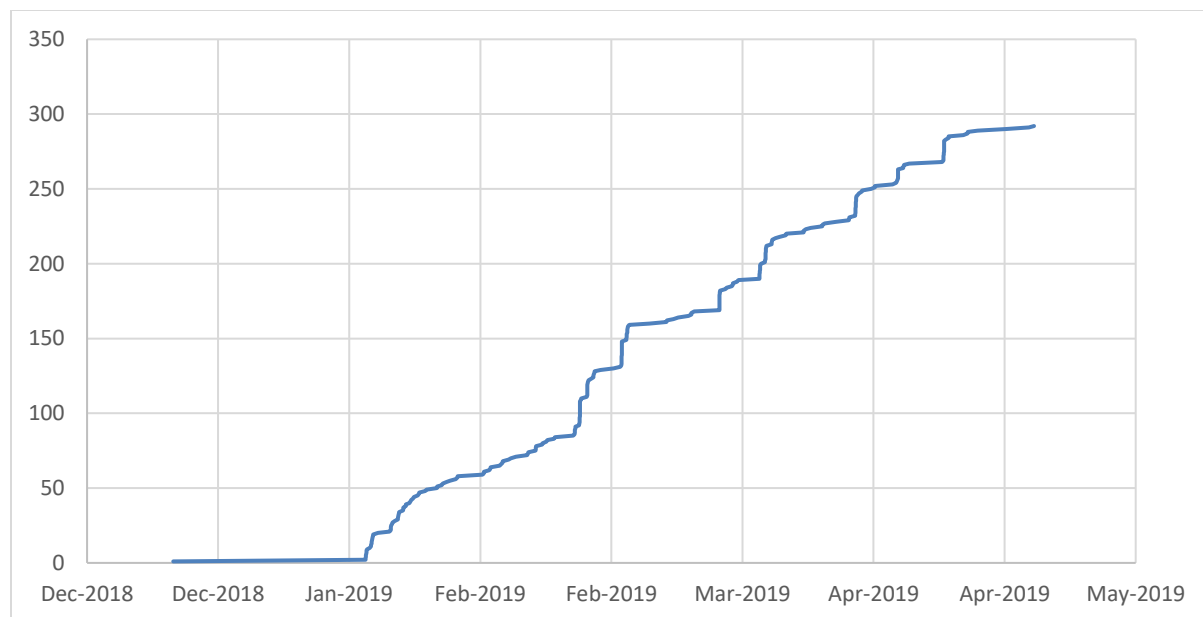


Figure 6. New user registration since project closure



227. A comment made by a number of stakeholders is that the tools (especially for WSP applications) would be desirable on stand-alone PCs (to avoid data confidentiality issues raised by PWA in Thailand - see section 5.3), or as a smartphone application that would assist field workers. DHI and IWA are aware of these interests and seeking support from other sources where these developments could be funded to further sustain the use of FDMT outputs.

228. The assessment of Institutional Sustainability of **'Highly Likely'**.

6 Conclusions

229. **The FDMT has delivered the CEO endorsed project objective and outcomes** within budget and with a short no-cost extension. The project is highly relevant to UN Environment and to GEF IW programmes and the tools will benefit a range of agencies and organisations working on river basin management and water supply.

230. The Decision Support System and underlying methodology developed by the FDMT Project is of significant relevance and benefit to multiple organisations and agencies that are working with water management under climate variability and change impacts. These clearly include current and planned GEF and UN Environment projects, and water supply utilities.

231. The **FDMT objective** (...methodology with tools to support a DSS...) has been successfully met with the development and pilot basin testing of the tools and training approaches at the basin and the water utility level. The scope of the objective (basin and water utility) has necessitated the PMU to beneficially split the training within the pilot basins to accommodate the two main end-user groups.

232. Although a detailed **gender** analysis was not conducted in the PPG phase, the project did undertake a significant study on the roles of women in water management within the three basins and deliver reports on the identification of gender sensitive indicators relevant for flood and drought management. In addition, disaggregated data at workshops and other meetings was collected.

233. The **co-executing agencies** (DHI and IWA) delivered the project effectively and in-line with their comparative advantages through an efficient PMU. The overall project management and governance was efficient with informative PSC meetings under the supervision of UN Environment's Task Manager.

234. **Pilot basins:** the lack of project resources to enable the pilot basins to implement the use of the tools (rather than to test the tools and training approaches) was seen by the evaluators as an omission in the design; but the inclusion in the project of implementation would have required additional budget and time for implementation. The project objective was the development of the tools, however, the pilot basins seem to have expected to get more from their involvement than 'just testing and training'. This perception certainly reduced 'national ownership' of the tools in Lake Victoria and Volta Basins. In the Chao Phraya basin, the technical and financial capacity of HII appears sufficient to sustain the use of the tools

235. **Training and awareness raising:** The project carried out an impressive number of training workshops. This has led to robust training methods appropriate for supporting the tools in other basins and water utilities. An important lesson (see Section 7): the project would have benefited if it had involved a wider group of stakeholders (e.g., academic institutes and disaster management organisations, beyond the inception phase). Several of the basin and water utility staff who had been trained by project activities have moved on to different jobs or have retired. Partnering with a local institution that could handle training would have solved the problem of staff turnover. During the evaluation visits, it was clear that the best way to gain familiarity with the FDMT was to have a one on one interaction between an expert and novice. Additionally, some users needed to print the entire guidance documents to facilitate stakeholder approval and use, which presented limitations on the uptake of the tool. The value of this approach to convey the importance and functionality of the tools to specific individuals (including GEF Secretariat and GEF STAP) should not be overlooked.

236. Several stakeholders considered that the **WSP tool** should be a standalone product to alleviate some of the issues of utilities not being able to upload sensitive information about processes or risk. In addition, future developments of the WSP should consider means to enable end-users to have more control of the software to enable customisation to outputs or to tailor site-specific issues (e.g., ensuring that risk matrices used are relevant to locations and not generic 'risks').

237. The issue of access to the 'backend' of the FDMT, i.e. for partners to be able make changes in the code, the models and hence the software that lay behind the portal interface was raised several times by partners. Some of this was tied to individuals who had high competence with designing and working with such systems, who felt that the partners should have more involvement in the science behind the portal.

238. Additional information on the sources and justification of **datasets** would be considered beneficial by stakeholders, although this information was often available on request. End-users also expressed an interest to have more information on the potential overlap with other similar tools or models with a comparison of benefits.

239. The **sustainability** of the FDMT tools and approaches is assured in the short-term by DHI maintaining the portal and IWA continuing to publicise the tools through its network. However, the uptake by GEF IW projects has been limited to-date despite several IW:LEARN supported twinning events and two GEF IW Conferences that gave a platform (presentations, posters and workshops, etc.) to encourage the use of the tools. The portal and tools have been included in a draft update of the GEF TDA/SAP manual for IW:LEARN. In the longer term, there is a role for UN

Environment, GEF Secretariat and GEF STAP to further promote these important aids in managing floods and droughts under climate variability and change impacts. DHI and IWA are actively working with other agencies (e.g. World Bank, WHO, UNCCD, etc.) to support the further use and revision of the tools. At the pilot level (as mentioned above) HII is further sustaining the use of tools through other regional projects; but, in Lake Victoria and Volta basins, there is less evidence of such activities. This could be linked to the differing roles between commissions (with restrictive budgets, resources and mandates) and organisations such as HII. The project could have benefitted from more engagement in Lake Victoria and Volta basins with institutes that could have assisted with sustainability (e.g., academic or research bodies).

6.1 Key Strategic Questions

240. The evaluation Terms of Reference identified four Key Strategic Questions and the details of these are presented in section 2.

241. **Strategic Question 1: Uptake of FDMT tools.** The web portal is operational and supports the objectives of the project by providing access to tools and methodology. Multiple stakeholders commented on the clarity and ease of use of the portal that was effectively supported by training and awareness raising. Within the pilot basins there was significant use of the portal and tools (including over 6000 logins after the project has been completed). Portal use by basin/utility managers has continued (see usage graphs in section 5.8) after the end of the project. Stakeholders and PMU have reported that other agencies (WHO, World Bank, UNCCD) are continuing to utilise the portal and tools.

242. **Strategic Questions 2: Use of FDMT tools.** In the Chao Phraya Basin in Thailand, HII has been received training enabling this national institute to train regional staff (in Irrawaddy basin) and provide assistance to national organisations (e.g. PWA and MWA). In Lake Victoria Basin there has been some application of the tools at the level of LVBC and at the Kisumu treatment works in Kenya. In the Volta River Basin, there has been the limited application of the tools at the basin level and for utilities for the WSP tools. The project has undertaken multiple technical training workshops and awareness raising activities in the pilot basins with over 300 personnel attending technical training. The pilot activities have had a significant and beneficial impact on the tools and the associated training programmes Workshops provided feedback on the content and approach of the training and were used to adaptively manage future content (e.g. splitting the training for basin managers and utility managers, adjusting the number of days for training, etc.).

243. **Strategic Question 3: Contribution of FDMT to other processes.** The PMU provided input to the update of the TDA/SAP guidance manual in January 2018 that has been incorporated in a draft for GEF IW:LEARN approval together with material from other GEF global projects (e.g. TWAP, World Water Assessment Programme (WWAP) gender guidance, Economic Valuation of Ecosystem guidance, etc.). The tools have been (and are continuing to be) used by IWA and WHO to provide WSP assistance in other locations. The WSP tool is being planned for further development by IWA/WHO to enhance functionality.

244. **Strategic Question 4: Wider adoption of FDMT tools.** IWA and DHI are continuing to support the awareness raising on the tools and ensuring the portal is maintained for the next 3-5 years. IWA is working with WHO to further develop and apply the tools. IHH are working (together with DHI) in Myanmar with the WB to apply the FDMT. DHI are also working with a number of agencies (World Bank, UNCCD, FAO) to further refine tools for use in drought forecasting and for

management of river basins (e.g. Zambesi). In the Danube (a 'learning basin') there has been little involvement in this project due to their well-developed approaches (following the European Union's Flood Directive) approaches to floods, but the PMU reported there was a growing interest in drought forecasting which is increasingly affecting the Danube region. There has been little uptake (to-date) by GEF IW projects (either IWRM or TDA/SAP focussed projects). Although the FDMT project has been presented at the last two IW Conferences the tools and portal have only recently been completed. As always with GEF IW 'tool' development projects, ensuring that the tools are adopted by other GEF IW projects is a challenge. There is a clear role for GEF Secretariat and the GEF STAP in ensuring that the FDMT are integrated into future IW projects at the PIF stage, supported by UN Environment. Discussions with three IW project managers (implementing IWRM actions) who attended the last IW Conference indicated that two were 'not aware' of this relevant project, but had their own regional approaches for floods/drought management.

6.2 FDMT Project Ratings

Table 8. Evaluation Rating Summary

Criterion	Summary Assessment	Rating
Strategic Relevance		HS
1. Alignment to MTS and POW	Aligned and relevant to the MTS and POW (Section 5.1.1)	HS
2. Alignment to UN Environment /GEF/Donor strategic priorities	Aligned and relevant to GEF IW focal area under the last 3 replenishments. (Section 5.1.2)	HS
3. Relevance to regional, sub-regional and national environmental priorities	Whilst this is a global project the issues (floods and droughts) are highly relevant at regional and national levels. (Section 5.1.3)	S
4. Complementarity with existing interventions	The project outputs are highly relevant to UN Environment's programmes including the 'World Situation Room' assessment of waterbodies of concern. The project is relevant to the SDG targets (supporting specifically SDG 6 with basin planning and WSPs), to needs of from river basin organisations (commissions) and to operational requirements of water supply utilities. (Section 5.1.4). There was limited use of the FDMT by existing interventions as it was only ready to use at the end of the project and there were no funds available to embed the Tools in on-going projects.	S
Quality of Project Design	The project design had clear strengths from the complementarity of comparative advantages from the two Executing Agencies (DHI and IWA) but suffered from a number of weakness due to insufficient budget and time to enable the implementation of the tools in the pilot basin which had not been considered part of the project. (Section 5.2)	S

Criterion	Summary Assessment	Rating
Nature of External Context	There are no significant issues that impact the project's external operating context. Indeed, the expectations are that the use of the project's DSS will facilitate river basin and water utilities managers to better adapt their management to extreme weather conditions.	F
Effectiveness	The effectiveness of implementation has been greatly assisted by the Project Management Unit, jointly staffed by the two co-executing agencies that contributed clear comparative advantages, at the basin and utility levels.	S
<i>1. Delivery of outputs</i>	All project outputs confirmed in the project inception report have been delivered. The tools to assist water managers assess impacts and develop strategies for floods and droughts have been delivered and training workshops delivered in all three pilot basins. A web portal has been designed to facilitate user access to the tools and guidance material.	S
<i>2. Achievement of direct outcomes</i>	All expected project outcomes as given in the project document have been achieved. The methodological and technical applications have been tested in the three pilot basins with basin organisations and authorities as well as water utility managers as the key stakeholders. The functionality of the FDMT supports the 11 modules as identified in the WSP manual (see http://www.wsportal.org/what-are-water-safety-plans/) and within the context of future changes.	S
<i>3. Likelihood of impact</i>	This is a project with potentially very significant global level impact on future GEF International Waters projects that use the TDA/Sap approach. The co-executing agencies are continuing to promote the FDMT to other potential users at basin and utility levels. Communication on and about the FDMT will be key to its acceptance and to its adoption. This project has prepared several high-quality assessments and strategic recommendation documents.	L
Financial Management		HS
<i>1. Completeness of project financial information</i>	All financial reports required have been completed in a timely and comprehensive manner with appropriate sign-off by authorised signatories. The records have been archived using an intuitive record keeping system	HS
<i>2. Communication between finance and project management staff</i>	Good communication at all levels, this removed some of the delays expected in a project with two equal co-executing partners	HS

Criterion	Summary Assessment	Rating
Efficiency	The project began less than three months after CEO endorsement with the Project Inception Meeting held within six months. All outputs were delivered within a short no-cost extension (this extension has resulted in a downgrading of the rating following the UN Environment guidance). PSC meetings were effectively conducted and reported. The MTR was held a year late, but all the recommendations made were reported to have been implemented by the PMU. The project design and execution included multiple factors that enhanced cost-efficiency, including the organisation of the PMU, building on previous work, utilising external meetings to raise awareness of the tools, etc.	S
Monitoring and Reporting		S
<i>1. Monitoring design and budgeting</i>	The monitoring design was consistent with UN Environment and GEF requirements and the budget was adequate for the completion of the planned activities. There were some issues (also raised by the MTR) about the wording of outcomes, outputs and output level indicators for the outcomes as presented in the Results Framework, but these were approved by PRC and accepted by the GEF for endorsement.	S
<i>2. Monitoring of project implementation</i>	The project results framework was used to report progress and issues requiring additional attention in the annual PIRs. Project monitoring was conducted effectively by the PMU.	S
<i>3. Project Reporting</i>	All technical reports (PIRs, 6-monthly progress reports, etc.) were delivered as required and were comprehensive and clear.	S
Sustainability		L
<i>1. Socio-political sustainability</i>	At the global level, the socio-political sustainability of the FDMT will be dependent on the demand for tools to address impacts of climate change and the support of key regional and global institutions. At the basin level, the ongoing support is highly dependent on 'champions' in the region. This was very strong in Thailand with HII having clear technical and regional competences, together with adequate financial and staff resources, to further apply the tools. At the LVBA and VBA, the resources of the commissions (financial and staffing) do not appear to be enough to maintain the use of the tools and to further upscale or replicate the approaches developed without significant and specific external support.	L

Criterion	Summary Assessment	Rating
<i>2. Financial sustainability</i>	The executing agencies have committed to providing on-going support for a limit period for the FDMT outputs. A key future source of support will be from future GEF IWRM projects and it has been important that the FDMT have publicised the tools effectively at GEF IW Conferences. It will be important that UN Environment and particularly the GEF continue to encourage the uptake of the use of these important tools for IWRM and TDA/SAP activities. Equally important is the on-going awareness raising that IWA is providing to its members and seeking opportunities to work with other agencies.	L
<i>3. Institutional sustainability</i>	The two executing agencies have indicated their willingness to keep supporting the web-portal (DHI) and the awareness raising within the IWA members. However long-term there is a need to identify a more appropriate mechanism for maintaining the tools/portal other through ad hoc project support. The MTR report highlighted the important role that UN Environment, GEF Secretariat and the GEF STAP could play in promoting the use of the tools within the GEF IW community and to other agencies (e.g. WHO, UNECE, UN-Water, etc.).	HL
I. Factors Affecting Performance		S
<i>1. Preparation and readiness</i>	The Project was well designed with some details of the pilot basins that was enhanced with stakeholder analysis during inception. Country engagement was not significant (the FDMT is a global project) but this relatively limited national engagement is considered by the consultants to have inhibited country ownership of the tools and methods applied in the three pilot basins.	S
<i>2. Quality of project management and supervision</i>	The PMU was effective and efficient and benefited from the two EAs taking the lead on the issues they had demonstrable comparative advantages. Backstopping from UN Environment was effective with adequate financial management support and good technical supervision from the Task Manager – noting that this project had three TMs during executions	HS
<i>3. Stakeholders participation and cooperation</i>	As a global project, the FDMT created multiple occasions to interact with interested stakeholders at conferences, exhibitions, etc. At the pilot basins, co-operation with key stakeholders involved with the project was good – despite these partners not receiving any funding for activities. Beyond the engaged partners the involvement of stakeholders in Thailand was adequate with clear inter-sectoral/-ministry involvement in awareness raising	S

Criterion	Summary Assessment	Rating
	events. In the Volta and the Lake Victoria basin it appeared that there was better engagement with the water utility managers as opposed to the basin level authorities. This could be because the geopolitics were more complicated in these transboundary basins	
4. <i>Responsiveness to human rights and gender equity</i>	The FDMT project was a global project developing tools for improved management responses to floods and droughts. As such the <i>implementation</i> of these tools and approaches are likely to benefit all within the basins. The project has undertaken an important analysis on the roles of women and men in flood/drought management in the pilot basins and reported disaggregated data on the participation in events.	MS
5. <i>Country ownership and drivenness</i>	This is a global project with very limited country input. The three pilots engaged with 'organisations' involved in water management (at regional, national and water utility levels) but not specifically with government representatives (although in Thailand representatives from multiple ministries did participate in awareness events and in the use of the results by the Prime Minister's Office)	MS
6. <i>Communication and public awareness</i>	The project developed a communication strategy and communicated the FDMT project approach and benefits and multiple local, national, regional and global events. The outputs (reports, recommendations, guidance, awareness documents) were all of very high quality in terms of the information and the presentation of this material.	S
Overall Project Rating		S

7 Lessons Learned

245. The following table summarises the main lessons learned with their context from the FDMT project and how they could guide future projects.

Table 9. Lessons learned from FDMT project

Lesson 1	Executing agencies must continually manage expectations of partners.
FDMT Project Context	<p>The three pilot basins played a valuable role in testing the tools and commenting on the training in the use of these tools, but were not resourced to implement the tools. Although this was specified in the project documents and in the inception workshops, there was later misunderstanding on the resources they would receive to run the Tools due to staff turnover. This has had an impact on the 'country ownership' (especially in Lake Victoria and Volta River Basins).</p> <p>With hindsight, this could have been improved but would have required a project with higher budget to deliver the tools earlier in project to enable training and implementation in the test basins to be concluded. It would also have satisfied the pilot basins more to have received funding for the testing they conducted and not just for them to have contributed their time although benefiting from exposure to the tools and training in their use.</p>
Application of lesson in similar projects	<p>There should be absolute clarity for 'pilots' on the level of resources and their expected input to avoid any impacts on ownership. A form of 'service agreement' to define the inputs expected in return for participation in the training should be considered if pilots are used in this under-financed format in the future. It is also important to continually revisit expectations of partners as the specific individuals in partner organisations change with time.</p>
Lesson 2	Assessment of the gender and social dimensions of DSS tools that influence on the ground management options must be done as early as possible in the project implementation cycle.
FDMT Project Context	<p>A gender and social assessment was carried out during project implementation, leading to the development of a rapid assessment tool to address gender and social dimensions in flood and drought management for basin organisations and utilities. If this assessment had been carried out earlier, the tool could have incorporated gendered considerations into the fundamental design of the tools rather than as an add-on. It also has to be accepted that there is a poor ratio in the numbers of women in water, DRR, engineering and modelling as compared to men.</p>
Application of lesson in similar projects	<p>There are two parts of this lesson, the value of involvement of marginalised groups and the timing of that involvement. Women's views on the use of Tools are very important due to their social responsibilities. The second is that the earlier in the project cycle that women can be fully involved and engaged in a project, the better they can contribute to the design of the project.</p>
Lesson 3	Care must be used in the wording of project documents as some project partners can have negative perceptions on the use of some words due to their own peculiar circumstances.
FDMT Project Context	<p>The interaction with project partners and other stakeholders highlighted the different states of readiness of the key institutions to accept</p>

	'recommendations' which had been pre-identified as 'strategic'. As a key function of the FDMT is to contribute to SAPs, the designations of recommendations as strategic is redundant.
Application of lesson in similar projects	Future engagements for IW tool development should avoid what some see as 'loaded language'. It is important to have consensus on the meanings of terms, noting that in many cases, English or French may not be the first language of stakeholders and partners.
Lesson 4	Projects which have delivery of a DSS tool as the main output must allow sufficient time within the project period for not just delivery but also for adequate rollout and trials by partners.
FDMT Project Context	Recognising that IT-based projects are utilising products that are evolving quickly, project design and execution should include some flexibility on budgets and timeline to accommodate potential changes. Tools developed by the project need to be completed with sufficient remaining time to enable adequate training of the intended users. As noted by the PMU, the final development of tools/web portal was completed late in the project cycle, necessitating a short no-cost project extension.
Application of lesson in similar projects	Projects that are meant to deliver DSS tools for use by project partners should be designed/implemented in such a way as to deliver usable products and have sufficient time to enable training and feedback on the deliverables.
Lesson 5	To ensure long term use and sustainability of DSS Tools, formal and informal involvement of technical/academic institutions who have training as part of their core business needs to be incorporated in project design.
FDMT Project Context	At the pilot basins some organisations receiving the training and providing input to the refinement of the tools suffered from a relatively high turnover of staff. A process needs to be encouraged whereby end-users can benefit from on-going training to accommodate changes in personnel and to act as a means of refreshing the users' memory (especially when there is no 'implementation' of the tools planned).
Application of lesson in similar projects	In future projects involving technical capacity development, it could be beneficial to consider the involvement of local/regional academic/research/capacity building partners. These organisations are well placed to provide on-going training supporting the long-term sustainability of the tools. The high quality of the training materials produced by the FDMT project means that the material could also have a place as supplementary information for use in tertiary cycle institutions, the FDMT project could have then benefited a wider (and younger stakeholder base) through a proactive engagement with universities.
Lesson 6	For full effectiveness and basin specific tailored responses, DSS tools need to be continually updated and refined, this needs end-user control of the DSS backend software.
FDMT Project Context	Stakeholders at the pilot basin expressed wishes to make the outputs (for example) more relevant to the specific needs of the basins. Three areas of concern were expressed:

	<ul style="list-style-type: none"> - The Basin Planning app, one of 10 apps on the developed portal, is currently built around the DHI MIKE hydrological model which is proprietary to DHI and there was a wish by partners to utilise open-source models such as WEAP¹⁹ that users could have adapted better to their specific needs. This view was made very strongly by partners who had been trained on WEAP already. - Greater flexibility in the reporting applications was requested. As noted, where possible these were addressed by the PMU swiftly, but there was a clear frustration that stakeholders would have like the flexibility to make modifications themselves. - WSP Risk matrices: Stakeholders using this tool wished to have used their own risk matrix (based on actual basin risks) rather than a default set of risks included in the tool
Application of lesson in similar projects	This links to the lesson on managing expectations (lesson 1). By enabling the software to be editable or through improved communications on the limitations of the software. There was a need to better manage the expectations of the stakeholders and reduce frustrations in the use of these tools. The lesson from this experience is also aligned to the importance of understanding better the end-users needs and applications.
Lesson 7	The Timing of Mid-Term Review has important ramifications on the value of the MTR to influence the project implementation
FDMT Project Context	The MTR for the FDMT was conducted very late in the project (last half of year 3 in a 4 year project). This clearly reduced the beneficial impacts of MTRs in helping to guide the remaining part of the project.
Application of lesson in similar projects	The MTR is a key activity that can determine the success of a project. Having it done at the mid-point it is important as the review normally would indicate areas where significant opportunities to address any critical issues exist and the project would still have sufficient time to implement any recommendations made.

8 Recommendations

246. The following table summarises the main recommendations, context and suggested responsible agency. UN Environment is the entity that can be held accountable by the Evaluation Office for implementing evaluation recommendations, as such, they have been targeted at UN Environment. For these recommendations to be taken up by GEF and by executing agencies of future similar projects, UN Environment must be proactive in communicating and disseminating the recommendations to GEF. The recommendations are based on the evaluation and have also been informed by the four Global Environment Facility (GEF) International Waters Experience Notes that were produced as a result of the FDMT project.

Table 10. Recommendations from FDMT project terminal evaluation

	Narrative
Recommendation 1	In future DSS projects, gender analysis at project design stage must be a prerequisite for project funding, as gender is a key

¹⁹ Water Evaluation and Planning

	Narrative
To: UN Environment	component in project designs for sustainability. Where gender has not been explicitly analysed in project design, it must be mainstreamed in project roll out through increased female consultation and participation, building on the experiences from other GEF IW projects available from GEF IW:LEARN.
Context and Justification	The floods and drought management tools that have been developed by DHI and IWA is truly impressive, BUT it is the view of the evaluators that the relevance, quality and usefulness of the FDMT would have benefitted immensely from having gender issues embedded in the project right from the project design stage.
Responsible agency	UN Environment
Timeline	On-going action
Recommendation 2 To: UN Environment, with support from UN Environment - DHI	<p>There needs to be proactive promotion of the use of FDMT tools by other GEF IW projects, GEF Focal Areas, to other UN Agencies and through GEF IW:LEARN meetings and website.</p> <p>Option 1: UN Environment to consider additional ‘clinics’ at future IW Conferences to present in small interactive groups (3-5 Project Managers, GEF Secretariat, other Agencies) the tools and their application.</p> <p>Option 2: UN Environment to ensure that TMs are aware of the features and benefits of the FDMT for assisting with freshwater based projects by demonstrating to other GEF Focal Area projects involving water management (e.g. Biodiversity, Climate Change, etc.) how to use of the FDMT within their projects.</p>
Context and Justification	<p>UN Environment is intending to utilise the FDMT approaches within the ‘World Situation Room’ with regards to Waterbodies of Concern. UN Environment have a good opportunity to be able to provide training on the use of tools to support other UN agencies in their application. DHI and IWA are actively working with other partners to further develop and exploit the tools from the FDMT project.</p> <p>UN Environment can to continue to encourage the GEF to integrate FDMT within all IWRM projects. This can be undertaken through routine meetings of the International Waters Task Force and by continuing to present the applications at GEF IW Conferences and through GEF IW:LEARN meetings.</p>
Responsible agency	It is noted that other GEF Focal Area project involving water management (e.g. Biodiversity, Climate Change, etc.) could benefit from the use of the FDMT within their projects.
Timeline	On-going commitment
Recommendation 3	GEF IW should update the TDA-SAP guidance with FDMT.

	Narrative
To: UN Environment, with support from GEF - IW	
Context	<p>The TDA-SAP approach has been an integral part of GEF IW projects for over 20 years. Recent (draft) updates have included the reference to the use of FDMT. Further development of the guidance should consider closer integration of the tools.</p> <p>UN Environment (through TMs) and with the co-operation of UN Environment - DHI, DHI and IWA, should investigate further options to promote the FDMT within the GEF TDA-SAP approach to facilitate the use of advanced basin analysis techniques developed by the FDMT project.</p>
Responsible agency	UN Environment to work with GEF Secretariat, STAP and other GEF Agencies
Timeline	Immediate Action

ANNEX 1: TERMS OF REFERENCE

Terminal Evaluation of the UN Environment/Global Environment Facility project “Development of Tools to Incorporate Impacts of Climatic Variability and Change, in Particular Floods and Droughts, into Basin Planning Processes”

Section 1: PROJECT BACKGROUND AND OVERVIEW

Project General Information

Table 1. Project summary

GEF Project ID:	4533		
Implementing Agency:	UN Environment	Executing Agency:	UNEP-DHI Centre, DHI, and the International Water Association (IWA)
Sub-programme:	Ecosystem Management and Climate Change	Expected Accomplishment(s):	TBC
UN Environment approval date:	27/02/2014	Programme of Work Output(s):	UNEP POW, Climate Change sub-programme Output #111 and Ecosystem Management sub-programme Output #311
GEF approval date:	27/03/2013	Project type:	FSP
GEF Operational Programme #:		Focal Area(s):	International Waters
		GEF Strategic Priority:	IW-1
Expected start date:	26/05/2014	Actual start date:	26/05/2014
Planned completion date:	26/05/2018	Actual completion date:	30/11/2018
Planned project budget at approval:	26,554,842 USD ²⁰	Actual total expenditures reported as of [date]:	30,559,999.63
GEF grant allocation:	4,090,000 USD	GEF grant expenditures reported as of [date]:	4,005,157.63
Project Preparation Grant - GEF financing:	190,000 USD	Project Preparation Grant - co-financing:	N/A
Expected Full-Size Project co-financing:	22,464,842 USD	Secured Full-Size Project co-financing:	22,464,842 USD
First disbursement:	12/8/2014	Date of financial closure:	30/11/2018
No. of revisions:	2	Date of last revision:	November 30 th , 2018 (budget revision)
No. of Steering Committee meetings:	4	Date of last/next Steering Committee meeting:	Last: 3-4/10/18 Next: N/A

²⁰ As stated in the Project Document, the total cost of the Project (GEF funds and cofinance) is USD22,464,842. However, the GEF contribution of USD4,090,000 along with the total pledged cofinance from the various partners of USD22,464,842 gives a total project cost of USD26,554,842.

Mid-term Review (planned date):	Q2/3 2017	Mid-term Review (actual date):	April-September 2017
Terminal Evaluation (planned date):	Feb – July 2019	Terminal Evaluation (actual date):	March – August 2019
Coverage - Country(ies):	Volta Basin (Burkina Faso and Ghana), Lake Victoria Basin (Kenya, Tanzania, & Uganda), Chao Phraya Basin (Thailand)	Coverage - Region(s):	Global
Dates of previous project phases:	N/A	Status of future project phases:	TBD

Project rationale

According to the Project Document, climatic variability and change is being increasingly experienced in the form of more frequent, severe and less predictable floods and drought events. There is a growing sense of urgency among countries, basin organizations and other end users such as utilities of the need to build resilience towards floods and droughts as an integral part of the management of water resources. The growing risks related to hydrologic uncertainty are magnified in transboundary contexts, where cooperation among countries is essential to any coping strategy.

The hydrological processes responsible for flood generation are continuous and interrelated across a river basin. There is a close relation between water resource management, river management, land use management, forest management, erosion control, agriculture, urban drainage and sewerage within a basin. Flood management measures at one location of the basin may have impacts on the magnitude of floods downstream thereby contributing to transfer of flood risks within the river basin. The flood management measures therefore should take account of the entire basin from upstream to downstream. Decision Support Systems for flood management and planning are required for the use of policy makers and flood practitioners to guide the operational procedures of basin flood management and planning. This involves early warning systems to be operated in real-time as well as the management of the water in the river and flood plains in between and under flood events.

Consequently, the International Waters (IW) focal area of the GEF identified the increased frequency and unpredictability of floods and droughts as a priority concern in transboundary contexts, along with the other multiple drivers that cause depletion and degradation of shared water resources. In its focal area strategy, GEF IW emphasized the need to address the multiple priority stresses – including floods and droughts - impacting transboundary basins, through a multi-country cooperative effort that would enable the needed coordinated mitigation response. As recommended by the GEF, such multi-country effort should be informed by, and start with a basin-wide Transboundary Diagnostic Analysis (TDA) including consideration of increased climatic variability and change, in particular floods and droughts. Hence the need for a science based methodological approach to integrate floods and droughts in this analysis. In more general terms, there was a need for a technically and economically feasible and scientifically sound way to help land, water and urban area managers to integrate the information on increased frequency, magnitude and unpredictability of flood and drought events into different scales of planning processes including integrated water resource management plans (IWRM) at the basin level and water safety plans (WSP) at the local level.

The “Development of Tools to Incorporate Impacts of Climatic Variability and Change, in Particular Floods and Droughts, into Basin Planning Processes” (Flood and Drought Management Tools’ (FDMT)) project responds to this growing sense of urgency around the need to improve resilience within transboundary (and national) basins, and for this to become a critical part of water management plans. In order to do this, the FDMT project aimed to develop a methodology for basins, which uses tools and Decision Support Systems that would allow the integration of information on floods and droughts to (i) the GEF IW TDA-Strategic Action Plan (SAP) or equivalent process, and (ii) IWRM plans and WSPs. The methodology was to be based on an assessment of present approaches and developed through consultation with stakeholders and experience exchange in selected basins representative of different transboundary contexts. There was to also be testing on the ground in those same pilot basins.

Most advanced commercially available Decision Support Systems (DSS) combine databases, models, GIS and web technologies with configurable decision logics. This information is processed in such a way that it allows

basin organizations and water managers in countries to produce various scenarios that can allow them to make informed decisions on relevant management options (e.g. zoning, early warning systems, water infrastructures) and provide answers to important management questions. As part of the project, open access modules were to be developed to allow the integration of flood and drought elements and of likely climatic scenarios into more commonly used DSSs, and apply them to IWRM planning, to the TDA process, and to WSPs. The Water Safety Plan approach was to be used to complement wider basin planning as it provides a more in-depth engagement with key stakeholders and their legitimate concerns about risk assessment and management options within their boundaries as well as those in the wider river basin context. A particular emphasis was to be placed on the management of floods and droughts affecting urban and industrial areas that are the centers of economic growth, assets and wealth creation. Furthermore, the engagement with key economic stakeholders depending on sound river basin management can be deepened and lead to a wider appreciation of river basin management benefits, at the national and transboundary levels.

Project objectives and components

The 'Flood and Drought Management Tools' (FDMT) project (<http://fdmt.iwlearn.org/>) is funded by the Global Environment Facility (GEF) International Waters (IW) and implemented by the United Nations Environment Programme (UN Environment), with the International Water Association (IWA), the DHI A/S, and the UNEP-DHI Centre as the executing agencies.

The project goal is to contribute to the global efforts being made to maintain acceptable levels of societal and ecosystem sustainability vis-a-vis growing climatic uncertainty and unpredictability. The objective of the project is to improve the ability of land, water and urban area managers operating in transboundary river basins to recognize and address, as part of the TDA/SAP, IWRM and water safety planning processes, the implications of the increased frequency, magnitude and unpredictability of flood and drought events (F&D). The FDMT Project strategy is based on four mutually supportive components to achieve the project objective and overall goal.

The original results framework was revised during the project inception phase. Table presents the revised framework, which has the following four Components:

Component 1: Development of methodology and tools. The project was to develop jointly with pilot basins stakeholders a methodology with tools aimed at increasing understanding of F&D dynamics and impacts at transboundary and national levels and including enhancement of commonly used decision support systems. As per the Project Document, the expected output of Component 1 was at least 6 step by step methodologies or descriptions with tools adopting a basin and local approach, including enhancements for decision support systems (DSS). Following the project inception phase, it was changed to a flexible and user-friendly web based DSS system that would allow the integration of flood and drought issues into (i) the TDA/SAP GEF IW or equivalent processes, and (ii) IWRM plans and (iii) Water Safety plans. Activities included the development and integration of F&D components for DSS systems, stakeholder consultations in each pilot basin and learning basin, the development and quality testing of DSS codes which integrates flood and drought management decisions in water resources management, estimation of F&D impact and climate resilience, and the development of a methodology to apply DSSs in TDA/SAP, IWRM and WSP, and the preparation of consolidated manuals and guidance for application.

Component 2: Application and testing at basin-wide level. The project was to apply the (step by step) methodologies at the basin level (at least 3) using DSS tools in the three pilot basins to enable the integration of flood and drought issues into the IWRM, TDA/SAP and other planning processes. Following the inception phase, this was changed to focus on guiding users with the application of the DSS system. The main output of this component was strategic recommendations for inclusion of flood and droughts consideration in IWRM, TDA/SAP, WSP, and other basin land and water planning tools in the pilot basins. Activities included the establishment of a working environment for the application of methodology with DSS tools in pilot basins, application of F&D Components in a DSS for TDA/SAP, IWRM and other planning processes, and recommendations of policy and strategy for F&D in consultation with stakeholders.

Component 3: Validation and testing at local level. The outcome for this component was that the application of the step by step methodologies²¹ at lower administrative levels (specifically water utilities) using DSS tools in the three pilot basins enables the integration of flood and drought issues

²¹ Following the inception phase, the step-by-step methodologies were changed to a flexible and user-friendly web-based DSS system.

into local level planning (e.g. water safety planning) for water suppliers and regulators, (agro) industries and urban area managers to consider options for increased resilience and preparedness to F&D within broader basin context with an emphasis on vulnerable groups affected by water related shocks. The main output of this component was recommendations for inclusion of flood and drought issues in water safety planning (WSP) and other local planning approaches in the three pilot basins. Activities included cooperation with utilities to identify test areas, assessment of the gender and social dimensions in F&D management, development of downscaled methodology with DSS tools for incorporating F&D into planning processes in collaboration with key end users in pilot basins, and support of the application of methodology with DSS tools in at least 3 urban areas in the pilot basins through involving utilities and industry end users.

Component 4: Capacity building and dissemination. The focus of this component is on transferring knowledge and capacity to the stakeholders to enable them to apply the different project outputs within their respective basins. It aims to achieve two outcomes – (i) experience and know how gained through the project is made available within the GEF system and beyond, and (ii) global dialogue on water security and climate resilience enriched by the dissemination of and awareness raising on project outcomes. Component 4 has several outputs among which are training materials, communication strategy, experience notes, and public awareness and communication materials.

In addition to these four Components, there was a 5th component (designated as Component 0) that covered project preparation and inception activities.

The project was implemented from June 2014 - November 2018. The project outcomes in the form of technical applications and guidelines were tested and validated at both basin (basin organisations) and local levels (water utilities) in 3 different pilot basins (Volta Basin in West Africa, Lake Victoria Basin in East Africa, and Chao Phraya Basin in Thailand) involving a total of 12 countries; and were to be made available for all other GEF IW basins.

A number of partners in the three pilot basins were involved in testing and validation of the tools: Volta Basin Authority (VBA); Ghana Water Company Limited; Lake Victoria Basin Commission (LVBC); Kisumu Water and Sewerage Company, Kenya (KIWASCO); National Office for Water and Sanitation, Burkina Faso (ONEA); National Water and Sewerage Corporation, Uganda (NWSC); Mwanza Urban Water and Sanitation Authority, Tanzania (MWUWASA); Hydro and Agro Informatics Institute, Thailand (HAI); Metropolitan Waterworks Authority, Thailand (MWA); and Provincial Waterworks Authority, Thailand (PWA). Two other basins (Nile and Danube River Basins) were designated as learning basins through the Nile Basin Initiative (NBI) and the International Commission for Protection of Danube River (ICPDR) and International Association of Water Supply Companies in the Danube River Catchment Area (IAWD) respectively.

Table 2. FDMT Project Revised Results Framework22

PROJECT OBJECTIVE: To improve the ability of land, water and urban area managers operating in transboundary river basins to recognize and address, as part of the TDA/SAP, IWRM and water safety planning processes, the implications of the increased frequency, magnitude and unpredictability of flood and drought events (F&D)	
Component 1 Development of methodology and tools	
Outcome	Output
Outcome 1.1 Methodologies with tools aimed at increasing understanding of flood and drought dynamics and impacts at transboundary and local levels and including enhancement of commonly used decision support systems, fully developed jointly with pilot basins stakeholders.	Output 1.1 At least 6 step by step methodologies with tools adopting a basin and local approach, including enhancements for decision support systems, that would allow the integration of flood and drought issues into (i) the TDA/SAP GEF IW or equivalent processes, and (ii) IWRM plans and (iii) Water Safety plans
Component 2 Validation and testing at basin-wide level	
Outcome 2.1 Application of the (step by step) methodologies at the basin level (at least 3) using DSS tools in the three pilot basins enables the integration of flood and drought issues into the IWRM, TDA/SAP and other planning processes	Output 2.1 Strategic recommendations for inclusion of flood and droughts consideration in IWRM, TDA/SAP, WSP and other basin land and water planning tools in the 3 selected pilot basins.

Component 3 Validation and testing at local level	
<p>Outcome 3.1 Application of the methodologies at lower administrative levels using DSS tools in the three pilot basins enables the integration of flood and drought issues into local level planning (e.g. water safety planning) for water suppliers and regulators, (agro) industries and urban area managers to consider options for increased resilience and preparedness to F&D within broader basin context with an emphasis on vulnerable groups affected by water related shocks.</p>	<p>Output 3.1 Recommendations for inclusion of flood and drought issues in WSP and other local planning methods in the 3 pilot basins with integration of urban and (agro-) industrial water users' perspectives and realities.</p>
Component 4 Capacity building and dissemination	
<p>Outcome 4.1 Experience and know how gained through the project is made available within the GEF system and beyond.</p>	<p>Output 4.1.1 Learning package including technical specifications and training materials for the application of the new methodology with DSS tools is tested in 2-3 trainings with basin officials, utility and industry management and operational staff, and representatives from civil society with 15-30 people per training.</p>
<p>Outcome 4.2 Global dialogue on water security and climate resilience enriched by the dissemination of and awareness raising on project outcomes.</p>	<p>Output 4.2.1 Communication approach developed to disseminate F&D methodology within pilot basins, GEF basins, and to other relevant end users.</p>
	<p>Output 4.2.2 2-3 Experience Notes and other documents and audio-visual materials produced for IW LEARN dissemination mechanisms and website.</p>
	<p>Output 4.2.3 Communication materials (4-5) developed for and participation in major water events: WWF, Water Week, GEF IWC 8/9, and IWA Conferences.</p>

Annex 2 presents the Theory of Change (ToC) diagram for the FDMT Project, developed by the Mid Term Review (MTR) consultant. It should be noted that an explicit ToC diagram from the project development phase was not prepared as it was not a requirement at that time. The intervention logic in the Project Document and results framework was analysed by the MTR consultant to establish the project's theory of change, and a reconstructed ToC was developed to ensure that there is a consistent and clear conceptual understanding of the project impact pathways.

Executing Arrangements

The roles and responsibilities in relation to project implementation (oversight, management and guidance/ technical advice) are detailed in the ProDoc Section 4 Institutional Framework and Implementation Arrangements. The Institutional Framework and Implementation Arrangements are also shown schematically in Figure 2 below. The Implementing agency of the Project is UNEP, while DHI A/S, and the International Water Association – IWA are joint executing partners. Upon CEO endorsement of the project, UNEP was to prepare a single, three-party Project Cooperation Agreement (PCA) between itself and DHI and IWA for delivery of the project. The PCA was to outline the roles and responsibilities of the each of the agencies (UNEP, DHI, IWA) during project implementation.

The **Steering Committee (SC)** was to be composed of representatives of the funding partners and of the implementing and executing agencies (GEF Secretariat, UNEP, DHI, IWA), and of the pilot basin organizations. The SC was to set its own operational procedures and approve its own Terms of Reference. It was to meet at least once a year and thereafter as frequently as the SC itself deems necessary. The SC was to be responsible for providing general oversight of the execution of the Project and will ensure that all inputs and activities agreed upon in the project document are adequately prepared and implemented.

Owing to the specialized nature of the flood and drought modelling methodologies, the project executing agencies, DHI and IWA, were to second existing project staff to the project to form **the Project Management Unit (PMU)**. The PMU was to include a technical coordinator from DHI and an outreach coordinator from IWA

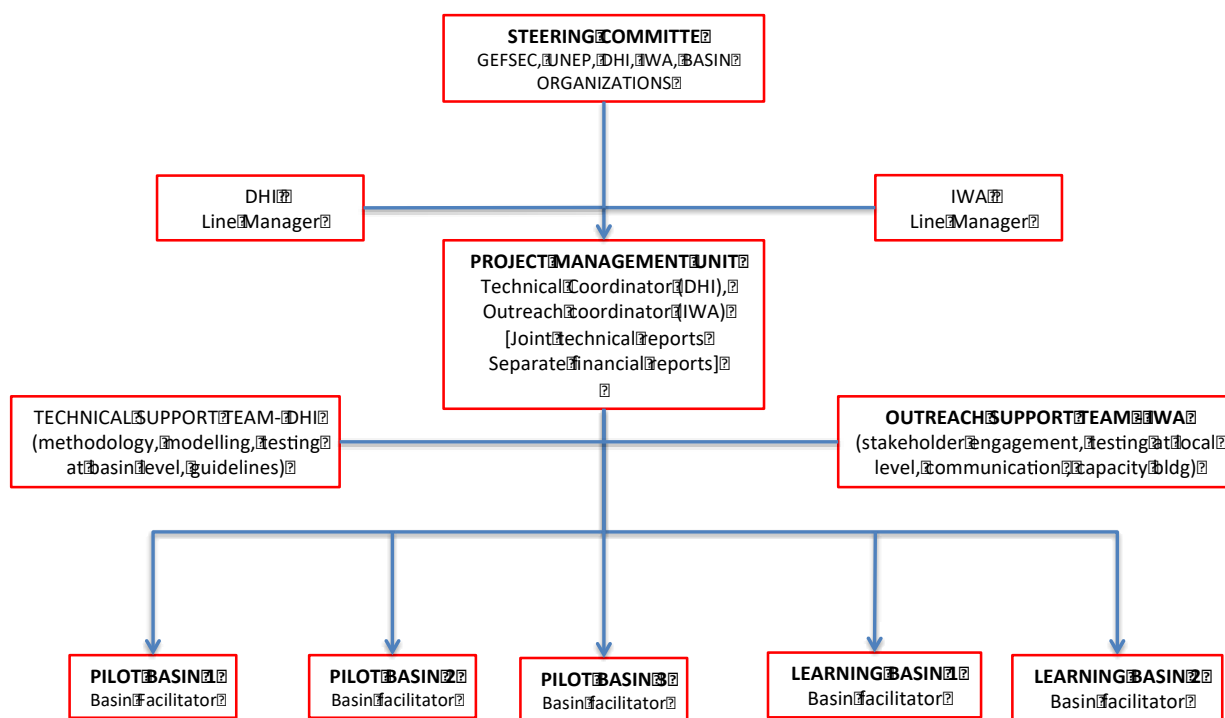
who would hold weekly management meetings, and secretarial and administrative support. The PMU was to carry out the day-to-day administration of the Project and be responsible to the SC for the project activities, financial accountability, staff welfare and discipline, etc.

The PMU was to tap into resources in IWA and DHI to support the delivery of the project. The DHI technical coordinator was to work with a technical support team in DHI to develop and implement the DSS. Whereas, the IWA outreach coordinator was to work with staff within IWA (outreach support team) on relevant tasks such as the design and operation of the website, for the organization of consultation and outreach conferences, workshops, and special events and for the production of dissemination materials and publications. These content support teams from IWA and DHI were to report directly to the PMU.

Permanent focal points in the three pilot basins (basin facilitators) were to be selected among existing staff within the executing agencies that were present in the region. IWA would have staff in each of the pilot basins, and (potentially) the learning basins. These staff were to have the role of relationship building and to facilitate that the basin visits from the coordinators and technical support teams were productive. The basin facilitators would report directly to the PMU. The project management unit was to liaise with these contact points to organize meetings, identify stakeholders and implement actions on the ground assisted by short term DHI and IWA staff.

Cooperation partners were to be invited to participate in relevant project events (e.g. basin inception meetings and DSS testing and training in the pilot basins) and to contribute/comment on relevant project outputs. Final cooperation arrangements with these partners were to be agreed during the inception period.

Figure 2. Institutional Framework and Implementation Arrangements²³



Project Cost and Financing

As stated in the Project Document, the total cost of the Project (GEF funds and co-finance) is USD \$ 22,464,842. However, the GEF contribution of USD \$4,090,000 along with the total pledged co-finance from the various partners of USD \$22,464,842 gives a total project cost of USD \$26,554,842.

Table below provides planned versus actual costs and Table summarizes the project co-financing as per the project design documentation.

²³ From the Project Document.

Table 3. Budget and Expenditure by Component

Component/sub-component/output <i>All figures as USD</i>	GEF Financing	Co-Financing	Estimated total cost at design	Actual Cost/ expenditure	Expenditure ratio (actual/ planned)
Component 1	1,691,976	9,917,379	11,609,355	10,763,116	0.93
Component 2	949,943	5,617,938	6,567,881	6,442,859	0.98
Component 3	599,256	2,347,160	2,946,416	3,273,557	1.39
Component 4	658,405	1,082,365	1,740,770	2,257,784	1.30
Project Management	190,420	3,500,000	3,690,420	3,732,526	1.01
TOTAL PROJECT COSTS	4,090,000	22,464,842	26,554,842	26,469,999	

Table 4. Co-financing Table

Sources of Co-financing	Name of Co-financier (source)	Type of Cofinancing	PLANNED Cofinancing Amount (\$)	ACTUAL Cofinancing Amount (\$)
Private Sector	IWA	In-kind	2,919,842	2,919,842
Private Sector	DHI	In-kind	11,277,000	11,277,000
GEF Agency	UNEP	In-kind	733,000	733,000
GEF Agency	UNEP-DHI	In-kind	100,000	100,000
National Government	Basin Organizations and Partners	In-kind	7,435,000	7,435,000
Total Co-financing			22,464,842	22,464,842

Implementation Issues

The FDMT Project experienced a 14-month delay between GEF CEO approval and actual start (although it did start on the original expected start date). Approval by the GEF CEO was granted on 27 March 2013 and by UN Environment on 27 February 2014, with an expected start date of 26 May 2014 and planned completion date of 26 May 2018. A tripartite Project Cooperation Agreement (PCA) was signed between UN Environment, DHI, and IWA on 25 April 2014, and the first disbursement was made on 12 August 2014. Following a 6-month inception phase, the Project inception meeting was held in Bangkok from 23-24 November 2014. The first PSC meeting was held in Kisumu, Kenya, from 1-3 March 2015.

The Mid-term Review (MTR) of the project was conducted from April – September 2017. According to the MTR, project execution had proceeded in accordance with the annual work plan (with minor adjustments). Technical work on the DSS only started in March 2015 after the first PSC meeting, and some delay was encountered in meeting most of the mid-term targets due to the need to implement adaptive measures to address the challenges encountered, and to the evolving nature of the development of the tools. Delay in completion of the DSS and tools (Component 1) had knock-on impacts on the other Components. Despite the delays, the MTR overall rating for the FDMT project was ‘Highly Satisfactory’. The project was expected to achieve all its outcomes, its objective and goal, and yield substantial benefits in terms of strengthening the ability of managers to address climate change impacts on flood and drought. Considering that further capacity development as well as extensive marketing of the DSS would be required when the tools were to be completed, the MTR found that a no-cost extension of the Project may be necessary to ensure that the Project objective and overall goal are attained, in addition to implementing a series of recommendations which highlighted issues of sustainability, training and outreach to decision makers. The Project was extended until November 2018.

Section 2. OBJECTIVE AND SCOPE OF THE EVALUATION

Key Evaluation principles

Evaluation findings and judgements should be based on **sound evidence and analysis**, clearly documented in the evaluation report. Information will be triangulated (i.e. verified from different sources) as far as possible, and when verification is not possible, the single source will be mentioned (whilst anonymity is still protected). Analysis leading to evaluative judgements should always be clearly spelled out.

The “Why?” Question. As this is a terminal evaluation and a follow-up project is likely [or similar interventions are envisaged for the future], particular attention should be given to learning from the experience. Therefore, the “Why?” question should be at the front of the consultants’ minds all through the evaluation exercise and is supported by the use of a theory of change approach. This means that the consultants need to go beyond the assessment of “what” the project performance was, and make a serious effort to provide a deeper understanding of “why” the performance was as it was. This should provide the basis for the lessons that can be drawn from the project.

Baselines and counterfactuals. In attempting to attribute any outcomes and impacts to the project intervention, the evaluators should consider the difference between *what has happened with, and what would have happened without, the project*. This implies that there should be consideration of the baseline conditions, trends and counterfactuals in relation to the intended project outcomes and impacts. It also means that there should be plausible evidence to attribute such outcomes and impacts to the actions of the project. Sometimes, adequate information on baseline conditions, trends or counterfactuals is lacking. In such cases this should be clearly highlighted by the evaluators, along with any simplifying assumptions that were taken to enable the evaluator to make informed judgements about project performance.

Communicating evaluation results. A key aim of the evaluation is to encourage reflection and learning by UN Environment staff and key project stakeholders. The consultant should consider how reflection and learning can be promoted, both through the evaluation process and in the communication of evaluation findings and key lessons. Clear and concise writing is required on all evaluation deliverables. Draft and final versions of the main evaluation report will be shared with key stakeholders by the Evaluation Manager. There may, however, be several intended audiences, each with different interests and needs regarding the report. The Evaluation Manager will plan with the consultant(s) which audiences to target and the easiest and clearest way to communicate the key evaluation findings and lessons to them. This may include some or all of the following; a webinar, conference calls with relevant stakeholders, the preparation of an evaluation brief or interactive presentation.

Objective of the Evaluation

In line with the UN Environment Evaluation Policy²⁴ and the UN Environment Programme Manual²⁵, the Terminal Evaluation (TE) is undertaken at completion of the project to assess project performance (in terms of relevance, effectiveness and efficiency), and determine outcomes and impacts (actual and potential) stemming from the project, including their sustainability. The evaluation has two primary purposes: (i) to provide evidence of results to meet accountability requirements, and (ii) to promote operational improvement, learning and knowledge sharing through results and lessons learned among UN Environment, UNEP-DHI Centre, DHI and IWA. Therefore, the evaluation will identify lessons of operational relevance for future project formulation and implementation especially for any second phase of the project.

Key Strategic Questions

In addition to the evaluation criteria outlined in Section 10 below, the evaluation will address the **strategic questions** listed below. These are questions of interest to UN Environment and to which the project is believed to be able to make a substantive contribution:

Is the Flood and Drought web portal operational and does it effectively support the overall project objectives? To what extent have the web portal and its web applications been utilized by target stakeholders? What are the reasons for successful/unsuccessful uptake of the web portal and how could it be improved for sustained usage and uptake?

To what extent have land, water and urban area managers been able to practically apply the methodologies and tools in their work without further training and support including beyond the end of the project? To what extent have the capacity building and training activities of the project helped to improve this application?

To what extent and in what ways has the project contributed to the TDA/SAP process and informed the way target stakeholders undertake water safety planning in the pilot basins?

²⁴ <https://www.unenvironment.org/resources/other-evaluation-reportsdocuments/evaluation-policy-2016>

²⁵ http://www.unep.org/QAS/Documents/UNEP_Programme_Manual_May_2013.pdf . This manual is under revision.

To what extent have the tools and/or approaches been adopted and applied in basins other than the project's pilot and learning basins?

Evaluation Criteria

All evaluation criteria will be rated on a six-point scale. Sections A-I below, outline the scope of the criteria and a link to a table for recording the ratings is provided in Annex 1). A weightings table will be provided in excel format (link provided in Annex 1) to support the determination of an overall project rating. The set of evaluation criteria are grouped in nine categories: (A) Strategic Relevance; (B) Quality of Project Design; (C) Nature of External Context; (D) Effectiveness, which comprises assessments of the delivery of outputs, achievement of outcomes and likelihood of impact; (E) Financial Management; (F) Efficiency; (G) Monitoring and Reporting; (H) Sustainability; and (I) Factors Affecting Project Performance. The evaluation consultants can propose other evaluation criteria as deemed appropriate.

A Strategic Relevance

The evaluation will assess, in line with the OECD/DAC definition of relevance, *'the extent to which the activity is suited to the priorities and policies of the target group, recipient and donor'*. The evaluation will include an assessment of the project's relevance in relation to UN Environment's mandate and its alignment with UN Environment's policies and strategies at the time of project approval. Under strategic relevance an assessment of the complementarity of the project with other interventions addressing the needs of the same target groups will be made. This criterion comprises four elements:

1. *Alignment to the UN Environment Medium Term Strategy²⁶ (MTS) and Programme of Work (POW)*

The evaluation should assess the project's alignment with the MTS and POW under which the project was approved and include, in its narrative, reflections on the scale and scope of any contributions made to the planned results reflected in the relevant MTS and POW.

2. *Alignment to UN Environment / Donor/GEF Strategic Priorities*

Donor, including GEF, strategic priorities will vary across interventions. UN Environment strategic priorities include the Bali Strategic Plan for Technology Support and Capacity Building²⁷ (BSP) and South-South Cooperation (S-SC). The BSP relates to the capacity of governments to: comply with international agreements and obligations at the national level; promote, facilitate and finance environmentally sound technologies and to strengthen frameworks for developing coherent international environmental policies. S-SC is regarded as the exchange of resources, technology and knowledge between developing countries. GEF priorities are specified in published programming priorities and focal area strategies.

3. *Relevance to Regional, Sub-regional and National Environmental Priorities*

The evaluation will assess the extent to which the intervention is suited, or responding to, the stated environmental concerns and needs of the countries, sub-regions or regions where it is being implemented. Examples may include national or sub-national development plans, poverty reduction strategies or Nationally Appropriate Mitigation Action (NAMA) plans or regional agreements etc.

4. *Complementarity with Existing Interventions*

An assessment will be made of how well the project, either at design stage or during the project mobilization, took account of ongoing and planned initiatives (under the same sub-programme, other UN Environment sub-programmes, or being implemented by other agencies) that address similar needs of the same target groups. The evaluation will consider if the project team, in collaboration with Regional Offices and Sub-Programme Coordinators, made efforts to ensure their own intervention was complementary to other interventions, optimized any synergies and avoided duplication of effort. Examples may include UN Development Assistance Frameworks or One UN programming. Linkages with other interventions should be described and instances where UN Environment's comparative advantage has been particularly well applied should be highlighted.

Factors affecting this criterion may include:

- Stakeholders' participation and cooperation
- Responsiveness to human rights and gender equity

²⁶ UN Environment's Medium Term Strategy (MTS) is a document that guides UN Environment's programme planning over a four-year period. It identifies UN Environment's thematic priorities, known as Sub-programmes (SP), and sets out the desired outcomes, known as Expected Accomplishments (EAs), of the Sub-programmes.

²⁷ <http://62.160.8.20/bsp/staticpages/mandate.aspx>

- Country ownership and driven-ness

B. Quality of Project Design

The quality of project design is assessed using an agreed template during the evaluation inception phase, ratings are attributed to identified criteria and an overall Project Design Quality rating is established (www.unep.org/evaluation). This overall Project Design Quality rating is entered in the final evaluation ratings table as item B. In the Main Evaluation Report a summary of the project's strengths and weaknesses at design stage is included, while the complete Project Design Quality template is annexed in the Inception Report.

Factors affecting this criterion may include (at the design stage):

- Stakeholders participation and cooperation
- Responsiveness to human rights and gender equity

C. Nature of External Context

At evaluation inception stage a rating is established for the project's external operating context (considering the prevalence of conflict, natural disasters and political upheaval). This rating is entered in the final evaluation ratings table as item C. Where a project has been rated as facing either an Unfavourable or Highly Unfavourable external operating context, and/or a negative external event has occurred during project implementation, the ratings for Effectiveness, Efficiency and/or Sustainability may be increased at the discretion of the Evaluation Consultant and Evaluation Manager together. A justification for such an increase must be given.

D. Effectiveness

i) Delivery of Outputs

The evaluation will assess the project's success in producing the programmed outputs (*products, capital goods and services resulting from the intervention*) and achieving milestones as per the project design document (ProDoc). Any *formal* modifications/revisions made during project implementation will be considered part of the project design. Where the project outputs are inappropriately or inaccurately stated in the ProDoc, reformulations may be necessary in the reconstruction of the TOC. In such cases a table should be provided showing the original and the reformulation of the outputs for transparency. The delivery of outputs will be assessed in terms of both quantity and quality, and the assessment will consider their ownership by, and usefulness to, intended beneficiaries and the timeliness of their delivery. The evaluation will briefly explain the reasons behind the success or shortcomings of the project in delivering its programmed outputs and meeting expected quality standards.

Factors affecting this criterion may include:

- Preparation and readiness
- Quality of project management and supervision²⁸

ii) Achievement of Direct Outcomes

The achievement of direct outcomes (*short and medium-term effects of the intervention's outputs; a change of behaviour resulting from the use/application of outputs, which is not under the direct control of the intervention's direct actors*) is assessed as performance against the direct outcomes as defined in the reconstructed²⁹ Theory of Change. These are the first-level outcomes expected to be achieved as an immediate result of project outputs. As in 1, above, a table can be used where substantive amendments to the formulation of direct outcomes is necessary. The evaluation should report evidence of attribution between UN Environment's intervention and the direct outcomes. In cases of normative work or where several actors are collaborating to achieve common outcomes, evidence of the nature and magnitude of UN Environment's 'substantive contribution' should be included and/or 'credible association' established between project efforts and the direct outcomes realised.

²⁸ In some cases 'project management and supervision' will refer to the supervision and guidance provided by UN Environment to implementing partners and national governments while in others, specifically for GEF funded projects, it will refer to the project management performance of the executing agency and the technical backstopping provided by UN Environment.

²⁹ UN Environment staff are currently required to submit a Theory of Change with all submitted project designs. The level of 'reconstruction' needed during an evaluation will depend on the quality of this initial TOC, the time that has lapsed between project design and implementation (which may be related to securing and disbursing funds) and the level of any changes made to the project design. In the case of projects pre-dating 2013 the intervention logic is often represented in a logical framework and a TOC will need to be constructed in the inception stage of the evaluation.

Factors affecting this criterion may include:

- Quality of project management and supervision
- Stakeholders' participation and cooperation
- Responsiveness to human rights and gender equity
- Communication and public awareness

iii) Likelihood of Impact

Based on the articulation of longer term effects in the reconstructed TOC (*i.e. from direct outcomes, via intermediate states, to impact*), the evaluation will assess the likelihood of the intended, positive impacts becoming a reality. Project objectives or goals should be incorporated in the TOC, possibly as intermediate states or long term impacts. The Evaluation Office's approach to the use of TOC in project evaluations is outlined in a guidance note available on the Evaluation Office website, <https://www.unenvironment.org/about-un-environment/evaluation> and is supported by an excel-based flow chart, 'Likelihood of Impact Assessment Decision Tree'. Essentially the approach follows a 'likelihood tree' from direct outcomes to impacts, taking account of whether the assumptions and drivers identified in the reconstructed TOC held. Any unintended positive effects should also be identified and their causal linkages to the intended impact described.

The evaluation will also consider the likelihood that the intervention may lead, or contribute to, unintended negative effects. Some of these potential negative effects may have been identified in the project design as risks or as part of the analysis of Environmental, Social and Economic Safeguards.³⁰

The evaluation will consider the extent to which the project has played a catalytic role or has promoted scaling up and/or replication³¹ as part of its Theory of Change and as factors that are likely to contribute to longer term impact.

Ultimately UN Environment and all its partners aim to bring about benefits to the environment and human well-being. Few projects are likely to have impact statements that reflect such long-term or broad-based changes. However, the evaluation will assess the likelihood of the project to make a substantive contribution to the high-level changes represented by UN Environment's Expected Accomplishments, the Sustainable Development Goals³² and/or the high-level results prioritised by the funding partner.

Factors affecting this criterion may include:

- Quality of Project Management and Supervision (including adaptive management)
- Stakeholders participation and cooperation
- Responsiveness to human rights and gender equity
- Country ownership and drivenness
- Communication and public awareness

E. Financial Management

Financial management will be assessed under two themes: *completeness* of financial information and *communication* between financial and project management staff. The evaluation will establish the actual spend across the life of the project of funds secured from all donors. This expenditure will be reported, where possible, at output level and will be compared with the approved budget. The evaluation will assess the level of communication between the Project/Task Manager and the Fund Management Officer as it relates to the effective delivery of the planned project and the needs of a responsive, adaptive management approach. The evaluation will verify the application of proper financial management standards and adherence to UN Environment's financial management policies. Any financial management issues that have affected the timely delivery of the project or the quality of its performance will be highlighted.

Factors affecting this criterion may include:

- Preparation and readiness
- Quality of project management and supervision

30 Further information on Environmental, Social and Economic Safeguards (ESES) can be found at <http://www.unep.org/about/eses>

31 Scaling up refers to approaches being adopted on a much larger scale, but in a very similar context. Scaling up is often the longer term objective of pilot initiatives.

Replication refers to approaches being repeated or lessons being explicitly applied in new/different contexts e.g. other geographic areas, different target group etc.

Effective replication typically requires some form of revision or adaptation to the new context. It is possible to replicate at either the same or a different scale.

32 A list of relevant SDGs is available on the EO website www.unep.org/evaluation

F. Efficiency

In keeping with the OECD/DAC definition of efficiency the evaluation will assess the extent to which the project delivered maximum results from the given resources. This will include an assessment of the cost-effectiveness and timeliness of project execution. Focussing on the translation of inputs into outputs, cost-effectiveness is the extent to which an intervention has achieved, or is expected to achieve, its results at the lowest possible cost. Timeliness refers to whether planned activities were delivered according to expected timeframes as well as whether events were sequenced efficiently. The evaluation will also assess to what extent any project extension could have been avoided through stronger project management and identify any negative impacts caused by project delays or extensions. The evaluation will describe any cost or time-saving measures put in place to maximise results within the secured budget and agreed project timeframe and consider whether the project was implemented in the most efficient way compared to alternative interventions or approaches.

The evaluation will give special attention to efforts by the project teams to make use of/build upon pre-existing institutions, agreements and partnerships, data sources, synergies and complementarities with other initiatives, programmes and projects etc. to increase project efficiency. The evaluation will also consider the extent to which the management of the project minimised UN Environment's environmental footprint.

The factors underpinning the need for any project extensions will also be explored and discussed. As management or project support costs cannot be increased in cases of 'no cost extensions', such extensions represent an increase in unstated costs to implementing parties.

Factors affecting this criterion may include:

- Preparation and readiness (e.g. timeliness)
- Quality of project management and supervision
- Stakeholders participation and cooperation

G. Monitoring and Reporting

The evaluation will assess monitoring and reporting across three sub-categories: monitoring design and budgeting, monitoring implementation and project reporting.

i. Monitoring Design and Budgeting

Each project should be supported by a sound monitoring plan that is designed to track progress against SMART³³ indicators towards the delivery of the projects outputs and achievement of direct outcomes, including at a level disaggregated by gender, vulnerability or marginalisation. The evaluation will assess the quality of the design of the monitoring plan as well as the funds allocated for its implementation. The adequacy of resources for mid-term and terminal evaluation/review should be discussed if applicable.

ii. Monitoring of Project Implementation

The evaluation will assess whether the monitoring system was operational and facilitated the timely tracking of results and progress towards projects objectives throughout the project implementation period. This should include monitoring the representation and participation of disaggregated groups (including gendered, vulnerable and marginalised groups) in project activities. It will also consider how information generated by the monitoring system during project implementation was used to adapt and improve project execution, achievement of outcomes and ensure sustainability. The evaluation should confirm that funds allocated for monitoring were used to support this activity.

iii. Project Reporting

UN Environment has a centralised Project Information Management System (PIMS) in which project managers upload six-monthly status reports against agreed project milestones. This information will be provided to the Evaluation Consultant(s) by the Evaluation Manager. Some projects have additional requirements to report regularly to funding partners, which will be supplied by the project team (e.g. the Project Implementation Reviews and Tracking Tool for GEF-funded projects). The evaluation will assess the extent to which both UN Environment and donor reporting commitments have been fulfilled. Consideration will be given as to whether reporting has been carried out with respect to the effects of the initiative on disaggregated groups.

³³ SMART refers to indicators that are specific, measurable, assignable, realistic and time-specific.

Factors affecting this criterion may include:

- Quality of project management and supervision
- Responsiveness to human rights and gender equity (e.g. disaggregated indicators and data)

H. Sustainability

Sustainability is understood as the probability of direct outcomes being maintained and developed after the close of the intervention. The evaluation will identify and assess the key conditions or factors that are likely to undermine or contribute to the persistence of achieved direct outcomes (ie. 'assumptions' and 'drivers'). Some factors of sustainability may be embedded in the project design and implementation approaches while others may be contextual circumstances or conditions that evolve over the life of the intervention. Where applicable an assessment of bio-physical factors that may affect the sustainability of direct outcomes may also be included.

1. Socio-political Sustainability

The evaluation will assess the extent to which social or political factors support the continuation and further development of project direct outcomes. It will consider the level of ownership, interest and commitment among government and other stakeholders to take the project achievements forwards. In particular the evaluation will consider whether individual capacity development efforts are likely to be sustained.

2. Financial Sustainability

Some direct outcomes, once achieved, do not require further financial inputs, e.g. the adoption of a revised policy. However, in order to derive a benefit from this outcome further management action may still be needed e.g. to undertake actions to enforce the policy. Other direct outcomes may be dependent on a continuous flow of action that needs to be resourced for them to be maintained, e.g. continuation of a new resource management approach. The evaluation will assess the extent to which project outcomes are dependent on future funding for the benefits they bring to be sustained. Secured future funding is only relevant to financial sustainability where the direct outcomes of a project have been extended into a future project phase. Even where future funding has been secured, the question still remains as to whether the project outcomes are financially sustainable.

3. Institutional Sustainability

The evaluation will assess the extent to which the sustainability of project outcomes (especially those relating to policies and laws) is dependent on issues relating to institutional frameworks and governance. It will consider whether institutional achievements such as governance structures and processes, policies, sub-regional agreements, legal and accountability frameworks etc. are robust enough to continue delivering the benefits associated with the project outcomes after project closure. In particular, the evaluation will consider whether institutional capacity development efforts are likely to be sustained.

Factors affecting this criterion may include:

- Stakeholders participation and cooperation
- Responsiveness to human rights and gender equity (e.g. where interventions are not inclusive, their sustainability may be undermined)
- Communication and public awareness
- Country ownership and driven-ness

I Factors and Processes Affecting Project Performance

(These factors are rated in the ratings table, but are discussed within the Main Evaluation Report as cross-cutting themes as appropriate under the other evaluation criteria, above)

1. Preparation and Readiness

This criterion focuses on the inception or mobilisation stage of the project (ie. the time between project approval and first disbursement). The evaluation will assess whether appropriate measures were taken to either address weaknesses in the project design or respond to changes that took place between project approval, the securing of funds and project mobilisation. In particular the evaluation will consider the nature and quality of engagement with stakeholder groups by the project team, the confirmation of partner capacity

and development of partnership agreements as well as initial staffing and financing arrangements. (Project preparation is included in the template for the assessment of Project Design Quality).

2. Quality of Project Management and Supervision

In some cases 'project management and supervision' will refer to the supervision and guidance provided by UN Environment to implementing partners and national governments while in others, specifically for GEF funded projects, it will refer to the project management performance of the executing agency and the technical backstopping and supervision provided by UN Environment.

The evaluation will assess the effectiveness of project management with regard to: providing leadership towards achieving the planned outcomes; managing team structures; maintaining productive partner relationships (including Steering Groups etc.); communication and collaboration with UN Environment colleagues; risk management; use of problem-solving; project adaptation and overall project execution. Evidence of adaptive management should be highlighted.

3. Stakeholder Participation and Cooperation

Here the term 'stakeholder' should be considered in a broad sense, encompassing all project partners, duty bearers with a role in delivering project outputs and target users of project outputs and any other collaborating agents external to UN Environment. The assessment will consider the quality and effectiveness of all forms of communication and consultation with stakeholders throughout the project life and the support given to maximise collaboration and coherence between various stakeholders, including sharing plans, pooling resources and exchanging learning and expertise. The inclusion and participation of all differentiated groups, including gender groups should be considered.

4. Responsiveness to Human Rights and Gender Equity

The evaluation will ascertain to what extent the project has applied the UN Common Understanding on the human rights based approach (HRBA) and the UN Declaration on the Rights of Indigenous People. Within this human rights context the evaluation will assess to what extent the intervention adheres to UN Environment's Policy and Strategy for Gender Equality and the Environment.

In particular the evaluation will consider to what extent project design, implementation and monitoring have taken into consideration: (i) possible gender inequalities in access to, and the control over, natural resources; (ii) specific vulnerabilities of women and children to environmental degradation or disasters; and (iii) the role of women in mitigating or adapting to environmental changes and engaging in environmental protection and rehabilitation.

5. Country Ownership and Driven-ness

The evaluation will assess the quality and degree of engagement of government / public sector agencies in the project. While there is some overlap between Country Ownership and Institutional Sustainability, this criterion focuses primarily on the forward momentum of the intended projects results, ie. either a) moving forwards from outputs to direct outcomes or b) moving forward from direct outcomes towards intermediate states. The evaluation will consider the involvement not only of those directly involved in project execution and those participating in technical or leadership groups, but also those official representatives whose cooperation is needed for change to be embedded in their respective institutions and offices. This factor is concerned with the level of ownership generated by the project over outputs and outcomes and that is necessary for long term impact to be realised. This ownership should adequately represent the needs of interest of all gendered and marginalised groups.

6. Communication and Public Awareness

The evaluation will assess the effectiveness of: a) communication of learning and experience sharing between project partners and interested groups arising from the project during its life and b) public awareness activities that were undertaken during the implementation of the project to influence attitudes or shape behaviour among wider communities and civil society at large. The evaluation should consider whether existing communication channels and networks were used effectively, including meeting the differentiated needs of gendered or marginalised groups, and whether any feedback channels were established. Where knowledge sharing platforms have been established under a project the evaluation will comment on the sustainability of the communication channel under either socio-political, institutional or financial sustainability, as appropriate.

Section 3. EVALUATION APPROACH, METHODS AND DELIVERABLES

The Terminal Evaluation will be an in-depth evaluation using a participatory approach whereby key stakeholders are kept informed and consulted throughout the evaluation process. Both quantitative and qualitative evaluation methods will be used as appropriate to determine project achievements against the expected outputs, outcomes and impacts. It is highly recommended that the consultant(s) maintains close communication with the project team and promotes information exchange throughout the evaluation implementation phase in order to increase their (and other stakeholder) ownership of the evaluation findings. Where applicable, the consultant(s) should provide a geo-referenced map that demarcates the area covered by the project and, where possible, provide geo-reference photographs of key intervention sites (e.g. sites of habitat rehabilitation and protection, pollution treatment infrastructure, etc.)

The findings of the evaluation will be based on the following:

(a) **A desk review** of:

Relevant background documentation, see Annex 3;

Project design documents (including minutes of the project design review meeting at approval); Annual Work Plans and Budgets or equivalent, revisions to the project (Project Document Supplement), the logical framework and its budget;

Project reports such as six-monthly progress and financial reports, progress reports from collaborating partners, meeting minutes, relevant correspondence and including the Project Implementation Reviews and Tracking Tool etc.;

Project outputs: See Annex 3;

Mid-Term Review of the project;

Evaluations/reviews of similar projects.

(b) **Interviews** (individual or in group) with:

UN Environment Task Manager (TM);

Project management team;

UN Environment Fund Management Officers (FMO);

Sub-Programme Coordinator;

GEF Focal Points

Project partners, including UNEP-DHI Centre (executing partner), DHI (DSS support and implementation), IWA (approach testing in cities-basins, dissemination and stakeholder engagement – utilities & industry), GWP (consultation on transboundary IWRM), World Bank (assistance with development and outreach), Flood Hazard Research Centre (technical input), IUCN (technical input), UNESCO (technical input), INBO (assistance in identification of transboundary basin partners, World Meteorological Office (technical input), UN-Water (technical input), GEUS (technical input), IUCN – Technical support (ecosystem services, basin management); IW:Learn (technical input and collaboration), Transboundary River Basin Organisations (technical input and collaboration), local authorities, local and indigenous communities, urban and (agro) industrial water users and civil society groups, ministries responsible within regional economic commissions and catchment organizations, national and regional environment institutions, universities, research organisations, NGOs, fisheries community, water utilities, farmers, industries, media, women groups.

Relevant resource persons.

Surveys (to be defined during Inception Phase)

Field visits to the three pilot basins (exact sites to be identified in the inception phase)

Other data collection tools

Evaluation Deliverables and Review Procedures

The evaluation team will prepare:

- **Inception Report:** (see Annex 1 for links to all templates, tables and guidance notes) containing an assessment of project design quality, a draft reconstructed Theory of Change of the project, project stakeholder analysis, evaluation framework and a tentative evaluation schedule.
- **Preliminary Findings Note:** typically in the form of a powerpoint presentation, the sharing of preliminary findings is intended to support the participation of the project team, act as a means to ensure all information sources have been accessed and provide an opportunity to verify emerging findings. In the case of highly strategic project/portfolio evaluations or evaluations with an Evaluation Reference Group, the preliminary findings may be presented as a word document for review and comment.
- **Draft and Final Evaluation Report:** (see links in Annex 1) containing an executive summary that can act as a stand alone document; detailed analysis of the evaluation findings organised by evaluation criteria and supported with evidence; lessons learned and recommendations and an annotated ratings table. In addition, brief case studies of each basin may be produced on the project pilot basins (3 all together) to assess individual basin-level project performance and lessons learned. The basin studies will be specified in the Inception Report and would be presented as Annexes to the main evaluation report if determined as useful/necessary.
- **Evaluation Bulletin:** a 2-page summary of key evaluation findings for wider dissemination through the EOU website.

Review of the draft evaluation report. The evaluation team will submit a draft report to the Evaluation Manager and revise the draft in response to their comments and suggestions. Once a draft of adequate quality has been peer-reviewed and accepted, the Evaluation Manager will share the cleared draft report with the Project Manager, who will alert the Evaluation Manager in case the report contains any blatant factual errors. The Evaluation Manager will then forward revised draft report (corrected by the evaluation team where necessary) to other project stakeholders, for their review and comments. Stakeholders may provide feedback on any errors of fact and may highlight the significance of such errors in any conclusions as well as providing feedback on the proposed recommendations and lessons. Any comments or responses to draft reports will be sent to the Evaluation Manager for consolidation. The Evaluation Manager will provide all comments to the evaluation team for consideration in preparing the final report, along with guidance on areas of contradiction or issues requiring an institutional response.

Based on a careful review of the evidence collated by the evaluation consultants and the internal consistency of the report, the Evaluation Manager will provide an assessment of the ratings in the final evaluation report. Where there are differences of opinion between the evaluator and the Evaluation Manager on project ratings, both viewpoints will be clearly presented in the final report. The Evaluation Office ratings will be considered the final ratings for the project.

The Evaluation Manager will prepare a **quality assessment** of the first and final drafts of the main evaluation report, which acts as a tool for providing structured feedback to the evaluation consultants. The quality of the report will be assessed and rated against the criteria specified in template listed in Annex 1 and this assessment will be appended to the Final Evaluation Report.

At the end of the evaluation process, the Evaluation Office will prepare a **Recommendations Implementation Plan** in the format of a table, to be completed and updated at regular intervals by the Task Manager. The Evaluation Office will track compliance against this plan on a six monthly basis.

The Evaluation Team/Evaluation Consultant

For this evaluation, the evaluation team will consist of a Team Leader and one Supporting Consultant who will work under the overall responsibility of the Evaluation Office represented by an Evaluation Manager Martina Bennett, in consultation with the UN Environment Task Manager Yegor Volovik, Fund Management Officers Paul Vrontamitis and Lydia Eibl-Kamolleh and the Climate Change and Ecosystems Management Sub-programme Coordinators, Niklas Hagelburg and Marieta Sakalian. The consultants will liaise with the Evaluation Manager on any procedural and methodological matters related to the evaluation. It is, however, the consultants' individual responsibility to arrange for their visas and immunizations as well as to plan meetings with stakeholders, organize online surveys, obtain documentary evidence and any other logistical matters related to the assignment. The UN Environment Task Manager and project team will, where possible, provide logistical support (introductions, meetings etc.) allowing the consultants to conduct the evaluation as efficiently and independently as possible.

The Team Leader will be hired for 6 months spread over the period 01 March 2019 to 31 August 2019 and should have: an advanced university degree in water resources management, environment, natural resource management, development studies, international relations, knowledge management or relevant field required; a minimum of 15 years of technical / evaluation experience, including of evaluating large, regional or global programmes and using a Theory of Change approach; a broad understanding of the thematic areas related to water resource management, environmental management, international waters, climate change, transboundary monitoring, and other environmental issues; excellent writing skills in English is required; team leadership experience and, where possible, knowledge of the UN system, specifically of the work of UN Environment.

The Supporting Consultant will be hired for 6 months spread over the period 01 March 2019 to 31 August 2019 and should have: an advanced university degree in environmental sciences, international development or other relevant political or social sciences area; a minimum of 10 years of technical/monitoring/evaluation experience; a technical understanding of international water resource management, international waters, and transboundary monitoring; excellent writing skills in English and, where possible, knowledge of the UN system, specifically of the work of UN Environment. Experience in managing partnerships, knowledge management and communication is desirable for all evaluation consultants.

The Team Leader will be responsible, in close consultation with the Evaluation Office of UN Environment, for overall management of the evaluation and timely delivery of its outputs, described above in Section 11 Evaluation Deliverables, above. The Supporting Consultant will make substantive and high quality contributions to the evaluation process and outputs. Both consultants will ensure together that all evaluation criteria and questions are adequately covered. Detailed roles and responsibilities related to data collection and analysis and reporting will be agreed upon within the Team and specified in the Inception Report.

Specifically, Evaluation Team members will undertake the following:

Team Leader

The Team Leader will be responsible for overall management of the evaluation, in close consultation with the UN Environment Evaluation Office, and timely delivery of its outputs as described in the evaluation terms of reference. (S)He will lead the evaluation design, data collection and analysis, and report-writing with full support and substantive inputs from the Supporting Consultants. More specifically the Team Leader will:

Manage the inception phase of the evaluation, including:

- conduct a preliminary desk review and introductory interviews with project staff;
- draft the reconstructed Theory of Change of the project;
- prepare the evaluation framework;
- develop the desk review and interview protocols;
- draft the survey protocols (partner survey and user survey);
- plan the evaluation schedule;
- distribute tasks and responsibilities among the evaluation team members; and
- prepare, together with the Supporting Consultant, the inception report, including comments received from the Evaluation Office, project team, key partners, donors and Evaluation Reference Group, where appropriate. The Inception Report should be complete and coherent and follow the Evaluation Office guidelines on Content and Structure of the Inception Report (see Evaluation Office of UN Environment website (<https://www.unenvironment.org/about-un-environment/evaluation>)).

Coordination of the data collection and analysis phase of the evaluation, including:

- carry out, in conjunction with the Supporting Consultant and as agreed with the Evaluation Office, field missions for primary data collection;
- conduct further document reviews and in-depth interviews with key stakeholders of the project;
- provide methodological support to the Supporting Consultant regarding information collection, data analysis, surveys etc.;
- regularly monitor progress of the Supporting Consultant in information gathering and analysis; and
- prepare, together with the Supporting Consultant, preliminary findings to support discussion with in-country respondents or the project team and, where appropriate, the Evaluation Reference Group³⁴.

³⁴ Typically, preliminary findings are expected to be in the form of a PowerPoint which may be presented in country at the end of a field mission or presented to the project team by the evaluation team via Skype. Its purpose is to promote participation by sharing top level findings very shortly after the field mission and to provide a framework for early discussions. Preliminary findings are not intended to become word documents that go through a review loop, unless there is an Evaluation Reference Group or the evaluation is highly strategic/sensitive.

Coordination of the reporting phase, including:

- assign writing responsibilities to the Supporting Consultant(s) for the main report;
- receive and review/edit the first draft of sections written by the Supporting Consultant(s);
- write key sections of the main report, ensuring a complete and coherent report both in substance and style. The main report should follow the Evaluation Office guidelines on Content and Structure of the Main Evaluation Report (see Evaluation Office of UN Environment website (<https://www.unenvironment.org/about-un-environment/evaluation>));
- submit all elements of the main report (i.e. including case studies) to the Evaluation Office for them to circulate for factual feedback and comments;
- respond to consolidated comments received from the Evaluation Office and ensure that comments are taken into account during finalization of the main report; and
- prepare a Response to Comments annex for the main report, listing those comments not accepted by the evaluation team and indicating the reason for their rejection.

Managing internal and external relations of the evaluation team, including:

- maintain a positive relationship with all evaluation stakeholders, ensuring that the evaluation process is as participatory as possible but at the same time maintains its independence;
- avoid and resolve any misunderstandings, tensions and performance issues within the team; and
- communicate in a timely manner with the Evaluation Office on any issues requiring its attention and intervention.

The Team Leader shall have had no prior involvement in the formulation or implementation of the Project and will be independent from the participating institutions.

Supporting Consultant

The Supporting Consultant will be responsible for delivering timely and high-quality contributions to the evaluation process and outputs as described in the evaluation terms of reference under the leadership and supervision of the Team Leader. (S)He will participate actively in evaluation design, document analysis, fieldwork and report-writing. The Supporting Consultant will specifically provide:

Substantive contributions to the inception phase of the evaluation, including:

- conduct a preliminary desk review and introductory interviews with Project staff;
- support the Team Leader in drafting the reconstructed Theory of Change of the programme;
- assist in the preparation of the evaluation framework;
- contribute to the desk review and interview protocols;
- contribute to drafting the survey protocols (partner survey and user survey);
- contribute to sections of the inception report as agreed with the Team Leader; and
- any other tasks during the inception phase as requested by the Team Leader.

Substantive contributions to data collection and analysis, including:

- carry out, under the guidance of the Team Leader, field missions for primary data collection;
- conduct further document reviews and in-depth interviews with key stakeholders of the project as assigned by the Team Leader;
- support the Team Leader with the presentation of preliminary findings; and
- any other tasks related to data collection and analysis as requested by the Team Leader.

Substantive contributions to the main report, including:

- write key sections of the main report, as assigned by the Team Leader, including case studies;
- review/edit sections written by the Team Leader;
- review comments received from the UN Environment Evaluation Office, project team, key partners, donors and Evaluation Reference Group, where appropriate;
- assist the Team Leader with finalizing the main report; and
- any other tasks related to reporting as requested by the Team Leader.

Ensure good team work and external relations, including:

- maintain a positive relationship with evaluation stakeholders, ensuring that the evaluation process is as participatory as possible but at the same time maintains its independence;

- be a team player, avoid and help resolve any misunderstandings, tensions and performance issues within the team; and
- communicate in a timely manner with the Team Leader and/or the Evaluation Office on any issues requiring their attention and/or intervention.

The Supporting Consultant shall have had no prior involvement in the formulation or implementation of the Project and will be independent from the collaborating institutions and other partners of the project.

Schedule of the evaluation

The table below presents the tentative schedule for the evaluation.

Table 3. Tentative schedule for the evaluation

Milestone	Tentative Dates
Inception Phase and Desk Review	01 – 24 March 2019
Inception Report (first submission)	25 March
Inception report (final submission)	05 April
Begin Document Review (review of project file/dropbox; project consolidated final report and partner/sub-project reports should all be finalized by March 1) and mission preparations	08 April
Begin Initial interviews with Project Team and stakeholders via skype	10 April
Evaluation Mission – Copenhagen (DHI) (1 day) (Team Lead)	18 - 19 April
Evaluation Mission - Chao Phraya Basin (2 days in Bangkok) (Team Lead)	22 – 24 April
Evaluation Mission – Volta River Basin (1 day in Accra, 1 day in Ouagadougou) (Sub-Consultant)	22 – 24 April
Evaluation mission – Lake Victoria Basin (1 day in Kisumu+ 1 day in Nairobi) (Team Lead or Sub-Consultant)	25 April – 1 May
Follow-up interviews, surveys, data analysis, etc.	2 May – 17 May
Powerpoint/presentation on preliminary findings and recommendations	21 May
Draft report (including pilot basin case studies if applicable) to Evaluation Manager (and Peer Reviewer)	14 June
Draft Report shared with UN Environment Task Manager and Project Team	1 July
Draft Report shared with wider group of stakeholders	29 July
Final Report	26 August
Final Report shared with all respondents	30 August

Contractual Arrangements

Evaluation Consultants will be selected and recruited by the Evaluation Office of UN Environment under an individual Special Service Agreement (SSA) on a “fees only” basis (see below). By signing the service contract with UN Environment/UNON, the consultant(s) certify that they have not been associated with the design and implementation of the project in any way which may jeopardize their independence and impartiality towards project achievements and project partner performance. In addition, they will not have any future interests (within six months after completion of the contract) with the project’s executing or implementing units. All consultants are required to sign the Code of Conduct Agreement Form.

Fees will be paid on an instalment basis, paid on acceptance by the Evaluation Manager of expected key deliverables. The schedule of payment is as follows:

Schedule of Payment for the Team Leader:

Deliverable	Percentage Payment
Approved Inception Report (<i>as per annex document 7</i>)	30%
Approved Draft Main Evaluation Report (<i>as per annex document 13</i>)	30%
Approved Final Main Evaluation Report	40%

Schedule of Payment for the Support Consultant:

Deliverable	Percentage Payment
Approved Inception Report (<i>as per annex document 7</i>)	30%
Approved Draft Main Evaluation Report (<i>as per annex document 13</i>)	30%
Approved Final Main Evaluation Report	40%

Fees only contracts: Air tickets will be purchased by UN Environment and 75% of the Daily Subsistence Allowance for each authorised travel mission will be paid up front. Local in-country travel will only be reimbursed where agreed in advance with the Evaluation Manager and on the production of acceptable receipts. Terminal expenses and residual DSA entitlements (25%) will be paid after mission completion.

The consultants may be provided with access to UN Environment's Programme Information Management System (PIMS) and if such access is granted, the consultants agree not to disclose information from that system to third parties beyond information required for, and included in, the evaluation report.

In case the consultants are not able to provide the deliverables in accordance with these guidelines, and in line with the expected quality standards by the UN Environment Evaluation Office, payment may be withheld at the discretion of the Director of the Evaluation Office until the consultants have improved the deliverables to meet UN Environment's quality standards.

If the consultant(s) fail to submit a satisfactory final product to UN Environment in a timely manner, i.e. before the end date of their contract, the Evaluation Office reserves the right to employ additional human resources to finalize the report, and to reduce the consultants' fees by an amount equal to the additional costs borne by the Evaluation Office to bring the report up to standard.

ANNEX 2. INDICATIVE PLANNED BUDGETS

Indicative planned budgets (not expenditure)

Component	Budget at project start ³⁵	Budget final year ³⁶
	US\$	US\$
1	845,737	845,737
2	824,921	824,921
3	926,397	926,397
4	1,175,419	1,175,419
5	232,526	232,526
Evaluation	85,000	85,000
Total	4,090,000	4,090,00

³⁵ Figures taken from 2014- 2015 workplan

³⁶ Figures taken from 2018 workplan

ANNEX 3 - LINKS BETWEEN THE PROJECT AND RECONSTRUCTED TOC OUTCOMES AND OUTPUTS

Figure 7 GEF FDMT Links between project outcomes at endorsement and Reconstructed ToC Outcomes

Components	Project Outcomes as per approved results framework	ToC Outcomes	Justification
Component 1 Development of methodology and tools	A methodology with DSS tools aimed at increasing understanding of F&D dynamics and impacts at transboundary and national levels and including enhancement of commonly used decision support systems, fully developed jointly with pilot basins stakeholders.	1.1 Methodologies developed with tools for understanding F&D dynamics and impacts at all levels and enhancement of DSS, co-designed with basin stakeholders. ³⁷	Some of the pilot basins did not use decision support systems in their operations so this aspect was removed. Project funding did not allow trial rollout of DSS with pilot basins
Component 2: Application and testing at basin-wide level	Application of the (step by step) methodologies at the basin level (at least 3) using DSS tools in the three pilot basins enables the integration of flood and drought issues into the IWRM, TDA/SAP and other planning processes	2.1 Application of the methodologies in the basins using DSS tools enables the integration of F&D issues into planning	None of the three pilot basins were engaged in a TDA or SAP process during the project period
Component 3: Validation and testing at local level	Uptake of the methodology with DSS tools at lower administrative levels within the 3 pilot basins enables water suppliers and regulators, (agro) industries and urban area managers to consider options for increased resilience and preparedness to F&D within broader basin context with an emphasis on vulnerable groups affected by water-related shocks.	3.1 Application of the methodologies and DSS tools to integrate F&D issues into local level planning and urban area managers to consider options for increased basin level resilience for vulnerable groups affected by water-related shocks.	At the local level was limited to water suppliers and regulators
Component 4: Capacity building and dissemination	Experience and know how gained through the project is made available within the GEF system and beyond.	4.1 Experience and know how gained through the project is made available within the GEF system and beyond.	No Change
	Global dialogue on water security and climate resilience enriched by the dissemination of and awareness raising on project outcomes	4.2 Global dialogue on water security and climate resilience enriched by the dissemination of and awareness raising on project outcomes.	No Change

³⁷ The phrase “fully developed” has been removed from the TOC outcomes as this is beyond the area of control of the project and the approved result was overly ambitious given the time frame, funding and expectations of basin partners

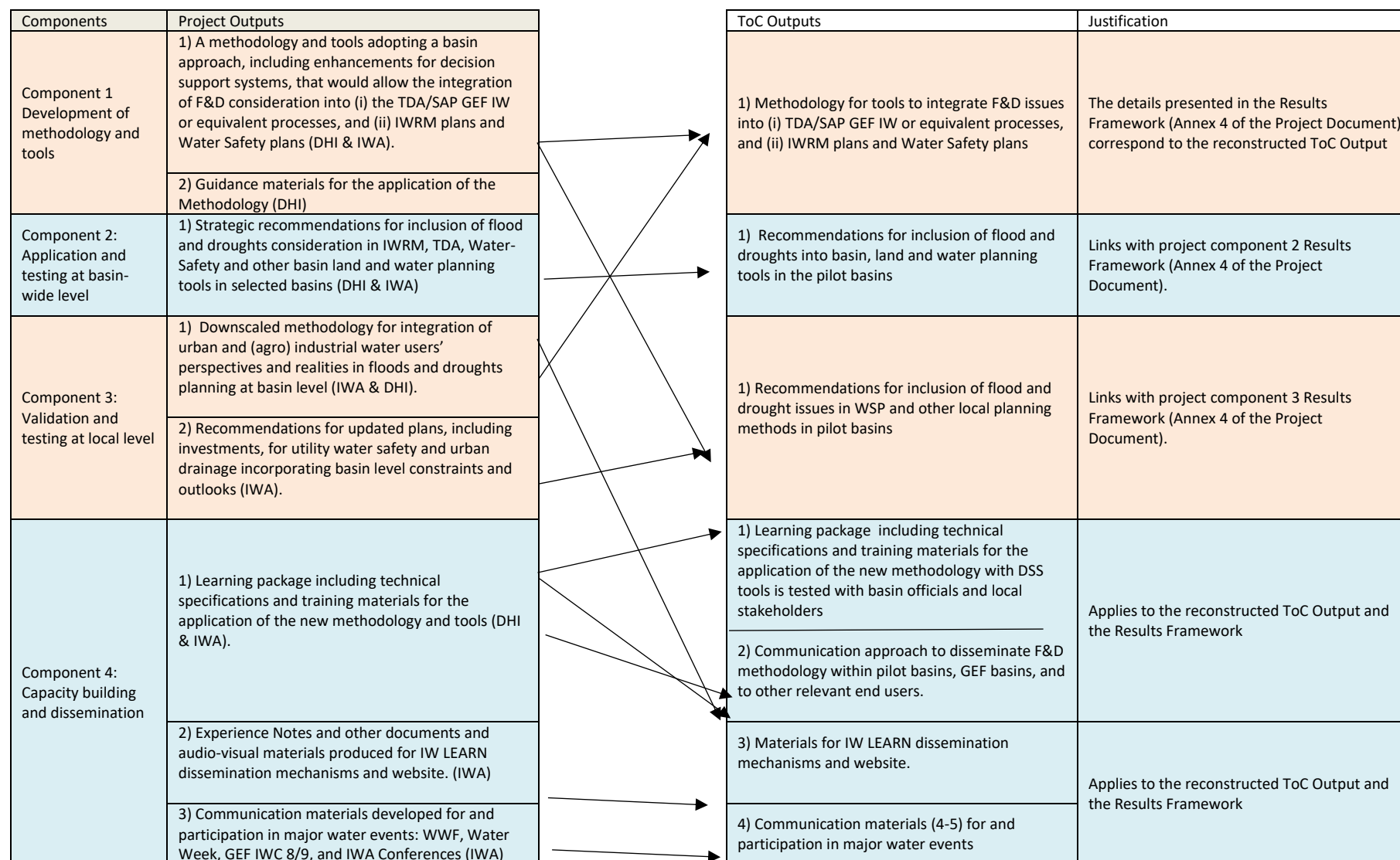


Figure 8 GEF FDMT Links between project outputs at endorsement and reconstructed ToC Outputs

ANNEX 4: PERSONS INVOLVED IN THE EVALUATION

The following responded to requests for in-person discussions, email or skype feedback

Name		Organisation
Victor	Addabor	GIS/RS Officer, National Disaster Management Organisation (NADMO), Accra
Frank	Aggrey	Climate Change Officer, National Disaster Management Organisation (NADMO), Accra
Bob	Alfa	Water Resources Engineer Water Resources Commission, Accra
Richmond	Amo Yartey	Inspectorate Department, National Disaster Management Organisation (NADMO), Accra
Ben	Ampomah	Executive Director, Water Resources Commission, Accra
Maria	Apostolova	IW Project Manager (Amazon River)
Harriet	Ashoro	Corporate Communications Officer, Kisumu Water and Sewerage Co, Ltd., Kenya
Martina	Bennett	UN Environment, Evaluation Manager
Peter	Bjornsen	Director DHI -UN Environment, Copenhagen, Denmark
Katharine	Cross	PMU Outreach Co-ordinator, IWA Bangkok, Thailand
Jennifer	de France	WHO
Bright	Elom Doviaw	National Disaster Management Organisation (NADMO), Accra
Dimitris	Faloutsos	IW Project Manager (Drin River)
Raul	Glotzbach	PMU, IWA
Mish	Hamid	GEF IW:LEARN Project Manager
Joakim	Harlin	UN Environment, Chief Freshwater Ecosystem Unit
Asoka	Jayarante	WHO trainer Consultant
Oluf	Jessen	PMU Technical Co-ordinator, DHI Copenhagen, Denmark
Siwilai	Kitpitak	Director of Water Resource and Environment Department, Metropolitan Water Authority (MWA), Samsennai water treatment plant, Bangkok, Thailand
Nipon	Leelarugi	Metropolitan Water Authority (MWA), Samsennai water treatment plant, Bangkok, Thailand
Apichoke	Lertlum	Metropolitan Water Authority (MWA), Samsennai water treatment plant, Bangkok, Thailand
Ticha	Lolupiman	Model developer, Hydraulics Informatics Institute (HII) Bangkok, Thailand
Margaret	Macauley	Chief Manager (WQA) Ghana Water Company Ltd, Accra
Mary	Matthews	GEF IW Project Manager (Kura River)
Rory	McKeown	WHO

Name		Organisation
Ekkarat	Meewassana	Metropolitan Water Authority (MWA), Samsennai water treatment plant, Bangkok, Thailand
Charlotte	Norman	Director in-charge of Climate Change Department, National Disaster Management Organisation (NADMO), Accra
Ulysses	Ocran-Hammond	Manager, Lower Volta Dredging and Aquatic Weed Harvesting Project, VRA
George,	Odero	Production Manager Kisumu Water and Sewerage Co, Ltd., Kenya
Amos	Odhiambo	Human Resource Officer, Kisumu Water and Sewerage Co, Ltd., Kenya
Godfrey	Opiyo	Planning Engineer, Kisumu Water and Sewerage Co, Ltd., Kenya
James	Oppong Otoo	Climate Change Officer, National Disaster Management Organisation (NADMO), Accra
Bramwel,	Ouma	GIS Analyst, Kisumu Water and Sewerage Co, Ltd., Kenya
Calistus	Quincy	Systems Administrator, EAC, LVBC, Kisumu, Kenya
Lalita	Rammont	PMU IWA
Bertrand	Richaud	PMU, DHI Copenhagen, Denmark
George	Saddimbah	UN Environment, PO-FMO
Piyamarn	Sisomphon	Project Leader, Hydraulics Informatics Institute (HII) Bangkok, Thailand
Yegor	Volovik	UN Environment, Task Manager
Jacob	Tumbolto	VBA and 2iE, Burkina Faso
Paul	Vrontamitis	UN Environment, FMO
Sutat	Weesakul	Director, Hydraulics Informatics Institute (HII) Bangkok, Thailand
Philip	Weller	Learning Basin, IAWD, Vienna Austria

ANNEX 5: DOCUMENTS CONSULTED

The PMU established a Dropbox with all key project documents, outputs, reports, communications, workshops and awareness raising summaries, financial (GEF and co-financing) reports that were provided to the consultants.

Key documents consulted included:

1. Project Concept (PIF)
2. Project Document with annexes (including results framework)
3. CEO Endorsement Document
4. Project Inception Report (and minutes from meetings)
5. Stakeholder reports from Pilot basins
6. PIRs
7. PSC minutes
8. Six-monthly progress reports
9. Financial reports
10. Project web portal (and YouTube 'how to' guides)
11. Selected outputs (final reports, guidance notes, Strategic Recommendations, Gender reports on Floods and Drought Management in pilot basins, etc.)
12. Communications documents
13. Experience Notes

ANNEX 6: CONSULTANTS' RESUME

Dr Peter Whalley is a physical chemist who has been working in water and environment management for over 25 years. He has extensive experience of developing appropriate water monitoring networks, nutrient management plans, implementing training programmes and providing trans-boundary support in a range of countries. He has been involved with the development, implementation and compliance checking of the EU Water Framework Directive. For the last fifteen years he has worked on over 20 GEF funded International Waters projects.

These include technical/project management roles: the Danube Regional Project, Tisza River integrated land-water management, Lake Prespa Strategic Action Programme (SAP), Caribbean Large Marine Ecosystem SAP, Amazon, Nubian Aquifer SAP. In addition, he has assisted with project preparation (development of project documents) and, mid-term and terminal evaluations for a for IW, BD and multi-focal area projects for UNDP, UNEP, IDB and the World Bank. He has also been a part of the team evaluating the global and regional UNDP Human Development Reports taking the lead on relevant reports relating to water and climate change. He was also involved for four years assisting UNDP IEO to perform quality assurance checks on terminal evaluations. Specifically, he has been involved in evaluations for GEF International Waters and the Biodiversity Focal Areas including: UNDP Orange River, UNEP/LOICZ Target Research Project, UNEP IWCAM (Caribbean), UNEP/UNDP Pacific IWRM, UNEP Amazon, UNEP Upper Yangtze Biodiversity, UNEP Amazon, UNDP Albania, UNDP Chu Talas River, Marine Protected Areas, UNEP TWAP.

Prof Chris Gordon is a is a limnologist and ecotoxicologist based at the University of Ghana's Institute for Environment and Sanitation Studies. He has many years of experience as a limnologist and aquatic resource management advisor. As an academician and a consultant, he has in-depth and extensive knowledge of ecosystem functioning and ecology of the Volta River Basin, coastal wetlands and large river and estuarine systems.

Prof Gordon has considerable experience working with international bodies such as the GEF, UNEP, FAO, UNDP, DFID (former ODA) DANIDA, IDRC, DGIS. Over the past 30 years, Prof Gordon has provided guidance on various national policies, strategies and action plans that include: National Climate Change Master Plan (2015); National Climate Change and Green Economy Learning Strategy (2017); Science, Technology and Innovation Policy (2018).

He has served as member of the Steering Committee Earth Systems Governance Programme; as Coordinating Lead Author, Chapter 3 Africa, for International Panel for Biodiversity and Ecosystem Services (IPBES). He has provided input the UNEP Post-2015 Discussion Paper as well as the UNEP Foresight Expert Panel. He is a past Vice-President of both the International Society of Limnology and of Wetlands International.

Currently, Prof Gordon is Chair of the Technical Committee on Environment for the Ghana Standards Authority, Convenor for the revision of the ISO standard on Environmental Due Diligence. and member of the World Adaptation Research Programme of UN Environment. In 2016, he was conferred with the award of Member Order of the Volta, for services to Ghana in research, education and development.

ANNEX 7: QUALITY ASSESSMENT OF THE EVALUATION REPORT

Evaluation Title:

Terminal Evaluation of the UN Environment/Global Environment Facility project “Development of a Methodology with Tools and Decision Support Systems to Incorporate Floods and Droughts into IWRM in Transboundary Basins (Floods and Droughts Management Tools)”

All UN Environment evaluations are subject to a quality assessment by the Evaluation Office. This is an assessment of the quality of the evaluation product (i.e. evaluation report) and is dependent on more than just the consultant’s efforts and skills. Nevertheless, the quality assessment is used as a tool for providing structured feedback to evaluation consultants, especially at draft report stage. This guidance is provided to support consistency in assessment across different Evaluation Managers and to make the assessment process as transparent as possible.

	UN Environment Evaluation Office Comments	Final Report Rating
Substantive Report Quality Criteria		
<p>Quality of the Executive Summary:</p> <p>The Summary should be able to stand alone as an accurate summary of the main evaluation product. It should include a concise overview of the evaluation object; clear summary of the evaluation objectives and scope; overall evaluation rating of the project and key features of performance (strengths and weaknesses) against exceptional criteria (plus reference to where the evaluation ratings table can be found within the report); summary of the main findings of the exercise, including a synthesis of main conclusions (which include a summary response to key strategic evaluation questions), lessons learned and recommendations.</p>	<p>The Executive Summary is clear and concise, covering all the relevant information.</p>	5
<p>I. Introduction</p> <p>A brief introduction should be given identifying, where possible and relevant, the following: institutional context of the project (sub-programme, Division, regions/countries where implemented) and coverage of the evaluation; date of PRC approval and project document signature); results frameworks to which it contributes (e.g. Expected Accomplishment in POW); project duration and start/end dates; number of project phases (where appropriate); implementing partners; total secured budget and whether the project has been evaluated in the past (e.g. mid-term, part of a synthesis evaluation, evaluated by another agency etc.)</p> <p>Consider the extent to which the introduction includes a concise statement of the purpose of the evaluation and the key intended audience for the findings?</p>	<p>All relevant background information is provided.</p>	5
<p>II. Evaluation Methods</p>	<p>The section read well and covers the main areas.</p>	5

<p>This section should include a description of how the <i>TOC at Evaluation</i>³⁸ was designed (who was involved etc.) and applied to the context of the project?</p> <p>A data collection section should include: a description of evaluation methods and information sources used, including the number and type of respondents; justification for methods used (e.g. qualitative/ quantitative; electronic/face-to-face); any selection criteria used to identify respondents, case studies or sites/countries visited; strategies used to increase stakeholder engagement and consultation; details of how data were verified (e.g. triangulation, review by stakeholders etc.).</p> <p>Methods to ensure that potentially excluded groups (excluded by gender, vulnerability or marginalisation) are reached and their experiences captured effectively, should be made explicit in this section.</p> <p>The methods used to analyse data (e.g. scoring; coding; thematic analysis etc.) should be described.</p> <p>It should also address evaluation limitations such as: low or imbalanced response rates across different groups; gaps in documentation; extent to which findings can be either generalised to wider evaluation questions or constraints on aggregation/disaggregation; any potential or apparent biases; language barriers and ways they were overcome.</p> <p>Ethics and human rights issues should be highlighted including: how anonymity and confidentiality were protected and strategies used to include the views of marginalised or potentially disadvantaged groups and/or divergent views.</p>		
<p>III. The Project</p> <p>This section should include:</p> <ul style="list-style-type: none"> • <i>Context</i>: Overview of the main issue that the project is trying to address, its root causes and consequences on the environment and human well-being (i.e. synopsis of the problem and situational analyses). • <i>Objectives and components</i>: Summary of the project's results hierarchy as stated in the ProDoc (or as officially revised) • <i>Stakeholders</i>: Description of groups of targeted stakeholders organised according to relevant common characteristics • <i>Project implementation structure and partners</i>: A description of the implementation structure with diagram and a list of key project partners • <i>Changes in design during implementation</i>: Any key events that affected the project's scope or parameters should be described in brief in chronological order • <i>Project financing</i>: Completed tables of: (a) budget at design and expenditure by components (b) planned and actual sources of funding/co-financing 	<p>All elements covered well.</p>	<p>5</p>
<p>IV. Theory of Change</p> <p>The TOC at Evaluation should be presented clearly in both diagrammatic and narrative forms. Clear articulation of each major causal pathway is expected, (starting from outputs to long term impact), including explanations of all drivers and assumptions as well as the expected roles of key actors.</p>	<p>Good consideration of causal pathways and description of the assumptions and drivers underlying the TOC.</p>	<p>5</p>

³⁸ During the Inception Phase of the evaluation process a *TOC at Design* is created based on the information contained in the approved project documents (these may include either logical framework or a TOC or narrative descriptions). During the evaluation process this TOC is revised based on changes made during project intervention and becomes the *TOC at Evaluation*.

<p>Where the project results as stated in the project design documents (or formal revisions of the project design) are not an accurate reflection of the project's intentions or do not follow OECD/DAC definitions of different results levels, project results may need to be re-phrased or reformulated. In such cases, a summary of the project's results hierarchy should be presented for: a) the results as stated in the approved/ revised Prodoc logframe/TOC and b) as formulated in the TOC at Evaluation. <i>The two results hierarchies should be presented as a two column table to show clearly that, although wording and placement may have changed, the results 'goal posts' have not been 'moved'.</i></p>		
<p>V. Key Findings</p> <p>A. Strategic relevance:</p> <p>This section should include an assessment of the project's relevance in relation to UN Environment's mandate and its alignment with UN Environment's policies and strategies at the time of project approval. An assessment of the complementarity of the project with other interventions addressing the needs of the same target groups should be included. Consider the extent to which all four elements have been addressed:</p> <ol style="list-style-type: none"> 5. Alignment to the UN Environment Medium Term Strategy (MTS) and Programme of Work (POW) 6. Alignment to UN Environment/ Donor/GEF Strategic Priorities 7. Relevance to Regional, Sub-regional and National Environmental Priorities 8. Complementarity with Existing Interventions 	<p>Initially missing discussion on alignment to regional/national environmental priorities and complementarity with other interventions, but has been revised to cover all elements.</p>	<p>5</p>
<p>B. Quality of Project Design</p> <p>To what extent are the strength and weaknesses of the project design effectively <u>summarized</u>?</p>	<p>The section presents a good description of the design and describes well the main project design strengths and weaknesses.</p>	<p>5</p>
<p>C. Nature of the External Context</p> <p>For projects where this is appropriate, key <u>external</u> features of the project's implementing context that limited the project's performance (e.g. conflict, natural disaster, political upheaval), and how they affected performance, should be described.</p>	<p>Short and concise description of the external factors affecting the project.</p>	<p>4</p>
<p>D. Effectiveness</p> <p>(i) Outputs and Direct Outcomes: How well does the report present a well-reasoned, complete and evidence-based assessment of the a) delivery of outputs, and b) achievement of direct outcomes? How convincing is the discussion of attribution and contribution, as well as the constraints to attributing effects to the intervention.</p> <p>The effects of the intervention on differentiated groups, including those with specific needs due to gender, vulnerability or marginalisation, should be discussed explicitly.</p>	<p>The discussion of achievement of outcomes initially needed some focusing and structuring. This has been addressed by the Evaluation Team and has improved.</p>	<p>5</p>
<p>(ii) Likelihood of Impact: How well does the report present an integrated analysis, guided by the causal pathways represented by the TOC, of all evidence relating to likelihood of impact?</p> <p>How well are change processes explained and the roles of key actors, as well as drivers and assumptions, explicitly discussed?</p>	<p>Discussion is grounded in a sound understanding of the TOC.</p>	

<p>Any unintended negative effects of the project should be discussed under Effectiveness, especially negative effects on disadvantaged groups.</p>		
<p>E. Financial Management This section should contain an integrated analysis of all dimensions evaluated under financial management and include a completed 'financial management' table. Consider how well the report addresses the following:</p> <ul style="list-style-type: none"> • <i>completeness</i> of financial information, including the actual project costs (total and per activity) and actual co-financing used • <i>communication</i> between financial and project management staff • 	<p>All aspects are considered and discussed, to the extent that the financial documentation was provided to the Evaluation Team and considering the delay in which that documentation was provided.</p>	<p>5</p>
<p>F. Efficiency To what extent, and how well, does the report present a well-reasoned, complete and evidence-based assessment of efficiency under the primary categories of cost-effectiveness and timeliness including:</p> <ul style="list-style-type: none"> • Implications of delays and no cost extensions • Time-saving measures put in place to maximise results within the secured budget and agreed project timeframe • Discussion of making use of/building on pre-existing institutions, agreements and partnerships, data sources, synergies and complementarities with other initiatives, programmes and projects etc. • The extent to which the management of the project minimised UN Environment's environmental footprint. 	<p>All aspects are considered and discussed.</p>	<p>6</p>
<p>G. Monitoring and Reporting How well does the report assess:</p> <ul style="list-style-type: none"> • Monitoring design and budgeting (<i>including SMART indicators, resources for MTE/R etc.</i>) • Monitoring of project implementation (<i>including use of monitoring data for adaptive management</i>) • Project reporting (<i>e.g. PIMS and donor report</i>) 	<p>Section adequately covers all dimensions of monitoring as per guidance.</p>	<p>5</p>
<p>H. Sustainability How well does the evaluation identify and assess the key conditions or factors that are likely to undermine or contribute to the persistence of achieved direct outcomes including:</p> <ul style="list-style-type: none"> • Socio-political Sustainability • Financial Sustainability • Institutional Sustainability 	<p>This section now includes a detailed discussion that makes the determination of the ratings clear.</p>	<p>5</p>
<p>I. Factors Affecting Performance These factors are <u>not</u> discussed in stand-alone sections but are integrated in criteria A-H as appropriate. Note that these are described in the Evaluation Criteria Ratings Matrix. To what extent, and how well, does the evaluation report cover the following cross-cutting themes:</p> <ul style="list-style-type: none"> • Preparation and readiness • Quality of project management and supervision³⁹ • Stakeholder participation and co-operation 	<p>Ratings and comments are included in the Ratings Table in the Conclusions. All themes have been addressed in other sections of the report.</p>	<p>5</p>

³⁹ In some cases 'project management and supervision' will refer to the supervision and guidance provided by UN Environment to implementing partners and national governments while in others, specifically for GEF funded projects, it will refer to the project management performance of the executing agency and the technical backstopping provided by UN Environment.

<ul style="list-style-type: none"> • Responsiveness to human rights and gender equity • Country ownership and driven-ness • Communication and public awareness 		
<p>VI. Conclusions and Recommendations</p> <p>i. Quality of the conclusions: The key strategic questions should be clearly and succinctly addressed within the conclusions section. It is expected that the conclusions will highlight the main strengths and weaknesses of the project, and connect them in a compelling story line. Human rights and gender dimensions of the intervention (e.g. how these dimensions were considered, addressed or impacted on) should be discussed explicitly. Conclusions, as well as lessons and recommendations, should be consistent with the evidence presented in the main body of the report.</p>	Clear conclusions, recommendations and lessons – strategic questions are addressed have been revised and addressed effectively.	5
<p>ii) Quality and utility of the lessons: Both positive and negative lessons are expected and duplication with recommendations should be avoided. Based on explicit evaluation findings, lessons should be rooted in real project experiences or derived from problems encountered and mistakes made that should be avoided in the future. Lessons must have the potential for wider application and use and should briefly describe the context from which they are derived and those contexts in which they may be useful.</p>	Clear and useful lessons learned.	5
<p>iii) Quality and utility of the recommendations: To what extent are the recommendations proposals for specific action to be taken by identified people/position-holders to resolve concrete problems affecting the project or the sustainability of its results? They should be feasible to implement within the timeframe and resources available (including local capacities) and specific in terms of who would do what and when. At least one recommendation relating to strengthening the human rights and gender dimensions of UN Environment interventions, should be given. Recommendations should represent a measurable performance target in order that the Evaluation Office can monitor and assess compliance with the recommendations.</p>	Clear and useful recommendations.	5
<p>VII. Report Structure and Presentation Quality</p>		
<p>i) Structure and completeness of the report: To what extent does the report follow the Evaluation Office guidelines? Are all requested Annexes included and complete?</p>	The report follows the recommended structure and meets all the requirements in the TOR.	5
<p>ii) Quality of writing and formatting: Consider whether the report is well written (clear English language and grammar) with language that is adequate in quality and tone for an official document? Do visual aids, such as maps and graphs convey key information? Does the report follow Evaluation Office formatting guidelines?</p>	Good quality report – well-structured, clearly and well written, concise whilst providing detail.	5
<p>OVERALL REPORT QUALITY RATING</p>		S

A number rating 1-6 is used for each criterion: Highly Satisfactory = 6, Satisfactory = 5, Moderately Satisfactory = 4, Moderately Unsatisfactory = 3, Unsatisfactory = 2, Highly Unsatisfactory = 1. The overall quality of the evaluation report is calculated by taking the mean score of all rated quality criteria.

At the end of the evaluation, compliance of the evaluation process against the agreed standard procedures is assessed, based on the table below. *All questions with negative compliance must be explained further in the table below.*

Evaluation Process Quality Criteria	Compliance	
	Yes	No
Independence:		
1. Were the Terms of Reference drafted and finalised by the Evaluation Office?	x	
2. Were possible conflicts of interest of proposed Evaluation Consultant(s) appraised and addressed in the final selection?	x	
3. Was the final selection of the Evaluation Consultant(s) made by the Evaluation Office?	x	
4. Was the evaluator contracted directly by the Evaluation Office?	x	
5. Was the Evaluation Consultant given direct access to identified external stakeholders in order to adequately present and discuss the findings, as appropriate?	x	
6. Did the Evaluation Consultant raise any concerns about being unable to work freely and without interference or undue pressure from project staff or the Evaluation Office?		x
7. If Yes to Q6: Were these concerns resolved to the mutual satisfaction of both the Evaluation Consultant and the Evaluation Manager?		
Financial Management:		
8. Was the evaluation budget approved at project design available for the evaluation?	x	
9. Was the final evaluation budget agreed and approved by the Evaluation Office?	x	
10. Were the agreed evaluation funds readily available to support the payment of the evaluation contract throughout the payment process?	x	
Timeliness:		
11. If a Terminal Evaluation: Was the evaluation initiated within the period of six months before or after project operational completion? Or, if a Mid Term Evaluation: Was the evaluation initiated within a six-month period prior to the project's mid-point?	x	
12. Were all deadlines set in the Terms of Reference respected, as far as unforeseen circumstances allowed?	x	
13. Was the inception report delivered and reviewed/approved prior to commencing any travel?	x	
Project's engagement and support:		
14. Did the project team, Sub-Programme Coordinator and identified project stakeholders provide comments on the evaluation Terms of Reference?	x	
15. Did the project make available all required/requested documents?	x	
16. Did the project make all financial information (and audit reports if applicable) available in a timely manner and to an acceptable level of completeness?	x	
17. Was adequate support provided by the project to the evaluator(s) in planning and conducting evaluation missions?	x	
18. Was close communication between the Evaluation Consultant, Evaluation Office and project team maintained throughout the evaluation?	x	
19. Were evaluation findings, lessons and recommendations adequately discussed with the project team for ownership to be established?	x	
20. Did the project team, Sub-Programme Coordinator and any identified project stakeholders provide comments on the draft evaluation report?	x	
Quality assurance:		
21. Were the evaluation Terms of Reference, including the key evaluation questions, peer-reviewed?	x	
22. Was the TOC in the inception report peer-reviewed?	x	
23. Was the quality of the draft/cleared report checked by the Evaluation Manager and Peer Reviewer prior to dissemination to stakeholders for comments?	x	
24. Did the Evaluation Office complete an assessment of the quality of both the draft and final reports?	x	
Transparency:		
25. Was the draft evaluation report sent directly by the Evaluation Consultant to the Evaluation Office?	x	
26. Did the Evaluation Manager disseminate (or authorize dissemination) of the	x	

cleared draft report to the project team, Sub-Programme Coordinator and other key internal personnel (including the Reference Group where appropriate) to solicit formal comments?		
27. Did the Evaluation Manager disseminate (or authorize dissemination) appropriate drafts of the report to identified external stakeholders, including key partners and funders, to solicit formal comments?	x	
28. Were stakeholder comments to the draft evaluation report sent directly to the Evaluation Office	x	
29. Did the Evaluation Consultant(s) respond to all factual corrections and comments?	x	
30. Did the Evaluation Office share substantive comments and Evaluation Consultant responses with those who commented, as appropriate?	x	

Provide comments / explanations / mitigating circumstances below for any non-compliant process issues.

<u>Process Criterion Number</u>	<u>Evaluation Office Comments</u>