



Project Implementation Report

(1 July 2022 – 30 June 2023)

Project Title:	Upgrading of China Small Hydropower (SHP) Capacity
GEF ID:	6919
UNIDO ID:	140196
GEF Replenishment Cycle:	GEF-6
Country(ies):	China
Region:	EAP - East Asia and Pacific
GEF Focal Area:	Climate Change Mitigation (CCM)
Integrated Approach Pilot (IAP) Programs ¹ :	N/A
Stand-alone / Child Project:	Stand-alone
Implementing Department/Division:	IET/CTP
Co-Implementing Agency:	NA
Executing Agency(ies):	Ministry of Water Resources (MWR), China, P.R. Ministry of Finance (MOF), China, P.R. International Center for Small Hydro Power (ICSHP), China, P.R.
Project Type:	Full-Sized Project (FSP)
Project Duration:	60
Extension(s):	1
GEF Project Financing:	8,925,000 USD
Agency Fee:	847,875 USD
Co-financing Amount:	74,428,450 USD
Date of CEO Endorsement/Approval:	5/5/2016
UNIDO Approval Date:	7/4/2016
Actual Implementation Start:	7/29/2016
Cumulative disbursement as of 30 June 2023:	<u>7,414,953 USD</u>

¹ Only for GEF-6 projects, if applicable

Mid-term Review (MTR) Date:	1/17/2022
Original Project Completion Date:	7/29/2021
Project Completion Date as reported in FY22:	12/31/2023
Current SAP Completion Date:	12/31/2023
Expected Project Completion Date:	12/31/2023
Expected Terminal Evaluation (TE) Date:	7/1/2023
Expected Financial Closure Date:	30/06/2024
UNIDO Project Manager ² :	Heng LIU

I. Brief description of project and status overview

Project Objective			
<p>The Project aims at supporting the SHP capacity expansion programme of the Chinese Ministry of Water Resources (MWR), by reducing the environmental impact of SHP plants to better meet the challenges imposed by climate change. The objective of this project is to reduce GHG emissions and dependence on fossil fuels through the promotion of upgrading, greening and improving the management of existing SHP stations, contributing to the competitiveness of China's industries. Alongside important social and economic benefits, the project will improve local river ecology, hence contributing to adaptation of SHP plants to climate change.</p>			
Project Core Indicators		Expected at Endorsement/Approval State	
6	Greenhouse Gas Emissions Mitigated (metric tons of CO ₂ e)	Direct	1,975,500
		Indirect	5,567,318
11	Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment		25%
6.4	Increase in installed renewable energy capacity	Small Hydropower	23.47MW

Baseline
<p>The awareness, understanding, as well as a long-term vision over the necessity and benefits of green hydropower refurbishment are lacking in China. This is complemented by the absence of relevant expertise and necessary skill, both at policy level and project developer level. This resulted a significant gap with present international green hydropower development, as project owners are unwilling to take initial measure to upgrade to green hydropower due to the lack of relevant incentive measure and expertise. However, through the financial support of GEF funding, this situation will be changed. GEF funding is needed to cover the incremental costs related to the greening of the SHPs to ensure additional environmental and social benefits such as delivering water demand downstream, flood control, irrigation, water quality, and to increase the financial viability of the plants.</p>

Overall Ratings ³	FY23	FY22
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² Person responsible for report content

³ Please refer to the explanatory note at the end of the document and assure that the indicated ratings correspond to the narrative of the report

Global Environmental Objectives (GEOs) / Development Objectives (DOs) Rating	<i>Satisfactory (S)</i>	<i>Satisfactory (S)</i>
<p>The Project introduces green upgrades and standardised safety measures to demonstration SHP plants and improves the institutional frameworks of green SHP development, and therefore contributes to sustainable energy production and GHG emission reduction of China. In this fiscal year, all Project components have been progressing as planned without any major environmental problem reported. Despite that the continuous drought across China has been negatively impacting its outcomes in outputting clean electricity and cutting GHG emissions, those less impacted plants are still outputting additional clean energy and contributing GHG emission cuts. Therefore, the overall rating is Satisfactory (S).</p>		
Implementation Progress (IP) Rating	<i>Highly Satisfactory (HS)</i>	<i>Satisfactory (S)</i>
<p>The progress in FY23 had been significantly impacted by China's Covid-19 policies. However, with the restrictions lifted in December 2022, progress of the Project has been picking up at a quick pace with planned activities under the three components (see Section II for details) completed and KPIs reached, including policy recommendations for green SHP incentives, green upgrades and safety management of demonstration plants, and capacity building among stakeholders. Therefore, the implementation rating is Highly Satisfactory (HS).</p>		
Overall Risk Rating	<i>Low Risk (L)</i>	<i>Low Risk (L)</i>
<p>With Covid-19 policies lifted in China, the implementation risk of the Project significantly lowered. After completing the demonstration activities as planned, the co-financing of the Project has overachieved. Though the climate risk remains moderate in impacting power outputs, the risk rating should still be low as the Project enters its closing phase.</p>		

II. Targeted results and progress to-date

Please describe the progress made in achieving the outputs against key performance indicator's targets in the project's **M&E Plan/Log-Frame at the time of CEO Endorsement/Approval**. Please expand the table as needed.

Please fill in the below table or make a reference to any supporting documents that may be submitted as annexes to this report.

Project Strategy	KPIs/Indicators	Baseline	Target level	Progress in FY23
Component 1 – Policy and institutional framework for green SHP development in China				
Outcome 1.1: Policy and institutional framework for promoting green SHP plants are strengthened				
Output 1.1: Green SHP Assessment Standard and aligned technical standards formulated and revised	Final version of Green small hydro standard	Preliminary version of Chinese Green SHP standard	Draft and Final versions of Chinese Green SHP Ministerial standard	– Target completed in FY21, with no further progress in FY23
	Management rules for green SHP Assessment	No management rules for green SHP	Management rules for green SHP Assessment	– Rules prepared and submitted to MWR, and integrated into MWR's managerial rules

	Guidance on green SHP construction and technical guidelines on how to implement green hydro measures published	No technical guidelines on green SHP in China	Guidance published	– Target completed in FY21, with no further progress in FY23
	Technical Guidelines on Dehydration Recovery in Downstream River of Small Hydro aligned to Green SHP Assessment Standard	No aligned technical guidelines	Technical Guidelines developed in alignment to Green SHP Assessment Standard	– Target completed in FY21, with no further progress in FY23
	Green SHP Development Strategy	No strategy adopted	Green SHP Development Strategy developed	– Target completed in FY17, with no further progress in FY23
	Establishment and improvement of the online Management Information System for Green Hydropower	No online system	Online Management Information System for Green Hydropower	– System operational since FY21, now integrated into MWR's umbrella system
Output 1.2: Preferential green SHP policies developed and recommended	Green SHP labelling system established	No system in existence	Green SHP labelling system established	– Research and recommendation completed and submitted to MWR, and final report accepted by UNIDO in FY20 – Awarding green SHP plants through governmental document and plaque regularly.
	Incentive policies in 8 provinces recommended for adaption	Few (1-2) specific green incentive policies in place	At least one incentive policy recommended for adoption in each of 8 provinces	– Research and recommendation completed and submitted to local governments in 8 provinces, and final report accepted by UNIDO in FY22 – Incentive policies now in place in 8 provinces
	Introduction of mandatory ecological flows	Guidelines in place in 5 provinces	Mandatory ecological flows introduced in 2 provinces	– Ecological flows now mandatory for all SHP plants across the country
	National and provincial incentive policies recommended for adoption including a section on gender consideration	No green SHP incentive policies in place	At least one incentive policy recommended for national adoption	– Research and recommendation completed and submitted to MWR – Feedbacks from MWR undergoing
Output 1.3: Safe Production standard criteria rolled out nationwide	Safe production standard rolled out nationwide	Draft 'document' on safe production	Safe production standard rolled out nationwide	– Target completed in FY21, with no further progress in FY23
	Provincial safe production standards issued	No provincial standards issued	Issuance of provincial standards on safe production in 8 provinces	– Target completed in FY21, with no further progress in FY23
Component 2 – Technical demonstration for refurbishment and green upgrades of SHP plants				
Outcome 2.1: 19 refurbished green SHP plants (formerly 24) are fully operational and improved management and safety standards are in place				
Output 2.1: business plans and feasibility studies finalised for upgrading SHP demonstration plants	Number of detailed feasibility studies and business plans including gender considerations	No studies or plans	19 studies and plans prepared	– Target completed in Project Preparation Phase and implemented accordingly

Output 2.2: Preferential green SHP policies developed and recommended	No. of demonstration plants	0	19 (formerly 24)	<ul style="list-style-type: none"> – One more plant withdrawn from demonstration due to local policy changes, with contract terminated by UNIDO in Sept 2022 – Progress reports of 19 plants upon completion of refurbishment prepared and accepted – Final reports of 19 plants under preparation
	Additional Installed Capacity (MW)	0	20.2 (formerly 23.47)	<ul style="list-style-type: none"> – Additional 20.2 MW capacity installed (updated according to progress reports from owners of the remaining 19 plants)
	Annual MWh generated	0	141,023 (formerly 157,000)	<ul style="list-style-type: none"> – The power outputs of the pilot plants from Jan to Dec 2022 were 360,005.3MWh, which is slightly lower (-1836.6MWh) than the aggregated long-term average (LTA, 361,841.9MWh) before the interventions, which is largely due to extreme and continuous drought according to feedbacks from owners and provincial PMOs – Data from Jan to Jun 2023 still under collection and validation – Additional analysis of hydrological regime and potential impacts on power output undergoing
	Annual GHG emissions reduced	0	94,696 (formerly 110,000) tCO ₂ e	<ul style="list-style-type: none"> – In this report period, no additional GHG emission cut contribution due to lower than long-term average outputs under extreme and continuous drought (updated according to actual output of the remaining 19 demonstration projects) – The normal-performing 12 plants with outputs above their LTAs saw 35,634.61 tCO₂ e cut, if abnormal-performing plants discarded
	No. of pilot sites with ecological flow maintained year round	0	19 (formerly 24)	<ul style="list-style-type: none"> – All pilot projects with e-flow maintained year-round in compliance with mandatory national policy
	#/% of female-led (management team) pilot SHP plants (beneficiaries)		15	<ul style="list-style-type: none"> – 17 of the demonstration plants now with female leadership (updated according to the final report for monitoring and performance analysis of demonstration activities)
	#% of female employees at pilot SHP plants		25%	<ul style="list-style-type: none"> – 104 female employees (28%) out of 368 in total (updated according to the final report for monitoring and performance analysis of demonstration activities)
	Number of rivers with improved ecology		19 (formerly 24)	<ul style="list-style-type: none"> – All 19 rivers with improved ecology (updated according to case studies)

Outcome 2.2: Improved performance and safety management for SHPs in place

Output 2.3: Socio-economic and environmental impact of green SHP rehabilitation recorded	No. of Environmental and Social Management Plans prepared	0	19 (formerly 24)	<ul style="list-style-type: none"> – Monitoring of ESMP implementation completed
	No. of baseline and socio-economic and environmental studies of local area and population prior to rehabilitation, including a chapter on gender	0	10	<ul style="list-style-type: none"> – Ex-ante (baseline) survey, analysis and reports of 10 demonstration projects completed in FY21, with no further progress in FY23
	No. of socio-economic and environmental	0	10	<ul style="list-style-type: none"> – Ex-post survey, analysis and reports of 10 demonstration projects completed

	impact studies post SHP rehabilitation, including a chapter on gender			<ul style="list-style-type: none"> Final report of ex-ante and ex-post comparison and analysis completed Additional cost-benefit analysis undergoing
	% of female/male beneficiaries at project areas	41%	50%	<ul style="list-style-type: none"> The baseline ratio was refer to employee numbers only. The expectation ratio should refer to all beneficiaries. 39% F/M ratio (updated according to the employee numbers in final report for monitoring and performance analysis of demonstration activities for employees, without consideration of indirect beneficiaries with 50% F/M).
	No. of case studies prepared (% that includes gender section/dimension)	0	19 (100%, formerly 24)	<ul style="list-style-type: none"> Case studies and analysis for 19 individual plants completed Final report for assignment completed

Component 3 – Capacity building and knowledge sharing for the SHP industry in China

Outcome 3.1: Knowledge and awareness of decision makers, experts and technicians about green SHP retrofitting and management are improved

Output 3.1: Capacity building programme for SHP project owners, developers and technicians delivered to 1200 people	Training materials on green hydro and safe SHP with considerations on gender	No material developed	Material developed with a chapter on gender	<ul style="list-style-type: none"> Target completed in FY21, with no further progress in FY23
	No. of train-the-trainer sessions	None	1	<ul style="list-style-type: none"> Target completed in FY21, with no further progress in FY23
	No. of trained trainers	0	50	<ul style="list-style-type: none"> Target completed in FY21, with trainers offering training in subsequent training workshops
	No. of training workshops delivered to project owners, developers, managers, technicians and design institutes	0	15	<ul style="list-style-type: none"> 8 workshops in total completed, with <ul style="list-style-type: none"> 6 workshops completed by end of FY22 2 workshops completed in FY23
	Total No. of trainees	0	1200 (min. 300 female, 25%)	<ul style="list-style-type: none"> 1,226 trainees (399 female, 33%) trained, with <ul style="list-style-type: none"> 585 (243 female, 42%) trained by end of FY22 641 (156 female, 24%) trained in FY23
	No. of study tours	0	1	<ul style="list-style-type: none"> Target completed in FY20, with no further progress in FY23
	No. of study tour participants	0	25 (min. 7 female, 25%)	<ul style="list-style-type: none"> Target completed in FY20, with <ul style="list-style-type: none"> 16 participants (2 female, 12.5%) Another 11 (5 female) cancelled due to visa or other personal issues No further progress in FY23
Output 3.2: Capacity building programme for 200 officials on green SHP and Safety and Protection regulation	Training material developed on policy and regulation on Green Hydro and on Safe Production with considerations on gender	No material developed	Material developed on policy and regulation of green SHP and standardised safety measures, with chapters on gender	<ul style="list-style-type: none"> Target completed in FY21, with no further progress in FY23
	No. of training sessions for MWR officials in provinces	0	4	<ul style="list-style-type: none"> 2 workshops in total completed, with <ul style="list-style-type: none"> 1 workshop completed in FY22 1 workshop completed in FY23
	No. of officials trained	0	200 (min. 50 female, 25%)	<ul style="list-style-type: none"> 211 trainees (55 female, 26%) trained, with <ul style="list-style-type: none"> 66 (18 female, 27%) trained in FY22

				▫ 145 (37 female, 26%) trained in FY23
	No. of study tours	0	1	– Target completed in FY20, with no further progress in FY23
	No. of study tour participants	0	30 (min. 8 female, 25%)	– Target completed in FY20, with ▫ 23 participants (4 female, 17%) ▫ Another 11 (5 female) cancelled due to visa or other personal issues ▫ No further progress in FY23
Output 3.3: Inception awareness raising workshop held	Inception awareness raising workshop	0	1	– Target completed in FY18, with no further progress in FY23
	No. of attendees at workshop	0	150 (min. 38 female, 25%)	– Target completed in FY18, with 156 attendees (40 female, 26%), and no further progress in FY23
	Awareness raising and marketing material available for the public	Shortage of effective and quality material	Public awareness raising, marketing and training material developed and adapted for Chinese conditions and made available in printed and electronic format. Posters available at project sites	– Development of a bilingual brochure completed – Digital version of the brochure to be made publicly available on project website under development – Printing and distribution of the brochure undergoing
	Awareness raising and marketing material available for project developers and officials including consideration on gender	No material in Chinese	Public awareness raising, marketing and training material developed (with a chapter on gender) and adapted for Chinese conditions and made available in printed and electronic format.	– A documentary film in Chinese and English developed, and to be made publicly available on project website under development – Bilingual newsletters for 2022 published via UNIDO Open Data, and bilingual newsletters for 2023 under preparation
	National and provincial seminars on green hydro	0	3	– 3 national seminars organised in Xi'an, Nanchang, and Kunming
	Chinese Green SHP website established	0	Website established and regularly updated	– Website under development and expected to be launched by end of July 2023 – SNS campaigns organised and continued till end of project
	International green hydro event held in China with a side event relevant to gender	0	1	– 1 international webinar organised in Beijing
Output 3.4: Establishment of pilot green SHP plants	Training material developed for green SHP establishment with consideration on gender	Ad-hoc training material	Material developed with a chapter on gender, promoted by MWR and ICSHP.	– Target completed in FY21, with no further progress in FY23
	Establish 24 refurbished SHP plants as pilot green SHP plants	0	24	– Target completed, with ▫ 21 plants completed by end of FY22 ▫ Another 3 plants in FY23
	No. of trainees receiving training	0	350 (min. 88 female, 25%)	– 352 trainees (99 female, 28%) trained, with ▫ 229 (68 female, 30%) trained by end of FY22 ▫ 123 (31 female, 25%) trained in FY23
Output 3.5: Establishment of safe production standardization carried out	Training material developed for safe production establishment	Draft training material	Material developed and promoted by MWR	– Target completed in FY21, with no further progress in FY23

Promoting safe production standardization in 24 refurbished SHP plants	0	24	– Target completed, with ▫ 21 plants completed by end of FY22 ▫ Another 3 plants in FY23
No. of trainees receiving training	0	200 trainees (min. 50 female, 25%)	– 202 trainees (49 female, 24%) trained by end of FY22, with no further progress in FY23

III. Project Risk Management

1. Please indicate the overall project-level risks and the related risk management measures: (i) as identified in the CEO Endorsement document, and (ii) progress to-date. Please expand the table as needed.

	(i) Risks at CEO stage	(i) Risk level FY 22	(i) Risk level FY 23	(i) Mitigation measures	(ii) Progress to-date	New defined risk ⁴
1	Political risk	Low (L)	Low (L)	The Project objectives and activities have been crafted in line with national policies and objectives. MWR has been involved in all stages of the project design and have ensured their full support throughout the project and beyond. In addition, the provincial governments have been involved in the project preparation and have stated their interest in greening projects.	Active communication is maintained with Chinese government partners through reporting, instant messaging groups, e-newsletters, etc to share progress and updates under the Project. Chinese governmental partners including MWR and local water departments are actively engaged in annual workplans and implementation, technical demonstration, and policy recommendations, which aligns project progress is well with national priorities of the SHP industry.	<input type="checkbox"/>
2	Implementation risk	Low (L)	Low (L)	China has a very active national SHP industry which in part is already active in exporting equipment and knowledge. The Project will further strengthen industry actors across the value chain in extending their product and service portfolio towards more ecological sound solutions.	The implementation of the Project has so far further strengthened the value chain of the Chinese SHP industry by adding values through experiences of managing social and environmental impacts of SHP development. Additional values are also created through enhanced industrial capacities among SHP professionals.	<input type="checkbox"/>
				MWR, Provincial governments and SHP owners expressed their interest in the project during the PPG and helped to identify potential demonstration projects. Throughout the project, there will be regular and continued contact with stakeholders which should lead to their continued interest and participation.	Technical demonstration has been carried out and completed in close collaboration with not only SHP owners, but also government agencies, local communities, and researchers. The partnership formed through the demonstration is highly valuable for both the implementation of the Project itself and bolstering the confidence of the industry among the stakeholders. The final reports of the demonstration and analysis of outcomes are in the final stages of preparation.	

⁴ New risk added in reporting period. Check only if applicable.

				<p>Capacity building is an essential part of the Project. Knowledge and skills on SHP upgrading and operation and maintenance is already strongly established in the country. The pilot projects will be located at existing sites with qualified staff who will be further trained in environmental and management aspects.</p>	<p>Capacity building activities under the Project, including an array of training and awareness raising efforts, though significantly impacted and delayed by the Covid-19 pandemic, have been completed with good outcomes. Analysis of the outcomes have been completed, with further awareness raising efforts (film, brochure, posters, newsletters, SNS campaigns) undergoing and to be made public soon.</p>	
				<p>Management organizations were selected for their experience and skills in managing other similar GEF projects. A project management unit will be set up at the national level and monitored under M&E plan. Clear indicators for tracking outcomes and outputs with a focus on implementation milestones and project results and impacts have been prepared.</p>	<p>Management of the Project has been undertaken smoothly with active contribution from the PMO, MWR and UNIDO. The coordination and interactions between these partners have been kept at a very intimate and frequent level with monitoring and evaluation implemented as planned. Indicators for tracking outcomes of the Project are being closely monitored and evaluated, and the Terminal Evaluation of the Project is under preparation.</p>	
3	Technical risk	Low (L)	Low (L)	<p>There is limited technical risk since technological measures are widely used in many other countries. Detailed assessment of suitable sites for measures will be carried out and training for operating personnel will be provided, including from technology importers, when necessary.</p>	<p>All activities for technical demonstration were backed up by detailed feasibility studies and business plans, and by end of FY23, have been completed with impacts monitored and recorded. Final reports of technical demonstration and impact analysis are under preparation.</p>	<input type="checkbox"/>
4	Project sustainability	Low (L)	Low (L)	<p>A Project Steering Committee including different agencies will be established to oversee project implementation and will ensure collaboration. Members will include representatives of MWR, MOF, MEP, ICSHP and the provincial DWRs. By making all market players fully aware of the advantages of greening SHP and by equipping them with the capacity and tools to realize these benefits, the project aims to generate a self-reinforcing market. In addition, the incentive mechanisms that will be recommended will create a positive context that is</p>	<p>The partnership and positive work relation between partners under the Project have enabled sustained implementation of the Project. Technical demonstrations have been successfully completed with outcomes and impacts monitored and recorded, which has been valuable experiences to showcase the technical and financial feasibilities of the demonstrated measures. These experiences are also valuable in bolstering confidence among the SHP industry and potential financiers to sustain the adoption of the demonstrated measures. Contributions from the Project in improving Chinese SHP policies and institutions are expected to contribute further to the sustainability of the green upgrades of SHP development across the country. Such sustainability is further consolidated by improved industrial capacity and raised awareness through the Project.</p>	<input type="checkbox"/>

				<p>expected to ensure the attainment of the project outcomes and their sustainability.</p> <p>Strengthening and expansion of technical capability through training are built into existing organisations in Component 3. Training activities will be closely monitored and supported under the M&E plan. Linkage to experts and specialized institutions for training and support will be established and coordinated. To ensure that further green SHP projects are built after this project, the project will include a clear awareness raising activity for potential SHP owners, financiers and provincial government to understand the benefits of the measures. In addition, the project will review and recommend possible incentive measures which will support further investment.</p>	<p>The capacity building and knowledge sharing component under the Project has been completed with its impacts sustained. These include the training of SHP owners, technicians, officials, etc., who, with improved capacity, are going to sustain their direct contribution to the green development of SHP across the country. Moreover, training programmes are completed with heavy involvement of universities specialised in water management, who are going to, even after Project completion, continue benefiting parties that seek knowledge and education with them. Moreover, awareness-raising materials and campaigns, including brochures, posters, films, webpages, and SNS posts, have been developed and organised and will soon be released publicly to sustain the impact from the Project.</p>	
5	Financial risk	Low (L)	Low (L)	<p>This will be mitigated as much as possible through the choice of greening measures, the allocation of a grant, and the development of incentive policies. Demonstration projects are only selected on evidence of co-finance for the project. There is stringent selection of borrowers through assessment and due diligence of each borrower's historic and future financial management capacity.</p> <p>The banking sector has shown its interest in these projects through the provision of loans, as part of the co-finance, for the demonstration projects. The letters of commitment to invest provided by the projects include the loans from banks. Proper dissemination of the results will be organized to raise awareness in the banking sector.</p>	<p>After completion of the demonstration activities, a total of 335.12 million CNY (C. 47.87 million USD) co-financing was secured, which is at a ratio of 12:1 against the GEF contribution. The leveraged co-finance includes 128.04 million from central government allotment, 57.63 million from local government, and 149.44 million (inclusive of bank loans) by owners themselves.</p> <p>Loans provided by banks have been part of the co-financing for the refurbishment of demonstration plants, making up approximately 12% of the owner's self-finance. Professionals in the banking sector have been actively engaged in knowledge sharing and awareness raising activities of the Project, which is expected to bolster their confidence in the SHP industry of the country.</p>	<input type="checkbox"/>

6	Environmental and social risk	Low (L)	Low (L)	<p>The project specifically aims to improve the environmental and social circumstances of the SHP. Although in China, formal EIAs are not required for upgrading SHP projects, an environmental and social management plan (ESMP) will be prepared for each project and will identify any risks where applicable. Mitigation measures will be proposed at that time. In addition, an environmental and social impact assessment study will be carried out at 10 of the sites before and after the project. Annual environment and safeguards M&E reports will be provided, which will follow up with necessary actions.</p>	<p>All demonstration activities have been completed with ESMPs prepared beforehand and implemented with impacts recorded and analysed by an independent and specialised expert. These include the monitoring and analysis of implementation of mitigatory measures for (water, solid, & air) waste and noise control, occupational health and safety, soil erosion control, gender mainstreaming, etc. No major environmental or social issues were reported during construction and operation.</p>	<input type="checkbox"/>
				<p>This Project will pursue thorough and gender responsive communication and ensure stakeholder involvement at all levels, with special regard to involving women and men, as well as CSOs and NGOs promoting GEEW, and a gender expert. This shall mitigate social and gender related risks, promote gender equality, create a culture of mutual acceptance, and maximize the potential contribution of the project to improving gender equality in the energy field. To attract qualified female candidates to the project, adequate and gender responsive communication strategy will be carried out by reaching out to women's groups and associations, while also making trainings and workshops accessible for women, e.g. by providing safe transport, offering childcare, offering trainings at suitable times for women when children are in school and day-care, etc.</p>	<p>During the processing of project implementation, gender equality is one of the priorities for activities under the Project. Female members account for at least 25% of project teams of all contracted tasks. Accessibility assistance, including that for transport, childcare, etc, was available for all events organized. Specialised training and knowledge have been offered to female professionals within the SHP industry through tailored capacity building programmes under the Project to help them grow their careers.</p>	

				Every participating SHP has been asked to sign a confirmation letter to reinforce their commitment to the GEF project.	All participating SHP plants for technical demonstration have completed their activities as agreed, and final reports are under preparation.	
7	Climate change risk	Moderate (M)	Moderate (M)	Changing patterns in rainfall may affect the availability of the water flow and hydropower output. Activities included in the greening of the SHP should help to mitigate against adverse impacts and improve resilience.	The extreme and continuous drought across China's hydropower-rich areas is significantly impacting the outputs from hydropower plants including the demonstration ones under the Project. The current outputs could be even lower than long-term average before the interventions, which stops them from contributing to additional GHG emission cuts.	<input type="checkbox"/>

2. If the project received a **sub-optimal risk rating (H, S)** in the previous reporting period, please state the **actions taken** since then to mitigate the relevant risks and improve the related risk rating. Please also elaborate on reasons that may have impeded any of the sub-optimal risk ratings from improving in the current reporting cycle; please indicate actions planned for the next reporting cycle to remediate this.

The overall risk rating of the Project in FY22 was Satisfactory, which is above sub-optimal level.

3. Please indicate any implication of the **COVID-19** pandemic on the progress of the project.

The Covid-19 pandemic and China's response to that have significantly impacted the implementation of the Project, and therefore, completion of the Project has been extended to end of 2023 after reaching agreements with UNIDO and GEF National Focal Point in 2021. After China lifted its Covid restrictions at the end of 2022, the implementation of the Project, in particular the activities under its capacity building and knowledge sharing component, has picked up gradually by the end of FY23, and is expected to be completed as planned after the extension.

4. Please clarify if the project is facing delays and is expected to request an **extension**.

An extension of the Project has already been agreed with UNIDO and GEF Focal Point to end of 2023 in 2021. The implementation of the Project after extension has been satisfactory and would expect no further extension.

5. Please provide the **main findings and recommendations of completed MTR**, and elaborate on any actions taken towards the recommendations included in the report.

The Mid-Term Review (MTR) in January 2020 concluded that up until the review, 'major activities [of the project] are continuously progressed as planned', and the project was rated as 'smoothly implemented'. The MTR also find a few problems regarding the implementation of the project and made recommendations for improvements, including (1) strengthening communication and coordination within the project management team, (2) providing additional practical training in reimbursement and financial management for project owners, (3) increasing public engagement and awareness raising, and (4) supporting the formulation of local policy incentives for green SHP development.

Given the MTR recommendations, a few specific actions in response to them are taken, including (1) organising monthly meetings to share updates and progress to facilitate better communication and coordination between the PMO and UNIDO team, (2) offering detailed written & in-person guides and tutorials for project owners to prepare documents for reporting progress and processing reimbursements, and setting up rules for appraisal and acceptance of piloting projects for final reimbursements, (3) fast-tracking the development of publicly-accessible documentary film, brochures, and e-newsletters, and

preparing four seminars (3 domestic and 1 international) for knowledge sharing, and (4) developing policy recommendations for provincial SHP authorities.

IV. Environmental and Social Safeguards (ESS)

1. As part of the requirements for **projects from GEF-6 onwards**, and based on the screening as per the UNIDO Environmental and Social Safeguards Policies and Procedures (ESSPP), which category is the project?

☐ Category A project

☒ Category B project

☐ Category C project

(By selecting Category C, I confirm that the E&S risks of the project have not escalated to Category A or B).

Please expand the table as needed.

	E&S risk	Mitigation measures undertaken during the reporting period	Monitoring methods and procedures used in the reporting period
(i) Risks identified in ESMP at time of CEO Endorsement	In the PPG phase, it decided that ESMP needs to be prepared for each of the pilot project.	Implementation of the ESMPs prepared before start of the demonstration activities were monitored and analysed by one national expert in four provinces (Hubei, Chongqing, Yunnan, and Shaanxi, with same process completed in another 4 provinces in the previous fiscal year) where demonstration plants.	The ESMPs were prepared before the start of the demonstration activities with active inputs from project owners, national experts and local communities based on recorded baseline conditions. Implementation of the demonstration activities, including both phases of construction and operation, were surveyed, monitored and analysed by an independent national expert against the ESMPs and baselines to ensure compliance.
(ii) New risks identified during project implementation (if not applicable, please insert 'NA' in each box)	NA	NA	NA

V. Stakeholder Engagement

1. Using the previous reporting period as a basis, please provide information on **progress, challenges and outcomes** regarding engagement of stakeholders in the project (based on the Stakeholder Engagement Plan or equivalent document submitted at CEO Endorsement/Approval).

As identified in the PPG phase of the Project, primary target beneficiaries of the project are energy and environmental policy-making and implementing institutions at national and local levels, primarily MWR and MEP, SHP owners (end beneficiaries), designers, installers, training institutions, energy professionals, service providers and the financial sector. The outcomes of the planned project activities and potential recommendations for bridging the gaps have been discussed with all the potential stakeholders during the PPG stage.

Progress:

Implementation of the Project, including policy and institution, technical demonstration, and capacity

building and knowledge sharing, and decision makings during the implementation have fully engaged stakeholders of green SHP. Policy studies completed in the reporting period have made extensive consultation of related experts. Monitoring and analysis of the impacts of demonstration activities also take into consideration of a wide range of stakeholders including local communities. To further engage others, FY23 has seen a large amount of efforts dedicated to knowledge sharing and awareness raising. These include 4 capacity-building training workshops for 909 SHP owners, technicians, officials, etc, 3 national and 1 international seminar for knowledge sharing, a bilingual brochure, a bilingual documentary film and a website dedicated to sharing publicly knowledge and experience from the Project. As a routine, apart from PSC members, the final PSC meeting under preparation is also open to additional stakeholding parties, and invitations have been sent.

Challenges:

While trying its best to engage stakeholders on a wider scale, the project is challenged in this regard by:

- Differences of priorities of stakeholders: stakeholders under the Project have different priorities and, in some cases, they are competitive with each other. For example, SHP regulators prioritises minimising the environmental impacts of SHP development while owners are more concerned about economic outcomes.
- Efficiency drawbacks: extensively engaging stakeholders more often than not requires significant time budget. With the Project already under an extension and many of its activities undergoing to catch up the extended implementation plan, possible efficiency drawbacks from this should be taken into consideration.

Outcomes:

Though challenged, the outcomes from extensively engaging stakeholders are encouraging, including:

- Inclusive sharing of benefits from green SHP development: by extensively engaging stakeholders, the project is balancing their priorities and creating inclusive opportunities for sharing the multiple benefits from green SHP development among them. Green SHP develop generates an array of benefits shared across the spectrum of stakeholders, including economic gains, environmental improvements, climate mitigation, gender mainstreaming, etc., which showcases the feasibility of continuing green upgrades of the SHP industry of China.
- Raised awareness and support among stakeholders: By actively engaging SHP stakeholders in its decision-making, technical demonstration, and knowledge sharing, the Project is exerting positive influence on the way the concept of green SHP is perceived, understood, and implemented among government officials, technical personnel, and plant owners, and such influence is propagating beyond the provinces of the demonstration plants.

2. Please provide any feedback submitted by national counterparts, GEF OFP, co-financiers, and other partners/stakeholders of the project (e.g. private sector, CSOs, NGOs, etc.).

The feedbacks from Project partners have been quite positive towards the outcomes under these project Components:

- Policy and institution: MWR and local water departments have provided affirmative feedbacks regarding the policy outputs from the Project regarding Green SHP labelling, central and local incentive policies according to follow up information collected by vendors.
- Technical demonstration: Owners of and local residents close to the pilot plants are positive to the outcomes of the technical demonstration, in particular the improved environmental measures and benefit sharing, according to monitoring and analysis of independent national experts for impact studies and case studies.
- Capacity building and knowledge sharing: Participants to training programmes, seminars and other awareness-raising events have showed their approval of these activities through vendors organising them. These include SHP owners, technical personnel, officials, financiers, journalists, etc.

Further feedbacks will also be collected at the final PSC meeting under preparation.

3. Please provide any **relevant stakeholder consultation** documents.

- To facilitate the preparation of the Terminal Evaluation, the PSC meeting of 2023 has been postponed to the end of July 2023, for the proposed agenda of the meeting. Please see annexed **6919_PSC2023-proposed-agenda.pdf**

VI. Gender Mainstreaming

1. Using the previous reporting period as a basis, please report on the **progress achieved on implementing gender-responsive measures and using gender-sensitive indicators**, as documented at CEO Endorsement/Approval (in the project results framework, gender action plan or equivalent),.

The implementation of the Project during this reporting period has paid further attention to gender mainstreaming compared to the former reporting periods. The progress in this regard include:

- Further attention in supporting female specialists in participating the Project in technical and supporting capacities: In the recruitment of consultants and vendors to support the implementation of the Project, equal participation of female candidates has been encouraged. For example, the developer team for the project website is predominately composed by female specialists (3/4).
- Improved gender equality among demonstration plant employees: The support provided to female employees has seen increasing average income of female employees at over three quarters of the demonstration plants. Though improved and automated operation has saved labour requirements of the plants, around 3/4 of the plants saw no decrease of female employees, in particular those in leading roles.
- Improved capacity among female SHP professionals: The capacity building and knowledge sharing activities during this reporting period has continued helping female professionals (owners, technicians, officials, etc) in improving their capacity, so that they could upgrade their skills to equally compete for higher positions in their careers and increase their participation in the development and management of Green SHP.
- Highlighted monitoring of the gender indicator: The monitoring and evaluation of the Project during this reporting period has put gender indicators to an even higher stage, requiring at least 25% female participation of all activities.

VII. Knowledge Management

1. Using the previous reporting period as a basis, please elaborate on any **knowledge management activities / products**, as documented at CEO Endorsement / Approval.

Project Component 3 is dedicated to capacity building and knowledge sharing among stakeholders and the general public, particularly electricity consumers. During this reporting period, knowledge and experience accumulated through the implementation have been shared and disseminated under tools and products including case studies, technical reports, Project film and brochure, etc through training workshops, seminars, project website, and social media. The organised knowledge management and sharing activities in this reporting period include:

- 4 training workshops for 909 SHP owners, technicians, officials, etc., including 224 female (25%)
- 3 national seminars in Xi'an, Nanchang and Kunming
- 1 international webinar in Beijing

These efforts have successfully contributed to capacity building among SHP professionals as well as awareness-raising among the general public.

Please see the next box for details of knowledge products developed in this reporting period.

2. Please list any relevant knowledge management mechanisms / tools that the project has generated.

The knowledge sharing tools developed during this reporting period include:

- 2022 Project Newsletters in [English](#) and [Chinese](#)
- Project brochure in English and Chinese (see annexed)
- Project film in English and Chinese (see annexed)
- Project website in [Chinese](#) under development, including:
 - Case study reports in Chinese
 - Impact analysis report of demonstration in Chinese
 - EMSP monitoring report of demonstration in Chinese
 - Cost-benefit analysis of demonstration (*in preparation*)
 - Analysis of hydrological regime and impact on power output (*in preparation*)

VIII. Implementation progress

1. Using the previous reporting period as a basis, please provide information on progress, challenges and outcomes achieved/observed with regards to project implementation.

Progress:

During this reporting period, the Project has progressed as planned and been outputting satisfactory outcomes under its components, including (1) closing the study and recommendation for national incentive policies for green SHP development with recommendations made to MWR; (2) final reports from demonstration plant owners collected and under finalisation, and analysis of the social-economic and environmental impacts of demonstration finalising; (3) training programmes for capacity building completed as planned, and awareness-raising events closing with various tools and products developed.

Challenges:

- China's Covid-19 response was not lifted until December 2022. Due to the restrictions, many of the knowledge sharing events had to be re-scheduled to fit into the short time frame of the first half of 2023.
- Climate uncertainties are raising in China as the global climate warms up. This impacts the precipitation and water availability in many river basins across China, which is expected to bring uncertainties and impacts to power generation outputs.

Outcomes:

- Policy and institution: Recommendations of incentive policies for green SHP development in China has been submitted to MWR, and initial feedback information from MWR has been positive, though the materialisation of such policies in China might still take some more time.
- Technical demonstration: With all demonstration activities concluded, studies and analysis of impacts of the interventions, and monitoring of ESMP implementation have find very positive results and the technical reports are under finalisation. Additional cost-benefit analysis and hydrological regime assessment (past and future scenarios) are undergoing to gain further understandings of the economy of the demonstration and future outcomes after completion of the Project.
- Capacity building and knowledge sharing: Capacity building has continued progressing with training programmes organised and offered to SHP professionals including owners, technicians, officials etc. Various knowledge sharing products and tools have been developed and have been applied to seminars and other activities for that purpose. These products and tools are being made publicly available to continue benefiting the industry after the conclusion of the Project.

2. Please briefly elaborate on any **minor amendments**⁵ to the approved project that may have been introduced during the implementation period or indicate as not applicable (NA).

Please tick each category for which a change has occurred and provide a description of the change in the related textbox. You may attach supporting documentation, as appropriate.

<input type="checkbox"/>	Results Framework	N/A
<input type="checkbox"/>	Components and Cost	N/A
<input type="checkbox"/>	Institutional and Implementation Arrangements	N/A
<input type="checkbox"/>	Financial Management	N/A
<input type="checkbox"/>	Implementation Schedule	N/A
<input type="checkbox"/>	Executing Entity	N/A
<input type="checkbox"/>	Executing Entity Category	N/A
<input type="checkbox"/>	Minor Project Objective Change	N/A
<input type="checkbox"/>	Safeguards	N/A
<input type="checkbox"/>	Risk Analysis	N/A
<input type="checkbox"/>	Increase of GEF Project Financing Up to 5%	N/A
<input type="checkbox"/>	Co-Financing	N/A
<input type="checkbox"/>	Location of Project Activities	N/A
<input type="checkbox"/>	Others	N/A

3. Please provide progress related to the **financial implementation** of the project.

Please see annexed **6919_1-July-2022-30-June-2023-funds.xlsx** and **6919_grant-delivery-report-by-grant-and-SC-detail.pdf**

IX. Work Plan and Budget

1. Please provide **an updated project work plan and budget** for the remaining duration of the project, as per last approved project extension. Please expand/modify the table as needed.

Please fill in the below table or make a reference to a file, in case it is submitted as an annex to the report.

Please see annexed **6919_updated-2021-2023-work-plan-140196.pdf**, and **6919_IOM_140196_300_2000003430_11_202107_Budget-revision-funds.pdf**

X. Synergies

1. **Synergies** achieved:

Describe potential synergies arising out of UNIDO internal cooperation and/or cooperation with (external) bilateral and multilateral projects/programmes, if applicable.

Outputs and outcomes of the project are expected to create synergies with the following projects or programmes:

- **World Small Hydropower Development Report** (200192). The selected green hydropower pilot plants from GEF project will be included in the case study of the report;
- **Technical Guidelines for Development of Small Hydropower Plants** (170216). The standards and technical guideline, as well as rehabilitation measure will be good reference and integrated to the project 170216;

⁵ As described in Annex 9 of the *GEF Project and Program Cycle Policy Guidelines*, **minor amendments** are changes to the project design or implementation that do not have significant impact on the project objectives or scope, or an increase of the GEF project financing up to 5%.

- **Other GEF projects on small hydropower** (Madagascar 120094, Nigeria 120119, Burundi 140332). The training materials and other advocacy documents from the project will be shared with those projects.

3. Stories to be shared (Optional)

Please provide a brief summary of any especially interesting and impactful project results that are worth sharing with a larger audience, and/or investing communications time in. Please include links to any stories/videos available online.

Not available

XI. GEO LOCATION INFORMATION

The Location Name, Latitude and Longitude are required fields insofar as an Agency chooses to enter a project location under the set format. The Geo Name ID is required in instances where the location is not exact, such as in the case of a city, as opposed to the exact site of a physical infrastructure. The Location & Activity Description fields are optional. Project longitude and latitude must follow the Decimal Degrees WGS84 format and Agencies are encouraged to use at least four decimal points for greater accuracy. Users may add as many locations as appropriate.

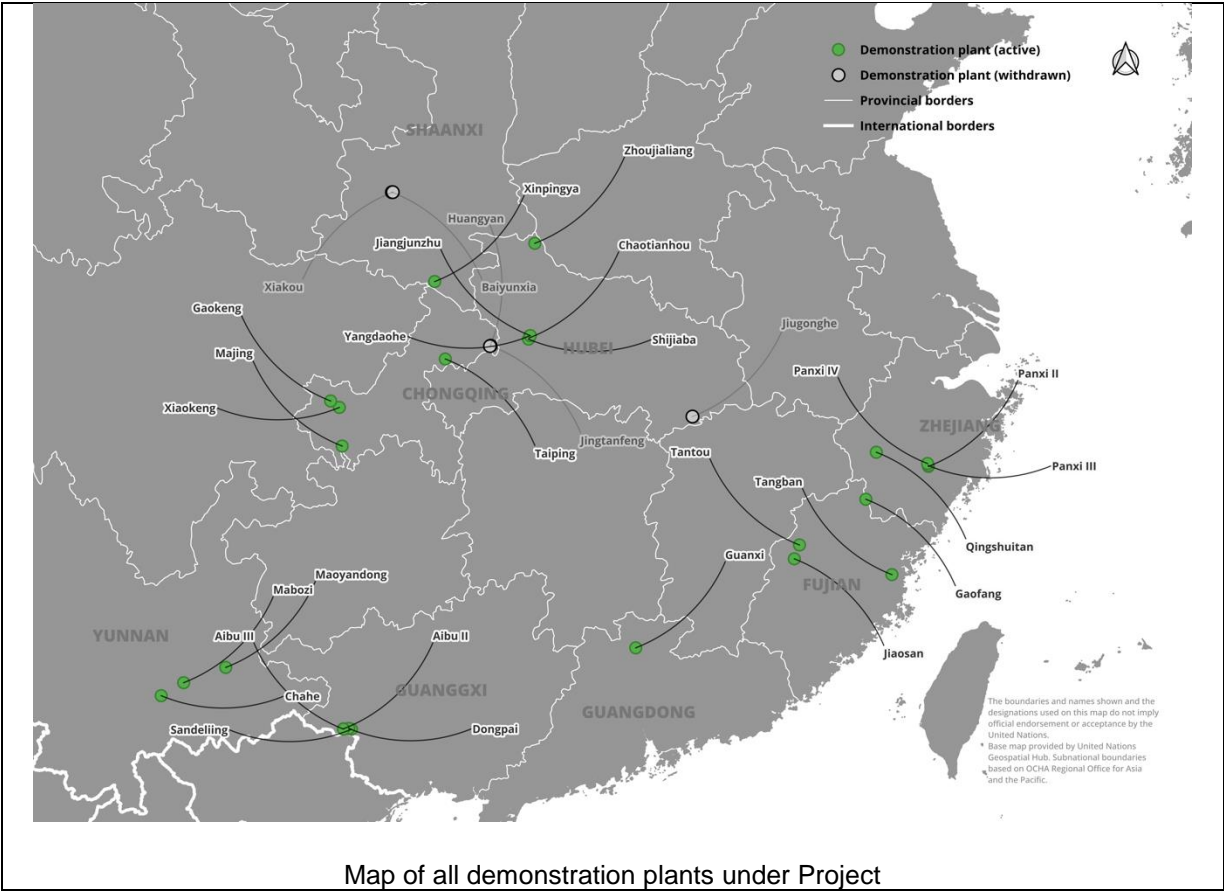
Web mapping applications such as [OpenStreetMap](#) or [GeoNames](#) use this format. Consider using a conversion tool as needed, such as: <https://coordinates-converter.com>

Please see the Geocoding User Guide by clicking [here](#)

Location Name	Latitude	Longitude	Geo Name ID	Location and Activity Description
Maoyandong II	24.32098611111111	103.72640555555556		Demonstration SHP plant (Active)
Mabozi	23.993580555555557	102.73767777777778		Demonstration SHP plant (Active)
Chahe	23.714158333333334	102.21041388888889		Demonstration SHP plant (Active)
Jiugonghe	29.5731361	114.68383888888889		Demonstration SHP plant (Withdrawn)
Zhoujialiang	33.05019166666667	110.98274166666667		Demonstration SHP plant (Active)
Chaotianhou	31.165730555555555	110.84691944444444		Demonstration SHP plant (Active)
Yangdaohe	31.209577777777778	110.86284166666667		Demonstration SHP plant (Active)
Shijiaba	31.142025	110.83577777777778		Demonstration SHP plant (Active)
Jiangjunzhu	31.213731066954473	110.87655507902205		Demonstration SHP plant (Active)
Majing	28.968627777777776	106.45878055555555		Demonstration SHP plant (Active)
Xiaokeng	29.759669444444445	106.39330277777778		Demonstration SHP plant (Active)
Gaokeng	29.890827777777776	106.18868611111111		Demonstration SHP plant (Active)

Jingtangfeng	31.0106306	109.94705555555556		Demonstration SHP plant (Withdrawn)
Huangyan	31.0020583	109.92966111111112		Demonstration SHP plant (Withdrawn)
Taiping	30.742794444444446	108.88096111111111		Demonstration SHP plant (Active)
Tangban	26.291641666666667	119.36753055555556		Demonstration SHP plant (Active)
Jiaosan	26.624444444444446	117.07527777777777		Demonstration SHP plant (Active)
Tantou	26.915063888888888	117.19654444444444		Demonstration SHP plant (Active)
Gaofang	27.868911111111111	118.75523888888888		Demonstration SHP plant (Active)
Baiyunxia	34.0512778	107.62662777777777		Demonstration SHP plant (Withdrawn)
Xiakou	34.0516	107.64806666666668		Demonstration SHP plant (Withdrawn)
Xinpingya	32.293919444444444	108.63169166666667		Demonstration SHP plant (Active)
Guanxi	24.739477777777778	113.35196388888889		Demonstration SHP plant (Active)
Sandeliing	22.990538888888889	106.67766666666667		Demonstration SHP plant (Active)
Dongpai	23.008355555555557	106.612625		Demonstration SHP plant (Active)
Aibu II	22.999780555555557	106.48873333333333		Demonstration SHP plant (Active)
Aibu III	22.993775	106.48935277777778		Demonstration SHP plant (Active)
Qingshuitan	28.841286111111111	119.00054166666666		Demonstration SHP plant (Active)
Panxi II	28.549130555555557	120.22378888888889		Demonstration SHP plant (Active)
Panxi III	28.5677	120.22063611111111		Demonstration SHP plant (Active)
Panxi IV	28.608419444444444	120.20287222222223		Demonstration SHP plant (Active)

Please provide any further geo-referenced information and map where the project interventions is taking place as appropriate.



EXPLANATORY NOTE

1. **Timing & duration:** Each report covers a twelve-month period, i.e. 1 July 2022 – 30 June 2023.
2. **Responsibility:** The responsibility for preparing the report lies with the project manager in consultation with the Division Chief and Director.
3. **Evaluation:** For the report to be used effectively as a tool for annual self-evaluation, project counterparts need to be fully involved. The (main) counterpart can provide any additional information considered essential, including a simple rating of project progress.
4. **Results-based management:** The annual project/programme progress reports are required by the RBM programme component focal points to obtain information on outcomes observed.

Global Environmental Objectives (GEOs) / Development Objectives (DOs) ratings	
Highly Satisfactory (HS)	Project is expected to achieve or exceed <u>all</u> its major global environmental objectives, and yield substantial global environmental benefits, without major shortcomings. The project can be presented as “good practice”.
Satisfactory (S)	Project is expected to <u>achieve most</u> of its <u>major</u> global environmental objectives, and yields satisfactory global environmental benefits, with only minor shortcomings.
Moderately Satisfactory (MS)	Project is expected to <u>achieve most</u> of its major <u>relevant</u> objectives but with either significant shortcomings or modes overall relevance. Project is expected not to achieve some of its major global environmental objectives or yield some of the expected global environmental benefits.
Moderately Unsatisfactory (MU)	Project is expected to achieve <u>some</u> of its major global environmental objectives with major shortcomings or is expected to <u>achieve only some</u> of its major global environmental objectives.
Unsatisfactory (U)	Project is expected <u>not</u> to achieve <u>most</u> of its major global environmental objectives or to yield any satisfactory global environmental benefits.
Highly Unsatisfactory (HU)	The project has failed to achieve, and is not expected to achieve, <u>any</u> of its major global environmental objectives with no worthwhile benefits.

Implementation Progress (IP)	
Highly Satisfactory (HS)	Implementation of <u>all</u> components is in substantial compliance with the original/formally revised implementation plan for the project. The project can be presented as “good practice”.
Satisfactory (S)	Implementation of <u>most</u> components is in substantial compliance with the original/formally revised plan except for only few that are subject to remedial action.
Moderately Satisfactory (MS)	Implementation of <u>some</u> components is in substantial compliance with the original/formally revised plan with some components requiring remedial action.
Moderately Unsatisfactory (MU)	Implementation of <u>some</u> components is <u>not</u> in substantial compliance with the original/formally revised plan with most components requiring remedial action.
Unsatisfactory (U)	Implementation of <u>most</u> components in <u>not</u> in substantial compliance with the original/formally revised plan.
Highly Unsatisfactory (HU)	Implementation of <u>none</u> of the components is in substantial compliance with the original/formally revised plan.

Risk ratings	
Risk ratings will assess the overall risk of factors internal or external to the project which may affect implementation or prospects for achieving project objectives. Risk of projects should be rated on the following scale:	
High Risk (H)	There is a probability of greater than 75% that assumptions may fail to hold or materialize, and/or the project may face high risks.
Substantial Risk (S)	There is a probability of between 51% and 75% that assumptions may fail to hold or materialize, and/or the project may face substantial risks.
Moderate Risk (M)	There is a probability of between 26% and 50% that assumptions may fail to hold or materialize, and/or the project may face only moderate risk.

Low Risk (L)	There is a probability of up to 25% that assumptions may fail to hold or materialize, and/or the project may face only low risks.
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LIST OF ANNEXES

1. **6919_PSC2023-proposed-agenda.pdf**: Tentative agenda of the Project Steering Committee meeting in preparation
2. **6919_project-brochure-in-English.pdf**: Finalized project brochure in English language
3. **6919_project-brochure-in-Chinese.pdf**: Finalized project brochure in Chinese language
4. **6919_project-film-in-English+Chinese.mp4**: Finalized project film in Chinese and English languages
5. **6919_1-July-2022-30-June-2023-funds.xlsx**: main expenditures during the reporting period between 1 July 2022 and 30 June 2023.
6. **6919_grant-delivery-report-by-grant-and-SC-detail.pdf**: Financial delivery report for the project
7. **6919_updated-2021-2023-work-plan-140196.pdf**: Updated project work plan and budget information for the remaining duration of the project (July to December 2023)
8. **6919_IOM_140196_300_2000003430_11_202107_Budget-revision-funds.pdf**: Project budget after the latest revision

All annexes are accessible at https://unidoccloud-my.sharepoint.com/:f:/g/personal/t_zhou_unido_org/EjprUOkUm-xEqSWn7jfl3KIBMMD893xCixJsRb0K5vACVg?e=vJbT9y