Mid-term External Evaluationtec
Project: Global Hydrometry Support Facility – Phase II
Consultant: Giacomo Morelli

Report

02/02/2024

Key Project Data

Project Title	Global Hydrometry Support Facility – Phase II
Trust Fund / Project Code	421377 Phase II
Starting Date	September 2021
End Date	August 2026
Lead Department	Infrastructure (I)
Organizational Unit	Earth System Monitoring (ESM)
Financing Entities	Swiss Agency for Development and Cooperation (SDC) Inter-American Development Bank (IDB) Climate Risk and Early Warning Systems (CREWS)
Project cost	CHF 4,724,400 (donors + WMO)
Project Executive	Stefan Uhlenbrook
Head of WMO Earth System Monitoring (ESM)	Dominique Bérod
Project Coordinator	Sophia Sandström

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List of Acronyms and Abbreviations

CNA	Capacity and Needs Assessment
CREWS	Climate Risk and Early Warning Systems Initiative
ESM	earth System Monitoring
EW4All	UN Early Warnings for All initiative
HydroSOS	Global Hydrological Status and Outlook System
IDB	Inter-American Development Bank
MtEE	Mid-term Evaluation Exercise
NHSs	National Hydrological Services
NMHSs	National Meteorological and Hydrological Services
OGC	Open Geospatial Consortium
SDC	Swiss Agency for Development and Cooperation
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNITAR	United Nations Institute for Training and Research
WMO	World Meteorological Organization
WHOS	WMO Hydrological Observing System
WHYCOS	World Hydrological Cycle Observing System
WWDI	World Water Data Initiative

Executive Summary

Evaluation objectives and scope

The main purpose of the Mid-term External Evaluation (MtEE) is to provide an independent assessment of the implementation progress of the project "Global Hydrometry Support Facility – Phase II", commonly known as HydroHub, in the period September 2021 – September 2023, through an analysis of relevance, effectiveness, efficiency, coherence and sustainability of the project activities.
The specific objectives of the evaluation are as follows: (1) Assess the extent to which the recommendations of the WMO HydroHub Phase I External Evaluation have been addressed in the design of Phase II; (2) Assess the level of implementation of the project activities within the evaluation period against those laid out in the WMO HydroHub Phase II Logframe and its set of indicators; (3) Assess the relevance, effectiveness, efficiency, and coherence of the project's activities, as well as the engagement process with countries in developing proposals; (4) Identify existing or potential bottlenecks to the successful implementation of planned activities and provide recommendations for future activities; (5) Assess the extent to which measures are being put in place to ensure impact and sustainability of outcomes of the project; and (6) Assess communication and knowledge sharing strategies so far, in view of making the WMO HydroHub a "Global Hub for Hydrometry".

Evaluation methodology

The evaluation applied a theory-based and utilization-focused approach; and utilized a purposeful sampling. The research design of the evaluation exercise used the following data collection methods: (1) Interviews with project stakeholders (on-line and face-to face); and (2) Desk review of project documents and reports.

In total, 40 individuals were interviewed (13 women + 27 men):

- 1 working day mission in Tanzania: 4 people interviewed face-to face (4 men)
- On-line interviews with The Gambia: 3 people interviewed (3 men)
- On-line interviews with stakeholders: 21 people interviewed (7 women + 14 men)
- Interviews at the HQs of WMO in Geneva: 12 people interviewed (6 women + 6 men)

Main findings

Relevance

The goals and aspirations of the project are fully aligned with WMO's vision and mission.

The project utilizes WMO's global authority in hydrometry standards and expertise in fostering international collaboration among NMHSs, recognized as vital for success by all interviewees.

Activities are designed on the spot since the project document leaves plenty of space for shaping and tailoring them according to emerging needs. Collaboration with other projects is contingent upon shared interests and compatibility between HydroHub initiative and the respective project.

The implementation of the project aligns with the WMO Gender Equality Policy and Action Plan. Whenever, the participation of women can be promoted, the HydroHub initiative put in place relevant measures: gender balanced is explicitly promoted in all calls to participate in project events.

Effectiveness

The MtEE exercise underscores that while the project successfully delivers outputs within the designated timeframe, gauging their tangible impact on intermediate outcomes, project outcomes (such as enhanced capacity, operationalized innovation, and optimized engagement and investments), and the overarching objective presents challenges. Indicators reflecting project outcomes and

objectives are directly linked to the project outputs. The baseline values for these indicators either mirror the values achieved in the initial phase of the HydroHub initiative or are set at zero. Although the contribution to achieving the outcomes and objectives is evident, assessing its precise "weight" is currently unfeasible for the MtEE due to the lack of monitored values for these indicators.

The delivery of outputs is not a cause for concern, as indicated by the MtEE. There are six main reasons behind this statement: (1) Clarity in Scope: Each activity of the project has a well-defined scope, (2) Relevance to Target Groups: The outputs generated by the project are pertinent to the target groups, particularly NMHSs and practitioners in the sector, making them of significant interest. All person interviewed on the matter confirmed that; (3) Capable Team: Those involved at all levels within the project are perceived to possess the necessary technical capabilities according to all individuals interviewed; (4) Tailored Activities: Activities are tailored and sized "on the spot" to meet the specific needs and interests of the institutions and individuals targeted; (5) The implementation of activities is non-sequential: each project activity operates independently from the others. Consequently, any delays in one activity will not impact the progress of others: (6) Variable size of the target group: the project document leaves a lot of room for HydroHub to decide the size of each activity. The number of people to be targeted by a given activity is not defined in the project document.

The project has garnered significant interest among all individuals interviewed. This is a promising factor for the project's realization of its aspirations. These individuals, who express interest, are experts in the sector with experience in various geographical areas worldwide.

The project monitoring system is activity-based. This form of monitoring is deemed appropriate for ensuring the smooth implementation of activities and the delivery of outputs. However, the evaluation of the contribution to achieving project outcomes is not explicitly addressed. Monitoring these contributions poses a particular challenge due to the diverse range of activities, a widely varied audience, and operations in different parts of the world in collaboration with other WMO activities. Members of the Think Tank seem to be aware of these complexities.

The great level of diversification of outputs is overwhelming: targets groups are diversified, some activities are locally relevant, others are implemented at global scale, and themes address varied a lot. Such diversification mirrors the broad aspirations of the project in terms of global reach and diversification of activities.

Efficiency

The project document thoroughly presents the intervention strategy, providing a brief description of the activities that the HydroHub Initiative aims to implement in order to deliver project outputs. It also succinctly outlines the benefits associated with these activities. While the scope of the activities is clear, their specific size or scale is not initially specified on purpose. The sizing of activities occurs during the project implementation, particularly when opportunities to work with specific target groups arise. Detailed activity design and resource allocation happen at this stage. This process is as well informed by reflections from the Advisory Council and the Think Tank.

According to the MtEE interviews, the existing management structure and overall technical capacity are deemed sufficient and appropriate for delivering project outputs satisfactorily. However, the evaluation identified a potential conflict of interest. The project related to the Innovation Call for the Pacific area was awarded to NIWA, although a representative of NIWA was sitting in the project Think Tank and may have supported actively the preparation of the call itself. The potential conflict of interest, if confirmed by an official audit, should be interpreted as a deficiency in the efficiency of the project.

Coherence

Coordination is fundamental to the WMO HydroHub. The absence of a strict geographical scope and the broad spectrum of sector practitioners targeted by project activities enables HydroHub to coordinate with a diverse range of institutions. However, coordination with regional offices seems less than satisfactory. During the interview process, it became evident that there was no coordination with the Regional Office for the South Pacific: the office was unaware of the Innovation Call for the Pacific Island Countries.

Sustainability

The WMO HydroHub Resource Mobilization Plan is a dynamic document that can change continuously. The version provided for the current MtEE is a Word document with Track Changes and does not have a formal goal. This type of plan aligns perfectly with the project's aspirations.

The HydroHub initiative can be viewed as a mechanism to introduce new ideas and activities within WMO and as a tool to attract donors. It is evident that numerous initiatives supporting NMHSs and the broader hydrometry sector in developing countries can be linked to the HydroHub initiative. From this perspective, HydroHub functions as an ongoing project that can be sustained by various financial contributions related to the scope of its activities.

Conclusions

MHSs are identified as the ultimate beneficiaries of the project. However, the engagement process is not clearly delineated – it is uncertain whether HydroHub initiates contact with NMHSs or if NMHSs actively seek support from HydroHub. The MtEE presents evidence suggesting that the project might be considered more offer-driven than demand-driven. The offer is demonstrated through the project's set of activities, while the demand from NMHSs for its services is not clearly evidenced by the partial information available to the MtEE: it is self-evident that it is HydroHub to choose its partners, especially when it comes to NMHSs, not the other way around.

Indeed, HydroHub appears to be the entity choosing its partners, particularly NMHSs, rather than the reverse. This decision-making dynamic becomes evident, especially when identifying actual opportunities. The MtEE highlights a need for HydroHub to actively search for its end beneficiaries, as the communication strategy does not effectively reach the project's target audience as per interviews. The lack of awareness among the project's end beneficiaries is evident, particularly with fewer monthly visits from developing countries, which constitute the project's focus, compared to visits from the Global North. In this context, labeling the initiative as entirely demand-driven may not be accurate. Typically, in development projects, services are offered to the final beneficiaries, who decide to participate based on how well the project aligns with their needs and interests. When it comes to engaging with NMHSs, the HydroHub initiative does not markedly differ from any other development initiative: all NMHSs interviewed on the matter stated that they participated in the project because they were in a dialogue with the HydroHub staff, none has approached HydroHub to ask for its support.

Evaluating the outcome and objective is not feasible due to unmonitored indicators. Nevertheless, the assessment of the project's activity implementation is notably positive and promising. There are no significant concerns regarding the delivery of the anticipated outputs outlined in the WMO HydroHub Phase II Logframe. On the flip side, procedural aspects related to the Innovation Call in the Pacific Island Countries and the quality of results from the awarded project raise concerns: a potential conflict

of interest may have affected the awarding process of the Innovation Call; and the Fiji NMHS is relying on NIWA to run effectively the technology introduced by the Innovation Project.

The project's activities are generally relevant and implemented efficiently, aligning coherently with the WMO institutional mandate and vision.

Formal communication and knowledge-sharing strategies are not clearly and formally outlined. According to interviews with relevant stakeholders, the primary objective of the communication strategy is to engage with NMHSs in developing countries and the global expert community, promoting WMO HydroHub as a Global Hub for Hydrometry. As per available information, the MtEE observes that: (1) the information flow to states in the Pacific area did not operate effectively; (2) representatives from all NMHSs, during interviews, noted that their awareness of the project is limited to the activities in which they are directly involved; and (3) data from an Excel file titled "Monthly Visitors" to the HydroHub website indicates that access is predominantly from the Global North, despite HydroHub's intended emphasis on serving the Global South.

Concerns and shortcomings in terms of overall project management are finally identified by the MtEE. They revolve around communication, accountability (underscored by potential conflicts of interest linked to the Innovation Project in Fiji), project reporting and the identification of lessons learned.

Recommendations

R#1: *Rapid evaluation of the projects (innovation calls)*
At WMO, Innovation Projects are perceived as the most crucial element in pursuing innovation through the HydroHub initiative. Therefore, validating the tool's efficacy for facilitating innovation is imperative to establish the project's approach credibility.

All interviewees, being aligned with WMO views, consider Innovation Calls as a promising mechanism to globally introduce innovation at NMHS levels.

Innovation Calls stand out as the only project component that can be swiftly evaluated. In addition, their contribution to project outcomes and objective is clear and direct. Introducing this evaluation approach will improve the accountability and transparency of the HydroHub project. This is very important in light of the potential conflict of interest happened with the Innovation Project awarded in Fiji.

R#2: *Considering conducting an external audit*
It is crucial to ascertain whether the potential conflict of interest identified by the current MtEE—specifically, the awarding of the Innovation Project for the Pacific Island Countries to a member of the HydroHub Think Tank—truly constitutes a violation of WMO's administrative and procurement procedures. The audit should also investigate whether other potential non-compliance issues arose during the project's implementation.

The external audit is of utmost importance, especially considering the information revealed in the report of the second meeting of the Think Tank which is in contradiction with the Technical Evaluation Report delivered to the WMO Procurement Office related to the award to NIWA by the HydroHub Team. According to the report, an individual from NIWA volunteered to support the Innovation Call in the Pacific Island Countries. Subsequently, NIWA emerged as the winner of that call and was awarded CHF 100,000 for a Innovation Project that did not comply with the specifications included in the HydroHub project document. This sequence of events underscores the significance of an external audit in ensuring transparency and accountability in the project's processes and decision-making.

R#3: *Adherence to the project document of awarded projects through the innovation calls*
Ensuring that awarded projects align with the criteria included in the project document. Deviating from these criteria presents a significant challenge in terms of project accountability. An example of such divergence is evident in the Fiji project, where notable disparities were observed. The grant was awarded to a large company from New Zealand, sidelining local enterprises. Furthermore, the use of non-open-source software and the absence of an emphasis on promoting local self-manufacturing, production, and services were noted.

The project document generally provides ample flexibility for the project to shape and execute its activities. Therefore, adherence to the project document is crucial to ensure project accountability. Additionally, if the Innovation Calls lack specific definitions and have a broad scope, verifying their validity as tools for scaling up innovation becomes challenging.

R#4: *WMO regional officers and the Think Tank*
There seems to be a deficiency in effective communication with NMHSs, and the involvement of hydrometry practitioners from developing nations in the Think Tank appears to be in favour of the Global North. The inclusion of WMO officers from regional offices could improve project communication with NMHSs and enable the Think Tank to better address issues relevant to the Global South.

R#5: *Widening the scope of project reporting*
Project reporting should include a dedicated section that not only outlines technical achievements but also explains, reflects on, and documents the implemented activities. This practice is vital for comprehensive project cycle management as it facilitates the identification of lessons learned and best practices. Moreover, for accountability, reporting should transparently highlight and adequately justify any deviations from the original project proposal.

R#6: *Women representation in the Think Tank*
Increasing the representation of women in the Think Tand would be in better alignment with WMO policy. Moreover, opening the Think Tank to women with diverse backgrounds, not solely focused on hydrometry, could bring a different perspective to project needs, extending beyond technical aspects.

R#7: *Establishing a communication strategy*
There are indications that the communication strategy is not effectively reaching the end-beneficiaries of the HydroHub initiative.

Lessons learnt and potential good practices

Any valuable lessons learnt or good practices related to project implementation were identified by the evaluation exercise.

1. Background and Project Description

1.1. Context

The project recognizes the importance of joint global efforts to expedite the achievement of the 2030 Agenda, with a specific focus on SDG 6. The goal, which pertains to clean water and sanitation, is currently behind schedule and requires a heightened pace of implementation. This aligns with the newly established SDG 6 Global Acceleration Framework, aimed at achieving rapid and scaled-up results by 2030. More concretely, the project aims to support the 2030 Agenda and SDG 6 by improving the availability of hydrological data. The project supports, as well, Early Warning for All (EW4All) Initiative, formally launched by the UN Secretary-General in November 2022 at the COP27 meeting in Sharm El-Sheikh, calling for the whole world to be covered by an early warning system by the end of 2027. Such data is crucial for effective water resource management and the provision of safe and reliable water supplies.

The 2030 Water Resources Group warns of a projected 40% gap between global water supply and demand by 2030 if current practices persist. Worryingly, 60% of WMO Member states report decreasing local water monitoring capacities. Many countries are addressing global water challenges through sustainable water management, resilience to floods and droughts, and water quality improvements. Effective governance, infrastructure management, and international agreements rely on reliable hydrological data for informed decision-making. The provision of hydrological data of adequate quality often remains a challenge, being two thirds of national networks in decline according to a recent survey of WMO.

1.2. Project intervention logic

Overall goal:
Enhanced and sustainable monitoring and information support NMHSs' effective delivery of hydrological services for disaster risk reduction, social and economic development, and environmental protection.

Outcome 1: Increased Capacity
NMHSs, with improved staff technical expertise, sustainably operate hydromet monitoring systems with enhanced data management and improved national and international data sharing.

Outcome 2: Operationalized Innovation
NMHSs continuously develop and innovate their hydrometric approaches and technologies in collaboration with academia and private sector.

Outcome 3: Optimized Engagements and Investments
NMHSs catalyse development opportunities and impact for the overall hydromet community through strengthened internal and external engagements that offer greater visibility, knowledge sharing and communication.

1.3. Intervention strategy

The intervention strategy for WMO HydroHub Phase II activities is intended to be tailored to the needs of countries. The entry points for intervention are threefold:

1. Individual or groups of NMHSs within a region with specific challenges reach out to the WMO HydroHub for support (e.g., through the WMO Regional Offices or WMO Hydrological Advisors);

2. International development projects (e.g., CREWS, the Adaptation Fund) include a set of targeted WMO HydroHub activities as a component to their projects; and

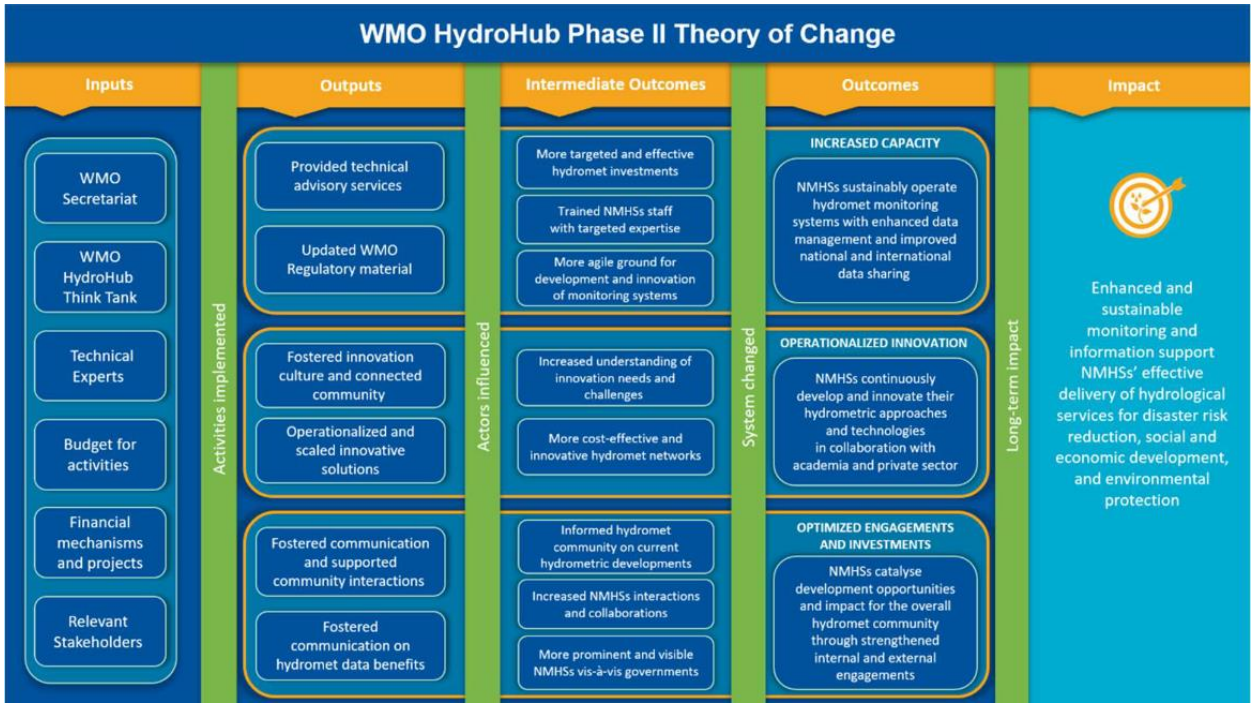
3. Global challenges of NMHSs are identified through engagement with the WMO Community (e.g., through the WMO Regional Associations, the Hydrological Assembly and the WMO Regional Hydrological Forums) or WMO tools (including the continuous WMO Hydrology Survey and the Hydromet Gap Report 2021) and addressed through targeted activities outlined in the WMO HydroHub Portfolio of activities, which are expected to contribute to the achievement of the three project outcomes.

Table 1: Project portfolio of activities

Outcome 1: Increased Capacity		
Activities	***Description***	***Expected benefits***
Capacity and Needs Assessments (CNAs)	To assess institutional, human and technical capacities, gaps and needs of NMHSs, hydrological forecasting institutions, water resources management bodies and Basin Organizations at national and regional levels, as well as to develop a Roadmap for improved service delivery.	NMHSs: to better understand and address their gaps and needs, looking at the full hydromet services value chain, based on Roadmap recommendations. Donors: to target their investments in a more effective way.
Face-to-face and Distance Learning Trainings	To design and carry out trainings addressing specific technical expertise deficits, especially those identified at regional level.	NMHSs: to improve and sustain technical expertise of their staff. Regions: to address the lack of locally available trainings.
Learning Exchanges	To facilitate and guide learning exchanges among two or more NMHSs in view of addressing specific hydrometric challenges.	NMHSs: to sustainably support each other in improving staff technical expertise and to create long-term regional collaboration opportunities.
Data Management and Sharing support activities	To equip NMHSs with appropriate data management and sharing tools as well as foster the development of data sharing agreements.	NMHSs: to better manage their data and share them in an efficient and interoperable way with users and riparian countries.
Reviewing and updating WMO Regulatory material	To ensure international guidance material better reflects the realities of hydrometry on the ground	NMHSs: to develop and innovate monitoring systems and integrate non-traditional data sources in a more agile way. Innovators: to be incentivized in developing new hydrometric technologies and approaches.
Outcome 2: Operationalized Innovation		
Activities	***Description***	***Expected benefits***
Innovation Workshops	To bring together NMHSs, academia, private sector (solution providers) and others, and facilitate targeted interactions among them.	NMHSs: to express their operational challenges and needs, as well as discover new approaches and technologies.

		Private sector: to tailor their solutions to operational realities. Academia: to direct their research towards more pertinent topics.
Innovation calls	To find and operationalize innovative solutions to NMHSs hydrometric challenges.	NMHSs: to complement and substitute traditional approaches, technologies and data sources by innovative solutions in a cost-effective and sustainable way. Innovators: to operationalize their solutions in NMHSs Academia: to be more proactive and creative in developing new hydrometric solutions.
Outcome 3: Optimized Engagements and Investments		
Activities	***Description***	***Expected benefits***
Knowledge sharing & support for communication Tools and Platforms	To disseminate knowledge and lessons learnt from all WMO HydroHub activities and to connect NMHSs with existing networks.	NMHSs: to increase their visibility and transparency as well as learn from each other. Donors: to access information needed for effective investments and evaluation of supported activities. Hydromet community: to keep track of hydrometric challenges, successes and developments.
User-provider Workshops and Webinars	To bring together NMHSs, public and private sectors (users of hydromet services) and facilitate targeted interactions among them, including for identifying and developing new markets for NMHSs services.	NMHSs: to better understand user needs, showcase portfolio of their services and identify new data sources in view of potentially integrating them in their operations. Public and private sectors: (existing and potential users of hydromet services) to showcase their own hydrological data collection with the potential to establish public-private engagements as well as identify NMHSs services of interest.
Ministerial Roundtables	To carry out national cost-benefit analysis of hydrological data investments, and convey the comprehensible results and recommendations to ministries responsible for NMHSs budget allocations	NMHSs: to increase their prominence and visibility vis-à-vis government in view of incentivizing increase in their budgets Government: to have an evidence-based decision-making support regarding budget allocation, related national policies and regional agreements

1.4. Theory of change



2. Purpose and scope of Mid-term External Evaluation

2.1. Purpose

As per the ToR, the main purpose of the Mid-term External Evaluation (MtEE) is to provide an independent assessment of the implementation progress of the project in the period September 2021 – September 2023, through an analysis of relevance, effectiveness, efficiency, coherence, and sustainability of the project activities.
The specific objectives of the evaluation are as follows:

1. Assess the extent to which the recommendations of the WMO HydroHub Phase I External Evaluation have been addressed in the design of Phase II;
2. Assess the level of implementation of the project activities within the evaluation period against those laid out in the WMO HydroHub Phase II Logframe and its set of indicators;
3. Assess the relevance, effectiveness, efficiency, and coherence of the project's activities, as well as the engagement process with countries in developing proposals;
4. Identify existing or potential bottlenecks to the successful implementation of planned activities and provide recommendations for future activities;
5. Assess the extent to which measures are being put in place to ensure impact and sustainability of outcomes of the project;
6. Assess communication and knowledge sharing strategies so far, in view of making the WMO HydroHub a "Global Hub for Hydrometry".

2.2. Scope

The MtEE will cover the period September 2021 – September 2023. It will cover all the planned outputs and outcomes under the project, with attention to synergies with other WMO Programmes and contribution to NMHSs.

More specifically, links to and coherence with the WMO Hydrological Observing System (WHOS) and the World Hydrological Cycle Observing System (WHYCOS) as components of WMO HydroHub will be assessed, as well as with other technical programmes such as the Associated Programme on Flood Management, the Integrated Drought Management Programme, the Climate Risk and Early Warning Systems Initiative (CREWS), the UN Early Warnings for All initiative (EW4All), the World Water Data Initiative (WWDI) and the Global Hydrological Status and Outlook System (HydroSOS) among others were briefly assessed.

At the global/regional levels, the following project activities have been taken into consideration:

- *Webinar on the WMO Hydrological Observing System (WHOS)*
- *Distance Learning Course "Interoperable Data Exchange in Hydrology" (2022 Edition in English and 2023 Edition in Spanish)*
- *Innovation Workshop "WMO HydroHub Phase II Innovation Roadmap"*
- *WMO Global Hydrology Dashboard and Webinars*
- *WMO-OGC Workshop "GroundWaterML2 standard"*
- *WMO-UNEP-UNESCO-WHO-OGC Workshop on Water Quality Monitoring*
- *WMO HydroHub Youth Symposium 2023 Trialogue on Innovation for Education*
- *Innovation Call in Latin America and the Caribbean*
- *WMO-UNEP-WWQA Innovation Workshop "Innovative approaches and technologies for Water Quality Monitoring"*

- *Innovation Call with ESA (tbc)*
- *Regional Socio-economic benefit analysis side-event in Asia and the Pacific (tbc)*
- *Adaptation Fund Innovation Project "Enhancing Hydromet Services through Regional Monitoring Innovation Hubs in Africa"*
- *Joint WMO-UNEP-UNESCO-OGC and CIC Project "Enabling improved water quality (WQ) knowledge in the Plata basin"*

To the extent possible, the evaluation tried to link the findings and recommendations to the broader cross-cutting aspect of the project as well as the extent to which the planned and implemented activities are able to mainstream gender equality and youth engagement.

2.2.1. Audience of the MtEE

The primary audience of the MtEE is composed by the following stakeholders:

- WMO HydroHub Team
- WMO HydroHub Advisory Council
- NMHSs targeted
- the Swiss Agency for Development of Cooperation (main donor of the project); and
- Inter-American Development Bank (financial support to selected activities).

2.3. Evaluation questions

Relevance

The extent to which the WMO HydroHub activities are needed, consistent with and advancing priorities, recommendations and policy frameworks in the field of hydrometry.

Evaluation questions:

1. *How relevant are the WMO HydroHub activities undertaken in the evaluation period to WMO's vision, mission and strategic objectives?*
2. *What is the extent to which the project approach is strategic and based on WMO's comparative advantages?*
3. *To what extent does the project contribute to implementation of the WMO Gender Equality Policy and Action Plan and SDG5?*
4. *How are future plans and activities being identified and designed?*
5. *Are the WMO HydroHub activities coherent with the needs of NMHSs and do they support the goals and policies of WMO?*

Effectiveness

The extent to which the objectives, activities and expected outputs and outcomes outlined in the WMO HydroHub Phase II Logframe have been achieved or are likely to be before August 2026.

Evaluation questions:

1. *Does the WMO HydroHub implement an adequate Theory of Change?*
2. *Is a risk mitigation mechanism in place?*
3. *To what extent were the objectives /outcomes and outputs achieved or are likely to be achieved?*
4. *Does the WMO HydroHub have an adequate M&E Plan? How are the results being monitored?*
5. *What were/are the major factors influencing the achievement or non-achievement of the project objectives?*

6. *Has there been progress towards the stated outcomes and what evidence/early markers are available? Which approaches/actions seem to be most effective, and which not? Are there any challenges to delivering on time and within budget?*
7. *Has the knowledge sharing strategy been effective in raising the profile of the project within the global hydrometry community?*
8. *What is the likelihood of achieving the intended impacts? Is there any early evidence of impact?*

Efficiency

The extent to which the resources of the WMO HydroHub are managed cost-effectively and coordination with other stakeholders in this cross-cutting programme achieved.

Evaluation questions:

1. *Have resources (financial, human, technical support etc.) been allocated strategically to achieve the project outputs and outcomes?*
2. *How are WMO resources being planned for future activities of the WMO HydroHub?*
3. *Is the current project management structure and technical capacity sufficient and adequate?*
4. *What are the systems in place for financial management and workplan monitoring?*
5. *Are there more cost-effective ways of achieving the same results?*
6. *How WMO HydroHub activities are linked and contributing to WMO Technical Commission and Regional Associations' work?*

Coherence

The extent to which the WMO HydroHub activities are compatible with other interventions in a country, sector or institution

Evaluation questions:

1. *To what extent are WMO Divisions and Regional Offices contributing (and informed) to meeting/achieving the WMO HydroHub's objectives, including but not limited to avoiding duplications and enhancing synergies?*
2. *How consistent is the WMO HydroHub with other actors' interventions?*
3. *How does the WMO HydroHub complement and coordinate with others?*
4. *To what extent does the WMO HydroHub add value while avoiding duplication of effort?*
5. *To what extent has the project integrated gender equality and youth engagement into itsdesign, implementation and monitoring?*
6. *Associations' work?*

Sustainability

The extent to which the WMO HydroHub Resource Mobilization Plan is likely to achieve its goals.

Evaluation questions:

1. *To what extent has the WMO HydroHub Resource Mobilization Plan achieved its goals so far?*
2. *Is the WMO HydroHub Resource Mobilization Plan designed in an optimal way to achieve its goals? How can it be improved?*

3. Evaluation methodology

3.1. Approach

The evaluation applied a theory-based and utilization-focused approach.[1]

Theory-based evaluations focus on analysing a project's underlying logic and causal linkages. Indeed, projects are built on assumptions on how and why they are supposed to achieve the agreed results through the selected strategy. This set of assumptions constitutes the "program theory" or "theory of change". The MtEE is based on the theory of change analysing the strategy underpinning the project, including objectives and assumptions, and assessing its robustness and realism.

A utilization-focused approach[2] is based on the principle that evaluations and reviews should be judged on their usefulness to their intended users. Therefore, they should be planned and conducted in ways that enhance the likely utilization of both the findings and of the process itself to inform decisions: the evaluation report is expected to end with actionable recommendations.

3.2. Methods: data collection tools

The research design of the evaluation exercise used the following data collection methods: (1) Interviews with project stakeholders (on-line and face-to face); and (2) Desk review of project documents and reports.

3.3. Methods: purposeful sampling[3]

The sampling was designed by the Evaluator in strict consultation with the HydroHub Team in Geneva. The sampling and the consequent schedule of meetings for interviews took necessarily into account the willingness and availability of stakeholders to meet the Evaluator during the data collection phase.

Project stakeholders interview belongs to following groups: HydroHub Team at WMO, other WMO Officers, Advisory Council Members, Think Thank selected members, NHMSs and other relevant stakeholders.

3.4. Methods: data analysis

The analysis of data was based on the evaluation matrix (annex 2) and data triangulation from different sources (interviews to project stakeholders and desk reviews) was the data analysis method applied. The choice of the triangulation as data analysis methods fitted the evaluation needs: it had to respond to a high number (26) of evaluation questions.

3.5. Ethics

The Evaluator conducted the whole evaluation exercise in accordance with the principles outlined in the United Nations Evaluation Group (UNEG) "Ethical Guidelines for Evaluations".

[1] Rossi, P., Freeman, H. & Hofmann, G., 1999. Evaluation. A Systematic Approach. 6th ed. Thousand Oaks: Sage.
[2] Patton, M. Q., 2008. Utilization-focused evaluation 4th ed. Thousand Oaks: Sage.
[3] *"The logic and power of purposeful sampling lie in selecting information-rich cases for study in depth. Information-rich cases are those from which one can learn a great deal about issues of central importance to the purpose of the inquiry, thus the term purposeful sampling. Studying information-rich cases yields insights and in-depth understanding rather than empirical generalizations."* Patton MQ. Qualitative research and evaluation methods. 3rd Sage Publications; Thousand Oaks, CA: 2002.

3.6. Limitations

The evaluation design meets the requirements of the MtEE without any specific limitations in terms of validity.

The Evaluator opted for a qualitative approach due to limited relevant quantitative baseline data on the project's indicators. A quantitative method was unnecessary and impractical. This choice was justified by the need to understand the project's delivery process in a formative appraisal, focusing on how and why results are achieved. Quantitative methods do not offer insights into these aspects4.

The "purposeful sampling" method effectively met the evaluation requirements. It entails selecting individuals or groups with substantial knowledge and experience related to the project. This approach focuses on information-rich cases, involving interviews with individuals closely connected to the project. It aims to generate in-depth understanding, unlike statistically representative probability sampling, which primarily yields empirical generalizations. The evaluation addressed a wide range of questions, making this method suitable.

Practically, using videoconference applications for interviews was suitable for engaging stakeholders across diverse locations worldwide. The Evaluator, based in Switzerland, conducted interviews for two days at the WMO Headquarters in Geneva.

The MtEE process closely followed the agreements outlined in the inception report between the Evaluator and the HydroHub Team. Due to unforeseen personal circumstances, the evaluator was unable to travel to The Gambia as requested by the HydroHub Team. Consequently, the planned in-country mission of one working day was substituted with online interviews involving pertinent project stakeholders. This change had no influence on the MtEE findings since the initial mission had already planned interviews with these stakeholders, and field visits were not part of the original arrangement.

Annex 2 included the work plan of the MtEE, annex 3 the list of documents consulted and annex 4 the list of people interviewed. In total, 40 individuals were interviewed (13 women + 27 men):

- 1 working day mission in Tanzania: 4 people interviewed face-to face (4 men)
- On-line interviews with The Gambia: 3 people interviewed (3 men)
- On-line interviews with stakeholders: 21 people interviewed (7 women + 14 men)
- Interviews at the HQs of WMO in Geneva: 12 people interviewed (6 women + 6 men)

It's essential to highlight that, during the MtEE, the Evaluator did not have access to the progress report for the final year of project implementation, as it had not been written at that time. Additionally, there was a lack of materials related to WHOS and WHYCOS. Some information regarding these two WMO initiatives was partially accessible on the HydroHub website. The Evaluator used all documents that the WMO HydroHub team made available for his jobs.

Finally, the Evaluator submitted two specific requests to the HydroHub Team, seeking information pertaining to the process of the Innovation Call in the Pacific Island Countries and the monthly visit statistics for the HydroHub website. The details of the project proposal that did not receive approval under the Innovation Call were not provided to the Evaluator. Following the HydroHub Team's suggestion, the Evaluator reached out to the WMO Procurement Office with his request but never received a response. Whereas information regarding the monthly number of visits to the HydroHub website is limited to the top ten countries that access the website most frequently. Consequently, the Evaluator was unaware of the statistics from other countries.

[4] Patton, M. Q., 2008. Utilization-focused evaluation. 4th ed. Thousand Oaks: Sage.

4. Project status and findings by evaluation criteria

4.1. Relevance

The project's goal is to strengthen capabilities, implement innovative approaches, and optimize investments and participation in the global hydrometry sector. Its primary objective is to assist National Meteorological and Hydrological Services (NMHSs) in providing hydrological services for disaster risk reduction, as well as fostering social and economic development and environmental protection on a global scale.

The goals and aspirations of the project are fully aligned with WMO's vision and mission:

> **WMO's vision**
> *By 2030, we see a world where all nations, especially the most vulnerable, are more resilient to the socioeconomic consequences of extreme weather, climate, water and other environmental events; and underpin their sustainable development through the best possible services, whether over land, at sea or in the air*
>
> **WMO's mission**
> *To facilitate worldwide cooperation on monitoring and predicting changes in weather, climate, water and other environmental conditions through the exchange of data, information and services, standardization, application, research and training*

The alignment of the project with goal 4 and objectives 4.1, 4.2 and 4.3 represents the space of manoeuvre of the project with the specific focus on hydrological matters.

> **Goal 4**
> *Close the capacity gap on weather, climate, hydrological and related environmental services: Enhancing service delivery capacity of developing countries to ensure availability of essential information and services needed by governments, economic sectors and citizens.*
>
> **Objective 4.1**
> *Address the needs of developing countries to enable them to provide and utilize essential weather, climate, hydrological and related environmental services.*
>
> **Objective 4.2**
> *Develop and sustain core competencies and expertise.*
>
> **Objective 4.3**
> *Scale-up effective partnerships for investment in sustainable and cost-efficient infrastructure and service delivery.*

In fact, the components of the WMO Strategic Plan 2020/2023 are mirrored in the logic of the project intervention. The project approach clearly holds strategic importance for the organization.

The project capitalizes on the WMO's unique comparative advantage. As the global authority in the field, the organization sets standards for hydrometry worldwide. Furthermore, WMO's expertise in fostering international collaboration among NMHSs is considered a crucial factor for the project's success by all persons interviewed on the matter.

The project was designed to be adaptable and responsive to specific demands. Activities are said to tailored based on the demand-driven approach, utilizing the expertise of the Advisory Council and the Think Tank members to inform decisions. Activities are designed on the spot since the project document leaves plenty of space for shaping and tailoring them according to emerging needs. Collaboration with other projects is also possible, contingent upon shared interests and compatibility between HydroHub initiative and the respective project.

During the data collection process, interviewed staff from all NMHSs emphasized the project's significance in aligning with their institutional and practical requirements, underlining its importance in supporting their activities.

The implementation of the project aligns with the WMO Gender Equality Policy and Action Plan. Whenever, the participation of women can be promoted, the HydroHub initiative put in place relevant measures: gender balanced is explicitly promoted in all calls to participate in project events.

4.2. Effectiveness

The project implementation has currently achieved the following status in terms of delivering output, as indicated in table 2.

Table 2 - Project outputs and activities (as pper July 2023, i.e., last updated available)

Activities for Outcome 1 [INCREASED CAPACITY], Output 1.1 Provided technical advisory services:		
1.1.1 Capacity and Needs Assessments (CNAs) – to assess institutional, human and technical capacities, gaps and needs of NMHSs, hydrological forecasting agencies, water resources management bodies and Basin Organizations at national and regional levels, as well as to develop a Roadmap for improved service delivery	Allow: • **NMHSs** to better understand and address their gaps and needs, looking at the full hydromet services value chain, based on Roadmap recommendations • **Donors** to target their investments in more effective way	**Baseline:** 2 **Target:** 4 **Status (implemented):** 2 - Costa Rica and Panama **Status (ongoing):** 3 - South Sudan, Bolivia and Guatemala
1.1.2 Face-to-face Trainings – to design and carry out trainings addressing specific technical expertise deficits, especially those identified at regional level	Allow: • **Regions** to address the lack of locally available trainings • **NMHSs** to improve and sustain technical expertise of their staff	**Baseline:** 0 **Target:** 2 **Status (implemented):** 0 **Status (ongoing):** 0
1.1.2 Distance Learning Trainings – to design and carry out trainings addressing specific technical expertise deficits, especially those identified at regional level		**Baseline:** 0 **Target:** 5 **Status (implemented):** 2 - DLT "Interoperable Data Exchange in Hydrology" in English and DLT in South Sudan (hydrometry) **Status (ongoing):** 1 - DLT
1.1.3 Learning Exchanges – to facilitate and guide learning exchanges among two or more NMHSs in view of addressing specific hydrometric challenges	Allow: • **NMHSs** to sustainably support each other in improving staff technical expertise • **NMHSs** to create long-term regional collaboration opportunities	**Baseline:** 0 **Target:** 2 **Status (implemented):** 0 **Status (ongoing):** 0
Activities for Outcome 1 [INCREASED CAPACITY], Output 1.2 Updated WMO Regulatory material:		
1.2.1 Reviewing and updating WMO Regulatory material – to ensure international guidance material better reflects the realities of hydrometry on the ground	Allow: • **NMHSs** to develop and innovate monitoring systems and integrate non-traditional data sources in a more agile way • **Innovators** to be incentivized in developing new hydrometric technologies and approaches	**Baseline:** 0 **Target:** 1 **Status (implemented):** 0 **Status (ongoing):** 0
Activities for Outcome 2 [OPEARTIONALIZED INNOVATION], Output 2.1 Fostered innovation culture and connected hydromet community:		

2.1.1 Innovation Workshops – to bring together NMHSs, academia, private sector (solution providers) and others, and facilitate targeted interactions among them	Allow: • **NMHSs** to express their operational challenges and needs, as well as discover new approaches and technologies • **Private sector (solution providers)** to tailor their solutions to operational realities • **Academia** to direct their research towards more pertinent topics	**Baseline:** 2 **Target:** 4 **Status (implemented):** 5 - 2 Workshops with MOXXI "Workshop on Innovation Roadmap", WMO-OGC Workshop "GroundWaterML2 standard", Water Quality Workshop **Status (ongoing):** 1 – Workshop on Water Quality Monitoring and Assessment
Activities for Outcome 2 [OPEARTIONALIZED INNOVATION], Output 2.2 Operationalized and scaled innovative approaches and technologies:		
2.2.1 Innovation Calls – to find and operationalize innovative solutions to NMHSs hydrometric challenges	Allow: • **NMHSs** to complement and substitute traditional approaches, technologies and data sources by innovative solutions in a cost-effective and sustainable way • **Innovators** to operationalize their solutions in NMHSs • **Academia** to be more proactive and creative in developing new hydrometric solutions	**Baseline:** 2 **Target:** 4 **Status (implemented):** 3 - 1st Innovation Call in Bhutan; 2nd IC in Tanzania, Belize and Himalayan region; 3rd Innovation Call in Fiji **Status (ongoing):** 1 Innovation Call in Latin America and the Caribbean to be launched in 2023
Activities for Outcome 3 [OPTIMIZED ENGAGEMENTS AND INVESTMENTS], Output 3.1 Fostered communication and supported interactions among hydromet monitoring communities:		
1.1.1 Knowledge sharing and support for communication Tools and Platforms – to disseminate the lessons learnt from all WMO HydroHub activities and support existing networks **(Communication tools and platforms)**	Allows: • **NMHSs** to increase their visibility and transparency as well as learn from each other • **Donors** to access information needed for effective investments and evaluation of supported activities • **Hydromet community** to keep track of hydrometric challenges, successes and developments	**Baseline:** 0 **Target:** 3 **Status (implemented):** 1 - Website
3.1.1 Knowledge sharing and support for communication Tools and Platforms – to disseminate the lessons learnt from all WMO HydroHub activities and support existing networks **(Case studies)**		**Baseline:** 6 **Target:** 20 **Status (implemented):** 9 - 6 case studies + articles **Status (ongoing):** 2 - articles
3.1.1 Knowledge sharing and support for communication Tools and Platforms – to disseminate the lessons learnt from all WMO HydroHub activities and support existing networks **(Reports)**		**Baseline:** 0 **Target:** 1 **Status (implemented):** 1 - Innovation Snapshot
3.1.2 User-provider Workshops – to bring together NMHSs, public and private sectors (users of hydromet services) and facilitate targeted interactions among them, including for identifying and developing new markets for NMHSs services	Allow: • **NMHSs** to better understand user needs, showcase portfolio of their services and identify new data sources in view of potentially integrating them in their operations • **Public and private sectors (existing**	**Baseline:** 0 **Target:** 1 **Status (implemented):** 0 **Status (ongoing): 2** - User-Provider Workshops in Fiji and Samoa

3.1.2 User-provider Webinars – to bring together NMHSs, public and private sectors (users of hydromet services) and facilitate targeted interactions among them, including for identifying and developing new markets for NMHSs services	**and potential users of hydromet services)** to showcase their own hydrological data collection with the potential to establish public-private engagements as well as identify NMHSs services of interest	**Baseline:** 0 **Target:** 5 **Status (implemented):** 1 Hydrology Dashboard Webinar **Status (ongoing):** 0
Activities for Outcome 3 [OPTIMIZED ENGAGEMENTS AND INVESTMENTS], Output 3.2 Fostered communication on the hydrological data benefits:		
3.2.1 Ministerial Roundtables – to carry out national cost-benefit analysis of hydrological data investments, and convey the comprehensible results and recommendations to ministries responsible for NMHSs budget allocations	Allow: • **NMHSs** to increase their prominence and visibility vis-à-vis government in view of incentivizing increase in their budgets • **Government** to have an evidence-based decision-making support regarding budget allocation, related national policies and regional agreements	**Baseline:** 0 **Target:** 2 **Status (implemented):** 0 **Status (ongoing):** 0

Project builds on assumptions on how and why it is supposed to achieve the agreed results through the selected strategy; this set of assumptions constitutes the 'project theory of change', which is visualized in section 1.4 of the present report. According to the interviewees, the project's Theory of Change is considered meaningful and well-developed conceptually. It is widely acknowledged that the project activities and outputs have the potential to significantly contribute to the project's desired outcomes.

The MtEE exercise highlights that although outputs can be successfully delivered within the project duration, it is challenging to measure their actual contribution to intermediate outcomes, project outcomes (such as increased capacity, operationalized innovation, and optimized engagement and investments), and the overall objective, although indicators of project outcomes and objectives are directly tied to project outputs. The baseline value for these indicators is either equivalent to the values attained during the initial phase of the HydroHub initiative or is set at zero. While the contribution to achieving the outcomes and objectives is self-evident, assessing its actual "weight" is currently impossible for the MtEE because the values of these indicators are not being monitored.

Additionally, the MtEE identifies two features that are very specific of the HydroHub project:

- The project targets lack a defined geographical scope. In essence, the project can potentially target all developing countries without specific limitations. Targeting occurs as the project unfolds, with some geographical areas outlined in the project document. However, the project implementation enjoys a considerable amount of flexibility in choosing specific countries or regions to focus on.

- While there is a clear emphasis on NMHSs, it can be observed that the project's scope extends to anyone globally interested in the project's subject matter. The project's target group is not specifically defined, allowing any individual engaged in hydrometry to participate in project activities. This is demonstrated by the fact that the "Innovation Workshop on Water Quality Monitoring & Assessment" was open to participants of these types:

    - Public and private water quality monitoring agencies;
    - National Hydrological Services (NHSs);
    - Research & Academia;
    - Private sector (solution providers);

- Public and private sectors reliant on water quality monitoring;
- Communities & local citizen science groups;
- International organizations & non-governmental organizations(NGOs);
- Foundations & developing agencies.

Now of the MtEE, specific factors that may promote/hinder the achievement of project objective "Enhanced and sustainable monitoring and information support NMHSs' effective delivery of hydrological services for disaster risk reduction, social and economic development, and environmental protection" cannot be properly identified. The two features of the project make it very open.

Examining the project's aspirations beyond its stated outcomes and objectives is a valuable exercise to grasp the project's underlying essence:

- The project must be inherently open, aiming to be as inclusive as possible to cater to the needs and interests of NMHSs from developing countries.
- The project aspires to engage a wide range of individuals in its activities, encouraging the exchange of ideas among various actors, including organizations and individuals, to foster innovation in the filed of hydrometry.
- Additionally, the project aims to serve as a platform for new donors to support its activities, reflecting another key aspiration of the project.

The MtEE confirms that the project's aspirations are actively being pursued. From this perspective, it can be affirmed that the project is being implemented in complete alignment with its objective.

The delivery of outputs is not a cause for concern, as indicated by the MtEE. There are six main reasons behind this statement:

- **Clarity in Scope:** Each activity of the project has a well-defined scope, ensuring substantial clarity in its implementation.
- **Relevance to Target Groups:** The outputs generated by the project are pertinent to the target groups, particularly NMHSs and practitioners in the sector, making them of significant interest. All person interviewed on the matter confirmed that.
- **Capable Team:** Those involved at all levels within the project are perceived to possess the necessary capabilities according to all individuals interviewed. Great appreciation is also shown for the HydroHub project Team.
- **Tailored Activities:** Activities are tailored and sized "on the spot" to meet the specific needs and interests of the institutions and individuals targeted. The HydroHub Team engages in brainstorming, debates, and analysis with the Advisory Council, the Think Tank, colleagues at WMO, and NMHSs before initiating activities. This approach aims to align each activity with the relevant challenges, interests, and needs of the participants.
- **The implementation of activities is non-sequential**: each project activity operates independently from the others. Consequently, any delays in one activity will not impact the progress of others.
- **Variable size of the target group**: the project document leave a lot of room for HydroHub to decide the size of each activities. The number of people to be targeted by a given activity is not defined.

Lastly, it is crucial to emphasize that the project is meticulously designed and executed to ensure that its outputs meet high-quality standards. Significant efforts are made to align the project's activities with other ongoing relevant initiatives in the global hydrometry sector. There is a distinct intention to capitalize on opportunities stemming from WMO-led initiatives and the knowledge and expertise of hydrometry practitioners worldwide. This intention expands the project's scope. Once again, comprehending the project's contribution to its outcomes and objectives becomes an exceptionally challenging task, and it is not feasible within the current scope of the MtEE.

The project has implemented a comprehensive risk mitigation plan. Like other projects within WMO, the HydroHub initiative has created a risk and control matrix with assistance from the WMO Monitoring, Evaluation, Risk, and Performance Unit. This tool is designed to map and address project risks falling into three distinct categories: contextual, institutional, and programmatic. The information from this tool is documented in the Risk Log and is consistently updated to ensure its relevance and effectiveness.

The risks outlined in the mitigation plan are deemed relevant, although the MtEE exercise finds them to be overly general. Similarly, the corresponding mitigation actions are also considered too broadly formulated and lack actionable specifics. As an illustration, three risks and their associated mitigation actions are provided in table 3, along with evaluation considerations.

Table 3: Risk Mitigation Plan and MtEE considerations

Risk category	**Risk**	**Mitigation actions**	**MtEE considerations**
Contextual	Government instability, including high probability of changes in key positions within relevant ministries / NMHSs leading to lack of engagement in and sustainability of ongoing projects and dialogues	Field missions to engage authorities in the country together with local partners.	The term "engage" lacks specificity, and the means of engagement are not defined. There is a lack of clarity on what specific activities should be implemented to engage the authorities mentioned in the mitigation actions. Additionally, there are no details provided on the number of required field missions or the responsible parties for conducting them. As a result, the mitigation measure is overly general and lacks actionable guidance.
Institutional	Lack of buy-in from non-confirmed targeted donors, leading to the non-funding of some activities during the WMO HydroHub Phase II	Identify strong synergies with other ongoing / planned projects	The process of identifying "strong synergies" is not clearly defined, and the term "strong" lacks specific criteria or metrics. The question of how to recognize these synergies remains unanswered, rendering the mitigation measure overly general and lacking actionable steps.
Programmatic	Unwillingness of countries to share their hydrological data	Communication on the benefits of data sharing and	The mitigation measure lacks clarity as it does not specify any concrete communication

	required for timely and accurate basin-wide forecasts and early warnings	transboundary cooperation	activities. The absence of explicit details makes the mitigation measure overly general and non-actionable.

The absence of predefined target groups and geographical scope complicates the process of risk identification. To enhance practicality, risks should be reassessed each time the project engages in a new activity with defined target groups and/or geographical scope: the exercise, however, would not be worth the time spent on it.

The MtEE is asked as well to provide an answer to two specific evaluation questions:

> *Has there been progress towards the stated outcomes and what evidence/early markers are available? Which approaches/actions seem to be most effective, and which not? Are there any challenges to delivering on time and within budget?*
>
> *What is the likelihood of achieving the intended impacts? Is there any early evidence of impact?*

Specific responses to these questions are not available due to the lack of monitored values for indicators at outcome and objective level. Additionally, the HydroHub initiative unfolds with a high degree of flexibility during its implementation. Furthermore, the MtEE lacks documentation describing the approaches, and the two progress reports in its possession do not provide context or reasons for selecting certain activities. Some activities, such as distance learning training on "Interoperable Data Exchange in Hydrology," distance learning training in South Sudan, and the Innovation Call in the Pacific, are identified in the project document. Others, like the GroundWaterML 2.0 Workshop, the Innovation Call in Latin America, and the distance learning training on "Interoperable Data Exchange in Hydrology" in Spanish, are mentioned in progress reports with reasons for their selection sometimes specified and other times not. In all cases, it is apparent that activities unfold during implementation once a target group and sometimes a partner are identified through various means, which are not always detailed in the progress report.

Nevertheless, it is indisputable that the project generates significant interest among all interviewed individuals. While this cannot be formally regarded as evidence of impact, it does present a promising factor for the project to realize its aspirations. These individuals are experts in the sector who have worked in various geographical areas worldwide.

The MtEE exercise revealed that, in line with its logical framework, the project monitoring system is activity-based. This type of monitoring is considered suitable for ensuring the smooth implementation of activities and the delivery of outputs. However, measuring the contribution to the achievement of project outcomes is not addressed. Monitoring contributions to outcomes is particularly challenging given the diverse range of activities, a widely varied audience, and operations in different parts of the world in collaboration with other WMO activities. Members of the Think Tank appear to be cognizant of these issues, and discussions on this topic are ongoing, but as of now, no concrete actions have been taken in this regard.

The MtEE was asked to include in its analysis a given set of outputs:

Webinar on the WMO Hydrological Observing System (WHOS)
The webinar presented some of the highlights and achievements of the WHOS development and implementation. More specifically, the webinar intended to allow participants to learn more about the importance of data interoperability, WHOS concept and objectives, WHOS brokering approach, WHOS regional prototypes as well as WHOS data use cases.

Distance Learning Course "Interoperable Data Exchange in Hydrology" (2022 Edition in English and 2023 Edition in Spanish)
The course had three main objectives: firstly, to increase awareness about the significance of international exchange and the utilization of hydrological data; secondly, to fill gaps in knowledge and technical expertise related to data sharing; and thirdly, to introduce and explain the functionalities and implementation processes of the WMO Hydrological Observing System (WHOS).

Throughout the Distance Learning Course, it became evident that language could be a hindrance to broader participation. Therefore, HydroHub responded by offering the same course in Spanish. Additionally, efforts are currently underway to develop French and Russian versions of the course.

Innovation Workshop "WMO HydroHub Phase II Innovation Roadmap"
The Innovation Workshop had a specific focus on pinpointing areas of innovation that the WMO HydroHub could support during its Phase II, aiming to ensure that its activities contribute to the sustainable capability development within NMHSs. The event delved into recent advancements in hydrometric monitoring approaches and technologies, along with assessing the current needs of operational monitoring agencies worldwide. Despite the workshop's title, no roadmap for implementation was provided.

WMO Global Hydrology Dashboard and Webinars
The webinar presented valuable information on operational hydrological services worldwide collected through the WMO Global Hydrology Survey 2020.

The Webinar demonstrated how the Hydrology Dashboard works, and how to interpret and use the available information.

WMO-OGC Workshop "GroundWaterML2 standard"
The workshop introduced the GroundWaterML2 standard (GWML2) and demonstrated its recent implementations.

WMO-UNEP-UNESCO-WHO-OGC Workshop on Water Quality Monitoring
The workshop was organized around four challenges:

1. Data to Action: Transforming data into actionable insights for water stewardship;
2. Empowering citizen scientists to improve water quality, from monitoring to action;
3. Melding AquaWatch & Global Indigenous Knowledge; and
4. Routine Monitoring of Antimicrobial Resistance in Water.

The primary expectations of the workshop organizers were to connect the right mix of experts and practitioners in water quality monitoring and assessment, and enable them to work together on concrete solutions to well-defined challenges; to plan the next steps for implementing the solutions identified; and to create new relationships between experts to synergize their respective activities.

This organizational setup is deemed innovative. According to interviews, it facilitated collective brainstorming among experts from various parts of the world, focusing on selected challenges.

WMO HydroHub Youth Symposium 2023 Trialogue on Innovation for Education
The WMO HydroHub Youth Symposium aimed at raising awareness among the young generation on (1) Sustainable water resources management; (2) Water monitoring; (3) Crowdsourcing and career perspectives in the field of water.

Innovation Call in Latin America and the Caribbean
The innovation call in Latin America is currently being launched as of the MtEE. According to interviews, the call aligns with the scope and objectives of the project. However, the MtEE highlights

that the language in which the call is written (English) may discourage the participation of innovators in the region. According to interviews, innovators in the hydrology sector in Latin America may not necessarily feel comfortable working in English.

WMO-UNEP-WWQA Innovation Workshop "Innovative approaches and technologies for Water Quality Monitoring"
The WMO, UNEP (United Nations Environment Programme), UNESCO (United Nations Educational, Scientific and Cultural Organization) and OGV (Open Geospatial Consortium) co-organized Workshop Series on Water Quality Monitoring hosted under the banner of the World Water Quality Alliance (WWQA) aims at addressing the broad spectrum of water quality monitoring, including modelling, earth observation, citizen sciences etc., with the goal to foster development and operationalization of innovative solutions for water quality monitoring, improve data harmonization and interoperability, and arrive at a common road map for strengthened cooperation on water quality monitoring across the various institutions and data streams to enable a better global view on water quality and achievement of SDG 6.3.2.

Innovation Call with ESA
A draft Concept Note for the joint WMO-ESA Innovation Call "Advancing the operational use of remotely sensed data in view of improving hydrological services in the world" was developed. Subject to the agreement between WMO and ESA on the joint Call timeline, process, selection criteria, as well as the availability of funding, the launch of the Call is planned for 2023-2024. A linkage to overall WMO activities related to satellite will be ensured.

Regional Socio-economic benefit analysis side-event in Asia and the Pacific
Meetings took place with the WMO Senior Economic and Societal Impacts Officer. The outcomes of the discussions suggest two potential avenues to enhance the visibility of NMHS and underscore the importance of investing in hydrological monitoring: conducting socio-economic benefits analysis.

Adaptation Fund Innovation Project "Enhancing Hydromet Services through Regional Monitoring Innovation Hubs in Africa"
In Tanzania and The Gambia, WMO worked on the formulation a project proposal "Enhancing Hydromet services through Regional Monitoring Innovation Hubs in Africa", that may be later be approved and funded by the Adaptation Fund (AF) are relevant to support capacity developments of the NMHSs in the two countries.

The Concept Note "Enhancing Hydromet services through Regional Monitoring Innovation Hubs in Africa" underwent a technical review by the AF Board Secretariat, leading to specific comments that WMO addressed in their response submitted to the AF on 19 December 2022. The AF acknowledged this response, and no additional comments were made at that point.

The process to get to the final formulation of a project proposal (not yet finalized) went through solid steps aiming at ensuring overall quality of the proposal itself. A pre-concept was draft, later two national workshops were organized in The Gambia and Tanzania to inform the formulation of the Concept Paper.

It is important to note that the formulation of the Adaptation Fund is to be attributed to the efforts put in place by the HydroHub initiative: the work was coordinated by the HydroHub team. However, the concept paper and future project proposal do not align specifically with any activity included in the logical framework. It stretches further the frontier of the HydroHub initiative: it is about innovation and capacity development. Under this perspective, it aligned with the outcomes and objective of the

project. In addition, due to its tentative budget (USD 5,000,000), if approved, it would constitute a great co-financing contribution.

The great level of diversification of outputs is overwhelming: targets groups are diversified, some activities are locally relevant, others are implemented at global scale, and themes address varied a lot. Such diversification mirrors the broad aspirations of the project in terms of global reach and diversification of activities.

Finally, the MtEE was asked to answer the evaluation question *Has the knowledge sharing strategy been effective in raising the profile of the project within the global hydrometry community?* The Knowledge Sharing Strategy is not formalized, and the project is primarily promoted through a website and word-of-mouth to increase awareness among target groups about the HydroHub initiative. Notably, most visitors to the HydroHub website access it from the Global North, as indicated by an Excel file provided ad-hoc for the MtEE by the Project Team. Given that the project is primarily intended for the Global South, this discrepancy in website access may be considered a shortcoming. The evaluation exercise, however, could not identify the reasons behind this uneven access to the HydroHub website.

4.3. Efficiency

The project document thoroughly presents the intervention strategy, providing a brief description of the activities that the HydroHub Initiative aims to implement in order to deliver project outputs. It also succinctly outlines the benefits associated with these activities. While the scope of the activities is clear, their specific size or scale is not initially specified. The sizing of activities occurs during the project implementation, particularly when opportunities to work with specific target groups arise. Detailed activity design and resource allocation happen at this stage. This process is as well informed by reflections from the Advisory Council and the Think Tank.

According to the MtEE interviews, the existing management structure and overall technical capacity are deemed sufficient and appropriate for delivering project outputs satisfactorily. This approach aligns well with the demand-driven nature of the HydroHub project that according to interviews is a distinctive feature of the project. However, the potential conflict of interest identified by the evaluation (refer to Section 5 “Main challenges and shortcomings), if confirmed by an official audit, should be interpreted as a deficiency in the efficiency of the project: ensuring accountability in the disbursement of public funds should be a project management element of primary importance.

The MtEE was tasked with addressing a particular evaluation question *Are there more cost-effective ways of achieving the same results?* However, it faced a challenge in providing a definitive response because the specific size of results was not defined, and project activities were being developed as the implementation progressed. Furthermore, a significant portion of these activities did not influence the implementation of other tasks or build upon preceding ones. This lack of interactivity made it difficult to assess the cost-effectiveness of the project's methods.

HydroHub activities are seamlessly integrated into the WMO's work, aiming to contribute significantly to the efforts of the WMO Technical Commission and Regional Associations. Specifically, Output 1.2, which involves updating WMO Regulatory materials, holds utmost relevance in this context. Additionally, establishing connections with Project X, focusing on the assessment of the performance of flow measurement instruments and techniques, is crucial. Furthermore, the promotion of hydrometric innovations by the project is also highly relevant in this regard. The project also coordinated efforts with WHOS and WHYCOS.

The project monitoring system is structured around activities and is accompanied by a corresponding financial work plan. Achievements at outcome level as per the project indicators are not tracked. Apart from a few noted shortcomings (as detailed in section 5), the project has not exhibited any other concerns regarding the efficient utilization of resources thus far.

4.4. Coherence

The WMO HydroHub project serves as an ideal platform for coordination with other initiatives within WMO due to its emphasis on hydrometry, innovation, and a diverse range of activities. Its prominent role within the WMO in fostering innovation in hydrometry is acknowledged as a significant aspect that facilitates dialogue with donors. According to findings from interviews with WMO officers and members of the Advisory Council and the Think Tank, the HydroHub is seen as a valuable toolbox, offering feasible solutions that can be leveraged for new project ideas presented to donors.

Coordination is also a fundamental aspect of the WMO HydroHub. The absence of a strict geographical scope and the broad spectrum of sector practitioners targeted by project activities enable the HydroHub to coordinate its work with a diverse array of institutions, programmes and donors. According to interviews, the HydroHub initiative's flexibility and its focus on hydrometry enable it to contribute to various initiatives and attract funding from different donors. Hydrometry represents the initial step in the value chain for any project or initiative related to water. Hydrohub can definitively contribute to:

- The UN Global Early Warning Initiative for the Implementation of Climate Adaptation Executive Action Plan 2023-2027 specifically on its pillar 2 Observation and forecasting and its financing mechanisms.
- The World Water Data Initiative
- The Global Hydrological Status and Outlook System
- The UN Early Warnings for All initiative

The MtEE, however, could dig much into these aspects as the project reporting lacks substantial information on this regard.

This approach successfully prevents duplication of efforts within the WMO. On the contrary, the HydroHub provides an opportunity for WMO to coordinate with other relevant activities within the organization. In addition, the approach is facilitated by the fact that the specific size or scale of activities is specified: activities can have any size. For example: the distance learning training on “Interoperable Data Exchange in Hydrology” in English targeted 85 people from around the world and the on in South Sudan (hydrometry) the staff of the NMHS, while WMO-OGC Workshop "GroundWaterML2 standard" involved the participation of 143 people.

The MtEE through the interviews, identified the following collaborations with the following divisions and initiative at WMO HQs are the most relevant in terms of setting up synergies:

- Project Management and Implementation Unit of the Member Services and Development Department: HydroHub is collaborating with its work in South Sudan. HidroHub paid for the Capacity and Needs Assessments (CNAs), while a project financed by CREWS and implemented by the department will fund the Innovation Call for South Sudan.
- Project X “Assessment of the Performance of Flow Measurement Instruments and Techniques”. Through the collaboration, the technical innovations promoted by HydroHub may be assessed.

- WHYCOS seeks to enhance national capabilities in fundamental observation, encourage cooperation at the basin-wide, regional, and international levels, and facilitate the free exchange of hydrological data. It represents an ideal ground for collaboration. Its overarching objective is to aid decision-making in water management by providing trustworthy data and information. The ultimate vision involves reinforcing sustainable socio-economic development, environmental protection, addressing climate change impacts through mitigation and adaptation, and preventing conflicts, particularly in transboundary catchments.
- Also, WMO Hydrological Observing System (WHOS) represents another ideal ground for collaboration. WHOS facilitates the exchange of hydrological data in an interoperable manner. It operates at various scales, including local, national, regional, and global levels, employing diverse tools. The system also offers a registry for hydrological data and information services, cataloged according to open standards and procedures developed by organizations such as the Open Geospatial Consortium (OGC), WMO, W3C, GeoJson, and other relevant entities.

On the contrary, the coordination with regional offices appears to be less than satisfactory. In the interview process, it became evident that there was no coordination with the Regional Office for the South Pacific, as this office was unaware of the Innovation Call for the Pacific Island Countries.

The project document clearly states that youth participation will be encouraged in all WMO HydroHub Phase II activities, and during its implementation a youth symposium with a participation of around 270 young people from all over the world aimed at raising awareness among the young generation on (1) Sustainable water resources management; (2) Water monitoring; (3) Crowdsourcing and career perspectives in the field of water. The MtEE did not indified any other activity targeting/involving the youth in the HydroHub activities. This occurrence does not represent a concern since they are not specific targets set for the inclusion of youth in any part of the project document and project targets do not mention any specific target group differentiated by age.

4.5. Sustainability

The WMO is expected to contribute an additional CHF 2,400,000, in addition to the co-finance contribution of CHF 2,400,000 from SDC. This requirement comes from the main donor side.

At the time of the present MtEE, the project has already secured CHF 1,940,000, leaving a fundraising gap of CHF 460,000 to meet SDC's requirement. Additionally, the HydroHub Team has identified a shortfall of CHF 1,235,000 to complete some identified activities, that add to those included in the project logical framework. Again, the project's boundaries are somewhat blurred: formally, CHF 460,000 would suffice. However, the project's spirit, aiming to function as an aggregation hub for ideas and activities, is evident. This approach goes beyond its targets at the output level.

For instance, based on interviews, it is likely that the project will secure CHF 100,000 from CREWS for an additional innovation call specifically designed for South Sudan. This means HydroHub will exceed its target by delivering one more innovation call. Furthermore, if efforts to secure CHF 200,000 for an additional innovation call with the European Space Agency are successful, HydroHub will deliver two more innovation calls than originally planned. However, the target related to innovation calls is already likely to be achieved with the calls in the Pacific and Latin America and Caribbean regions without the need for the two mentioned additional innovation calls. These calls add to the project, they are not needed for the project to achieve its targets.

Therefore, the HydroHub initiative can be viewed as a mechanism to introduce new ideas and activities within WMO and as a tool to attract donors. It is evident that numerous initiatives supporting NMHSs and the broader hydrometry sector in developing countries can be linked to the HydroHub initiative. From this perspective, HydroHub functions as an ongoing project that can be sustained by various

financial contributions related to the scope of its activities. The WMO HydroHub Resource Mobilization Plan is a dynamic document that can change continuously. The version provided for the current MtEE is a Word document with Track Changes and does not have a formal goal. This type of plan aligns perfectly with the project's aspirations.

The MtEE was asked to provide answers to two specific evaluation questions: *(1) To what extent has the WMO HydroHub Resource Mobilization Plan achieved its goals so far? And, (2) Is the WMO HydroHub Resource Mobilization Plan designed in an optimal way to achieve its goals? How can it be improved?* The lack of a formal goal makes the exercise unfeasible.

In Tanzania and The Gambia, the WMO collaborated on creating a project proposal titled "Enhancing Hydromet services through Regional Monitoring Innovation Hubs in Africa." This proposal might be approved and funded by the Adaptation Fund, aiming to support the capacity development of NMHSs in both countries.

The Concept Note titled "Enhancing Hydromet services through Regional Monitoring Innovation Hubs in Africa" underwent a technical review conducted by the Board Secretariat of the Adaptation Fund. This review resulted in specific comments, which the WMO addressed in their response submitted to the AF on 19 December 2022. The Adaptation Fund acknowledged this response, and no further comments were provided at that time.

The process of reaching the final formulation of a project proposal, which is not yet finalized, involved well-defined steps designed to ensure the overall quality of the proposal. Initially, a pre-concept was drafted, followed by the organization of two national workshops in The Gambia and Tanzania. These workshops were conducted to provide valuable input and information, shaping the development of the Concept Paper.

It's crucial to highlight that the formulation of the Adaptation Fund is a result of the dedicated efforts undertaken by the HydroHub initiative, spearheaded by the HydroHub team. However, it's worth noting that the concept paper and the prospective project proposal don't specifically fit within any activity outlined in the logical framework; it is an activity related to fund-raising, not a project activity needed to deliver a project output. Instead, they stretch further the frontier of the HydroHub initiative, focusing on innovation and capacity development. From this perspective, the proposal aligns with the project's objectives and outcomes. Furthermore, given its estimated budget of USD 5,000,000, if approved, it would serve as a significant co-financing contribution.

5. Main challenges and shortcomings

The project implementation does not face significant challenges. The statement is supported by two significant pieces of evidence:

Firstly, the project operates on a highly flexible model, without a predetermined sequence of activities. There are no crucial tasks that must be completed to enable the implementation of subsequent activities. This adaptability allows the project to incorporate a wide range of needs and interests as it progresses, essentially shaping itself along the way.

Secondly, the task of fundraising an additional CHF 460,000 does not pose a significant challenge. Due to its flexible and adaptable nature, the project can seek resources from a diverse range of donors. The project's characteristics make it practical to approach a broad spectrum of funding sources.

In contrast, the MtEE identified a few notable shortcomings in the project's implementation.

Shortcoming n.1
Its importance should be viewed as highly significant. Specifically, it is linked to the Innovation Calls component, which most interviewees consider to be the most innovative aspect of the entire HydroHub approach.

- The limited participation in the Innovation Call for the Pacific can be attributed to several factors:
    - *Ineffective communication about the initiative*
      According to interviews, WMO officers based in the region were unaware of the Innovation Call. Additionally, it was reported to the Evaluator that the potential participation of Fiji NMHS was discussed in an online meeting with Fiji NMHS, Samoa NMHS, WMO, Pacific Community (PSC), and National Institute of Water and Atmospheric Research (NIWA). The question of who would have applied to the call if this meeting had not taken place remained unanswered.

    - *Irrelevance of the initiative for the end beneficiaries (NHMNs) in the region*
      The submission of only two project proposals might be interpreted as indicative of the perceived irrelevance of the innovation call for the region. This irrelevance could be attributed to thematic reasons, where the improvement of capacities in the hydrometry sector is not considered a pressing issue by relevant employees of the NMHSs in the region. Methodological irrelevance is another possibility, with actors in the sector potentially being unwilling to invest time and effort in formulating project proposals that could ultimately be rejected, preferring instead to work with their existing funds. Lastly, the call may be viewed as irrelevant due to capacity-related challenges, wherein the target beneficiaries, i.e., NMHS in the region, might face difficulties in drafting a suitable project proposal.

      The statement regarding thematic irrelevance lacks direct evidence, and, on the contrary, feedback from individuals interviewed supports the notion that supporting NMHSs in hydrometry does address real needs. The observed shortage of applications may indeed be attributable to ineffective communication, emphasizing the importance of improving communication strategies to convey the relevance and benefits of the initiative to potential participants. On the other hand, the assertion of methodological and capacity-related irrelevance appears to be substantiated. Two pieces of evidence partially support this claim: first, the Fiji NMHS contributed to the

formulation the awarded proposal solely by providing information upon request from NIWA; second, during the implementation of the awarded proposal, the Fiji NMHS did not actively participate in the project reporting. This pattern suggests that, while information provision was forthcoming, there may be limitations in the active engagement and capacity to actively contribute to project management and reporting processes. It has been reported to the Evaluator, that this kind of approach to drafting project proposals and project reporting is the usual approach that characterized the work of the Fiji NMHS. While the MtEE cannot conclusively demonstrate it, there is a possibility that the observed approach is widespread within the entire Pacific region. This approach, while potentially promoting capacities, may fall short of effectively empowering the end-beneficiaries, namely the NMHSs.

- *Lack of other actors interested in the initiative*
  In Fiji, NIWA holds a very prominent position within the sector. In fact, the majority of the equipment available to the NMHS in Fiji is usually procured through direct collaboration with NIWA. Furthermore, NIWA not only supplies the equipment but also offers all the required technical support. According to interviews, NIWA holds a dominant position in the region regarding the provision of meteorology and hydrology services as well as equipment. Consequently, it is plausible that there are no other entities actively involved in this sector within the region.

In light of the mentioned factors, the MtEE has determined that the implementation of the Innovation Call for the Pacific Island Countries fell short. The MtEE appreciates the efforts put forth by the project team, Advisory Council, and Think Tank. However, these efforts proved unsuccessful, given the result of only receiving two applications. It is evident that investing time and resources in a call that attracts such limited interest is not an efficient was of working. While adhering to the procurement process is crucial, it does not offer a sufficiently diverse range of options that could potentially lead to the identification of the best solution.

The basis for the call was solely the existing need to enhance the performance of the NMHSs, without considering or discussing other factors that might encourage participation in an open call.

Additional insights can be derived regarding the Innovation Call for the Pacific Island Countries are the following:

- The call deviated from the project document, which clearly states that *Innovation Calls are a good mechanism to address specific needs identified by NMHSs through operationalization of innovative solutions developed by selected entities… Operational uptake of effective low-cost technologies, partial self-manufacturing, local production and services, and open-source solutions to instigate collaboration are the main criteria to deploy this activity…Regarding the applicants (no individuals), start-ups and small enterprises from developing countries are especially targeted.* However, the call was awarded to a company that holds a dominant position in the hydrometry market in the Pacific region. This company utilized technology not produced in Fiji, and the software used to generate relevant data is not open source.

- The awarded project *Non-contact measurement of river flows in the Pacific region, using innovative surface image velocimetry and stereoscopic methods* did not produce satisfactory results. The assertion is backed by two key pieces of evidence: firstly, it was explicitly stated in the interviews that the Fiji NMHS lacks the financial means to renew the license of the software linked to the cameras. Moreover, the institution does not have any staff members

proficient in operating this software. Consequently, the Fiji NMHS heavily relies on NIWA for these functions. In essence, the project made minimal contributions to enhancing the capabilities of the intended institution.

- Awarding a project to an active member of Think Tank represents a potential conflict of interest. The MtEE also notes that according to the report of the second meeting of the Think Tank a person from NIWA volunteered to support the Innovation Call in the Pacific Island Countries. The MtEE highlights that the value of the awarded project was CHF 100,000. The report is in contradiction with the Technical Evaluation Report delivered to the WMO Procurement Office in relation to the award to NIWA by the HydroHub Team that states:

> **The TEB recognizes the following potential conflict of interest:**
>
> - **Mr. Evan Baddock (WMO HydroHub Think Tank member) is a team member of the consortium for the proposal submitted by the National Institute of Water and Atmospheric Research (NIWA).**
>
> **The WMO HydroHub Think Tank members have not been involved in the preparation of this Innovation Call. We have no reason to believe that any confidential information has been known by Mr. Evan Baddock prior to the Tender Posting.**

Instead, the report of report of the second Think Tank meeting includes the following:

List of volunteers to support the Innovation Calls:

Activity	Volunteers
Innovation Call – Pacific Island Countries	• Shawn Boyce • Nick van de Giesen • Rita Chen • Mark Randall • Evan Baddock

It is important, as well, to highlight that also in the report of the first Think Tank meeting it is written that:

> ***Decision 2:*** *Think Tank members will volunteer to support the Innovation Calls in the Pacific and Latin America and the Caribbean as well as the Innovation Workshop in Israel.*

- Nothing is written in the relevant Progress Report about the proposal submitted in response the innovation call that was not awarded by the HydroHub initiative. From a formal point of view the omission of information related to that proposal is not a problem. However, it is an important piece of information to better understand the HydroHub innovation call spirit and importance. In fact, The project's essence is to promote innovative projects through specific calls, aiming to assess the feasibility of the call instrument for scaling up. Documenting diverse approaches proposed by different countries is crucial for enhancing understanding of how the call instrument adapts to various contexts. Without such information and related reflection, call management risks becoming a procedural exercise devoid of added value for knowledge production—a more typical approach for donors rather than technical agencies. Could the non-awarded project align with the call? Was it fundamentally like the awarded project but less detailed? Were there specific formalities preventing the call's approval? Was it simply written in a chaotic way? Did the applicant understand the call scope? Who was the applicant, a start-up company, a large company, a NMHS? These questions, among others, would shed

light on understanding the innovation call's strengths and limitations as a tool for scaling up innovation in hydrometry.

Shortcoming n.2
The Innovation Call for Latin America and the Caribbean is presented in English, which, according to interviews, might deter innovators who are not proficient in that language. The HydroHub project acknowledged the language barrier (as observed in Distance Learning Courses) and took steps to address it by offering the course in Spanish, French, and Russian. However, similar efforts have not been made for the Innovation Call, potentially limiting the participation of non-English-speaking innovators.

Shortcoming n.3
The progress reports of HydroHub are concise, with each activity summarized briefly in a dedicated document. However, the overall reporting lacks a designated section for explaining, reflecting upon, and documenting the implemented activities. To enhance understanding, it is essential for project reporting to address the following questions:

- Why the activity was organized in a given manner (e.g., explaining why did HydroHub made the DLT in South Sudan utilizing an approach that involved producing short videos for learning purposes? What are the elements that make this approach better than an approach that does not entail the production of short videos? What are the implications in terms of cost?).
- What are the reasons that may explain the participation of targeted people/institutions in a given activities (e.g., with only two application were received in the Pacific Island States application call?).
- How did HydroHub realize that it could be good to engage in Spanish, Russian and French to better target participants in the Distance Learning Training “Interoperable Data Exchange in Hydrology”?
- Why the HydroHub is mainly visited by people residing in the Global North, while the focus of the project is the Global South?

These questions indeed delve into the broader aspects of project management, offering insights that extend beyond the technical accomplishments of the HydroHub initiative. They are universally applicable to projects across various sectors, emphasizing that technical achievements represent the culmination of a process. Lessons learned are crucial components of effective project management and are typically identified throughout the project's lifecycle.

The MtEE did not have access to documentation detailing the lessons learned during the implementation of the project. Documenting and reflecting upon these lessons are fundamental for continuous improvement, enabling future projects to benefit from the experiences and challenges faced during the current initiative. It is in fact, commonly understood that sharing and analyzing lessons learned contribute significantly to enhancing project effectiveness and efficiency in the long-term representing the ideal horizon of the HydroHub initiative.

Furthermore, documenting the process would not only enhance the reader's comprehension of the project but also establish a more comprehensive framework for recognizing the HydroHub initiative as a unified endeavor, rather than a basket of activities relevant for the Hydrometry sector.

Shortcoming n.4
Based on the interviews, it is apparent that the concept of "innovation" is not universally interpreted in the same manner among members of the Advisory Council, Think Tank, and within WMO. Some individuals perceive "innovation" as being related to technical solutions for hydrometry at the NMHS

level, while others believe the term should encompass innovative approaches in other aspects of the project, such as novel actions required to achieve project outputs, for example.

Shortcoming n. 5

The representation of women, with 4 out of 16 members, is deemed inadequate by most stakeholders interviewed. Geographical representation is also seen as uneven, which, given WMO's UN agency status, is considered a notable shortcoming. Being WMO an UN agency, this occurrence may be considered a shortcoming per se. Practically, the uneven representation may potentially lead to incomplete analyses of the project's opportunities and challenges, although the MtEE lacks concrete evidence supporting this claim. Nevertheless, according to some interviews, the shortcoming n.2 might be linked to the geographical uneven distribution of Think Tank members.

Shortcoming n. 6

None of the interviewed NMHS officers had interactions with the HydroHub project through its website. In fact, their awareness is limited to the specific project components they are involved in, and they lack comprehensive knowledge of the entire HydroHub project. This observation, coupled with the data from the "Monthly Visitors" Excel file for the HydroHub website, suggests that access to the site is predominantly from the Global North, raising questions about the project's intended focus on serving the Global South.

6. Conclusions and recommendations

6.1. Conclusions

The project possesses distinct characteristics: it lacks a rigid predetermined geographical scope and has an expansive target audience that, at least in theory, includes all stakeholders in the global hydrometry sector. In addition, the number of people that should be targeted by each activity is not identified in any part of the project document. These features render the project highly flexible and, as per interviews, responsive to demand. Essentially, it comprises a series of activities that can be sized and implemented independently. Each of these activities can be identified as a sub-micro project within the overarching project structure. Establishing connections between activities is also possible; however, the project document does not explicitly require such connections.

By being flexible, the project has been engaging with many different actors during its implementation. The implementation of activities did not encounter any major issues and went smoothly. The care towards quality assurance was referred as a primary concern of the HydroHub Team, that was also supported by a broad array of sector experts that work at the WMO and/or sit in the Advisory Council and the Think Tank.

NMHSs are the end beneficiaries of the project: it is not clear if it is HydroHub that engages firstly with them, or it is the NHMSs that look firstly for the support of the Hydrohub. The MtEE had some evidence that the project should be considered more offer-driven rather then demand-driven, since the offer is demonstrated by the project and its set of activities, while the demand for its services is not demonstrated by partial evidence available to the MtEE. In fact, it is self-evident that it is HydroHub to choose its partners, especially when it comes to NMHSs, not the other way around. In other terms, there is the necessity for HydroHub to search for its end beneficiaries since the communication strategy does not reach out effectively the project end-beneficiaries, who do not know the HydroHub initiative. Although it is not a univocal piece of evidence, the monthly visits from developing countries, i.e., the target of the project, are far less than the visits from the Global North. In this sense, the definition of the initiative as demand driven is not exact: every development project offers its services to the final beneficiaries, who ultimately accept to be part of the project because it matches some of their needs and interests. When it comes to engaging with NMHSs, the HydroHub initiative does not differ from any other development initiative.

The inherent flexibility of the project facilitated seamless coordination with other initiatives led by the WMO, presenting no notable challenges. The relatively small size of the organization further enhances coordination within the WMO.

The identified shortcomings highlight a project management focus on technical aspects, while crucial elements of the project management cycle, such as communication, accountability (underscored by potential conflicts of interest linked to the Innovation Project in Fiji), and the identification of lessons learned, are overlooked.

Table 4 outlines the conclusions drawn by the MtEE concerning its specific objectives:

Table 4 MtEE Specific Objectives

Specific objective 1: *Assess the extent to which the recommendations of the WMO HydroHub Phase I External Evaluation have been addressed in the design of Phase II* The recommendations from the external evaluation of WMO HydroHub Phase I have been incorporated into the design of Phase II. Within the governance structure of the project, the establishment of the Think Tank is acknowledged by the MtEE as the most crucial aspect.
Specific objective 2*: Assess the level of implementation of the project activities within the evaluation period against those laid out in the WMO HydroHub Phase II Logframe and its set of indicators.* Assessing the outcome and objective is not viable due to unmonitored indicators. However, the evaluation of the project activity implementation is notably positive and promising. No significant concerns arise regarding the delivery of the anticipated outputs outlined in the WMO HydroHub Phase II Logframe. Conversely, procedural aspects tied to the Innovation Call in the Pacific Island Countries and the quality of results from the awarded project are areas of concern.
Specific objective 3: *Assess the relevance, effectiveness, efficiency, and coherence of the project's activities, as well as the engagement process with countries in developing proposals.* The project's activities are generally relevant and implemented efficiently, aligning coherently with the WMO institutional mandate and vision. However, the Innovation Call in Fiji is regarded as a form of project failure. This is evidenced by the fact that only two applications were received, the awarding process was marred by a potential conflict of interest as a Think Tank member received the grant, and the Fiji NMHS was reported to lack the essential technical and financial capacities to operate the equipment provided through the project. The effectiveness of activities cannot be assessed because the indicators are not monitored. In The Gambia and Tanzania, HydroHub's involvement with NMHSs comprised drafting a pre-concept note, organizing two national workshops, developing a concept note, and ultimately preparing a comprehensive project proposal. An external consultant spearheaded this process, with NMHSs contributing input and assisting in the organization of national workshops. In Fiji, the NMHS that benefited from the Innovation Project awarded to NIWA through the Innovation Call stated that they did not actively participate in the project proposal. The idea of the project belonged to NIWA and the development of the project proposal was led by NIWA. The process cannot be considered empowering.
Specific objective 4: *Identify existing or potential bottlenecks to the successful implementation of planned activities and provide recommendations for future activities.* As project activities do not require a sequential implementation, the MtEE did not identify any potential bottlenecks. As mentioned, an activity is a sub-micro project within the overarching project structure: potential bottlenecks cannot happen.
Specific objective 5: *Assess the extent to which measures are being put in place to ensure impact and sustainability of outcomes of the project.* Since the outcomes are not measurable, the impact and sustainability of outcomes of the project cannot be assessed.

Specific objective 6: *Assess communication and knowledge sharing strategies so far, in view of making the WMO HydroHub a "Global Hub for Hydrometry"*

Formal communication and knowledge-sharing strategies are not clearly defined. According to interviews with relevant stakeholders, the primary objective of the communication strategy is to engage with NMHSs in developing countries and the global expert community, promoting WMO HydroHub as a Global Hub for Hydrometry. Based on available information, the MtEE asserts that: (1) the flow of information to states in the Pacific area did not function effectively, as only two applications were received; (2) representatives from all NMHSs, when interviewed, mentioned that their awareness of the project is limited to the activities in which they are directly involved; and (3) data from an Excel file titled "Monthly Visitors" to the HydroHub website may indicate that access is predominantly from the Global North, despite HydroHub's intended focus on serving the Global South.

6.2. Recommendations

Recommendation #1:
Rapid evaluation of the projects (innovation calls)

Rationale

In the views of the most at WMO, Innovation Projects represented the most important element in terms of innovation, that HydroHub initiative pursues. Therefore, validating the efficacy of the tool to facilitate effective innovation is essential to demonstrate the credibility of the project's approach.

All interviewees view Innovation Calls as a promising mechanism to introduce innovation at NMHS level globally. Therefore, evaluating them is considered a necessary step.

Innovation Calls represent the sole project component that can be rapidly evaluated. They have clear objectives, a well-defined scope, specific geographical boundaries, and target groups. Consequently, their effectiveness and sustainability can be swiftly and easily assessed.

Their contribution to project outcomes and objective is clear and direct.

Implementing this type of evaluation will enhance the accountability and transparency of the HydroHub project. Due to its inherently high level of flexibility in implementation, the project has blurred boundaries.

Conducting such evaluations will bring clarity and ensure a more transparent and accountable process. This is very important in light of the potential conflict of interest happened with the Innovation Project awarded in Fiji.

Implementation modalities

The methods for executing the recommendation can differ, and these should be deliberated upon by the Advisory Council and the Think Tank. The MtEE proposes a few elements for consideration in the implementation process:

- Employing a consultant with expertise in environmental science who is not affiliated with the hydrology sector (ensuring no conflict of interest) and possesses a minimum experience in evaluations.
- The evaluation should primarily address the following questions: (1) Does the project align with the specifications outlined in the HydroHub project document? (2) What impact does the project have on the capacities of the targeted NMHS in terms of finances, personnel, and institutional resources? (3) Has the innovation been seamlessly integrated into the regular operations of the targeted NMHS? (4) Is the targeted NMHS involved in project reporting, or is it just a project beneficiary? (5) Is the innovation financially sustainable in the long term? (6) Identification of lessons learned
- The rapid evaluation can be carried out on-line. No need for field missions.
- Duration of the evaluation: 15 working days
- Deliverable of each evaluation: short evaluation reports for each evaluation of about 5 pages.
- People to interview: relevant NMHS staff and its project partners, including the grantees.

It is suggested to evaluate all projects financed by HydroHub phase II and those implemented during phase I, which in total will be between 5 or 7. This important for two main reasons: (1)

working on all projects will provide an overview at different timescale from the closure; and (2) it justifies the total number of working days: finding a consultant to work for less than 15 days may be an unfeasible task.

It is suggested that HydroHub coordinates with SDC to cut the budget dedicated to some activities and re-allocate it to the evaluation of the innovation project.

Responsibility:
Hydro Hub Team, Advisory Council and SDC

Timeline for implementation:
Within a month after the conclusion of the last project funded through the innovation calls

Recommendation #2:
Considering conducting an external audit

Rationale:
It is crucial to ascertain whether the potential conflict of interest identified by the current MtEE—specifically, the awarding of the Innovation Project for the Pacific Island Countries to a member of the HydroHub Think Tank—truly constitutes a violation of WMO's administrative and procurement procedures. The audit should also investigate whether other potential non-compliance issues arose during the project's implementation. This assessment holds significance, especially considering the current and future engagement of various donors in HydroHub activities. Donors typically depend on UN agencies to uphold high standards of transparency and accountability.

The external audit is of utmost importance, especially considering the information revealed in the report of the second meeting of the Think Tank, Tank which is in contradiction with the Technical Evaluation Report delivered to the WMO Procurement Office related to the award to NIWA by the HydroHub Team. According to the report, an individual from NIWA volunteered to support the Innovation Call in the Pacific Island Countries. Subsequently, NIWA emerged as the winner of that call and was awarded CHF 100,000 for an Innovation Project that did not comply with the specifications included in the HydroHub project document. This sequence of events underscores the significance of an external audit in ensuring transparency and accountability in the project's processes and decision-making.

Modalities:
According to the WMO procedures.

Responsibility
WMO.

Timeline for implementation:
As soon as possible

Recommendation #3:
Adherence to the project document of awarded projects through the innovation calls

Rationale:
In the project document, it is written …*Operational uptake of effective low-cost technologies, partial self-manufacturing, local production and services, and open-source solutions to instigate*

collaboration are the main criteria to deploy this activity. The innovative solution should demonstrate benefits in Low to Middle Income Countries (Least Developed Countries and Small Island Developing States are however given preference in the evaluation process). Regarding the applicants (no individuals), start-ups and small enterprises from developing countries are especially targeted…. It is crucial that the projects receiving awards align with the provided description; otherwise, the fulfillment of the specified criteria cannot be effectively demonstrated. Furthermore, deviating from this description poses a significant challenge in terms of project accountability. An example of such deviation occurred in the Fiji project, where notable disparities were observed. The grant was awarded to a large company from New Zealand, neglecting local enterprises. Additionally, the software used was not open source, and there was no emphasis on promoting local self-manufacturing, production, and services. Regrettably, the awarded Innovation Project in Fiji failed to generate any discernible effects indicative of an enhancement in the country's operational self-reliance, as it primarily fostered the typical working relationship between NIWA and NMHS.

The project document generally provides ample flexibility for the project to shape and execute its activities. Therefore, adherence to the project document is crucial to ensure project accountability. Additionally, if the Innovation Calls lack specific definitions and have a broad scope, verifying their validity as tools for scaling up innovation becomes challenging.

Modalities:
The Terms of Reference and the awarding mechanism related to Innovation Calls should reflect the requirements of the project document.

Responsibility
HydroHub Team

Timeline for implementation:
During the awarding process related to all next Innovation Project related to the Latin America and the Caribbean region. And also, during the Innovation Calls ESA and South Sudan, if they will materialize. In principle, during any Innovation Call.

Recommendation #4:
WMO regional officers and the Think Tank

Rationale:
Effective communication with NMHSs appears to be lacking, and the participation of hydrometry practitioners from developing nations in the Think Tank seems skewed in favour of the Global North. Involving WMO officers from regional offices could enhance project communication with NMHSs and enable the Think Tank to focus better on issues relevant to the Global South. These officers could serve as project "ambassadors" to engage with NMHSs in their regions effectively.

Modalities:
The HydroHub Team can easily reach out to different WMO regional officers to confirm their availability for participation in the Think Tank meetings.

Responsibility
HydroHub Team and Advisory Council

Timeline for implementation:

During the first quarter of 2024

Recommendation #5: *Widening the scope of project reporting*
Rationale: Project reporting should encompass a dedicated section for explaining, reflecting on, and documenting the implemented activities, extending beyond technical achievements. This practice is integral to project cycle management as it helps identify lessons learned and best practices. Additionally, for accountability purposes, reporting should clearly highlight and properly justify any deviations from the original project proposal.
Modalities: The HydroHub Team should incorporate these considerations into their reporting process. This type of reporting can occur either in real-time ("on the spot") during the activity or after its completion.
Responsibility HydroHub Team
Timeline for implementation: As soon as possible

Recommendation #6: *Women representation in the Think Tank*
Rationale: The gender balance among Think Tank members is currently considered by those interviewed on the matter as uneven. Increasing the representation of women would be in better alignment with WMO policy. Moreover, opening the Think Tank to women with diverse backgrounds, not solely centered on hydrometry, could bring a different perspective to project needs, extending beyond technical aspects. It is important to note that an internal discussion on the issue is going on within the Advisory Council and Think Tank members, who seem to be much aware of this shortcoming.
Modalities: A call should be launched through the HydroHub websites and promoted directly also by the HydroHUb Team through other mechanisms.
Responsibility Hydro HubTeam and Advisory Council
Timeline for implementation: During the first quarter of 2024.

Recommendation #7: *Establishing a communication strategy*
Rationale:

There are indications that the communication strategy is not effectively reaching the end-beneficiaries of the HydroHub initiative.

Modalities: A discussion within the HydroHub Team, Advisory Council, and the Think Tank is necessary. Key questions to address include: What should the communication strategy aim to achieve? Who are the specific target audiences? How should they be targeted effectively? Are the associated costs justified by the anticipated benefits? Is it worthwhile to maintain an operational website primarily visited by actors from the Global North, who are not the primary targets of the project? Numerous other questions may arise during this discussion.
Responsibility Hydro HubTeam, Advisory Council and the Think Tank
Timeline for implementation: During the first quarter of 2024.

7. Lessons learnt and potential good practices

The MtEE did not find any valuable lessons learned or best practices related to project implementation. The lack of identification of lessons learned is due to the lack of project reporting that goes beyond the technical accomplishments of each project activity. In other words, there was no material to be evaluated and triangulated with interviews. The project's strong technical emphasis, the knowledge gained about project management and processes was not emphasized in any of the reports used for the evaluation.

Annexes

Annex 1 – TOR of the MtEE

TERMS OF REFERENCE / DESCRIPTION OF DUTIES

1. Brief Overview

Project Title	Global Hydrometry Support Facility – Phase II
Trust Fund / Project Code	421377 Phase II
Starting Date	September 2021
End Date	August 2026
Type of Evaluation	Mid-term External Evaluation
Evaluation Period	September 2021 – September 2023
Countries covered	Cambodia, Costa Rica, Fiji, Laos PDR, Panama, Samoa and South Sudan
Lead Department	Infrastructure (I)
Organizational Unit	Earth System Monitoring (ESM)
Financing Entities	Swiss Agency for Development and Cooperation (SDC), Inter-American Development Bank (IDB) and Climate Risk and Early Warning Systems (CREWS)
Project cost	CHF 4,724,400 (donors + WMO)
Evaluation Manager	Assia Alexieva
Project Executive	Stefan Uhlenbrook
Head of WMO Earth System Monitoring (ESM)	Dominique Bérod
Project Coordinator	Sophia Sandström
ToRs version	April 2023

2. Project Background

2.1 Introduction

The Global Hydrometry Support Facility (WMO HydroHub) was established in 2017 with the financial support of the Swiss Agency for Development and Cooperation (SDC) to enhance water monitoring systems in the world through innovation, and by bringing a broad range of stakeholders from different sectors together and providing them with technical guidance and support for sustainable operations.

The aim of Phase I (2017-2021) was to help expand a reliable and sustainable base of hydrometeorological data and information services in support of informed decisions and policy-making in water management.

In its Phase II that started in September 2021 for another 5-year period, the WMO HydroHub builds on the achievements and lessons learnt of Phase I, and further advances innovation in the hydrometry agenda through providing NMHSs and other actors with capacity, innovation and engagement opportunities in view of enhancing the effective delivery of hydrological services for disaster risk reduction, social and economic development, and environmental protection.

2.2 Achievements from Phase I

The **main achievements** of the WMO HydroHub Phase I include:

Increased capacity

- The WMO HydroHub supported the implementation of the WMO Hydrological Observing System (WHOS) in the La Plata basin and Arctic region, which led to the free and interoperable international exchange of hydrological data in these regions.
- The WMO HydroHub, together with the Associated Programme for Flood Management (APFM) and in collaboration with the Global Water Partnership (GWP) established a partnership with the Inter-American Development Bank (IDB) to conduct country-wide needs and capabilities assessments of NMHSs and other relevant organizations in Costa Rica and Panama.
- The WMO HydroHub led the development of a Distance Learning Course "Interoperable Data Exchange in Hydrology", in collaboration with the COMET Program (University Cooperation of Atmospheric Research, USA).

Operationalized Innovation

- The WMO HydroHub conducted two Innovation Calls, aiming at fostering the operational uptake of innovative approaches and technologies by NMHSs in a way that makes their operations more cost effective and sustainable. Projects were implemented in Afghanistan, Bhutan, Tanzania, Belize and the Indian Himalayan region.
- Two Innovation Workshops were co-organized with the International Association of Hydrological Sciences (IAHS) and its working group on measurements and observations in the 21st century (MOXXI), bringing NMHSs, academia and the private sector together, in view of starting a dialog on how to foster uptake of innovative solutions in operational environments.

Enhanced Engagement

- The WMO HydroHub in collaboration with other WMO divisions developed, designed and conducted the WMO Global Hydrology Survey to collect information on governmental and non-governmental organizations that are responsible for operational hydrology within countries, their capabilities, structure, hydrological networks, data-management and hydrological forecasting characteristics. The survey results are helping to support regional priority activities, inform investment decisions and were used to shape and target the WMO HydroHub activities for its Phase II.

The **main lessons learnt** of the WMO HydroHub Phase I include:

Innovation

Innovation is a means to achieve the goals of the WMO HydroHub and not an objective in itself. It is not appropriate to ring-fence innovation within the structure of the WMO HydroHub, as it led – in Phase I – to a lack of synergies between innovation and other WMO HydroHub activities, which are essential to achieve its goals. Instead, in Phase II, the WMO HydroHub will leverage innovation through concrete and punctual activities where appropriate, most effective and in synergy with other activities in view of achieving the overall goal.

Triggering innovation is partially a trial-and-error process and will inevitably lead to failures. Lessons learnt from these failures should be shared to help others learning from errors. A culture of smart failure will help learn and provide opportunities to suggest other elements for ideas to succeed.

Governance

An updated governance structure is necessary in order to reflect the fact that technical guidance is needed not only on the innovation activities but on all WMO HydroHub activities. The updated governance structure shall strengthen contributions to and from the WMO Constituent Bodies (Technical Commissions, Research Board, Regional Associations). Proposed new Terms of Reference (ToRs) for the AC are annexed to this Proposal (Annex I).

Work Efficiency

The WMO HydroHub stakeholders represented in its governing body must play a more active role in the delivery of the WMO HydroHub activities and their funding as well as supporting its outreach and growth. The work efficiency of the WMO HydroHub will be increased with more frequent monitoring and evaluation of progress by the AC. This would allow the AC to provide timely and strategic guidance to the WMO Secretariat and technical experts, in turn increasing work efficiency, mitigating risks and enabling more responsive management.

Communication

During Phase I, there was not enough communication between the WMO HydroHub, NMHSs and WMO Regional Offices. This did not maximize synergies with other ongoing and future development projects in the countries/regions. Also, communication between NMHSs and their key stakeholders and end-users were not fostered enough, in a way that ensures that the development of NMHSs reflects their needs and requirements. Activities outlined in the WMO HydroHub Phase II Proposal build on consultations with beneficiary NMHSs as well as the WMO Regional Offices.

Spending of funds

Phase I experienced underspending of the project for two main reasons: 1) lack of implemented activities, and 2) 3-4-month delay in the start of the project team. For Phase II, it is suggested to provide regular financial updates throughout the duration of the project during AC meetings. This would help put light on potential under/overspending, have open discussions and help make decisions on how to overcome finance-related issues, also in dialogue with other external funders at an appropriate point in time within the project implementation.

Implementation

As highlighted in the WMO HydroHub 2019 External Evaluation, tangible results were only visible at a late stage of Phase I. More time than expected was needed for the project to be operational (development of strategic documents). The Phase II Proposal has been designed in a way that includes specific activities and a timeline in order to allow enhanced monitoring and evaluation of progress.

The main achievements and lessons learnt of the WMO HydroHub Phase I mentioned above, along with the recommendations of the 2019 External Evaluation helped to shape and design the activities for Phase II as well as its operational structure.

2.3 Overall goal and expected outcomes

In its Phase II, it is foreseen that the WMO HydroHub will reach the following overall goal and outcomes.

Overall goal:

Enhanced and sustainable monitoring and information support NMHSs' effective delivery of hydrological services for disaster risk reduction, social and economic development, and environmental protection.

Outcome 1: Increased Capacity

NMHSs, with improved staff technical expertise, sustainably operate hydromet monitoring systems with enhanced data management and improved national and international data sharing.

Outcome 2: Operationalized Innovation

NMHSs continuously develop and innovate their hydrometric approaches and technologies in collaboration with academia and private sector.

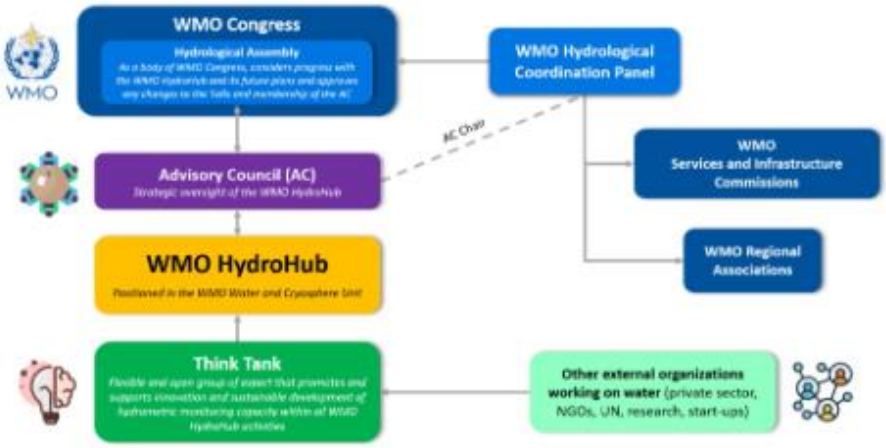
Outcome 3: Optimized Engagements and Investments

NMHSs catalyse development opportunities and impact for the overall hydromet community through strengthened internal and external engagements that offer greater visibility, knowledge sharing and communication.

2.4 Governance

The WMO HydroHub governing body, the Advisory Council (AC) is placed at a high level, falling into the Hydrological Assembly as a body of the WMO Congress. The Hydrological Assembly considers progress with the WMO HydroHub and its future plans. The Hydrological Assembly – which convenes every 4 years as part of the WMO Congress –also approves any changes to the ToRs and Membership of the current AC and Think Tank (TT). The WMO Technical Commissions – Infrastructure Commission (INFCOM) and Services Commission (SERCOM) – are kept informed of project workplan and progress.

The WMO HydroHub Governance Structure is schematized below:



WMO HydroHub Governance Structure

2.5 Project Implementation

The WMO HydroHub is part of WMO's Earth System Monitoring (ESM) Division – *in the Infrastructure Department* – which oversees WMO's activities on monitoring and information systems on water, cryosphere and ocean. The ESM team supports the implementation of the various WMO HydroHub activities. The Hydrological and Water Resources Services Division (HWR) – *in the Services Department* – which promotes the effective use of hydrology in sustainable development to reduce the risk and impacts of water-related disasters and supports effective environmental management at international, regional, national and basin levels, also supports the implementation of WMO HydroHub activities.

The WMO HydroHub team comprises three full time members: a project Coordinator, a project Officer and a Communication Officer (short-term). The team is part of the ESM Division and benefits from close collaborations with team members from both the ESM and the HWR Divisions as well as from other departments and teams within WMO.

2.6 Overall Budget

The overall budget of the project (donors + WMO) amounts to CHF 4,724,400.

3. Evaluation Purpose, Scope and Objectives

3.1 Context

Two external evaluations were included in the WMO HydroHub Phase II Project Proposal that was approved by the SDC in August 2021, and which serves as basis for the SDC – WMO Agreement that was signed in September 2021. The first external evaluation will be conducted halfway into the Phase II project duration, whereas the second external evaluation will be conducted towards the end of Phase II.

3.2 Purpose and objectives

The main purpose of the mid-term external evaluation is to provide an independent assessment of the implementation progress of the project in the period September 2021 – September 2023, through an analysis of relevance, effectiveness, efficiency, coherence and sustainability of the project activities.

The specific objectives of the evaluation are as follows:

1. Assess the extend to which the recommendations of the WMO HydroHub Phase I External Evaluation have been addressed in the design of Phase II;
2. Assess the level of implementation of the project activities within the evaluation period against those laid out in the WMO HydroHub Phase II Logframe and its set of indicators;
3. Assess the relevance, effectiveness, efficiency, and coherence of the project's activities, as well as the engagement process with countries in developing proposals;
4. Identify existing or potential bottlenecks to the successful implementation of planned activities and provide recommendations for future activities;
5. Assess the extent to which measures are being put in place to ensure impact and sustainability of outcomes of the project;
6. Assess communication and knowledge sharing strategies so far, in view of making the WMO HydroHub a "Global Hub for Hydrometry".

The evaluation's purpose is to:

Learn and improve: To provide useful and relevant information to ongoing and future activities, explore why implementation actions and interventions have been successful or not, provide suggestions on how to strengthen the project.

In other words, the evaluation is envisioned as a formative appraisal which takes stock of past performance but is oriented towards improving future work. The evaluation can also be used to draw useful lessons on the implementation of a complex cross-cutting project which involves contributions from and collaborations with multiple WMO Secretariat divisions, technical programmes and essentially all levels of the WMO governance.

The primary audience of this mid-term review report is the Swiss Agency for Development of Cooperation, as the main donor for the WMO HydroHub Phase II and the Inter-American Development Bank which is increasing its financial support to selected activities.

3.3 Scope and limitations

The mid-term evaluation will cover the period September 2021 – September 2023. It will cover all the planned outputs and outcomes under the project, with attention to synergies with other WMO Programmes and contribution to NMHSs.

More specifically, links to and coherence with the WMO Hydrological Observing System (WHOS) and the World Hydrological Cycle Observing System (WHYCOS) as components of WMO HydroHub will be assessed, as well as with other technical programmes such as the Associated Programme on Flood Management, the Integrated Drought Management Programme, the Climate Risk and Early Warning Systems Initiative (CREWS), the UN Early Warnings for All initiative (EW4All), the World Water Data Initiative (WWDI) and the Global Hydrological Status and Outlook System (HydroSOS) among others will be assessed.

A full-scale evaluation of the WMO HydroHub would imply evaluating major elements of many other WMO programmes. Such an approach is neither considered feasible nor relevant for the sake of the evaluation's analytical depth and practical value, as the idea is rather to explore the efficiency of collaboration given interdependencies with other programmes.

In terms of geographical scope of activities implemented, the following countries should be taken into consideration:

- Costa Rica and Panama – for the country assessment with the IDB
- Fiji and Samoa – for the Innovation Call implementation (Fiji) and the User-Provider Webinars and Workshops (Fiji and Samoa)
- South Sudan – for the Online training, Capacity and Needs Assessment, Learning Exchange, Innovation Call and Ministerial Roundtable
- Cambodia and Laos PDR – for the data sharing activities within the CREWS Cambodia and Laos PDR project

At the global/regional levels, the following activities should be taken into consideration:

- Webinar on the WMO Hydrological Observing System (WHOS)
- Distance Learning Course "Interoperable Data Exchange in Hydrology" (2022 Edition in English and 2023 Edition in Spanish)
- Innovation Workshop "WMO HydroHub Phase II Innovation Roadmap"
- WMO Global Hydrology Dashboard and Webinars
- WMO-OGC Workshop "GroundWaterML2 standard"
- WMO-UNEP-UNESCO-WHO-OGC Workshop on Water Quality Monitoring
- WMO HydroHub Youth Symposium
- 2023 Trialogue on Innovation for Education
- Innovation Call in Latin America and the Caribbean
- WMO-UNEP-WWQA Innovation Workshop "Innovative approaches and technologies for Water Quality Monitoring"
- Innovation Call with ESA (tbc)
- Regional Socio-economic benefit analysis side-event in Asia and the Pacific (tbc)
- Adaptation Fund Innovation Project "Enhancing Hydromet Services through Regional Monitoring Innovation Hubs in Africa" (tbc)
- Joint WMO-UNEP-UNESCO-OGC and CIC Project "Enabling improved water quality (WQ) knowledge in the La Plata basin" (tbc)

Gender equality and youth engagement are important cross cutting policy drivers of the WMO. To the extent possible, the evaluation will link the findings and recommendations to the broader cross-cutting aspect of the project as well as the extent to which the planned and implemented activities are able to mainstream gender equality and youth engagement. The evaluation will also look particularly at how gender equality and youth engagement concerns were integrated throughout its methodology, strategies/approaches, data and all deliverables, including in the final report.

The results of the mid-term evaluation will be used by the Advisory Council and the WMO HydroHub team in the formulation of a management response that will outline how the recommendations may be taken forward. The results of the mid-term evaluation will also inform SDC on the project progress and provide initial input to their decision on potential further financing support beyond August 2026.

3.4 Evaluation Criteria and Key Questions

Within this framework, the following criteria and questions have been identified as indicative of the key information requirements to meet the evaluation objectives. They will be further refined during the inception phase of the evaluation.

3.4.1 Relevance

The extent to which the WMO HydroHub activities are needed, consistent with and advancing priorities, recommendations and policy frameworks in the field of hydrometry.

Specific evaluation questions include (but are not limited to):

- How relevant are the WMO HydroHub activities undertaken in the evaluation period to WMO's vision, mission and strategic objectives?
- What is the extent to which the project approach is strategic and based on WMO's comparative advantages?
- To what extent does the project contribute to implementation of the WMO Gender Equality Policy and Action Plan and SDG5?
- How are future plans and activities being identified and designed?
- Are the WMO HydroHub activities coherent with the needs of NMHSs and do they support the goals and policies of WMO?

3.4.2 Effectiveness

The extent to which the objectives, activities and expected outputs and outcomes outlined in the WMO HydroHub Phase II Logframe have been achieved or are likely to be before August 2026.

Specific questions include (but are not limited to):

- Does the WMO HydroHub implement an adequate Theory of Change?
- Is a risk mitigation mechanism in place?
- To what extent were the objectives /outcomes and outputs achieved or are likely to be achieved?
- Does the WMO HydroHub have an adequate M&E Plan? How are the results being monitored?
- What were/are the major factors influencing the achievement or non-achievement of the project objectives?

- Has there been progress towards the stated outcomes and what evidence/early markers are available? Which approaches/actions seem to be most effective, and which not? Are there any challenges to delivering on time and within budget?
- Has the knowledge sharing strategy been effective in raising the profile of the project within the global hydrometry community?
- What is the likelihood of achieving the intended impacts? Is there any early evidence of impact?

3.4.3 Efficiency

The extent to which the resources of the WMO HydroHub are managed cost-effectively and coordination with other stakeholders in this cross-cutting programme achieved.

Specific questions include (but are not limited to):

- Have resources (financial, human, technical support etc.) been allocated strategically to achieve the project outputs and outcomes?
- How are WMO resources being planned for future activities of the WMO HydroHub?
- Is the current project management structure and technical capacity sufficient and adequate?
- What are the systems in place for financial management and workplan monitoring?
- Are there more cost-effective ways of achieving the same results?
- How WMO HydroHub activities are linked and contributing to WMO Technical Commission and Regional Associations' work?

3.4.4 Coherence

The extent to which the WMO HydroHub activities are compatible with other interventions in a country, sector or institution

- To what extent are WMO Divisions and Regional Offices contributing (and informed) to meeting/achieving the WMO HydroHub's objectives, including but not limited to avoiding duplications and enhancing synergies?
- How consistent is the WMO HydroHub with other actors' interventions?
- How does the WMO HydroHub complement and coordinate with others?
- To what extent does the WMO HydroHub add value while avoiding duplication of effort?
- To what extent has the project integrated gender equality and youth engagement into its design, implementation and monitoring?

3.4.5 Sustainability

The extent to which the WMO HydroHub Resource Mobilization Plan is likely to achieve its goals.

Specific questions include (but are not limited to):

- To what extent has the WMO HydroHub Resource Mobilization Plan achieved its goals so far?
- Is the WMO HydroHub Resource Mobilization Plan designed in an optimal way to achieve its goals? How can it be improved?

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4. Methodology

The independent mid-term evaluation will comply with WMO's evaluation approach and criteria, which is based on the norms and standards of the United Nations Evaluation Group (UNEG). The UNEG Guidance Integrating Human Rights and Gender Equality in Evaluations will also be observed. The final methodology and evaluation questions will be determined by the consultant(s) in consultation with WMO HydroHub Coordinator, Head of ESM and Project Executive.

4.1 Documentation and Preliminary Review

The evaluation will begin with a preliminary review of documentation, website, communication material and other relevant sources identified in collaboration with the WMO HydroHub team.

4.2 Inception phase

An evaluation matrix: The Evaluator will develop an evaluation matrix designed to guide the data gathering and analysis process. The matrix will detail the issues to be addressed and sub-questions to be covered, as well as performance indicators, sources of information and information-gathering methods for each issue.

A list of stakeholders and draft questionnaires: In cooperation with the WMO HydroHub team, the Evaluator will identify a list of stakeholders to be consulted in the context of the review. The potential stakeholder groups identified at this stage are: (a) WMO Secretariat (D/HCC, H/ESM and Division staff, technical programmes contributing to or having linkages with the WMO HydroHub); (b) Governance (members of the Advisory Council and Think Tank); and (c) External stakeholders and beneficiaries such as other UN Organizations, CREWS, Donors, Academia, Foundations, private sector, and especially NMHSs (to assess if the WMO HydroHub responds to their needs and demands). Draft interview questionnaires for stakeholder groups will be designed.

4.3 Data Collection

Data collection methods will include literature and documentation review, a survey, and interviews – *both face-to-face and online* – of WMO HydroHub team, colleagues from the Services and Infrastructure departments, members of the WMO HydroHub Advisory Council (see section 6.5) and the key stakeholders listed above (see section 4.2).

4.4 Data Analysis and Reporting

At the data analysis stage, the Evaluator will analyze all the data collected. To the extent possible, data triangulation will be achieved by analyzing information from multiple sources. The evaluation report will indicate the extent to which gender and youth issues and considerations were incorporated, where applicable. A final report adhering to the evaluation terms of reference and highlighting the principal findings of the review will finalize the evaluation process.

All data collection tools are to be included as an annex to the final report. The link between evaluation questions, data collection, analysis, findings and conclusions will be made and set out in a transparent manner in the presentation of the review findings.

5. Expected Deliverables and Schedule

5.1 Expected Deliverables

The key deliverables that are required from the Evaluator include:

1. Draft **Inception report** (not exceeding 20 pages excluding the annexes) – based on available documents and an initial discussion with the Project Coordinator and Project Executive. The inception report should set out any changes proposed to the methodology or any other issues of importance in the further conduct of the evaluation. The inception report will:

- Describe the conceptual framework that will be used to undertake the evaluation;
- Set out in some detail the approach for data collection, the evaluation methodology i.e. how evaluation questions will be answered by way of data collection methods, data sources, sampling and selection criteria, and indicators;
- Set out the detailed workplan for the evaluation, which indicates the phases in the evaluation and their key deliverables;
- Set out the list of key stakeholders to be interviewed;
- Set out a plan for data collection, interviews or discussions;
- Set out the outline for the final mid-term evaluation report;
- Summarize the main findings of the preparation phase.

2. Conduct **interviews and consultations** with relevant stakeholders and hold informal feedback meetings with stakeholders. Draft findings should be discussed and validated with key stakeholders.

3. Carry out an online **Evaluation Workshop** to share the preliminary findings with the WMO HydroHub Advisory Council. A brief review of the key results for each evaluation criteria should be provided. The workshop should be organized by the consultant.

4. Produce a **draft evaluation report** including an Executive Summary of key findings, conclusions and recommendations. The draft evaluation report will be reviewed by the WMO HydroHub Project Coordinator from a methodological point of view. The draft evaluation report will also be shared with relevant stakeholders and a request for comments will be made within a specified time.

5. Develop a PowerPoint (or other visual, shareable format) **presentation** of the final findings and recommendations for the key audiences and users of the evaluation.

6. Produce a **final evaluation report** incorporating feedback from WMO and other stakeholders. The final evaluation report provides direct and explicit evaluative answers to the key questions. The report describes the findings, challenges and shortcomings and provides conclusions and recommendations. The final evaluation report should also include a section on output and outcome level results against indicators and targets of each activity and comments on each one.

The total length of the report should be a maximum of 40 pages, excluding annexes. Annexes can provide background and further details on specific components of the project.

The evaluation report should include:

1. Cover page with key project data
2. Table of contents
3. Acronyms
4. Executive Summary
5. Background and project description
6. Purpose and scope of evaluation
7. Evaluation methodology and evaluation questions
8. Project status and findings by evaluation criteria

9. Main challenges and shortcomings
10. Conclusions and recommendations
11. Lessons learnt and potential good practices
12. Annexes (list of interviews, overview of meetings, proceedings stakeholder meetings, other relevant information)

5.2 Schedule

Month	Tasks	Responsible
December 2022	Preliminary draft of the Terms of Reference (ToRs)	Head of WMO Monitoring, Evaluation, Risk and Performance Unit; and WMO HydroHub Project Coordinator
January 2023	Review of the ToRs by ESM team and Chair of the Advisory Council and Think Tank and adjustments provided	WMO HydroHub Project Coordinator
February 2023	Review and approval of the ToRs by members of the Advisory Council	WMO HydroHub Project Coordinator
April 2023	Call for expression of interest	WMO HydroHub Project Coordinator
May 2023	Selection of independent Evaluator	Head of WMO Monitoring, Evaluation, Risk and Performance Unit; Head of WMO ESM; and WMO HydroHub Project Coordinator
September 2023	Discussion (online) with the Evaluator on the project and the ToRs	WMO HydroHub Project Executive; Head of ESM; and Project Coordinator
September 2023	Documentation review, identification of key respondents; Development of evaluation matrix and interview protocols; Preparation and review of Inception Report.	Evaluator; Head of WMO Monitoring, Evaluation, Risk and Performance Unit; and WMO HydroHub Project Coordinator
October 2023	Interviews and Consultations	Evaluator
October 2023	Evaluation Workshop presenting the preliminary findings to the members of the Advisory Council	Evaluator
November 2023	Preparation of draft evaluation report	Evaluator
November 2023	Circulate draft report among key stakeholders for feedback and comments	WMO HydroHub Coordinator
December 2023	Finalize the report	Evaluator
December 2023	Submit the final report	Evaluator

6. Management and Responsibilities

6.1 Overall Evaluation Management

The WMO HydroHub Coordinator shall serve as team leader and have responsibility for the evaluation's timely completion and reporting of results.

6.2 Quality Assurance and Guidance for Management Response

The Head of the WMO Monitoring, Evaluation, Risk and Performance Unit (MERP) will provide guidance on the quality assurance of the methodology and the evaluation report as well as on the management response.

Annex 2 – Evaluation Matrix

Main Evaluation Criteria / Questions	Evaluation Indicators	Source of Data	Methods
Criterion: Relevance			
1. How relevant are the WMO HydroHub activities undertaken in the evaluation period to WMO's vision, mission, and strategic objectives?	Extent to which WMO HydroHub activities are aligned with WMO's vision, mission and strategic objectives.	Project Document / Progress Reports / WMO Strategic Plan 2020-2023 and WMO Strategic Plan 2024-2027 / HydroHub Team /Head ESM/ Project Executive/WMO Officers	Data collection: Desk review & Interviews Data analysis: triangulation
2. What is the extent to which the project approach is strategic and based on WMO's comparative advantages?	Identification of strategic elements within the project approach, which are based on WMO's comparative advantages.	Project Document / Progress Reports / WMO Strategic Plan 2020-2023 and WMO Strategic Plan 2024-2027 / Advisory Council reports / Think Tank reports / HydroHub Team / Head ESM/ Project Executive	Data collection: Desk review & Interviews Data analysis: triangulation
3. To what extent does the project contribute to implementation of the WMO Gender Equality Policy and Action Plan and SDG5?	Extent to which the project contributes to implementation of the WMO Gender Equality Policy and Action Plan and SDG5.	Project Document / Progress Reports / WMO Gender Equality Policy and Action Plan / https://sdgs.un.org/goals/goal5 / HydroHub Team / WMO Officers	Data collection: Desk review & Interviews Data analysis: triangulation
4. How are future plans and activities being identified and designed?	Identification of mechanisms that are used to identify and design future plans and activities.	Project Document / Progress Reports / Advisory Council reports / Think Tank reports / HydroHub Team / WMO Officers / Members of the Advisory Council / Members of the Think Tank / NMHSs Officers	Data collection: Desk review & Interviews Data analysis: triangulation
5. Are the WMO HydroHub activities coherent with the needs of NMHSs and do they support the goals and policies of WMO?	Extent to which WMO HydroHub activities address the needs of NMHSs and identification of their alignment to the goals and policies of WMO.	Progress Reports / Advisory Council reports / Think Tank reports / HydroHub Team / Head ESM/ Project Executive/ NMHSs Officers	Data collection: Desk review & Interviews Data analysis: triangulation
Criterion: Effectiveness			
1. Does the WMO HydroHub implement an adequate Theory of Change?	Identification of elements within the Theory of Change that are/are not conducive to the project goal.	Project Document / HydroHub Team / WMO Officers / Members of the Advisory Council / Members of the Think Tank	Data collection: Desk review & Interviews Data analysis: triangulation

Main Evaluation Criteria / Questions	Evaluation Indicators	Source of Data	Methods
2. Is a risk mitigation mechanism in place?	Identification of a risk mitigation mechanism.	Project Document / Progress Reports / HydroHub Team / Head ESM/ Project Executive/ WMO Risk Officer	Data collection: Desk review & Interviews Data analysis: triangulation
3. To what extent were the objectives /outcomes and outputs achieved or are likely to be achieved?	Identification of project achievements vs project expected results.	Project Document / Progress Reports / M&E System / HydroHub Team / Head ESM/ Project Executive	Data collection: Desk review & Interviews Data analysis: triangulation
4. Does the WMO HydroHub have an adequate M&E Plan? How are the results being monitored?	Identification of mechanisms to monitor the project results and assessment of its adequacy	Project Document / Progress Reports / M&E Plan / HydroHub Team / Head ESM/ Project Executive/Chair of Advisory Council	Data collection: Desk review & Interviews Data analysis: triangulation
5. What were/are the major factors influencing the achievement or non-achievement of the project objectives?	Identification of the major factors influencing the achievement or non-achievement of the project objectives.	Project Document / Progress Reports / Advisory Council reports / Think Tank reports / HydroHub Team / Head ESM/ Project Executive / WMO Officers / Members of the Advisory Council / Members of the Think Tank / NMHSs Officers	Data collection: Desk review & Interviews Data analysis: triangulation
6. Has there been progress towards the stated outcomes and what evidence/early markers are available? Which approaches/actions seem to be most effective, and which not? Are there any challenges to delivering on time and within budget?	Identification of evidence/early markers; identification of approaches/actions and opinions around them about their effectiveness; identification of challenges.	Project Document / Progress Reports / Advisory Council reports / Think Tank reports / HydroHub Team / Head ESM/ Project Executive /WMO Officers / Members of the Advisory Council / Members of the Think Tank /	Data collection: Desk review & Interviews Data analysis: triangulation
7. Has the knowledge sharing strategy been effective in raising the profile of the project within the global hydrometry community?	Analysis of opinions around the effectiveness of the knowledge sharing strategy and identification of evidence of its effectiveness.	Project Document / Progress Reports / Advisory Council reports / Think Tank reports / HydroHub Team / WMO Officers / Members of the Advisory Council / Members of the Think Tank	Data collection: Desk review & Interviews Data analysis: triangulation
8. What is the likelihood of achieving the intended impacts? Is there any early evidence of impact?	Identification of early evidence of impact.	Progress Reports / Advisory Council reports / Think Tank reports / HydroHub Team / WMO Officers / Head ESM/ Project Executive/ Members of the Advisory Council / Members of the Think Tank	Data collection: Desk review & Interviews Data analysis: triangulation
Criterion: Efficiency			

Main Evaluation Criteria / Questions	Evaluation Indicators	Source of Data	Methods
1. Have resources (financial, human, technical support etc.) been allocated strategically to achieve the project outputs and outcomes?	Identification of how resources have been allocated and identification of evidence of their adequacy	Progress Reports / Advisory Council reports / Think Tank reports / Project expenditure reports / HydroHub Team / Head ESM/ Project Executive	Data collection: Desk review & Interviews Data analysis: triangulation
2. How are WMO resources being planned for future activities of the WMO HydroHub?	Identification of how resources will be allocated and identification of evidence of their adequacy	Progress Reports / Advisory Council reports / Think Tank reports / Project expenditure reports / HydroHub Team / Head ESM/ Project Executive/WMO Director for Resource Mobilization	Data collection: Desk review & Interviews Data analysis: triangulation
3. Is the current project management structure and technical capacity sufficient and adequate?	Opinions around the effectiveness of the project management structure and identification of evidence of its effectiveness.	Project Document / Progress Reports / Advisory Council reports / Think Tank reports / HydroHub Team / WMO Officers/ Head ESM/ Project Executive / Chair of the Advisory Council /	Data collection: Desk review & Interviews Data analysis: triangulation
4. What are the systems in place for financial management and workplan monitoring?	Identification of systems in place for financial management and workplan monitoring.	Progress Reports / HydroHub Team/ Head ESM/ Project Executive / Chair of the Advisory Council	Data collection: Desk review & Interviews Data analysis: triangulation
5. Are there more cost-effective ways of achieving the same results?	Opinions around the effectiveness of the project management structure and identification of evidence of its cost-effectiveness.	Project Document / Progress Reports / Advisory Council reports / Think Tank reports / HydroHub Team / WMO Officers / Members of the Advisory Council / Members of the Think Tank / NMHSs Officers	Data collection: Desk review & Interviews Data analysis: triangulation
6. How WMO HydroHub activities are linked and contributing to WMO Technical Commission and Regional Associations' work?	Identification of relationships (what they are and how they act) between WMO HydroHub activities to the WMO Technical Commission and Regional Associations' work.	Progress Reports / Advisory Council reports / Think Tank reports / HydroHub Team / WMO Officers / Head ESM/ Project Executive /Chair of the Advisory Council /Advisor Council member John Fenwick /	Data collection: Desk review & Interviews Data analysis: triangulation
Criterion: Coherence			
1. To what extent are WMO Divisions and Regional Offices contributing (and informed) to meeting/achieving the WMO HydroHub's objectives, including but not limited to avoiding duplications and enhancing synergies?	Identification of how are WMO Divisions and Regional Offices contributing (and informed) to meeting/achieving the WMO HydroHub's objectives. Identification of synergies and duplications.	Progress Reports / HydroHub Team / WMO Officers/ Head ESM/ Project Executive/WMO Representative for SW Pacific	Data collection: Desk review & Interviews Data analysis: triangulation

Main Evaluation Criteria / Questions	Evaluation Indicators	Source of Data	Methods
2. How consistent is the WMO HydroHub with other actors' interventions?	Identification of the alignment of the WMO HydroHub activities with other actors' interventions.	HydroHub Team / WMO Officers / Members of the Advisory Council / Members of the Think Tank / NMHSs Officers/CREWS	Data collection: Interviews Data analysis: triangulation
3. How does the WMO HydroHub complement and coordinate with others?	Identification of complementary actions and coordination activities with other	Advisory Council reports / Think Tank reports / HydroHub Team / WMO Officers, including WMO Senior Economist//CREWS/ Members of the Advisory Council / Members of the Think Tank / NMHSs Officers	Data collection: Desk review & Interviews Data analysis: triangulation
4. To what extent does the WMO HydroHub add value while avoiding duplication of effort?	Collection of opinions about the added value of WMO HydroHub	Advisory Council reports / Think Tank reports / HydroHub Team / WMO Officers, including WMO Senior Economist//CREWS/ Members of the Advisory Council / Members of the Think Tank / NMHSs Officers	Data collection: Desk review & Interviews Data analysis: triangulation
5. To what extent has the project integrated gender equality and youth engagement into its design, implementation and monitoring?	Identification of gender equality and youth engagement elements in the design, implementation and monitoring of project activities and results	Progress Reports / Advisory Council reports / Think Tank reports / HydroHub Team / WMO Officers / Members of the Advisory Council / Members of the Think Tank / NMHSs Officers	Data collection: Desk review & Interviews Data analysis: triangulation
Criterion: Sustainability			
1. To what extent has the WMO HydroHub Resource Mobilization Plan achieved its goals so far?	Identification of achievement of the Resource Mobilization Plan vs its expected results	Progress Reports / Advisory Council reports / Think Tank reports / HydroHub Team / WMO Officers / Members of the Advisory Council Head ESM/ Project Executive	Data collection: Desk review & Interviews Data analysis: triangulation
2. Is the WMO HydroHub Resource Mobilization Plan designed in an optimal way to achieve its goals? How can it be improved?	Identification of elements that may improve the WMO HydroHub Resource Mobilization Plan.	Advisory Council reports / Think Tank reports / HydroHub Team / Head ESM/ Project Executive /WMO Director for Resource Mobilization / Members of the Advisory Council / / NMHSs Officers	Data collection: Desk review & Interviews Data analysis: triangulation

Annex 3 – Work plan

The evaluation took place in the months of September, October, November and December 2023. It foresaw three phases: 1) Inception phase; 2) Data collection phase; and 3) Reporting phase.

Inception phase

From 12 September to 4 October 2023

The Evaluator reviewed project related documents and organized, in consultation and collaboration with the HydroHub Team the schedule of meetings to be held during the next phase of the evaluation, i.e. the data collection phase.

At the end of the inception phase, an inception report was delivered by the Evaluator to the HydroHub Team.

Data collection phase

From 6 October to 31 October 2023

During the data collection phase, the evaluator will conduct on-line and face-to face interviews with project stakeholders.

Specifically, he travelled upon request of the HydroHub Team to Dar Es Salam, Tanzania. In Dar Es Salam, he held three meetings with four project stakeholders on 5 October 2023.

On 11 October, he held on-line meetings with 3 stakeholders involved in the project in Bangui, The Gambia.

During the last two weeks of October, he is expected to visit the WMO Head Quarter Geneva, where he is expected to work for two day and meet selected WMO officers involved in the project. During the same period, he is expected also to conduct on-line interviews with other project stakeholders.

Reporting phase

From 1 November to 02 February 2024

The deliverables of the reporting phase were a presentation/workshop of preliminary findings members of the Advisory Council (7-Nov-2023), the Draft MtEE Report (submitted by the Evaluator to the WMO by 15-Nov-2023), and the Final MtEE Report (submitted by 02-Feb-2024). In the Final MtEE Report, the Evaluator addressed the comments received on the Draft Report from WMO (14/12/2023). In addition, the Evaluator delivered a MtEE comments table showing how comments were addressed and a PowerPoint file of the final findings and recommendations.

Milestones	Deadline
Inception Phase	
TR Inception Report	28-Sep-2023
Data Collection Phase	
Mission in Dar Es Salaam, Tanzania	05-Oct-2023
On-line interviews with stakeholders in The Gambia	11-Oct-2023
Mission in Geneva at the WMO HQs	23-Oct-2023 & 24-Oct-2023
On-line interviews	16-Oct to 20-Oct-2023 & 25-Oct to 31-Oct-2023
Reporting phase	
Evaluation Workshop presenting the preliminary findings to the members of the Advisory Council	07-Nov-2023
Draft TR Report	15-Nov-2023

Comments on the Draft TR Report collected and sent by WMO to the Evaluator	14-Dec-2023
Final Report + Comments table	02-Feb-2024

Annex 4 – List of documents consulted during the inception phase

- Concept Note for the Adaptation Fund project "Enhancing Hydromet Services through Regional Monitoring Innovation Hubs in Africa" (2022)
- Final Report - Distance Learning Course "Interoperable Data Exchange in Hydrology" 21 March – 6 May 2022
- Final Report - WMO HydroHub Youth Symposium - 12 October 2022
- Hydrology Dashboard Webinar – April 2022
- Mission Report – Geo Week in Accra – 29 November 2022
- NIWA proposal – Innovation Call in the Pacific
- Open Call for Innovation Challenges on Water Quality Monitoring & Assessment
- Pre-Concept for a Regional Innovation Project/Programme "Enhancing Hydromet Services through Regional Monitoring Innovation Hubs in Africa" (2021)
- Report "Stakeholder Consultation Workshop for the preparation of the Project Concept Proposal to be submitted to the Adaptation Fund (AF) for a large innovation project "Enhancing Hydromet Services through Regional Monitoring Innovation Hubs in Africa" – Tanzania
- Report "Stakeholder Consultation Workshop for the preparation of the Project Concept Proposal to be submitted to the Adaptation Fund (AF) for a large innovation project "Enhancing Hydromet Services through Regional Monitoring Innovation Hubs in Africa" – The Gambia
- Webinar: WMO Hydrological Observing System (WHOS): Concept Note and Agenda
- WMO HydroHub Advisory Council meetings
    - 1st meeting report (19 January 2022)
    - 2nd meeting report (12 July 2022)
    - 3rd meeting report (5 September 2022)
    - 4th meeting report (20 February 2023)
    - 5th meeting report (9 May 2023)
    - 6th meeting report (12 September 2023)
- WMO HydroHub Innovation Call in Fiji - Final Report
- WMO HydroHub Innovation Call – Pacific Terms of Reference
- WMO HydroHub Innovation Snapshot – Issue n. 1, July 2023
- WMO HYdroHub project logframe – update July 2023
- WMO HydroHub Phase II - Progress Report 2021
- WMO HydroHub Phase II - Progress Report 2022
- WMO HydroHub Phase II – Project Document
- WMO HydroHub Phase II - Resource Mobilization Strategy and Plan
- WMO HydroHub Think Tank
    - 1st meeting report (10 February 2022)

    - 2nd meeting report (20 July 2022)
    - 3rd meeting report (7 September 2022)
    - 4th meeting report (20 February 2023)
    - 5th meeting report (11 May 2023)
- Workshop Report WMO-OGC Workshop “GroundWaterML2 standard" – 10 March 2022
- Youth Statements from the WMO HydroHub Youth Symposium
- www.crews-initiative.org
- https://hydrohub.wmo.int
- www.wmo.int

Annex 5 – People interviewed during the data collection phase

Mission in Tanzania

05 October 2023

Mr. Hakima Jehovania,	Meteorologist	Tanzania Meteorological Authority
Mr. Suleimani Chilo	Manager of Meteorological Services	Tanzania Meteorological Authority
Mr. Obadia Kibona	Senior Environmental Officer	Ministry of Water (Tanzania)
Mr. Robert K.M. Sunday	Assistant Director of Water Resource	Ministry of Water (Tanzania)

On-line interviews

11 October 2023

Mr. Landing Bojang	Chief Hydrologist	Department of Water Resources (The Gambia)
Mr. Momodou BE. Njie	Executive Secretary	Gambia Country Water Partnership
Mr. Alhagie Nyangado	Permanent Secretary	Ministry of Fisheries, Water Resources and National Assembly Matters

17 October 2023

Mr. Melchior Elsler	Associate Expert	United Nations Environment Programme
Mr. Sumit Sen	Associate Professor / Think Tank member	IIT Roorkee

18 October 2023

Mr. Tom Stewart	Hydrologist	SPC
Mr. Salvador Peña-Haro	Chief Technology Officer / Think Tank member	Photrack ag
Mr. Nick van de Giesen	Professor / Think Tank member	TU Delft
Mr. Mauro Nalesso	Water Resource Engineer /	Inter American Development Bank
Mr. Mark Heggli	Consultant / Advisory Council	Innovative Hydrology Consulting

19 October 2023

Mr. Hamish Biggs	Ecohydraulics Scientist	National Institute of Water and Atmospheric Research
Ms. Sophia Sandström	HydroHub Project Coordinador	WMO
Ms. Afroditi Anastasaki	Partnerships Consultant	UNITAR

20 October 2023

Mr. Henry Taiki	Representative for South-West Pacific	WMO
Mr. Harry Dixon	Professor / Advisory Council and Think Tank Chairperson	UK Centre for Ecology & Hydrology
Ms. Elizabeth Jamieson	Environment and Climate Change Canada	Project X / WMO
Ms. Ilse Gayl	Corporate Development Officer / Think Tank member	AEM

Work at the WMO HQs in Geneva

23 October 2023

Ms. Cristina Grigoras	Risk and Quality Management Officer	WMO
Ms. Victoria Alexeeva	Senior Economic and Societal Impacts Officer	WMO
Mr. Dominique Berod	Head, Earth System Monitoring Division	WMO
Ms. Johanna Kolhonen	Scientific Officer	WMO
Mr. Tommaso Abrate	Scientific Officer	WMO
Mr. Moyenda Chaponda	Project Officer, Member Services Department	WMO

24 October 2023

Mr. Daniel Kull	Director of Resource Mobilization and Development Partnerships	WMO
Ms. Beatrice Giovinazzo	Communication Officer	WMO
Mr. Igor Chernov	Associate Project Officer	WMO
Mr. Dominique Berod	Head, Earth System Monitoring Division	WMO
Ms. Elkaye Macasil	Programme Officer	CREWS Secretariat
Mr. Stefan Uhlenbrook		WMO
Ms. Silvana Alcoz	Scientific Officer	WMO

On-line interviews

25 October 2023

Ms. Alice Soares	Project Consultant (AF project)	Independent Consultant
Mr. Fabrice Fretz	Programme manager - SDC's Global Programme Water in Bern	SDC
Mr. Juan Bianchi	Researcher	National Water Institute (Argentina)
Ms. Cristina Wahrmann		

26 October 2023

Ms. Jay Wilson	Director for Development and Sustainability	The Association of Hydro-Meteorological Equipment Industry

30 October 2023

Ms. Yuliya Vystavna	Senior Water Programme Officer	International Atomic Energy Agency
Mr. Viliame Vereivalu	Head of Hydrology Division	Fiji NMHS