

FINAL ANNUAL REPORT

2022-2023



Date issued
October 2023

Report APFM
Report No. 53



WORLD METEOROLOGICAL ORGANIZATION

The World Meteorological Organization (WMO) is a specialized agency of the United Nations. It coordinates the activities of the meteorological and hydrological services of 193 countries and territories and is the authoritative voice on weather, climate and water.



ASSOCIATED PROGRAMME ON FLOOD MANAGEMENT

The Associated Programme on Flood Management (APFM) is a joint initiative of the World Meteorological Organization (WMO) and the Global Water Partnership (GWP). Since 2001 it promotes the concept of Integrated Flood Management (IFM) as an approach to flood management.



GLOBAL WATER PARTNERSHIP

The Global Water Partnership (GWP) is an international network whose vision is for a water secure world. The GWP mission is to advance governance and management of water resources for sustainable and equitable development. Created in 1996 the GWP network is open to all organizations that recognize the principles of integrated water resources management endorsed by the network.

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Design: Alexia Calvel

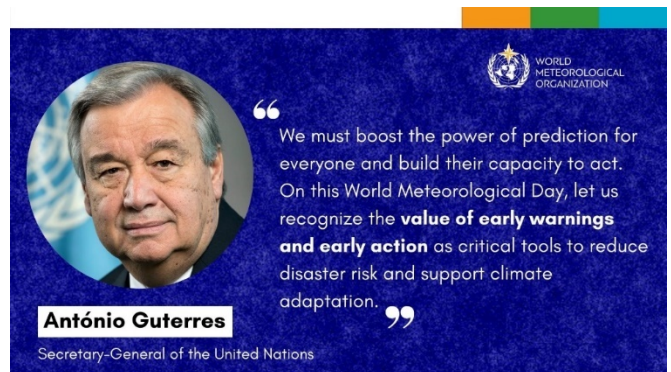
Executive Summary

This Annual Report documents the activities undertaken by the APFM Technical Support Unit during the reporting period 01st August 2022 to 31st July 2023.

The Associated Programme on Flood Management (APFM) has continued to promote and apply Integrated Flood Management (IFM) strategies and approaches at local, national, and regional levels in line with the APFM Business Model. During the reporting period, the IFM Helpdesk operated by the APFM Technical Support Unit (TSU) was instrumental in providing support to the WMO Members (National Meteorological and Hydrological Services (NMHSs)), international organizations, academia, NGOs and private entities, etc. strengthening their flood management approaches. The APFM TSU is leading the implementation of various activities of ongoing WMO projects such as Volta Flood and Drought Management, CREWS Caribbean and Cambodia and Lao PDR, and Flash Flood Guidance System (FFGS) with technical support from the Support Base Partners. The APFM TSU is supporting the [UN Early Warning for All initiative \(EW4All\)](#) mainly highlighting in its [Executive Plan 2023-2027](#) the availability of guidance or training materials on IFM including last mile connectivity along with presence of 30 plus Support Base Partners (SBPs) and their expertise to implement projects or capacity development workshops at local, national and regional levels. Just to restate, UN Secretary General mandated WMO during the world meteorological day 2022 to ensure that everyone on this planet are covered by early warning system within next five years.

Also, APFM TSU participated in the UN Water conference in March 2023, which was held after 46 years in New York. The APFM programme was presented to various participants attending from governmental agencies, international organizations, academia etc. APFM jointly with the Integrated Drought Management programme (IDMP) of WMO and GWP submitted the Water Action Agenda [commitment](#) to accelerate the implementation of SDG 6 and other water-related goals and targets of the countries mainly improving existing or establishing new people-centric and integrated EWS for floods and drought hazards.

The APFM TSU is continuously improving the visibility of the IFM HelpDesk (which received 75 requests in the last reporting period) at various WMO and GWP meetings, UN conferences and project workshops to inform flood managers, practitioners, and researchers about the existing IFM tools and policy documents, requesting assistance for capacity development workshops and pilot projects. The Water Youth Network (WYN) with their volunteers continued to provide support on communicating APFM through social media and engagement of youths through the youth led EWS competition.



The APFM TSU will continue to work with other WMO technical divisions and GWP regional offices to identify opportunities for collaboration on EW4All initiative mainly through the co-development of projects on integrated flood and drought management with the involvement of the SBPs.

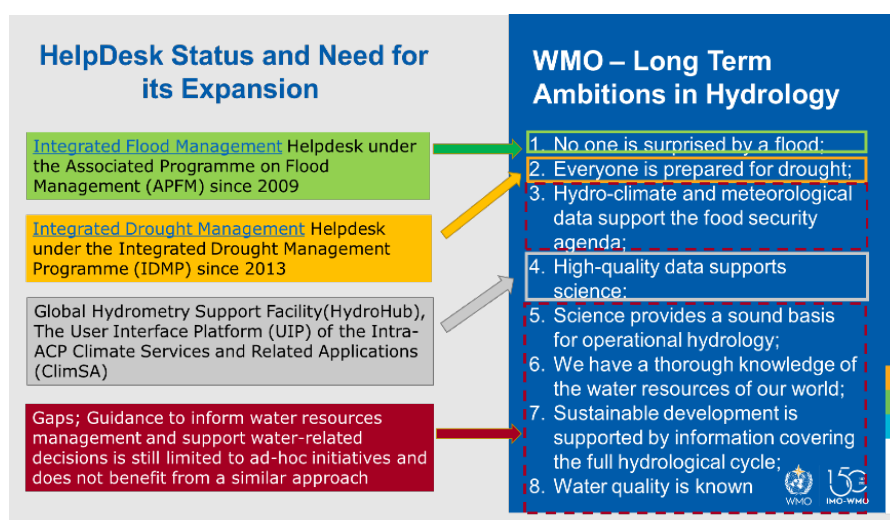
APFM Institutional development

19th World Meteorological Congress – approval of docs related to the Hydrological Action Plan and SC-HYD Activity 7

The World Meteorological Congress (Cg), the supreme body of the World Meteorological Organization (WMO), held its 19th session from 22 May to 2 June 2023. It assembles in a hybrid model all 193 Member Countries of WMO for reviewing the strategic documents, budget for the next session 2024-2027 and other documents of the constituent bodies. During this, the congress approved the Strategic Plan 2024-2027 to promote WMO's vision that "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.” One of WMO’s top strategic priorities – implementation of the UN Early Warnings for All Initiative – was the focus of the high-level dialogue on the opening day. The theme was *Accelerating and Scaling up Action at the Country Level which will strengthen the capacities of the NMHSs in developing early warning systems at local, national and regional levels*. Also, during Congress-19, elections were held for the post of new Secretary General, President, Vice-President and Executive Council Members. Prof. Celeste Saulo of Argentina has been appointed as the first female Secretary-General and the next WMO President will be Dr. Abdulla Al Mandous Director General of the National Center of Meteorology, United Arab Emirates.

The Congress session was divided into thematic days such as Services day, Infrastructure Day, Science Day, Water and Cryosphere Day, Capacity Day, etc, during which documents, and resolutions related to the particular activities were presented and approved by the WMO Members. During the Water and Cryosphere day, [Doc 4.1 \(9\) IFM and IDM HelpDesks expansion to inform Integrated Water resources management \(IWRM\)](#) related topics was presented (previously approved by WMO Standing Committee of Hydrology (SC-HYD) and Hydrological Coordination Panel (HCP) during 2023 and early 2023) later approved by the WMO Members through Resolution 19 (Cg-19). This document approval will allow APFM and IDMP to provide technical assistance to Members on the whole operational hydrology expertise covered by the eight long-term ambitions. The APFM & IDMP TSUs under the leadership of the SC-HYD will draft the Implementation plan for the expansion of the HelpDesks with the involvement of the SBPs.



WMO Hydrological Assembly

According to Regulation 26 of the WMO, during each session of Congress the WMO Hydrological Assembly shall be convened. According to this, the 3rd session of the Hydrological Assembly was organized as an open committee of the WMO Congress. During several sessions of the Hydrology Assembly APFM and SBPs presented their on-going work (including on-going projects) carried out in various Member countries as well as contribution to EW4All initiative mainly to strengthen integrated flood and drought management capacities.

The Hydrological Assembly was attended by 292 representatives of 121 WMO Members. Among those, 68 were Hydrological Advisers, and other participants included experts from national hydrological or meteorological agencies as designated by Members. The Hydrological Assembly allows hydrologists representing Members to make recommendations on the key strategic gaps and priorities of operational hydrology for the forthcoming period. The Hydrological Assembly, noting the limited resources to implement the Plan of Action despite its alignment with the WMO Strategic Plan 2024–2027, suggested prioritizing in the upcoming financial period the following activities:

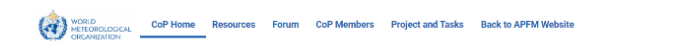
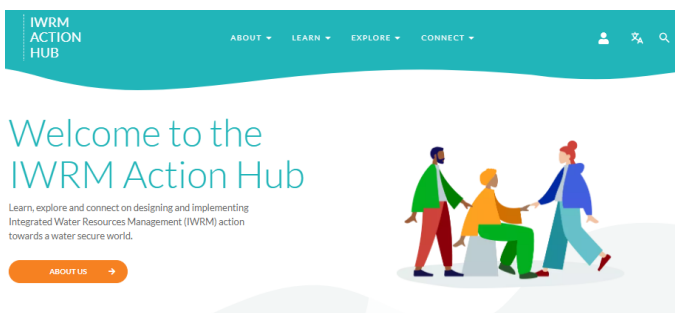
(a) Capacity development concerning in-situ hydrological observations and local hydrological services

delivery within the Earth system approach

- (b) Dialogue and cooperation between agencies involved in meteorology, hydrology and disaster management, scientific institutions, and academia in order to strengthen the links between operational hydrology and applied research
- (c) The strengthening of subregional transboundary cooperation where appropriate

Community of Practice (CoP) on E2E-EWS for Floods Forecasting

The WMO community of practice on End-to-End Floods Forecasting and Early warning system (E2E-FFEWS) website developed under the SC-HYD Activity 3 is still under development before being open for public use. The SC-HYD Members are currently prioritizing the finalization and publishing of interoperable hydrological models and platforms and following that the CoP website will be finalized and operationally available for the users. The SC-HYD Members are also exploring other existing CoP available such as the recently launched GWP [IWRM Action Hub](#) to develop synergies and linkages with the WMO CoP on E2E-FFEWS.

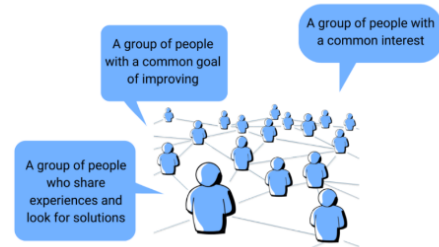


Community of Practice area for E2E-EWS-FF

Welcome to the WMO Community of Practice for Flood Forecasting and Warning.

This space is dedicated to all topics related to the end-to-end stages involved in the early warning of floods. This Community of Practice is a friendly space for the sharing of knowledge and experiences. It is a space where best practices, lessons learnt, case studies, stories, tools, working methods, and ways of addressing recurring problems can be shared for the common good.

What is Community of Practice



Inventory

Many simulation models have been produced that could be used for river stage forecasting. In fact, there are so many models and platforms available that it can be difficult to quickly determine which to use.

The primary purpose of this inventory is to provide information about models and platforms whose use is most likely to bring long-term success in flood forecasting and early warning systems. The inventory is designed to help scientists and engineers from a National Hydrological Service who are trying to select appropriate models and platforms for their needs. Screening criteria have been used to limit the number of models and platforms and help assure scientists and engineers selecting a model or platform from the inventory that they will have the best chance for success.



Hydrologic



Reservoir



Hydrodynamic



Platforms

Show 10 entries

Search:

Type	Short name	Long name	Link
Hydrologic	HEC-HMS	Hydrologic Modeling System	Click here to go to the model page
Reservoir	HEC-ResSim	Hydrologic Engineering Center Reservoir System Simulation	Click here to go to the model page
Hydrodynamic	HECRAS 2D	Hydrologic Engineering Center's (CEIWR-HEC) River Analysis System (HEC-RAS)	Click here to go to the model page
Platforms	Deft-FEWS	Deft Flood Early Warning System	Click here to go to the model page
Hydrologic	GRM	Grid based rainfall-Runoff Model	Click here to go to the model page
Hydrologic	DWAT	Dynamic Water resources Assessment Tool	Click here to go to the model page

Showing 1 to 6 of 6 entries

< Previous Next >

Inventory of models and platforms for flood forecasting. Accessible [here](#).

APFM implementation strategy for the next 3 years

APFM implementation strategy was discussed with the SBPs during the previous APFM SBPs forums in 2022 and 2023 and the TSU has made progress in drafting the initial strategy goal and relevant themes. The APFM strategy goal is to support Member countries establishing and strengthening Integrated Flood Management with a focus on flood early warning systems including capacity development for warning services and early action at local, national and regional levels. This will be achieved through:

- Proactively engaging and supporting countries through the UN Early Warnings for All (EW4All) initiatives.
- Continue to provide assistance on flood management related topics mainly rapid guidance on IFM, capacity development workshops and pilot projects through IFM-IDM Helpdesk.
- Ensure a Community of Practice is enhanced or improved with specific guidance tools and discussion forums on topics related to Integrated flood management.
- Strengthen community-based flood management and provide overall guidance on inclusive and people-centric flood management approaches.
- Continue designing and implementing projects on Integrated approach to floods and drought management not in silos.



As an outcome to Congress-19, WMO has started the development of a Programme on Weather, Climate, Hydrological, Marine and Related Environmental Services. This Programme should constitute the intermediary level between the Long-term Goal “Better serve societal needs: delivering, authoritative, accessible, user-oriented and fit-for-purpose information and services” contained in the 2024-2027 Strategy, and the Annual Operating Plans. The programmatic approach will allow better determining roles and responsibilities in the implementation of the 2024-2027 Strategy (including the EW4All initiative) and will be discussed at the SERCOM-3 session in March 2024 for presentation at EC-78 in June 2024. It is therefore suggested to ensure that the APFM Strategy (already linked to the WMO Vision and Strategy for Hydrology and its related Plan of Action as well as the GWP’s 2020-2025 Strategy and the 2023-2025 Work Programme) will also be finalized in a way to fit in, and complement when needed, the Weather, Climate, Hydrological, Marine and Related Environmental Services Programme. The APFM Strategy will therefore be further developed in the following months and presented (in a draft form) at the next virtual SBP meeting in March/April 2024, and then to the SBP Annual Forum in August 2024.

APFM Business model

APFM TSU is continuously promoting and applying Integrated Flood Management (IFM) strategies and approaches at local, national, and regional levels in line with the APFM Business Model. This is accomplished with financial resources from various sources as mentioned below:

1. In-kind contributions (primarily through the provision of fixed-term staff to the TSU) from WMO and GWP as APFM is now part of the regular WMO strategy for hydrology (long term ambition 1-No one is surprised by floods) and its action plan. Over the last years, these have been the major source of contributions to the TSU.
2. Core funding from donor countries, such as Japan, Switzerland or the Netherlands in the past, to implement APFM core activities in the development of new guidance material, conduct capacity development workshops, outreach activities and support cost for staffing the Technical Support Unit (TSU). However, the core donor for the APFM has not been available anymore after the end of 2016.
3. Implementation of projects or expert services through external donors, e.g. the Adaptation Fund which allowed the provision of Volta Basin project manager to monitor the project implementation and support the core activities of the APFM. APFM is continuously looking for more opportunities through APFM HelpDesk to design and develop new projects (jointly with the SBPs) allowing the possibility for staffing and to update or development of new tools and guidance materials. Some of the other WMO projects such as FFGS in Malawi and Costa Rica, CREWS Cambodia and Lao and CREWS Caribbean allowed SBPs to provide technical support and recovery of their staff costs.

Letter of Engagement with the Support Base Partners

During the reporting period, some of the existing or new SBPs who have signed the new Letter of Engagement (LoE) or are presently under finalization are as below:

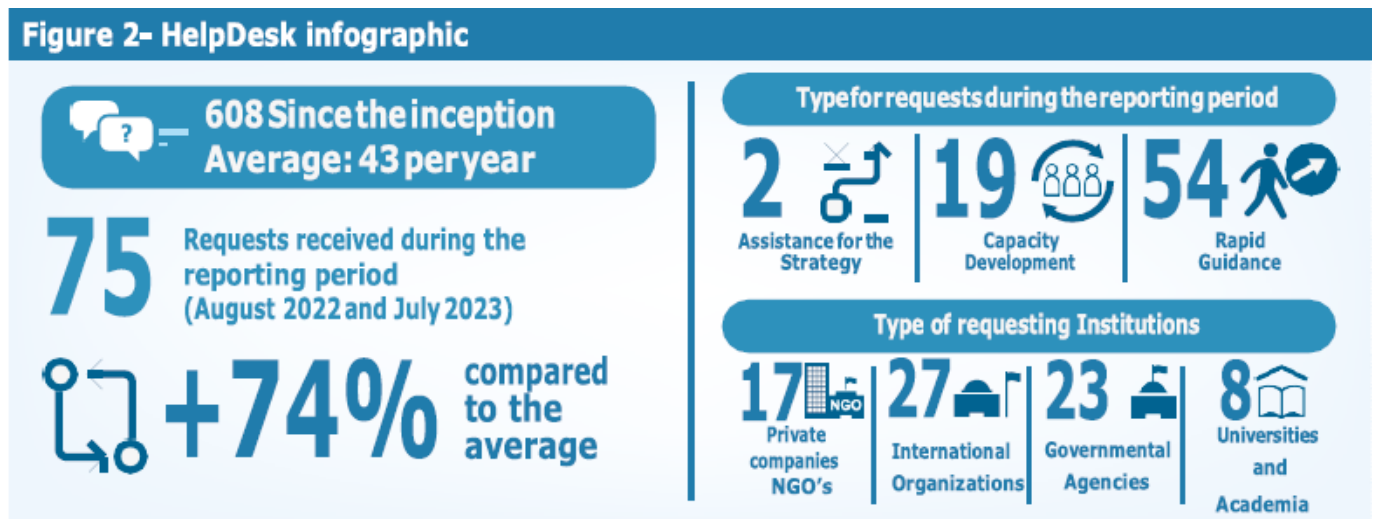
Name of the SBPs	Areas of cooperation
VORTEX.IO	<ul style="list-style-type: none"> - Provision of hydrological observation station - Data science, remote sensing - Flood and drought early warning system
Asian Disaster Preparedness Center (ADPC) (renewal)	<ul style="list-style-type: none"> - Multi hazard early warning system - Community based flood and drought management - Capacity development on flood preparedness and management
People in Need (PIN)	<ul style="list-style-type: none"> - Flood early warning system in rural and urban contexts - Transboundary early warning dissemination and communication mechanism - Capacity development on integrated flood management

Technical Assistance through IFM HelpDesk



The IFM Helpdesk continues to receive requests for assistance from users working on topics related to flood management and in general IWRM. In the reporting period, 75 number of requests were received from various users of IFM HelpDesk. Details about the HelpDesk request are presented in the below table (check Annex 1 for details on the requests received in the reporting period and refer to previous annual reports for earlier requests).

Figure 2- HelpDesk infographic



Volta Flood and Drought Management (VFDM) Project (September 2022- July 2023) and the way forward

The Adaptation Fund Secretariat selected the VFDM project for a [regional portfolio monitoring mission](#) in order to highlight implementation experience (good practices, lessons learned, challenges etc.) that will benefit future projects submitted to the Adaptation Fund for funding. During the 3rd project technical advisory committee meeting held on 2nd December 2022, the VFDM project partners and countries informed the Adaptation Fund about the implementation delays encountered due to the global Covid-19 pandemic and requested for one year no cost extension. This was eventually approved by the Adaptation Fund Board and the project termination date is now extended until end of June 2024.

During the reporting period, the implementation of the [Volta Basin Flood and Drought Management \(VFDM\)](#) project activities was carried out jointly with the APFM Support Base Partners namely Centro Internazionale in Monitoraggio Ambientale (CIMA) Research Foundation, International Union for Conservation of Nature (IUCN), Knowledge and Innovation (K&I).



Figure 1: VOLTALARM EWS developed under the VFDM project and training on impact-based flood forecasting.

The below table provides a list of major planned and completed activities of the VFDM project.

Activities completed until July 2023	Activities planned from August 2023- June 2024
National consultation reports for the Six countries and Volta Basin Authority for developing EWS on floods and drought	Install the National Centralized Database (WMO Meteorological, Climatological and Hydrological (MCH) database) and integrate the existing hydrological and meteorological observation data
Feasibility study on the application of the IUCN Red List of Ecosystems and guidance documents to promote ecosystem services through Nature-based solutions in the Volta Basin are completed	Visualization of the real-time Hydro-meteorological data from the national agencies under the myDewetra VOLTALARM EWS
Development of floods and drought risk maps and climate scenarios for the Volta Basin region with the support of 61 national technicians and CIMA Research Foundation. Development of long-term flood and drought risks prevention and management strategies for the Volta Basin.	Develop the drought monitoring system for the Volta Basin region by working with the national agencies and WMO drought expert team.
Design and development of the VOLTALARM multi-hazard early warning system for stakeholders in the Basin, namely the National Meteorological and Hydrological Services, and disaster management authorities. Link to the VOLTALARM EWS https://myDewetra.volta.world	The VOLTALARM EWS will be pilot tested in 10 prone areas of the Volta Basin during the monsoon and dry seasons in order to identify the applicability and effectiveness of the early warning-early action at the community level
Provision of training to over 200 participants from project countries through distance learning courses on Basic and Advanced Hydrology, Geospatial information, drought monitoring, and early warning services and response in the Volta Basin region	Continue to review and update national and transboundary policies, action plans and institutional capacity for integrated flood and drought management and link it with the existing climate change adaptation plans (NAPA, NAP etc.).
Provision of in-person training to over 200 regional, national and local stakeholders on gender mainstreaming and nature-based solutions for flood and drought management in the Basin	Develop the phase two of the Volta Basin Flood and Drought Management project for the entire region of the six countries and submit it to donors or financial institutions for funding

Implementation of community-based flood and drought management activities in the six communities of the Volta Basin.	Build synergies and complementarities with other on-going or completed projects and visualize any available products or tools on flood and drought monitoring and forecasting system (for eg: FEWS White Volta and Oti Basin project, REWARD project)
Review of the existing policies, plans and guidelines on flood and drought management at the regional, national and local levels of the Volta Basin.	Prepare for the project closure as well as for project final evaluation by an independent consultant
Development of the impact-based flood forecasting system for the Volta basin region and regional Bulletin to develop and share it with the stakeholders	

The third-year project progress report (PPR-III) was submitted to the Adaptation Fund in September 2022, including the request for one year no-cost extension of the project implementation. Following technical review from the Adaptation Fund Secretariat, the PPR-III report was approved and the final 4th tranche of funds was transferred for the implementation of the 4th year pending project activities during January 2023.

The APFM TSU will continuously work with the SBPs to develop a sustainability plan for the project to ensure that the project outputs are operational and sustained by the countries and regional authority (Volta Basin Authority) even after the completion of the project.

Provision of Technical Expert Service to WMO/GWP initiatives and new Proposal Development

CREWS Cambodia and Lao PDR

Under the framework of CREWS initiative, WMO, together with World Bank and UNDRR is leading the implementation of Cambodia’s flood and drought early warning system. The overall goal of CREWS Cambodia and Lao PDR project is to enhance the capacities of national and regional stakeholders/institutions to provide hydromet, early action and response services to ensure that vulnerable populations in Cambodia and Lao PDR are reached through effective and inclusive risk-informed early warning services. The APFM TSU with the SBPs (Asian Disaster Preparedness centre and CIMA Research Foundation) is supporting the project mainly the NMHSs and disaster management agencies with the development of national flood and drought risk maps, hydrological modelling and impact-based flood forecasting in the three pilot basins of Cambodia and Lao PDR and community-based flood management (supporting directly around 10,000 individuals) in Cambodia. The project will officially complete its implementation by July 2025.

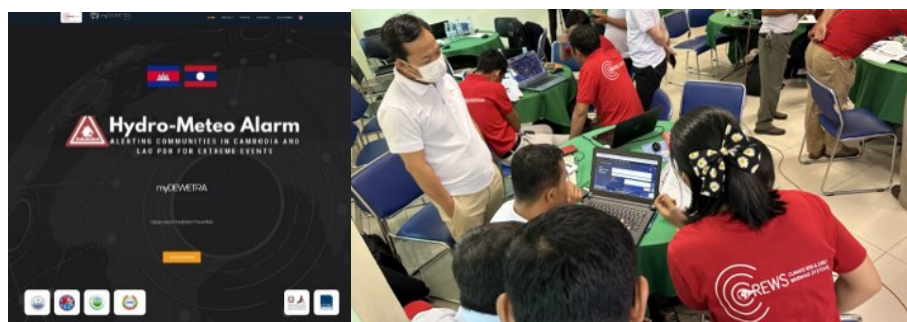


Figure 2: mydewetra visualization platform (<https://cl.mydewetra.world>- under development) training session with the national agencies of Cambodia and Lao PDR

CREWS Caribbean - Implementation of the CBFM activities in Antigua and Trinidad

The APFM TSU together with Knowledge & Innovation (SBP) were contacted by the WMO focal point of the CREWS Caribbean project to provide technical support for implementing community-based flood management activities in Antigua and Trinidad, which was funded by the CREWS Caribbean project and is implemented jointly by the WMO, World Bank and United Nations office for Disaster Risk Reduction (UNDRR). The overall objectives of the CBFM implemented activities were to provide necessary theoretical knowledge and conduct practical exercises to increase the understanding on the concepts of floods and the different phases of flood management among community representatives and relevant agencies of Trinidad and Antigua. Both CBFM projects were successfully completed by the end of June 2023 and APFM with Knowledge & Innovation is now finalizing a Manual on community-based flood management in Caribbean which will be made available for other countries where the Caribbean where similar issues and needs are identified.



Figure 3: Community based awareness workshop and activities in Antigua and Trinidad implemented under the CREWS Caribbean project

Community based flood management projects in Malawi and Costa Rica under the WMO flash flood guidance system (FFGS) project

Similar to the CREWS Caribbean project, APFM TSU together with the support base partner Knowledge and Innovation supported the community-based flood management (CBFM) projects in Malawi and Costa Rica, which were locally implemented by the National Red Cross societies. The project enhanced the self-help capabilities of the communities to the Hydro-Meteorological events including developing early warning dissemination channels and improving end users' response with gender mainstreaming. Overall, the project improved in-country response to multi-risk information and warnings through increased coordination between NMHSs and DRM authorities, and other relevant authorities at the national and sub-national level and moved towards translating and communicating hydromet impact-based warnings to vulnerable communities and enable early action measures. This activity contributed to the overarching FFGS project goals addressing a critical gap in reaching the "last mile". A manual for community-based flood management is under development and will be shared with other FFGS countries to improve their warning services to communities and early action.

Short video on the community-based flood management project in Costa Rica and Malawi is available [here](#).





Figure 4: Awareness workshop and activities in Malawi and Costa Rica implemented under the FFGS project

World Bank - An EPIC Response: Innovative Governance for Flood and Drought Risk Management

During 2021-2022, APFM and IDMP TSU provided support in reviewing the draft [EPIC response](#) tool which was later published online for use by policymakers and practitioners worldwide. Following this World Bank requested the joint team of APFM and IDMP to provide support in the pilot testing of the EPIC response publication in West Africa and South Asia through in-country stakeholders workshops. APFM TSU organized a virtual knowledge session for the APFM and IDMP Support Base partners on the EPIC response for implementing the tool and methodology in various on-going or future planned flood and drought risk management projects.

Gender mainstreaming workshops and finalization of the training manual

During the reporting period, the APFM TSU conducted training workshops in Costa Rica, the Caribbean and Southern Africa Development Community regions on mainstreaming gender into E2E-FFEWS and IFM. The training workshops provided the opportunity to understand the existing issues and needs related to gender and identify activities for mainstreaming gender into E2E-EWS value chain. Following the training workshops, SBP Knowledge and Innovation is supporting APFM TSU to finalize the training manual for mainstreaming gender, incorporating feedbacks and lessons learned from the above training workshops. The refined training manual is expected to be available for general use by early 2024.



Figure 5: Gender mainstreaming workshop in Caribbean, Costa Rica and SADC region

Women hydrologists empowerment during WMO Congress-19

During the Hydrological Assembly of Congress-19, sixteen female participants (ten hydrologists, six meteorologists) from the Flash Flood Guidance system project countries were invited to the women empowerment workshop. The overall objective of workshop was to foster practical leadership capabilities mainly enhancing skills in communication, negotiation, and consensus-building. Foremost among the outcomes was the formulation of the Female Empowerment Statement, articulating five recommended actions poised for presentation at the Nineteenth World Meteorological Congress (Cg-19) and the Hydrological Assembly. The statement from the workshop is available [here](#).



- 1 To ensure that all delegations to WMO Congress and Hydrological Assembly have a minimum of one female representative
- 2 To increase the number of women employees and in leadership positions through transparent recruitment and promotion processes within the NMHSs, WMO constituent bodies and expert teams
- 3 To ensure gender balance in workshops and trainings and offer more female empowerment programs on an annual basis
- 4 To provide mentorship and scholarships for women in the fields of meteorology and hydrology in the 6 RAs
- 5 To establish female experts networking groups across regions and globally, to provide an active, evolving resource to women at all levels

New Project development on activities related to Integrated Flood Management

- **Early warning system related activities in the Lake Chad, Central Asia and Pacific regions.**

The APFM TSU is supporting the design and development of various WMO pipeline projects which are focussed on early warning system for floods and drought. One of the advanced project is the one of [Lake Chad Basin](#) for which the Adaptation Fund has approved the concept note and the WMO project team submitted the project proposal for review and endorsement for implementation in May 2023. Similarly, other regional project pre-concept note in Central Asia and Pacific regions are developed with the technical support of the APFM TSU and will be submitted to the Adaptation Fund for funding.

- **Hydrological Status and Outlook System in Bangladesh and Nepal (HydroSOS-BaNe)**

The APFM TSU together with the WMO HydroSOS team is leading the development of the HydroSOS-BaNe project in Bangladesh and Nepal (initially planned for the region of Ganga Brahmaputra and Meghna Basin). The project will focus on the development of the HydroSOS EWS, risk maps, community-based flood management and reviewing and updating of climate change adaptation and disaster risk reduction policies at local, national and regional levels. During the 40th Adaptation Fund Board meeting held between 21-24 March 2023, the HydroSOS BaNe regional project pre-concept note was endorsed. Following this, the WMO team organized a regional workshop to review and finalize the concept note which will be submitted to the Adaptation Fund during early August 2023. The APFM TSU will reach out to various SBPs for their support in developing and implementing the specific project activities at the national and regional levels once the full project proposal is approved (expected around April 2024) by the Adaptation Fund for implementation.



Figure 6: Regional workshop in Phuket to finalize the concept note for the HydroSOS BaNe project

- **Water at the heart of Climate Action (WHCA)**

Four international partners (WMO, International Federation of the Red Cross and Red Crescent Societies (IFRC), UNDRR, and Systematic Observations Financing Facility (SOFF) are collaborating to develop the [project WHCA](#) under the framework of the UN Early Warning for All Initiative (EW4All) which will be funded by the Ministry of Foreign Affairs (MoFA) Netherlands. The APFM TSU is leading the development of the

WHCA project in the Nile Basin countries (Ethiopia, Sudan (presently on hold due to civil war), South Sudan and Uganda) and will support the targeted countries in strengthening their regional, national and local Hydro-Meteorological capacity on observation, data management, modelling and forecasting products for early warning services and early action at the local level. As agreed with the donor and implementation partners, the project will focus only on water-related hazards (especially floods and drought) observation, monitoring, and forecasting for early warning services (which are the main activities of WMO). The concept note of the project was approved and the one-year inception phase will commence in mid-August with country workshops.

- **Other new opportunities – contribution from the SBPs**

The APFM TSU welcomes new project ideas or opportunities for collaboration to support with IFM related activities development and implementation in line with the APFM Business model.

Resource Mobilization and Outreach

The APFM TSU is constantly looking for opportunities to organize or attend appropriate events and conferences where its available resources and expertise can be presented to a wider audience. The programme outreach will also help disseminate existing tools and expertise, identifying new avenues for partnerships especially attracting donors to fund the core activities or pilot projects. Some of the events actively organized or attended by the TSU are highlighted below:

APFM 20th Anniversary celebration during WMO SERCOM-2 session and outreach stand during Congress-19

APFM TSU continued the 20th Anniversary celebration of APFM with an interactive side event during the WMO SERCOM-2 session which was attended by more than 70 Member countries' representatives working in the national meteorological and hydrological services. On one hand, the side event served as an opportunity for the APFM TSU to raise awareness among Member countries regarding the APFM programme's IFM guidance materials and requesting support via the IFM Helpdesk. On the other hand, it served as a platform to enhance the visibility of APFM activities.

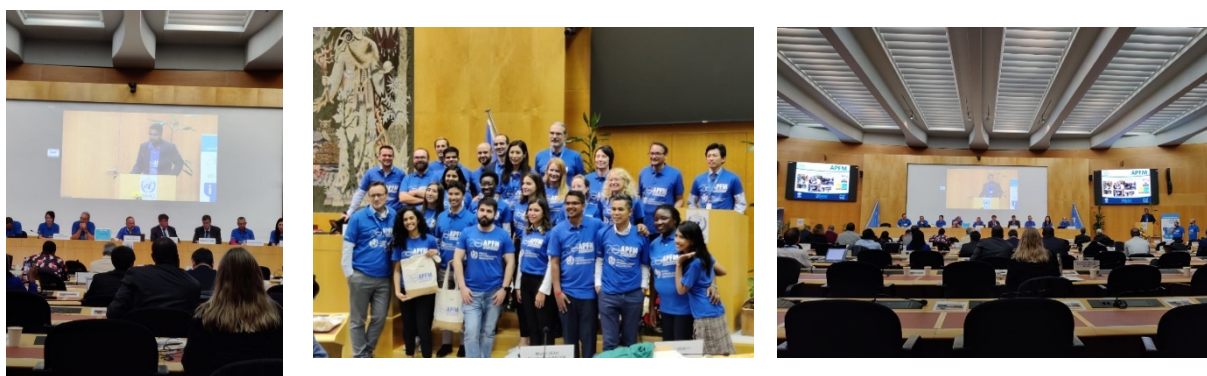
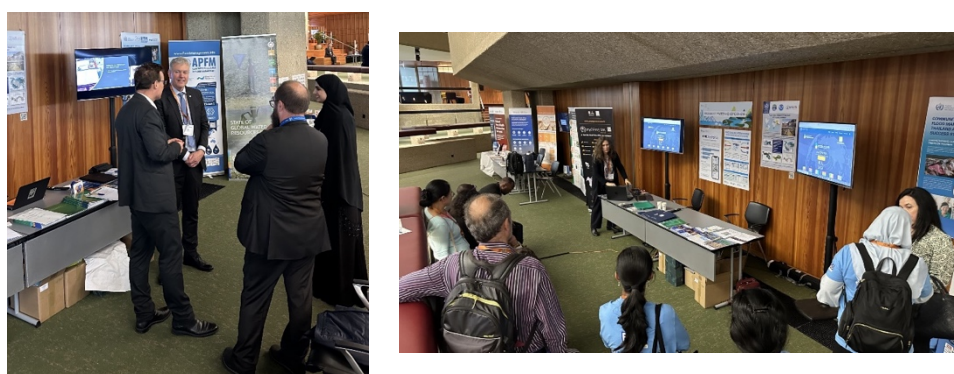


Figure 7: APFM 20th Anniversary side event organized during the WMO SERCOM-2 session

Also, APFM TSU also had a stand for disseminating APFM products and availability of IFM HelpDesk to Members for requesting assistance on flood management related tools, capacity development or pilot projects.



Second Global Integrated Flood and Drought Management Competition for Youth-led Projects

Following the success of the two youth-based project competitions organized in 2017 and 2022, the second edition Global Integrated Flood and Drought Management Competition for youth led projects on flood and drought early warning services was organized jointly by APFM, IDMP and Water Youth Network (WYN) during June-July 2023. It is this year for the first time the Youth component of the [Water Changemakers Award](#). More than 35 project ideas were submitted by youths worldwide; following a series of screening and pitching sessions, 14 project ideas were shortlisted for the second round mainly to develop a detailed concept note. Out of 14 shortlisted projects and the quality of the concept note, only 5 or 6 projects will be selected by end of August 2023 for the pitching to the Jury. The Jury, composed of WMO, GWP and WYN will select one or two winners for implementing their project with a financial support of 3000 Euros per project from WMO and GWP. The two competition winners will be invited to present their project information during the virtual session of the APFM SBP forum.

WYN volunteers and social media outreach

Eight volunteers from WYN continue to provide support in APFM's social media outreach activities. In the last reporting period, more than 30 APFM activities or project related events were disseminated under the APFM website and social channels such as Facebook, Twitter and LinkedIn where some of the SBPs are active and are provided with regular information. The Volunteers are also supporting in disseminating activities of IDMP as well as in organizing the youth-led project competition. APFM TSU is thankful for the in-kind contribution of WYN to support APFM's core activities.

Flash Flood Guidance System Global workshop- APFM visibility

APFM TSU participated in the second Global Flash Flood Guidance System (FFGS) workshop organized in Skopje, North Macedonia during the week of 19th May 2023. More than 200 participants from 60 plus countries attended the one-week hybrid workshop to share their experience of using FFGS system and discuss the way forward. APFM TSU participated in the session on 'From knowledge to action: Reaching the "Last Mile"' with the representative from Costa Rica and Malawi and shared the importance and experience of implementing community-based flood management activities to improve last mile connectivity and early response action.



Figure 8: APFM TSU is presenting community based flood management activity to FFGS workshop participants

APFM participation in the Europe-INBO 2022 conference

Three APFM TSU members were invited to participate in the Europe-INBO 2022 conference which was held in Annecy during September 2022. During the session-5 on Transboundary and international cooperation, APFM TSU member Dr Hwirin Kim presented information on APFM related activities mainly VFDM project as a successful example of transboundary cooperation and management of flood events in the Volta Basin countries.



The way forward

For the next period, the APFM TSU with some of the SBPs will continue implementing pending activities (planned between August 2023 and July 2024) and officially close the Volta flood and drought management (VFDM) project. The TSU will continuously update all SBPs regarding the implementation of the project activities with the developed tools, methodologies and success stories learned in flood and drought management so that it can be applied in other regions.

In parallel, the APFM TSU will continue to develop or implement new projects focusing on E2E-EWS-FF (Integrated Flood and Drought management in general) in various regions (national, transboundary) mainly supporting the UN call on early warning system for all in the next 5 years such as WHCA, HydroSOS BaNe, community-based projects through CREWS initiatives, FFGS, Early Warning System for Flood in MHEWS environment. The APFM request for active participation of the SBPs as well as identify new opportunities through GWP, particularly its Regional and Country Water Partnerships (RWPs and CWPs). These would be submitted to the relevant call for proposal or financial institutions such as European Horizon, adaptation fund, global environment facility or national foreign affairs of EW4All supporting countries.

The APFM TSU will continue to work with relevant WMO constituent bodies to support core activities of the APFM such as the IFM HelpDesk management and expansion to IWRM related to topics, Community of Practice, Communication and Outreach, and Coordination with the SBPs.

Furthermore, APFM will continue to regularly collaborate with the SBPs through the virtual SBP forum, for example, through webinars or meetings which will be held every 3-6 months. This would allow periodical engagement with the SBP network to provide updates, brainstorm and discuss possible ideas or synergies in project proposal development, expertise service, communication, and outreach.



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FINAL ANNUAL REPORT 2022-2023 – ANNEX-I



Date issued
October 2023

Report APFM
Report No. 53



WORLD METEOROLOGICAL ORGANIZATION

The World Meteorological Organization (WMO) is a specialized agency of the United Nations. It coordinates the activities of the meteorological and hydrological services of 193 countries and territories and is the authoritative voice on weather, climate and water.



ASSOCIATED PROGRAMME ON FLOOD MANAGEMENT

The Associated Programme on Flood Management (APFM) is a joint initiative of the World Meteorological Organization (WMO) and the Global Water Partnership (GWP). Since 2001 it promotes the concept of Integrated Flood Management (IFM) as an approach to flood management.



GLOBAL WATER PARTNERSHIP

The Global Water Partnership (GWP) is an international network whose vision is for a water secure world. The GWP mission is to advance governance and management of water resources for sustainable and equitable development. Created in 1996 the GWP network is open to all organizations that recognize the principles of integrated water resources management endorsed by the network.

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Graphic Design: Alexia Calvel

Annex-1 List of IFM HelpDesk Requests between August 2022-July 2023

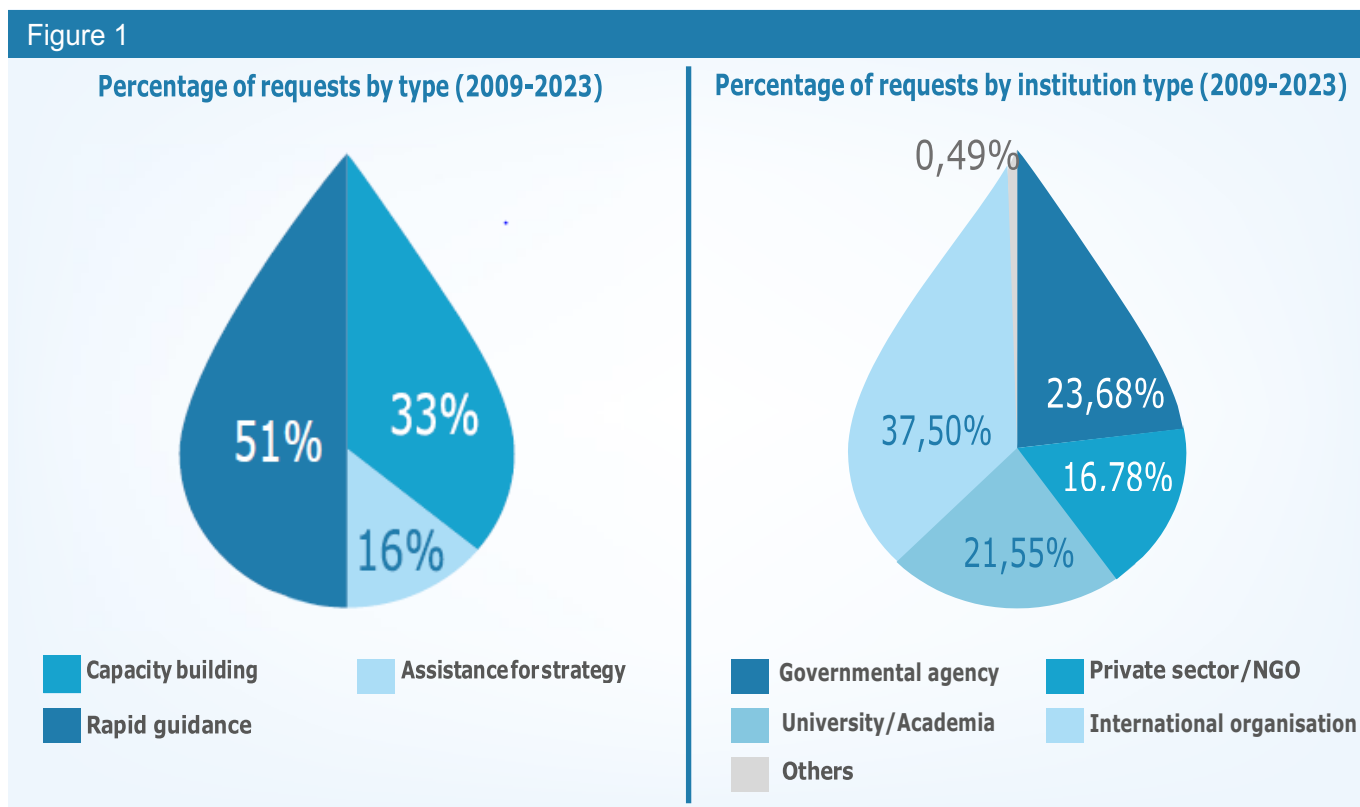
As per the recommendations of the Advisory and Management Committees of 2015, the lists of HelpDesk requests have been aggregated into a single list, independent of the channel through which the request has been received. Criteria on the consistency of aggregated data are provided at the beginning of Annex I in the APFM Annual Report 2015-2016 (APFM Report No. 39).

Since 2009, and as of July 2023, 608 requests have been received with an average of 43 per year. Of these 608, 36 were not fully addressed due to inappropriate requests (e.g. request for conference sponsorship, withdrawal, spam or lack of follow-up) from the requesting party. This translates into a rate of fulfilment of HelpDesk requests of more than 94%.

As shown in Figure 1 the most abundant type of request has been the "rapid guidance" (311 requests - 51.15%), followed by capacity building (202 requests – 33.22%). The category "assistance for strategy" covers around one-sixth of the total requests 15.63% (95 requests) from 2009 to July 2023.

Regarding the requesting institutions, "International Organizations" (245 requests - 37.50%) is the category that made the most use of the HelpDesk, as shown in Figure 2. The remaining requests were from governmental agencies (23.68 %), universities or academic institutions (21.55%), NGOs or private consulting companies (16.78%) and from others¹ (0.49%).

The proportion of IFM Helpdesk remains relatively high (75 requests) this year compared to the last three years with the number of requests, i.e., 2021-2022 (46 requests- 11 months counted), 2020-2021 (62 total requests- 13 months accounted) and 2019-2020 (51 total requests) as shown in Figures 2 and 3.



¹ Others category include technical assistance provided to the group of expertise (for e.g. HELP check in the Annex 1- HelpDesk request 2018-2019 of the Annual Report 2018-2019 for more information) working on specific activities related Integrated Flood Management.

Figure 2 – No. of requests among the three category types and reporting period (2009-2023)

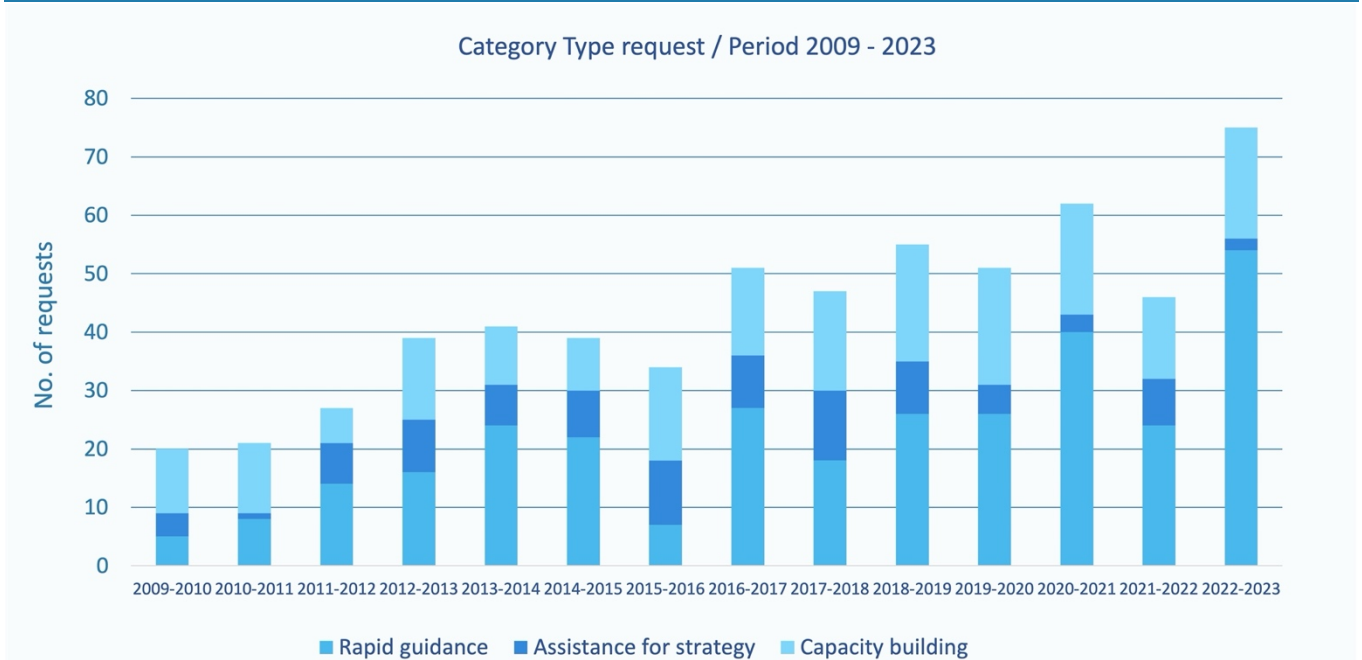


Figure 3 – No. of requests by Institutions requesting and reporting period (2009-2023)

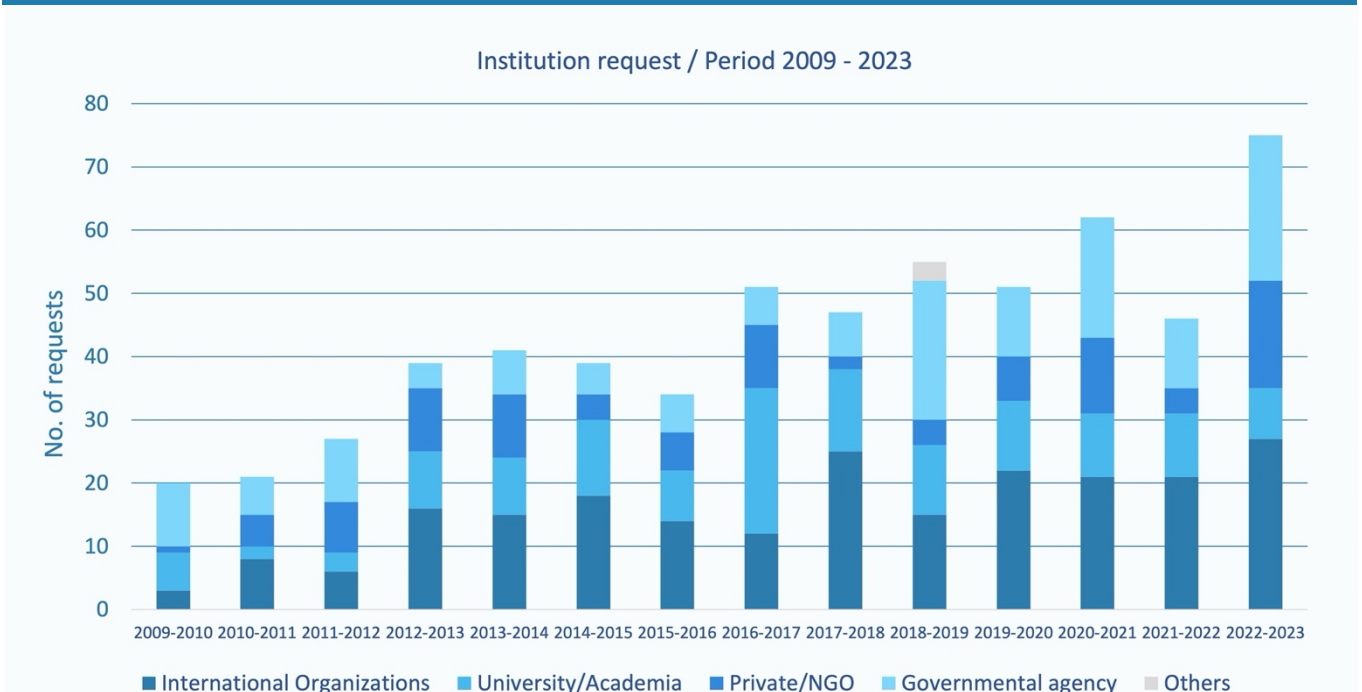
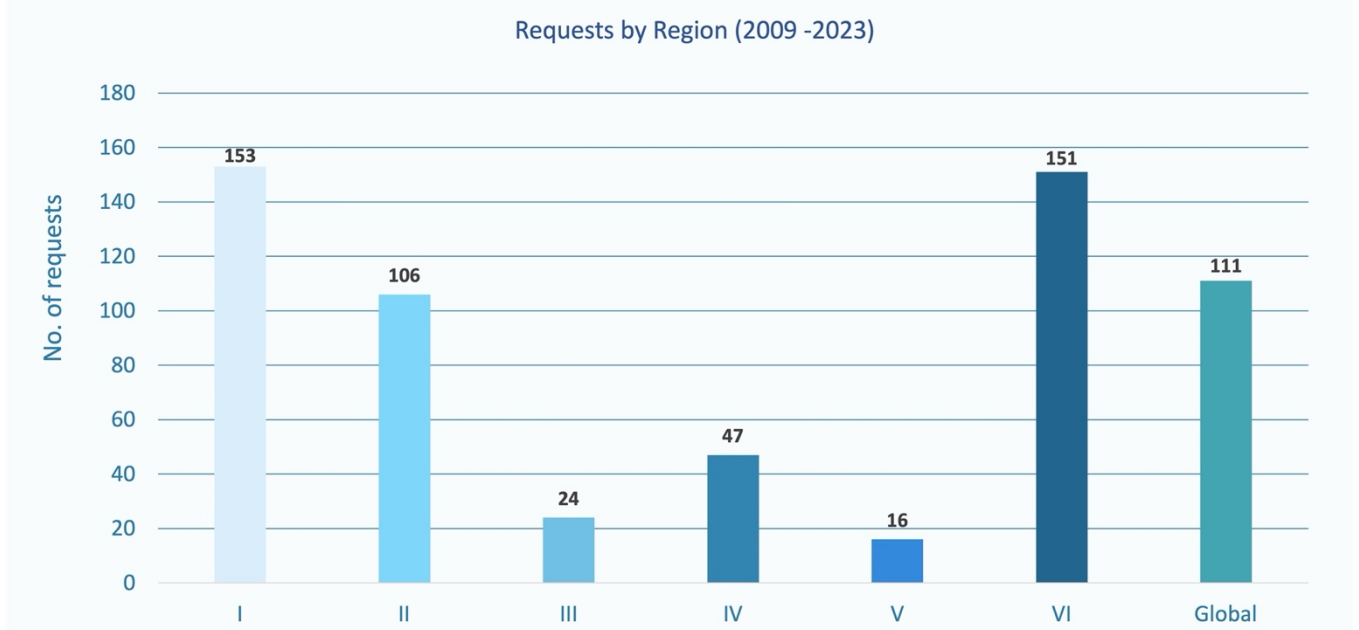
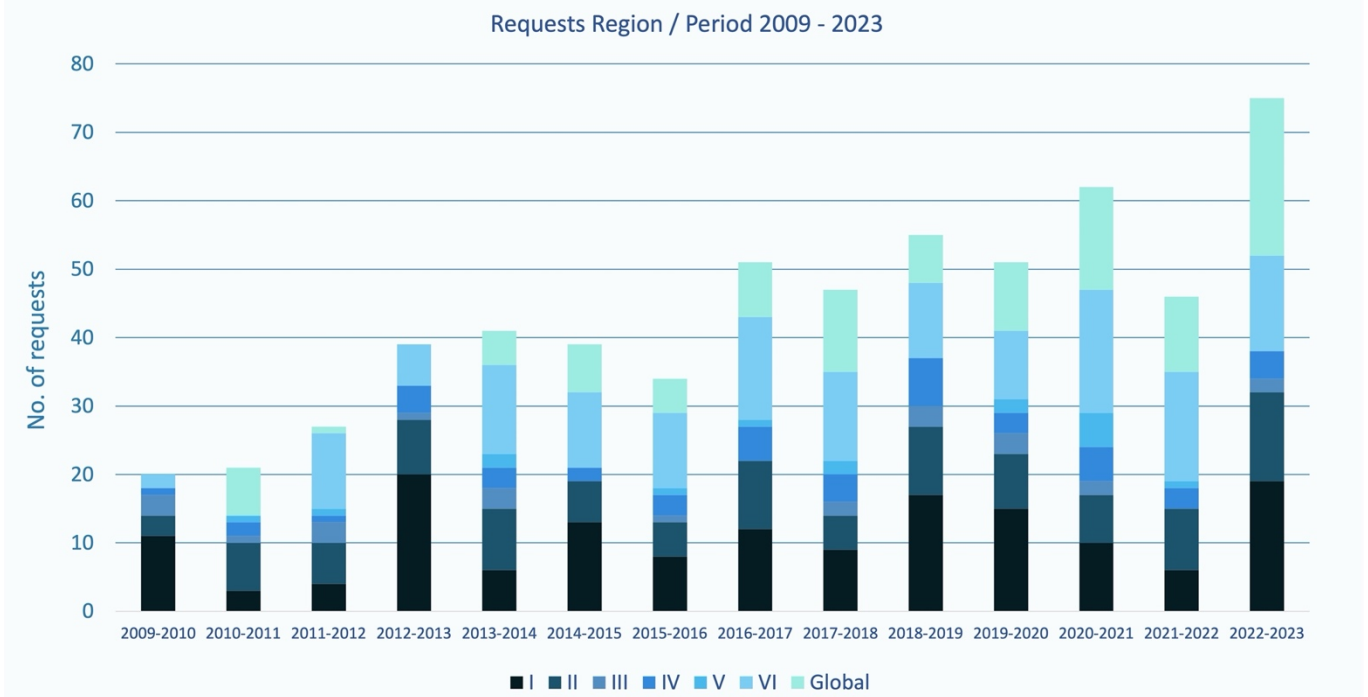


Figure 4 – No. of requests by geographical distributions since 2009



In terms of countries targeted as a result of HelpDesk requests, Figure 5 shows Regional Association(RA) I – Africa as the region that has mostly benefitted from APFM interventions (153 requests since HelpDesk inception), followed by RA VI - Europe (151 requests), RA II – Asia (106 requests), RA IV (47), RA III (24) and RA V (16). In addition, 111 requests fall under the category “Global”, which might reflect activities impacting the global, regional or transboundary level. A distribution by year is provided in Figure 5.

Figure 5 – No. of requests by geographical distribution and reporting period (2009-2022)



During the reporting period (August 2022-July 2023), 75 requests were received and most of them were responded with necessary action: of these, 17 are either ongoing or action is planned for the next reporting period.

A brief summary of the 75 HelpDesk requests received in the reporting period is provided in the table below. The majority of the 75 requests have been addressed. Prior to this reporting period, 533 requests were made and documented in previous annual reports.

List of IFM HelpDesk Requests between August 2022-July 2023

Requests received by TSU in the framework of the HelpDesk						
Requests		Received from 06/2009 to 07/2023			Status:	
(No 1-533) not displayed)		(see previous annual reports)			490 Completed 36 discarded 7 on-going	
No.	Date	Institution, Country	Category (Request came through contacts in WMO or in GWP)	Impact (Region or Global)	Type of request	Status
534	August-22	Deltares (NGO and Private Companies)	Rapid Guidance (GWP)	Global	Request to provide input to the HELP report	Completed
535	August-22	Israel Hydrological Service (Govt Agencies)	Capacity development (WMO)	VI	Presentation at National workshop	Completed
536	August-22	WMO Climate Service Branch (International Organization)	Rapid guidance (GWP)	Global	Provide input for IFM related workshop	Completed
537	August-22	International Centre for Water Resources and Global Change (ICWRGC), Koblenz, Germany (International Organization)	Rapid guidance (GWP)	Global	Provide input for IFM related workshop	Completed
538	September-22	Dewberry consulting (NGO and Private companies)	Capacity development (WMO)	IV	Presentation on WMO hydrological activities	Completed
539	September-22	Myanmar Department of Meteorology and Hydrology (Government agency)	Rapid Guidance (WMO)	II	Guidance and references on Water Resources Management publications	Completed
540	September-22	UNEP (International Organization)	Rapid Guidance (GWP)	Global	Provide input for presentation for WFP on APFM and IDMP	Completed
541	September-22	Student from Germany (University and Academia)	Rapid Guidance (GWP)	VI	Input for master thesis	Completed
542	September-22	XAIDA European project (International Organization)	Rapid Guidance (GWP)	Global	Review of project goals	Completed
543	October-22	World Bank (International Organization)	Rapid Guidance (WMO)	Global	Testing of the ERAM tool	Completed



544	October – 22	South Africa NMHS (Government agency)	Capacity development (WMO)	I	Presentation on WMO hydrological activities	Completed
545	October – 22	Department of Meteorology and Hydrology, Myanmar (Government agency)	Capacity development (WMO)	II	Request for national workshop	On-going
546	October – 22	Department of Water Affairs Namibia (Government agency)	Rapid Guidance (WMO)	I	References for awareness materials	Completed
547	October – 22	NMHS Moldova (Government agency)	Capacity Development (WMO)	VI	Support for data collection, management and forecasting	Ongoing
548	October – 22	WASCAL, Ghana (NGO and Private companies)	Rapid Guidance (WMO)	I	Guidance on NHS management	Completed
549	October – 22	FFGS, WMO (International Organization)	Capacity Development (WMO)	Global	Support to implement Community based flood management and gender mainstreaming in Malawi and Costa Rica	On-going
550	October – 22	UN Flores (International Organization)	Rapid Guidance (GWP)	Global	Request for presentation	Completed
551	October – 22	HELP (International Organization)	Rapid Guidance (GWP)	Global	Provide report on Pakistan flooding for annual HELP report	Completed
552	November- 22	SIAP+MICROS NGO and Private companies)	Rapid Guidance (WMO)	VI	Looking for synergies and understanding hydrological activities of WMO	Completed
553	November - 22	Italian National Meteorological Service (Government agency)	Rapid Guidance (WMO)	VI	Looking for contacts on cryosphere working groups	Completed
554	November - 22	Student from Japan (University and Academia)	Rapid Guidance (WMO)	II	Seeking information on floods and water quality	Completed
555	November - 22	El Salvador Ministry of Foreign Affairs (Government agency)	Rapid Guidance (WMO)	IV	Looking for information on technical Commissions	Completed
556	November - 22	Somalia Ministry of Foreign Affairs (Government agency)	Assistance fro Strategy (GWP)	I	Seeking support to set up a hydromet service	Ongoing
557	November - 22	GWP South Africa (NGO and private companies)	Rapid Guidance (WMO)	I	Review of the Bupusa FFEWS	Completed

558	November-22	GWP Water Academy for Youth Southeast Asia (NGO and private companies)	Rapid Guidance (GWP)	II	Input of workshop	Completed
559	December-22	Environment Canada (Government Agency)	Rapid Guidance (WMO)	IV	Seeking information on hydrological outlooks	Completed
560	December-22	Mercy Corps, Jordan (International Organization)	Capacity Development (WMO)	VI	Support on flood forecasting and early warning systems	On-going
561	December-22	SDC for South Sudan (Government Agency)	Rapid Guidance (WMO)	I	Request for review of ToR for consultancy on flood forecasting	Completed
562	December-22	Caritas, CH (International Organization)	Rapid Guidance (WMO)	II	Requested information related to low cost hydrological and meteorological station	Completed
563	December-22	Student, Ghana (University and Academia)	Capacity development (WMO)	I	Looking for Volta project information and impact outputs at the community level	Completed
564	December-22	Somalia MoECC (Government Agency)	Rapid Guidance (GWP)	I	Draft letter to request support in establishing NMHS	Completed
565	December-22	ICHARM (International Organization)	Rapid Guidance (GWP)	Global	Review extended abstracts for ICFM9	Completed
566	January-22	ICHARM (International Organization)	Rapid Guidance (GWP)	Global	Present on APFM during ICFM pre-event	Completed
567	January-22	GWP-Mongolia (NGO and private companies)	Capacity development (GWP)	II	Provide support for project development for Mongolia	Ongoing
568	February 2023	IAHS for Ukraine (NGO and Private Companies)	Assistance for Strategy (WMO)	VI	Looking for contacts for data rescue of Ukrainian data	Ongoing
569	February 2023	ALS Global, Peru (NGO and Private Companies)	Rapid Guidance (WMO)	III	Looking for information on standardization of water quality measures	Completed
570	February 2023	Independent Consultant (NGO and Private Companies)	Rapid Guidance (WMO)	II	Requested information related to drought risks mitigation and adaptation strategies	Completed
571	February-23	GWP West Africa (NGO and private companies)	Rapid Guidance (GWP)	I	Suggestions for consultant for flood vulnerability assessment of Mono basin	Completed
572	March 2023	TUD (University and	Rapid Guidance	VI	Looking for information on flood	Completed



		Academia)	(WMO)		recovery	
573	March 2023	International Commission for the Protection of the Rhine (NGO and Private Companies)	Rapid Guidance (WMO)	Vi	Looking for contacts and references on flood risk prevention	Completed
574	March 2023	Ministry of Foreign Affairs of Spain (Government Agency)	Rapid Guidance (WMO)	VI	Looking for contacts for synergetic activities	Completed
575	March 2023	UNDP (International Organization)	Rapid Guidance (WMO)	Global	Looking for review of technical requirements for tenders	Completed
576	March 2023	CREWS Carribean (International Organizations)	Capacity development (WMO)	Global	Request to implement CBFM activities in Trinidad	Completed
577	March 2023	World Bank (International Organizations)	Rapid guidance (GWP)	II	Request to present online on APFM at workshop	Completed
578	March 2023	Antea Group (NGO and Private Companies)	Rapid guidance (GWP)	Global	Request to join planned session for World Water Week	Ongoing
579	March 2023	World Bank (International Organizations)	Rapid guidance (GWP)	Global	Request to join planned session for World Water Week	Ongoing
580	March 2023	Jawaharlal Nehru University (University and Academia)	Rapid guidance (GWP)	II	Provide input for article	Completed
581	April 2023	OMVS (International Organization)	Capacity development (WMO)	I	Request for presentation at ministerial workshop	Completed
582	April 2023	IFRC/IUCN (International Organization)	Capacity development (WMO)	Global	Request for presentation at workshop	Completed
583	April 2023	Swiss Federal Institute for Forest, Snow and Landscape Research (Government Agency)	Rapid Guidance (WMO)	VI	Looking for contacts and synergetic activities	Completed
584	April 2023	Uruguay National Water Authority (Government Agency)	Capacity development (WMO)	III	Request for national assessment on E2E EWS for flood forecasting	Completed
585	April 2023	Tunisia Ministry of Foreign Affairs (Government Agency)	Rapid Guidance (WMO)	I	Request for guidance on hydrological topics	Completed
586	April 2023	Davao del Sur State College, Philippines (University and Academia)	Rapid Guidance (GWP)	II	Review project proposal	Completed
587	April 2023	IWMI (International	Rapid Guidance	I	Provide input for initiative on Fragility,	Completed

		Organizations)	(GWP)		Conflict and Migration (FCM)	
588	May 2023	UNDP (International Organizations)	Rapid Guidance (WMO)	Global	Request for information on FFGS	Completed
589	May 2023	CIMA Research Foundation (University and Academia)	Rapid Guidance (WMO)	Global	Request for peer-review	Completed
590	May 2023	Rwanda Water Board (Government Agency)	Capacity development (WMO)	I	Request for assistance on forecasting and warning systems	Ongoing
591	May 2023	Gambia Ministry of Foreign Affairs (Government Agency)	Rapid Guidance (WMO)	I	Looking for contacts	Completed
592	May 2023	Vrije University, Netherlands (University and Academia)	Rapid Guidance (GWP)	Global	Present at event	Completed
593	May 2023	UNU-Flores, City of Dresden (International Organizations)	Rapid Guidance (GWP)	Global	Present at event	Ongoing
594	June-2023	ECOWAS (Government agency)	Rapid Guidance (WMO)	I	Request for co-development of IFM and IDM project in Fjuata Djillon	Completed
595	June-2023	Nigeria Hydrological Services Agency (Government agency)	Capacity development (WMO)	I	Request for a meeting on WMO activities in Hydrology	Ongoing
596	June-2023	Pakistan National Disaster Management Authority (Government agency)	Rapid Guidance (WMO)	II	Looking for flood forecasting modelling solutions	Ongoing
597	June-2023	NOAA – USA (Government agency)	Rapid Guidance (WMO)	IV	Looking for documentation on international cooperation	Completed
598	June-2023	GEO Secretariat (International Organization)	Capacity development (WMO)	Global	Looking for speakers on hydrological data	Completed
599	June-2023	AQA, UK (NGO and Private Companies)	Rapid Guidance (WMO)	VI	Looking for rights to use APFM images in educational materials	Completed
600	June-2023	Gabon Space Agency (Government agency)	Rapid Guidance (WMO)	I	Looking for contacts on EWS	Ongoing
601	June-2023	UNOCHA for Senegal (International Organization)	Capacity development (WMO)	I	Request for a presentation at regional workshop	Completed



602	June-2023	International Journal of River Basin Management (NGO and Private Companies)	Rapid Guidance (WMO)	Global	Request for peer-review of paper	Completed
603	June 2023	K-Water (NGO and Private Companies)	Rapid Guidance (WMO)	VI	Request to provide information on Water organizations in Sweden	Completed
604	July 2023	WHO (International Organizations)	Capacity development (WMO)	Global	Request to present IFM experience on drowning and safety	Completed
605	July- 23	UNDRR, Switzerland (International Organization)	Capacity development (WMO)	VI	Present the Volta Basin EWS with IBF	Completed
606	July-23	RCUWM (International Organization)	Rapid Guidance (WMO)	II	Looking for opportunities of cooperation and guidance material	Ongoing
607	July-23	Institute of Geological and Mining Research – Cameroun (Government agency)	Rapid Guidance (WMO)	I	Looking for contacts in Gabon	Ongoing
608	July-23	IHP-RoK (International Organization)	Rapid Guidance (WMO)	II	Looking for information on HydroSOS and potential synergies	Ongoing



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