



FLOOD & DROUGHT MANAGEMENT TOOLS

2nd Project Steering Committee Meeting report

30 March - 1 April 2016

Sukosol Hotel

Bangkok, Thailand



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Action items

Item	Action	Who	When
<i>Midterm review</i>	Discussion of possible reviewers for midterm review/evaluation with Peter Bjornsen (UNEP-DHI) and Christine Haffner-Sifakis (UNEP)	DHI	April 8 th , 2016
	Development of terms of reference (need these to be provided by UNEP)	IWA, DHI and UNEP	April 25 th , 2016
<i>FDMT Tools</i>	<i>Indicator tool</i> Incorporation of indicators already used in some of the basins (e.g. Volta and Lake Victoria), as well as indicators related to the SDGs and AMCOW. Indicator tool to be further developed as part of a UNEP-DHI and WWF project	DHI	Ongoing
	Explore the integration of gender indicators – follow up with discussion with Maya and Peter		
	Address the issue of how the tools will interact with version of MIKE HYDRO or WEAP. Tools need to be attached to be a particular version of WEAP or MIKE (to consider at the end of the project) – to be addressed towards the end of the project	DHI	Ongoing
	DHI to include mechanism for user feedback in tools (.g. discussion forum on the website)	DHI	Ongoing
<i>Training</i>	Internal technical training with HAI – to be organized after the flood season this year	DHI	November 2016
	VBA and LVBC will maintain their present involvement and there will be no additional training to those already planned NOTE: DHI have several upcoming projects in both Lake Victoria Basin and Volta Basin – use this opportunity to keep both LVBC and VBA updated	DHI	August – December 2016
	DHI will arrange for NBI to use selected tools from the FDMT project.	DHI	August – December 2016
	IWA to follow up with the utilities on training (defining structure and scope) with DHI support and input on training materials and testing of tools	IWA	August – December 2016
	Development of a standard template for training (in relation to training of trainers) – considering a web based template (e.g. description with a link to a video for more details)	DHI (IWA review)	August – December 2016
	Increased involvement of regional focal points in, for example, trainings	IWA and DHI	Ongoing
<i>Gender and social dimensions</i>	IWA to share survey with PSC (work with PSC to assign a person or persons) and gender specialists to receive feedback for further revision of survey and concept	IWA	April 8 th – 18 th , 2016
	IWA to work with PSC to apply the survey further within their organisation and roll-out to country level	IWA	May 2 nd , 2016
	Work with UNEP to have a review of the gender survey by a gender expert in the UN system	IWA and UNEP	April 8 th – April 25 th , 2016
<i>Utilities</i>	With regards to WSP in the DSS, IWA and DHI will revise the concept for water utilities (to incorporate long-term planning and flood and drought issues) – information to be collected by IWA but need inputs on what is feasible, in	IWA and DHI	April 8 th – April 29 th , 2016

Item	Action	Who	When
	terms of the development of tools, by DHI		
<i>Basin inventory</i>	PMU to work with basin organisations to update/revise basin inventory, in particular relevant (existing and proposed) projects – PMU to share digital copy of basin inventories with basin organisations	IWA and DHI	April 8 th – April 25 th , 2016
<i>Review group</i>	Approach to engage review group (e.g. webinar, side meetings at various events) DHI to develop a concept when first item for review is available (e.g. webinar for review group followed by a discussion on what should be reviewed followed by questions for review group to respond to)	IWA and DHI	May 27 th , 2016
	Continue to receive recommendations to be part of the review group	IWA	Ongoing
<i>IFI projects in the basins</i>	Basin inventories will be used as starting points to gather information on existing complementary project. Will assign staff to compile information over next few weeks across basins including Mekong Delta	IWA	May 27 th , 2016
	DHI will follow up on known internal and external projects in the pilot basins	DHI	May 27 th , 2016
	Follow up with World Bank on Myanmar and Mekong Delta	IWA	April 7 th , 2016
<i>Use of master students</i>	Explore working with Master's students in country (e.g. Volta Basin) for testing and validation of tools	DHI	May 2 nd , 2016
<i>Communications</i>	Plan for communication and dissemination of technical material including a narrative for each user type	DHI and IWA	April 22 nd , 2016
	Updated information sheets for different user types	IWA and DHI	May 27 th , 2016
<i>Social media</i>	Provision of guidelines to encourage the use of social media (e.g. twitter) with partners and stakeholders. <i>The #floodsanddroughts is indicated in the communications strategy but has not been widely used. We need to ramp this up. Can also involve whoever tweets on behalf of DHI</i>	IWA	May 2 nd , 2016
<i>Video</i>	IWA to share project video so can be used by all project partners	IWA	April 8 th , 2016
	IWA to further collect comments/feedback from PSC on initial project video to guide future videos – adding all basins, changing initial footage with text, looking beyond the meeting room, ...)	IWA	April 15 th , 2016
<i>Infographic</i>	Further develop infographic and share with the PSC to receive comments/feedback for further development - explore ways to incorporate transboundary aspects, incorporate regional and local context, avoid a western look	IWA	Ongoing (next version before May 13 th)
<i>Key messages</i>	Work with PSC on identifying missing content and revising of key messages including narrative for a shared vision	IWA	May 6 th , 2016
<i>Blog</i>	IWA to work with partners and stakeholders to develop blogs (improve stakeholder engagement)	IWA	Ongoing
<i>Media kit</i>	Development of media kit	IWA	May 6 th , 2016
<i>Newsletter</i>	Consult UNEP and stakeholders on identifying contributors for the newsletter and additional people to subscribe to the newsletter (further dissemination) – and link newsletter with other processes/projects to show case them		
<i>Other items</i>	Provide information on the CTCN process for Myanmar	DHI	April 15, 2016
	Development of workshop and material for IW LEARN -	DHI and	April 11 th ,

Item	Action	Who	When
	update	IWA	2016
	PMU to work with PSC on steps towards a 2 nd phase (focused on implementation) – UNEP to take lead	UNEP (support from DHI and IWA)	December 2016
	PMU and VBA to define dates for next PSC meeting	DHI, IWA and VBA	May 2 nd , 2016

1. Project background

The Flood and Drought Management Tool (FDMT) project is funded by the Global Environment Facility (GEF) International Waters (IW) and implemented by UNEP, with the International Water Association (IWA) and DHI as the executing agencies. The project is developing methodologies and tools within a decision support system (DSS) to facilitate the inclusion of information about floods, droughts and future scenarios into Integrated Water Resources Management (IWRM) planning, Water Safety Planning (WSP), Transboundary Diagnostic Analyses (TDA) and Strategic Action Plans (SAP). The project is being implemented from 2014 - 2018, and 3 pilot basins (Volta, Lake Victoria and Chao Phraya) have been identified for development and testing of the DSS.

The project is responding to a growing sense of urgency around the need to improve resilience within river basins, and for this to become a critical part of water management plans. Consequently, the IW focal area of the GEF has identified the increased frequency and unpredictability of floods and droughts as a priority concern in transboundary contexts, along with the other multiple drivers that cause depletion and degradation of shared water resources.

Based on these issues, the project is developing a decision support system that supports the integration of information on floods and droughts into planning across scales. The project will integrate information on climate including floods and droughts for planning at both transboundary and national basin and local (specifically water utilities) levels by providing tools for both scales within a single planning DSS.

The planning DSS being developed is a computer software-based system containing a number of 'tools' with different technical functionality. The planning DSS is being tested and validated with available data at both basin and local levels in the 3 pilot basins; however it will be available for all other GEF IW basins. This also includes training modules available at the end of the project to ensure that methods can be applied to other basins. The aim is to develop an approach that interfaces with existing planning practices including TDA/SAP, IWRM planning or WSP.

2. Project Steering Committee

The Project Steering Committee (PSC) or Steering Committee (SC) for the UNEP/GEF Project entitled: “Flood and Drought Management Tools” project is established under the Project Document as approved by the collaborating institutions and organisations during the project preparation phase.

A specific responsibility of the SC will be to facilitate liaison with the GEF Implementing Agency (UNEP) regarding overall governance of the project.

The Steering Committee shall:

- Be the decision making body for the project;
- Provide governance assistance, policy guidance and political support in order to facilitate and catalyse implementation of the project, and to ensure relevant project outcomes;
- Annually review program progress and make managerial and financial recommendations as appropriate, including review, amendment and approval of annual reports, budgets and work plans.

To read the full Terms of Reference, please see Annex 3

3. Day 1 - [Site visit](#)

30 March 2016

Prior to the Steering Committee business meeting on from March 31st to April 1st, 2016, the Hydro and Agro Informatics Institute organised a site visit on the 30th March, 2016 to the Amphoe Sapphaya Regional Office of the Royal Irrigation Department (RID) in the Chainat Province where the Chao Phraya Diversion Dam is located. RID provided a [presentation](#) on the dam and water management. The Chao Phraya dam is operated by RID regulating the flow of the Chao Phraya River as it passes into lower Central Thailand, distributing water to an area of 11,600 km² in seventeen provinces as part of the Greater Chao Phraya Irrigation Project.

This was followed by a visit to Maharach Watergate to see the remote auto-gate control system and a telemetering station of the Hydro and Agro Informatics Institute. The PSC had a final visit to Somlae Pump Station of the Metropolitan Waterworks Authority (MWA) in Amphoe Muang, Patumthani Province. This visit included a [presentation](#) by MWA on their development and implementation process for Water Safety Planning and a [video](#) demonstrating the water treatment process of MWA.

4. Day 2 – PSC business meeting

31 March 2016 | Sukosol Hotel, Kaewkamol (2nd floor Garden wing)

Opening addresses

Sutat Weesakul of the Hydro and Agro Informatics Institute (HAI) in his opening address gave a reminder of the context of the Flood and Drought Management Tools (FDMT) project and what the project will achieve in the remaining 2 years of the project. He reminded the Steering Committee to use the meeting as an opportunity to review the project progress and provide feedback and guidance to the Project Management Unit (PMU), on the execution of the project and ensure that all activities agreed upon in the project document are achieved.

Ganesh Pangare, the Regional Director for the International Water Association (IWA) explained the importance of the project for the region and the benefits of developments in the region to the project, especially as IWA moves towards regionalisation and retreats from its traditional role towards working closer with partners to push forward in vision of a water wise world. For example, the West Asia North Africa (WANA) Water Summit, taking place during the IWA World Water Congress in Brisbane Australia, bringing high level stakeholders; politicians, water professionals, business leaders, academics, economists, provides a unique opportunity for the FDMT project to pitch the issues of flood and drought events at an elevated level and a step towards influencing policy and decision making processes.

Development of a methodology and tools (Component 1)

Output: Methodologies using tools adopting a basin and local approach, including enhancements for a decision support system, that would allow the integration of flood and drought issues into (i) the TDA/SAP GEF IW or equivalent processes, and (ii) IWRM plans and Water Safety plans

[Overall approach](#), and [data and planning](#)

The FDMT project started with a series of stakeholder consultations to understand the issues and needs within the pilot basins. Currently, the project is developing functionality (in the form of tools) as part of the methodology. The methodology describes how the functionality can be used to solve certain issues around flood and drought events. The functionality in the planning DSS is used to help

decision makers in a planning context with a focus on flood and drought issues in the current and future conditions.

A planning workflow (see Figure 1) is the starting point of the methodology, in which a baseline assessment and impact assessment is done to understand how a flood or drought event is, or is likely be, compared to the normal expected condition. This information is used in the planning step as the key process being supported by the project and with a focus on providing the tools to reduce the impact of an issue. Planning supported in the project focusses on both operational (not real-time day-to-day operations) and strategic (weeks to decades) planning. The outputs of the planning process are used to inform the decision making process on which solution to implement. A final step is monitoring, to assess how effective the implemented plan is working.

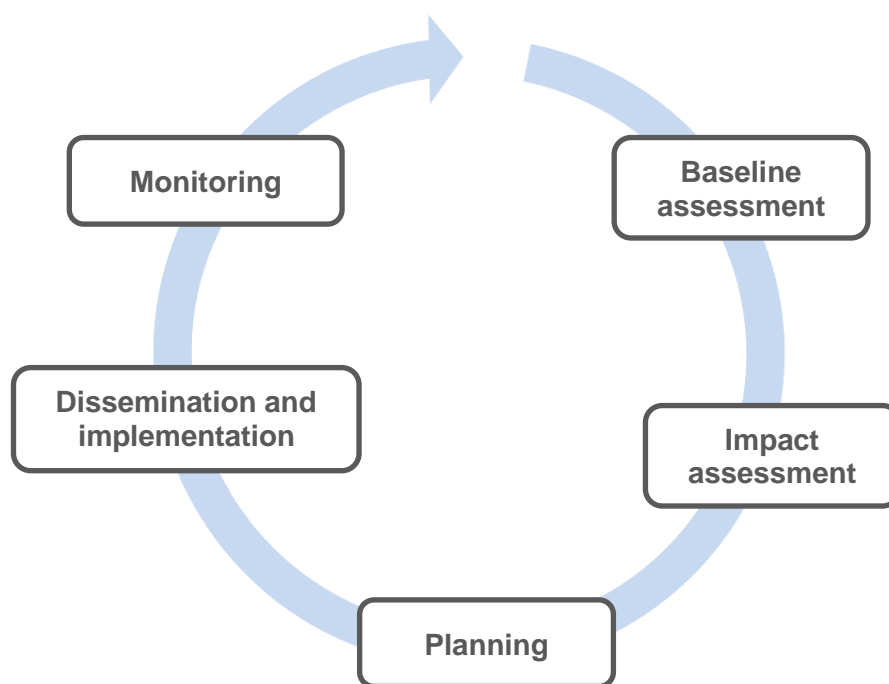


Figure 1. Planning workflow

The goal is to have most of the functionality completed by the end of 2016. The remaining time will be used for consultation, bug fixing, technical training and outreach. The project wants to develop functionality within the planning DSS that is well tested and operational.

A challenge will be combining the different functionality in the workflow and developing tools that are globally applicable with a high level of flexibility. This is important to ensure the methodology helps to address the issues of multiple users across geographical and institutional scales. The planning DSS provides the interface to achieve this, and the entry point will be the different users types (decision makers, technical users and advanced IT and model users) and the issues they need to address.

Decision makers have a high degree of power but are not as familiar with the detailed functionality of different tools. Whereas technical users have some decision making power, but do not have in-depth technical knowledge, and do not necessarily have the capacity to develop models. However, they need to understand the outputs of the models. Finally, advanced IT and model users have strong technical capacity but may need support in explaining the applicability. It is estimated that most stakeholders the project is interacting with are technical users.

Another key challenge is the availability and access to data. The project needs to ensure the availability of a basic set of data for any GEF basin. Remote sensing data is being used as this is freely available global data accessible in near real time. The project is developing a web based data portal to enable stakeholder's access to the latest data on:

- Rainfall – Rainfall: daily rainfall (2000 to present); seasonal forecast: 9 month seasonal forecast updated every 5 day; Climate change data from the CORDEX project
- Temperature and evapotranspiration – Daily maximum temperature from 2000 to present; evapotranspiration to be added
- Vegetation data – Different vegetation products and drought indices
- Soil water data – Water availability in the root zone from 2007 to present with daily values
- Water bodies – Areas covered with open water (updated every 10 days)

Other types of data provided include:

- Historical ensembles – Compares years to show variability of rainfall across different months, allows you to produce ensembles for different models. An ensemble is when you run the same model and have different conditions
- Seasonal forecast – Based on NOAA – 9 month forecast and is recalculated every 5 days. There will also be a skill assessment which is the level of accuracy of applying seasonal forecast to different geographic areas. There will be guidance to the user on whether it is better to use historical trends or seasonal forecast depending on the level of accuracy. There will also be different corrections available.
- Climate change – What is provided is an ensemble of change factors, which can be used to correct historical data to predict the future. A value to multiply your current climate can be used to estimate the projected climate (e.g. 2 times current rainfall).

The data portal is a web-based portal linking up to different data providers. New data is available every 2 days via a DHI server. Users of the portal are restricted to data from the basin they have registered with. The portal is independent product. However, it can be packaged and linked to existing planning tool (e.g. WRIS in the Lake Victoria Basin).

Other tools that have been developed to date are as follows:

- QGIS – tools to visualize data in the form of maps. QGIS is a freely available software that is integrated into the planning DSS interface.
- Indicator knowledge base and builder – The indicator builder is a web based tool where the user can identify indicators that are relevant for their situation and extract specific information on this. For example, the user can get information on how to use an indicator, where it is relevant, the spatial scale, how to calculate, and some examples of the indicator, etc. This tool is near complete, but will require further development. A version will be shared over the next 2-3 months. The tool is preconfigured; however, users can add indicators that are relevant for their basin and case. The aim is to compile and manage tools for indicators in one common platform and enable users to add indicators with descriptions and share this information with different stakeholders.
- Seasonal forecast and climate change – support future forecasting projects from weeks to decades (addressed in Component 2)
- Planning DSS – platform which compiles different information (e.g. from the data portal) and tools in one system and analyses the information. This is based on a user front-end and database back-end, which includes the different tools – models, scenarios, decision making tools, etc. This preserves a complex back-end for advanced users and a simple front-end for less advanced users.
- Simplified planning tool – A simplified version of the DSS is under development which connects to existing water resource models (e.g. MIKE HDRO, WEAP) to an interface enabling users to define interventions and indicators to develop scenarios and execute and evaluate the outcome based on a simple multi-criteria analysis. Users would use this tool to access models in a simplified way to overview issues and get a first estimate of which intervention can be used for a specific issue. For example, you can look at water demand, but water users need to be pre-defined in an existing model integrated into the system; set up in the back end. This is useful as not every user is interested in the models. An agreement has been established that MIKE HYDRO can be used without the license. However, if a user needs to change something in the MIKE HYDRO model, then a license is needed. The WEAP model will be integrated as many basins in Africa have a free license to use WEAP.
- WSP support (addressed in Component 3) – supports some of the modules and looking into supporting long-term planning using seasonal forecast and climate change data.

- Drought status (addressed in Component 2) – making data available, evaluating impacts (analysis of the data), and providing tools to support dissemination of information.
- Crop modelling (addressed in Component 2) – crop yield is important in planning. The Planning DSS links to FAO's AquaCrop model. Using the current conditions or based on forecasted information (feeding ensembles into the model), crop yield can be calculated.
- Decision methods – The project uses multi-criteria analysis and robust decision making to take into account uncertainty. The focus is on evaluating how robust a target is and using this to modify a plan, this is based on looking at the likelihood of failure and using this information to either improve or use a plan. The aim is to have this functionality completed by the end of 2016. The concept is based on cases from Thailand (HAII, EGAT, RID). The decision method indicates that if rainfall is within a certain range then the plan is likely to fail and the user can use this information to make a decision on whether to change the plan or not. This is not a planning approach but a tool to indicate how likely a plan would fail. It can take anything into account as it is based on defined indicators and thresholds by the user (this can be economic, social, environmental, etc., so long as the indicators can be calculated and can be integrated into the input parameters). The backend requires a model or tool (or calculation sequence) to calculate a scenario based on defined indicators and thresholds. The challenge is to create a front end that can be easily understood by the stakeholders.

As previously indicated, the link between the various tools is still missing, and additional elements will be developed, e.g. reporting tools (making appendices and annexes), and TDA support (providing data to make a baseline assessment of the condition of a basin, useful for basins that are doing their first TDA or updating a previous one) For flood support, flood information is difficult to collate on a global scale as these events happen in a short time scale (5-7 days forecasts). There are different remote sensing products but it can be difficult to get satellite based flood maps as they are cloud sensitive. Hence the aim is to focus on flood risk maps and hazard maps.

It was discussed that based on experience from the project, if the tools are useful then the next steps are to start thinking of implementation across 3 basins and beyond. There can be a recommendation to GEF to invest in the follow-up.

Action point(s)

- Indicator tool
 - Incorporation of indicators already used in some of the basins (e.g. Volta and Lake Victoria), as well as indicators related to the SDGs and AMCOW. Indicator tool to be further developed as part of a UNEP-DHI and WWF project.
 - Explore the integration of gender indicators – follow up with discussion with Maya and Peter.
- Address the issue of how the tools will interact with versions of MIKE HYDRO or WEAP. Tools need to be attached to be a particular version of WEAP or MIKE – to be considered at the end of the project.
- Data portal
 - Explore possibilities with basin organisations of using master students to test and validate data in the portal – looking at how the information from the web portals compare to observed data.
 - Include a mechanism for user feedback in tools (e.g. discussion forum on the website).
- Explore possibility of a 2nd phase (Implementation phase) to support future maintenance of tools.

[Gender and social dimensions, basin inventories and review group](#)

Gender and social dimensions

The project is gathering information on how stakeholders are including gender and vulnerable populations in their planning around flood and drought events. A report was developed in 2015 by a consultant, which included a review of indicators and questions to support mainstreaming gender and

social perspectives during planning. A survey has been developed as part of the suite of project tools, using the information from the report. The survey can be used to assess whether gender and vulnerable populations are adequately incorporated into planning.

After further review of the survey, the idea is to administer it within the basin organisations before distributing it to country level institutes (e.g. the ministry).

Action point(s)

- Share survey with PSC and work with PSC to assign a person or persons
- Work with PSC to apply the survey further within their organisation and roll-out to country level
- Work with UNEP to have a review of the gender survey by a gender expert in the UN system

Basin inventories

Basin inventories provide an overview of the pilot basins, data and information availability, GEF past and present involvement in the basin and key contact persons. The inventories are updated to reflect the latest information. In particular, the list of related projects is key in ensuring that the FDMT project is complementing and exchanging information with other project and groups of stakeholders working on issues around flood and drought management.

Action point(s)

- Update/revise basin inventory, in particular relevant (existing and proposed) projects – PMU to share digital copy of basin inventories with basin organisations. Basin inventories to be used as starting points to gather information on existing complementary project. Staff will be assigned to compile information over next few weeks across basins including Mekong Delta.
- DHI will follow up on known internal and external projects in the pilot basins.
- Follow up with World Bank on Myanmar and Mekong Delta to explore potential for extending the project geographically.

Review group

A review group was established to independently evaluate and review functionality of the planning DSS (and other tools) and the application to flood and drought issues. They will be asked to look at the application on specific flood and drought management issues, design and functionality of the tools and scaling up of the tools.

The review group would also review training and capacity building documentation for stakeholders and provide feedback on other outputs where needed (e.g. communication strategy, awareness workshop and other opportunities to target decision makers, etc.).

The PMU is exploring means to approach the members of the review group. The use of webinars of side meetings and existing events can provide the PMU with a means of demonstrating outputs and assigning members to look at different aspects of the tools.

Action point(s)

- Develop approach to engage review group (e.g. webinar, side meetings at various events)
 - DHI to develop a concept when first item is available for review
- PSC to provide recommendations of person(s) to join review group.

Validation and testing at basin-wide level (with basin organisations)

(Component 2)

Output: Strategic recommendations for inclusion of flood and droughts consideration in IWRM, TDA, Water-Safety and other basin land and water planning tools in the 3 selected pilot basins.

The planning DSS is the core platform, based on an existing DSS interface used in several past DHI projects. The system contains a database for storing data and an interface which can be configured by the user. This front end is more intuitive and less technical and easy to access for a normal user. There is a back end which is useful for more advanced users.

The purpose of the planning DSS is to be the core component where users can add models, apply scenarios, decision making, add data and undertake further analysis. Lessons from the technical trainings is that the planning DSS is heavy and complicated to work with, so there is a need for a more simplified tool for non-expert users.

The simplified planning tool is an approach to connect water resource models (MIKE HYDRO, WEAP) to a simple decision process for decision making (simply put, using the water resource model to generate scenarios that are evaluated and a decision to use the plan or not). The simplified planning tool will be presented at the IW 8 Conference in May (Sri Lanka) to raise interest from other basins.

The project is also working with seasonal forecast and climate models. The purpose is to provide rainfall data for the future; for coming weeks but also coming years. The project will work with medium range, seasonal forecast and climate models (the last two are integrated in the data portal). Forecast data can be used to indicate the drought forecast, which can be used in drought planning and for crop water demand, reservoir levels, stream flow, etc.

The project is looking at different indices for drought assessment:

- Rainfall and potential evaporation (using Tropical Rainfall Measuring Mission (TRMM) to estimate the change in rainfall). The use of Global Precipitation Measurement (GPM) will replace TRMM once there is sufficient historical data (this has a higher resolution) – Meteorological drought
- Soil moisture (using Soil Water Index (SWI) to estimate changes to the moisture content in the upper soil layers) – Hydrological drought
- Vegetation cover (using Normalized Difference Vegetation Index (NDVI) to estimate the vegetation growth) – Agricultural drought

The indices are converted into drought classifications; further deviation from what is expected indicates the severity of the drought situation.

The drought workflow is depicted in Figure 2 below. It consists of downloading and processing drought related information (TRMM, SWI, NDVI data can be retrieved from the data portal). The data is based on remote sensing data that is almost near-real time data.

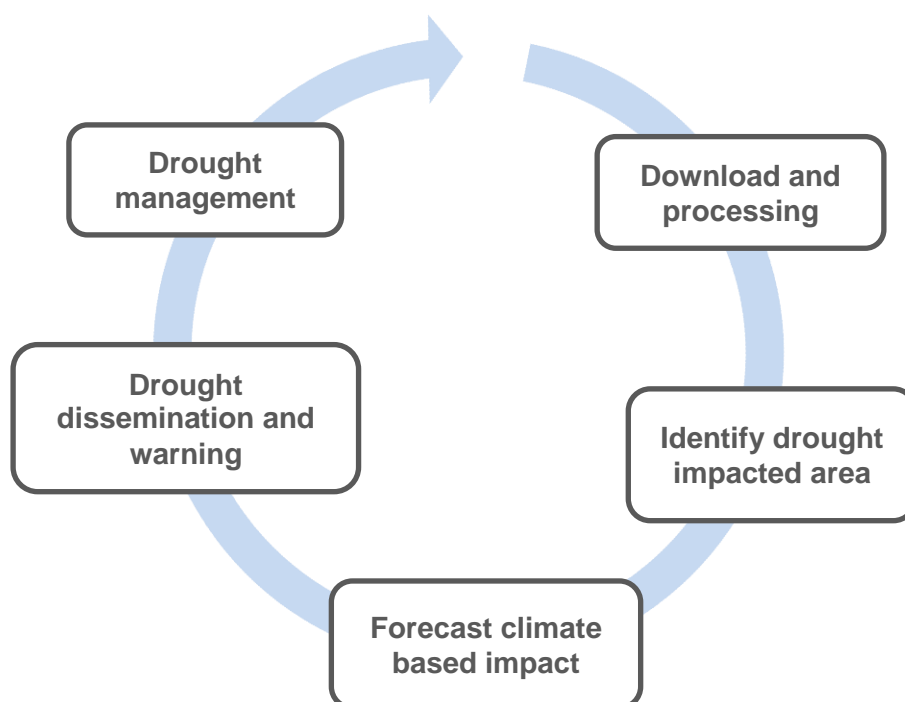


Figure 2. Drought workflow

The three indicators are used together to capture the likelihood of having a drought impact. There is no one unique approach. WMO is working on making guidelines for drought indices and various approaches are used in Europe and the US that the project is looking into, for example looking at land use types in respect to where the drought could possibly be located.

A drought report can be produced and posted on the data portal to summarise the drought status for a basin. The project is relying on the European drought Observatory and some other sources to develop the drought report templates. Aside from the

There is ongoing consultation with varying stakeholders with different approaches within the pilot basins (Volta –engage with sub-basin; Lake Victoria –engage with Ministries of Water (or equivalent); Chao Phraya –engage with relevant department –energy, agriculture, metrological, etc).

Furthermore, the project is also aligning with similar programmes and international organisations (e.g. Danube Water Programme (moving more towards this on the utilities side – looking at risk management also across the basin), NBI DSS, WMO, GWP). The project is also synergizing with other DHI projects. For example, there is collaboration with an ongoing project in Malawi in which a drought concept is being devised.

Next steps:

- Post processing library – to correct seasonal forecast values by comparing to local values, then adjust the seasonal forecast accordingly.
- Skill assessment to know how well the model for seasonal forecast is performing. If the lead time is more than 2-3 months then the information is not as accurate (has a low skill).
- Link with TDA will be worked on in 2016 – support in the assessment of the basin and the issues or to support the process of updating the TDA. This can include providing access to needed data or tools to give more scientifically sound analysis of the basin.
- Flood support (exploring options, looking at flood risk) will be worked on in 2016.

Validation and testing at local level (with utilities) (Component 3)

Output: Recommendations for inclusion of flood and drought issues in WSP and other local planning methods in the 3 pilot basins with integration of urban and (agro-) industrial water users perspectives and realities.

The aim is to apply and validate the planning DSS functionality at the local scale with water utilities, specifically through the Water Safety Plan (WSP) approach. The overall idea is to digitalise the WSP process for utilities and to support flood and drought implementation into the WSP approach. This will be useful when utilities need to make updates to their WSP. A focus has been put on WSP for testing as WSP is often incorporated into legislation so utilities are required to do it.

The DSS will fit into the WSP framework and assist water utilities in the different stages of WSP implementation. It will not create additional work and is not a tool to replace the existing WSP manual.

The WSP supporting tools are divided into (see Image 1):

- Schematic description of the water supply system.
- Assigning potential hazards, risks, control measures and monitoring mechanisms to each of the water supply components (e.g. abstraction points, pumping stations, pipes, etc.).

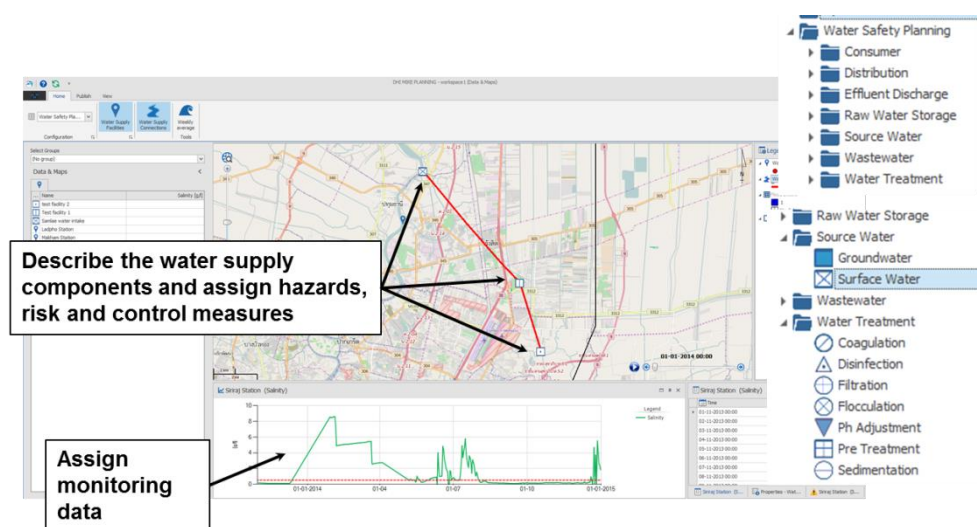


Figure 3. Drought workflow

Furthermore, based on the tools developed for the basin organisations, the project is integrating functionality to support long-term planning at water utilities (+5 years). This includes catchment planning to protect the abstraction points of utilities and to take into consideration climate change and climate variability and the potential impact on their operations. The objective is to help utilities assess the water availability and demand for a future condition and assess the water resource for the whole catchment to understand what are the likely changes and impact to water availability in the future. The functionality will be developed in 2016, essentially providing the functionality for basin organisation to utilities so they can apply it to their context and scale.

The project maintains the stakeholder consultation through events, meetings, training and awareness workshops to establish the working environment for how the planning DSS should be applied and tested with the utilities. Furthermore, the project is consulting with experts (WHO, Emanti Management Group, Water Research Commission) to ensure that the tools can potentially be used by utilities beyond the project areas. Other channels to keep utilities engaged are being explored, for

example the use of webinars and online trainings and demonstrations at events such as the Global Water Safety Conference tailored to water utilities.

The utilities in the pilot basins are at different levels with regards to their WSP status. Some have already developed and are implementing WSP while others are in the process of initiating the WSP, therefore they have different uses for the WSP tools being developed.

The Project will also make use of the review group once more content is available for review.

Next steps:

- Develop tools for dissemination and documentation
- Developing functionality for long-term planning (catchment planning and climate change)
- Consolidation and testing of functionality
- Linking with other programmes and organisations, for example linking to the Danube Basin – in particular collaboration with International Association of Water Companies for the Danube (IAWD)

Action point(s)

- With regards to WSP in the DSS, the concept for water utilities will be revised to incorporate long-term planning and flood and drought issues – information to be collected by IWA but need inputs on what is feasible, in terms of the development of tools, by DHI.

Capacity building and dissemination (Component 4)

Output:

- *Learning package including technical specifications and training materials for the application of the new methodology with DSS tools is tested in 2-3 trainings with basin officials, utility and industry management and operational staff, and representatives from civil society with 15-30 people per training.*
- *Communication approach developed to disseminate F&D methodology within pilot basins, GEF basins, and to other relevant end users.*
- *2-3 Experience Notes and other documents and audio-visual materials produced for IW LEARN dissemination mechanisms and website.*
- *Development of materials (4-5) developed and disseminated at major water events: WWF, Water Week, GEF IWC 7/8/9, and IWA Conferences.*

Component 4 on capacity building and dissemination is about pooling the experiences and know how gained through the project and from stakeholder and making this available to enrich the global dialogue on water security and adaptation to climate variability through the dissemination of the knowledge and experience. Also as important in ensuring the sustainability of the project and the planning DSS specifically is ensuring that the intended users understand how to use the system and integrate it into their workflow.

Capacity building

To provide an opportunity to introduce the planning DSS and complementary tools to stakeholders across scales (Basin organisations, government departments and water utilities), technical staff and junior to senior level water resource professionals from different organisations were brought to participate in a technical training (planned on a yearly basis) for their respective basins.

The training are based on a mix of presentations, group work and individual exercises enabling the participants to test the planning DSS and provide feedback on its functionality

As with the technical trainings, the project organises awareness/knowledge workshops (as recommended by NBI). These workshops are organized to enhance the levels of understanding around the capabilities and potential uses of the planning DSS in facilitating the inclusion of information about floods, droughts and future scenarios into planning across scales. The idea is to target high level staff (commissioners, senior advisors, policy makers and decision makers across scales) to ensure that they understand the benefits of a DSS and understand what the outputs from the DSS mean for decision making and planning.

Reports are developed for each training and workshop.

A standardised approach to training will be established as the project progresses. Furthermore, the regional offices of the basin and utility organisations will be included in future trainings.

Communication and dissemination

The project has engaged with a large number of stakeholders operating at different scales. With the array of stakeholders, the project has identified relevant stakeholder groups to engage through direct communications, who can help amplify the project's messages based on content that can be used to communicate with their audiences through their communications channels.

Furthermore, the project has defined 3 user types which will interact with the planning DSS in their respective capacities. To clarify how different users will use and apply the tools being developed in the project, and details on how the project will further engage with different groups, a series of narratives will be outline to explain the interaction.

User type	How technical tools are understood	How technical tools are used	How is technical information is used?
Decision makers	As a means to provide scientific information to inform decisions.	Minimally Useful to understand how the information was derived and from where.	Packaged outputs are used to inform decisions about planning, investments, etc.
Technical users	To enable data integration and produce outputs based on scientifically sound information	Medium Need to understand the functionality and how the tools work to decide when and how to apply (and who will run the tools).	Outputs (e.g. seasonal forecasting) can be used to inform other stakeholders on flood, drought and climate status in a defined area.
Advanced IT or model users	As a means to provide scientific information to inform decisions.	Minimally Useful to understand how the information was derived and from where.	Packaged outputs are used to inform decisions about planning, investments, etc.

The aim is to also use these user categories for the design of future training courses but also in the design and dissemination of the tools being developed by the project, as the technical messages and the content of the tools need to be tailored to the specific user. For example, this will also provide guidance to the video series under development.

The project is developing a series of videos. At past events (including the technical trainings and awareness workshop), stakeholders were asked to take part in interviews to explain the challenges around flood and drought management and the opportunities a planning DSS provides for decision-making processes. The video developed provides an explanation of the project, the perspectives of stakeholders in the 3 basins and an indication of the important of planning and how to plan better using a DSS. An updated version of the video based on comments from the PSC is available online (<https://vimeo.com/160019283>). The main comments provided by the PSC were on diversifying the images to look beyond the meeting demonstrating the different type of activities being done in the project, ensuring representation of all 3 basins (and the diversity of language and culture), and

ensuring that viewers are hooked within the first few seconds of the video (e.g. replacing descriptive text).

While developing the video, the project has also been developing an infographic to convey certain aspects of flood and drought management from catchment to cities. The 3-tier infographic will describe the issues around flood events, describe the issues around drought events, and describe the workflow process with the planning DSS as the key tools used to achieve a sustainable basin in which basin organisation are able to address the impacts of flood and drought events. The next steps are identifying missing elements, ensuring the imagery is representative of the basins (e.g. avoiding more western-oriented images). The infographic will also be used in developing an animated video illustrating the benefits of the planning DSS for flood and drought management. The animated video will offer a simplified visual approach to communicate the issue and the solution which the project is focusing on.

The table in Annex 4 lists the communication material that has been developed and other content that will be developed and a description of the purpose.

Action point(s)

- Communications
 - Develop plan for communication and dissemination of technical material including a narrative for each user type.
 - Develop/updated information sheets for different user types.
- Social media
 - Provision of guidelines to encourage the use of social media (e.g. twitter) with partners and stakeholders.
 - Promote the use of #floodsanddroughts for twitter with partners and stakeholders.
- Video
 - Share project video so can be used by all project partners
 - Collect comments/feedback from PSC on initial project video to guide future videos – adding all basins, changing initial footage with text, looking beyond the meeting room, ...)
- Infographic
 - Further develop infographic and share with the PSC to receive comments/feedback for further development – explore ways to incorporate transboundary aspects, incorporate regional and local context, avoid a western look
- Key messages
 - Work with PSC on identifying missing content and revising of key messages including narrative for a shared vision
- Work with partners and stakeholders to develop blogs (improve stakeholder engagement)
- Develop media kit
- Consult UNEP and stakeholders on identifying contributors for the newsletter and additional people so subscribe to the newsletter (further dissemination). Link newsletter with other processes/projects to show case them.

5. Day 3 – PSC business meeting

1 April 2016 | Sukosol Hotel, Kaewkamol (2nd floor Garden wing)

Budget and workplan 2016

The project is on track with the annual spending, however there may be an increase in spending for the year 2016. The project has had 3 technical trainings which were costly with regards to preparation and finances.

[Overview of budget](#)

[Expenditure to date \(December 2015\)](#)

[Workplan 2016](#)

Stakeholder involvement

The value of the tools being developed needs to be shown, otherwise they will not be used (even if an agreement is made that the tools are used). There needs to be a better technical anchor. The project will identify super users (the advanced users) in each organisation to provide them with a more focus/targeted training to increase their knowledge and awareness of the tools. These users can disseminate the knowledge to other staff within their organisation.

The idea would be to establish a training of trainers programme. The project can demonstrate how the trainings are in their best interest as this will ensure the successful uptake of tools. This will be done in Thailand for the Chao Phraya Basin. In the Lake Victoria Basin and Volta Basin, they are not ready for this just yet. As such the yearly trainings will remain (for VBA, Valentin could have a bit more focus training). However, this is something that can be considered with utilities across all three basins.

The super user training would not replace the yearly technical trainings but rather complement them as alone they might not be enough to ensure the use and sustainability of the tools. The tools need to be simple to enable wider understanding of the tools and application without complications.

To intensify the trainings beyond the project stakeholders, the capacity of key stakeholders needs to be enhanced before it can be communicated with others. Furthermore, there needs to be follow up sessions for the trainings.

The project is developing and validating tools (scientific development and validation), but not doing implementation. There can be incentives to take the tools further as there is potential and importance of the tools. Nonetheless, it remains in the hands of the stakeholders to take the tools, adopt and use, but we can support that.

There have been discussions about initiating a 2nd phase of the project with a focus on implementation, to push this forwards, the stakeholders will use and be able to demonstrate the value of the DSS and its tools. Therefore, basins and their organisations need to assess the applicability and usability of tool.

Planning processes for floods and droughts need to be well understood for the next phase to know what can be set up in each basin and how it can be actively integrated into planning. Policy makers and decision makers need to be aware of the tools in order to accept and incorporate this in their agendas as we move forward. Showing implementation of the tools can help in achieving acceptance.

There are multiple paths for testing and implementation; e.g. leverage projects to do implementation by raising awareness of policy makers and decision makers, using of students to test and apply the tools in specific areas, etc. HAIL is a good example where the awareness workshop became a high level symposium, this helped anchor awareness amongst different departments and higher level staff. A similar approach is needed in the other basins. The awareness workshop in the Volta was a learning and knowledge exchange event due to the change in location and situation. Regional Policy Steering Committee meetings in the Lake Victoria Basin can be used as well to leverage interest and support. The PMU can develop the relevant communication material to create awareness, with the recommendations of the PSC. Others events can be used, for example the scientific conference in which LVBC will be present, or VBA presenting on the project before the Council of Ministers.

The tools are not just for the TDA/SAP process as they should support other planning processes (e.g. IWRM, WSP). However, the TDA/SAP process is important not only for GEF, as they are a means to get donors to provide money around issues that are identified in the basins. The planning DSS can

provide the tools to gain the necessary traction to develop further the priorities and investment around the SAP for each basin. It is important to remember that the TDA and SAP are the tools for the basin organisations, and these can also be used to leverage the needed funds and get policy makers and decision makers on board.

The project is also working on a batch application so that users can access data not just through the web but also through an application. This will allow integration of data into existing systems of the users, for example, to feed the data into the WRIS systems in the various basins.

Action point(s)

- Trainings
 - Current trainings have been more about feedback, but the PMU will start soon with trainings on the application of the tools
 - Internal technical training with HAI – to be organised after the flood season this year – present at the next PSC the results of the super users training (can have HAI report on the outcome)
 - VBA and LVBC will maintain their present involvement and there will be no additional focused training to those already planned (Note: DHI have several upcoming projects in both Lake Victoria Basin and Volta Basin – use this opportunity to keep both LVBC and VBA updated).
 - Arrange for NBI to use selected tools from the FDMT project.
 - Follow up with the utilities on training (defining structure and scope)
 - Develop a standard template for training (in relation to training of trainers) – considering a web based template (e.g. description with a link to a video for more details)
 - Increased involvement of regional focal points in trainings for example.
 - Involve regional offices of stakeholders in trainings – can use this to look at how to move to the implementation phase at the local level
 - Work round constraints around the need of a dongle (e.g. web portal)
 - Explore the use of webinars to demonstrate the application of the planning DSS or develop step-by step guided videos – this will come after development of DSS is completed
- PSC members to send dates of events and meetings that can be used to raise awareness of the project and its outputs to help leverage interest and potential funds (e.g. Scientific conference in Arusha in October, VBA Ministers meeting in May)
- PSC members to provide list of projects running in the region (basin) which can be used in the project.
- Getting stakeholder involved in international events, including the IW8 Conference in May, IWA World Water Congress in October.

3rd Project Steering Committee meeting

Location: Volta Basin - Akosombo (location of the Volta Dam)

Host: Volta Basin Authority (VBA)

Date: *tbd (Q1 2017)*

Action point(s)

- PMU to discuss with VBA dates for 3rd PSC meeting (1st quarter of 2017) and inform the PSC.

Mid-term review/evaluation

The mid-term review/evaluation assesses progress (about half way through a project implementation). It should be seen as an opportunity to appraise the achievements in the project and to provide recommendations to steer the project in the second half of the project implementation (ensuring sustainable outcomes from the project).

The mid-term review will therefore:

- Compare current achievements to intended outcomes (commitments) – progress
- Looks at how to redirect efforts in the most effective way for success and sustainability

The process is confidential and involves a reviewer speaking to the PSC members and the project partners and also desk review.

They reviewer will look at:

- Project design and relevance – theory of change
- Project organisation and delivery – current status and potential for success
- Recommendation – ownership and sustainability

UNEP with support from the executing organisations will draft the terms of reference (ToR) and select a potential reviewer who is accountable to the implementing and executing agencies but has the role and mandate that makes the person independent of the implementing and executing agencies

The ToR will be developed in April/May. This will be followed by an internal procedure; this includes the internal UNEP process to select a candidate which should be done by June/July, then in September the reviewing process can start. The completion of the review process will depend largely on the process of interviewing. A first report will be completed to receive some comments then a final report produced. This will be followed by some management measures to be adopted based on the recommendations by the reviewer.

Action point(s)

- Discussion of possible reviewers for midterm review/evaluation with Peter Bjornsen (UNEP-DHI) and Christine Haffner-Sifakis (UNEP).
- Development of terms of reference.
- Need to indicate the names of those to be interviewed by reviewer.

Annex 1 – Agenda

30 March 2016 – Day 1 – Field Trip organised by HALL

31 March 2016 – Day 2 – Sukosol Hotel, Kaewkamol (2nd floor Garden wing)

Chair: HALL

Time	Item	Responsible
09:00-09:10	Opening and Welcoming Address	<i>HAI</i>
09:10-09:15	Words of Welcome – IWA Regional Director	<i>IWA</i>
09:15-09:30	Overview of agenda, meeting structure and rules of procedure (includes PSC terms of reference)	<i>UNEP</i>
09:30-09:45	Steering Committee comments and expectations of meeting	<i>UNEP</i>
09:45-10:00	Project goal and outcomes	<i>UNEP</i>
10:00-10:15	Coffee Break	
10:15-11:45	<p>Component 1 - Development of Methodology and Tools</p> <p>Part 1 Overall approach (10 min)</p> <ul style="list-style-type: none"> Overall approach (tools, workflow etc.) <p>Data and planning (30 min)</p> <ul style="list-style-type: none"> Data and information availability Planning approach <p>Discussion (30 min)</p> <p>Part 2 Basin inventory and gender issues (10 mins)</p> <ul style="list-style-type: none"> Inventory of previous and existing initiatives related to floods and drought and climate change issues Needs assessment through stakeholder consultations Assessment of the gender and social dimensions in F&D management <p>Annual workplan for 2016 including deliverables (5 mins)</p> <p>Discussion (15 min)</p>	<p><i>DHI</i></p> <p><i>IWA</i></p>
11:45-13:00	<p>Component 2 – Validation and testing at basin-wide level</p> <p>Basin approach and implementation (25 min)</p> <ul style="list-style-type: none"> Drought management approach Plan for flood approach Plan for application to TDA/SAP <p>Stakeholder interaction (10 min)</p> <ul style="list-style-type: none"> Stakeholder interaction and feedback on basin level <p>Annual workplan for 2016 including deliverables (5 mins)</p> <p>Discussion (15 min)</p>	<p><i>DHI</i></p> <p><i>IWA</i></p>
13:00-14:00	Lunch	
14:00-15:00	Component 3 - Validation and testing at local level	

Time	Item	Responsible
	<ul style="list-style-type: none"> Local level approach using WSP (15 mins) Stakeholder interaction and feedback on local level (10 min) <ul style="list-style-type: none"> Integration of utilities and other institutions in the development of the local level approach <p>Annual workplan for 2016 including deliverables (5 mins)</p> <p>Discussion (20 min)</p>	DHI IWA IWA
15:00-15:15	Coffee Break	
15:15-16:00	Component 4 - Capacity building and dissemination Capacity development (15 min) <ul style="list-style-type: none"> Awareness workshops Capacity building approach Technical documentation – status (10 min) <ul style="list-style-type: none"> Training materials and deliverables Communication and dissemination (15 mins) <ul style="list-style-type: none"> Communication strategy update Communication and dissemination – web site, newsletter, video etc. Feedback on infographic <p>Annual workplan for 2016 including deliverables (5 mins)</p> <p>Discussion (20 min)</p>	IWA DHI IWA
16:00-17:00	Project budget and workplan <ul style="list-style-type: none"> Overview of the project budget Changes to the project budget Expenditure to date (Dec 2015) Discussion and approval of workplan and budget by SC 	IWA and DHI
18:00-20:00	Dinner	

1 April 2016 – Day 3 – Sukosol Hotel, Kaewkamol (2nd floor Garden wing)
Chair: HAIL

Time	Item	Responsible
09:00-09:15	Review of Day 2 Overview of agenda, meeting structure	UNEP
09:15-10:00	Project budget and workplan	IWA and DHI
10:00-10:15	Coffee break	
10:15-11:00	Discussion from Day 2 – workplan, budget (as needed)	IWA and DHI
11:00-12:15	Stakeholder involvement <ul style="list-style-type: none"> Suggestion for specific project targets for stakeholder implementation of tools Requirements and time frame 	UNEP
12:15-12:30	3rd Project Steering Committee <ul style="list-style-type: none"> Suggestion and agreement on the date and place of the 3rd Project Steering Committee meeting 	HAIL

12:30-13:00	Mid-term review	<i>UNEP</i>
13:00-14:00	<i>Lunch</i>	
14:00-15:00	Any other business	<i>HAIL</i>
15:00-15:30	Wrap up and closing remarks	<i>UNEP</i>

NOTE: Depending on what is needed to be discussed on Day 2, the meeting may end earlier

Annex 2 – Participants

Name	Organisation	E-mail
Sutat Weesakul	Hydro and Agro Informatics Institute (HAI)	sutat@haii.or.th
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Annex 3 – PSC ToR

The Project Steering Committee (PSC) or Steering Committee (SC) for the UNEP/GEF Project entitled: “Flood and Drought Management Tools” (hereafter referred to as the project) is established under the Project Document as approved by the collaborating institutions and organisations during the project preparation phase as follows:

A specific responsibility of the SC will be to facilitate liaison with the GEF Implementing Agency (UNEP) regarding overall governance of the project. The Steering Committee shall:

- Be the decision making body for the project;
- Provide governance assistance, policy guidance and political support in order to facilitate and catalyse implementation of the project, and to ensure relevant project outcomes; and
- Annually review program progress and make managerial and financial recommendations as appropriate, including review, amendment and approval of annual reports, budgets and work plans.

1. Membership of the Committee

- 1.1. Full members of the SC shall consist of key representatives of the basin organisations participating in the project and external observers. Key representatives are defined as the basin organisation (i.e. VBA, LVBC and HAI). The external observers consist of UNEP-DHI and NBI;
- 1.2. In addition the Implementing Agency (UNEP), and the executing agencies (DHI and IWA) and the GEF Secretariat, shall designate individuals to serve as *ex officio* members of the committee;
- 1.3. The host organization of the steering committee will be invited to be the Chairperson with responsibility for chairing the formal meeting of the Committee and for acting as Chairperson of any ad hoc meetings convened during the subsequent inter-sessional period (which is until the next steering committee meeting). Such ad-hoc meetings can take place through teleconference as required and will be organized by the Project Management Unit (PMU);
- 1.4. SC chair will be active for one year and then handover to the new chair at the next SC; and
- 1.5. The SC may agree, by consensus, at the commencement of each meeting to co-opt additional experts as observers or advisors to any meeting or meetings of the Committee or part thereof, as the committee shall deem appropriate.

2. Secretariat of the Committee

- 2.1. The PMU established by IWA/DHI under authority of the project document shall act as Secretariat for the Committee; and
- 2.2. The PMU shall act as Secretary to the Committee and as rapporteur for formal meetings of the Committee.

3. Meetings of the Committee

- 3.1. The PMU acting in its capacity as Secretariat shall convene regular annual meetings of the Project Steering Committee; and
- 3.2. Ad hoc meetings may be convened:
 - When a majority of the Committee members make a request for such a meeting to the PMU; and
 - At the request of the PMU when circumstances demand.

4. Terms of Reference

The SC shall operate on the basis of consensus to:

- 4.1. Provide direction, and strategic guidance to the Project Management Unit (PMU) regarding project implementation and execution of agreed activities over the entire period of the project including the establishment of timelines and milestones for provision of agreed outputs;
- 4.2. Review and approve the annual work programme and budget for project execution ensuring that these remain focused on the project overall goal and objective;
- 4.3. Facilitate co-operation and co-ordination among the participating institutions, organisations and agencies particularly in transboundary environmental issues and cross component issues;

- 4.4. The role of each basin representative is to channel the outcomes and outputs of the project to relevant institutions within the basin for further endorsement and uptake. This is needed for buy in, adoption and usability after completion of the project;
- 4.5. Review and evaluate progress in project implementation and execution, and provide guidance to the PMU and core partners regarding areas for improvement, paying particular attention to:
 - Progress in implementation of the various project components;
 - The monitoring and evaluation plan of the project;
 - The quality of outputs produced;
 - The sustainability of the project outcomes; and
 - The replicability of actions recommended by the project; assist in soliciting wide support for the project;
- 4.6. Assist UNEP and the PMU in soliciting wide support for the project and raising such additional co-financing as may be required from time to time;
- 4.7. In order to enhance dissemination of project results and recommendations, the SC should review and monitor:
 - Stakeholder buy-in to the project during implementation (by review of the Monitoring and Evaluation survey reports);
 - Whether results reach intended targets; and
 - The risks of failure;
- 4.8. Provide feedback on Project Implementation Review (PIR) reports as needed and approve progress on the results framework presented at each SC meeting;
- 4.9. Consider and approve such recommendations as shall be presented to the Committee by the PMU and the all stakeholders regarding project execution;
- 4.10. Review and approve the outline of, and subsequently the final reports arising from the project, including conclusions and recommendations particularly focusing on quality of outputs, and the information dissemination strategy, including its utility by potential users; and
- 4.11. Agree at their first meeting:
 1. The membership, meeting arrangements and terms of reference of the committee as prepared in draft in this document; and
 2. The rules of procedure, and such standing orders and manner of conducting business as may be considered necessary by the committee.

5. Conduct of Committee Business

- 5.1. The Committee shall operate and take decisions on the basis of consensus, regarding any matter relating to project execution that has implications for key stakeholders; and
- 5.2. Where full consensus cannot be achieved in reaching agreement during a full meeting of the Committee, on any matter relating to project execution that has implications for core partners, the Secretariat shall, in consultation with the Committee, facilitate negotiations during the subsequent inter-sessional period with a view to seeking resolution, and will report the results of these negotiations to the Committee members.

6. Other Matters

- 6.1. Notwithstanding the membership and terms of reference contained in this document the Project Steering Committee shall have the power to amend, from time to time, the membership and terms of reference of the Committee; and
- 6.2. The role of each basin executive in the SC is to channel project outcomes and outputs to high levels of government to ensure endorsement across countries and institutions.

Annex 4 – Communication material

Product	Purpose
Factsheet / Information sheet(s)	<p>Factsheets/information sheets have been developed to provide an overview of the project for different audiences and on various topics.</p> <p>The factsheets/information sheets are updated on a regular basis with new developments from the project.</p>
<ul style="list-style-type: none"> Project information sheet [eng / fr / thai] 	Provides a quick means of informing targeted audiences and key stakeholders on the project.
<ul style="list-style-type: none"> Basin factsheets <ul style="list-style-type: none"> Chao Phraya Basin Lake Victoria Basin Volta Basin 	Basin factsheets provide a more extensive overview of the pilot basins. The aim is to provide more insight into why management of floods and droughts is essential.
<ul style="list-style-type: none"> Basin profiles <ul style="list-style-type: none"> Chao Phraya Basin Lake Victoria Basin Volta Basin 	Basin profiles provide a quick overview of the pilot basin, the impact flood and drought events, existing initiatives, future changes and the key project stakeholders.
<ul style="list-style-type: none"> Utility information sheet [eng / fr / thai] 	Utility information sheet provides an overview of the relevance and application of the DSS at local/utility level.
<ul style="list-style-type: none"> Basin information sheet [eng / fr / thai] 	Basin information sheet provides an overview of the relevance and application of the DSS at basin level.
<ul style="list-style-type: none"> Drought information sheet [eng / fr / thai] 	Drought information sheet provides an overview of how drought tools or functionality is being developed and how they can be used.
<ul style="list-style-type: none"> Flood information sheet (to be completed) [eng / fr / thai] 	Flood information sheet provides an overview of how flood tools or functionality is being developed and how they can be used.
Poster	The posters provide an overview on specific topic areas and can be used as promotional material and to explain project outputs.
<ul style="list-style-type: none"> Flood and Drought Management Tools – Project Overview 	Provides a quick overview of the project informing viewers on the project approach and geographical focus
<ul style="list-style-type: none"> Support for Water Safety Planning by the Planning Decision Support System 	Provides an overview of how the developed methodology (DSS) will support the implementation of the WSP, in particular describing the water supply system and identifying hazards, control measures and monitoring for each component of the water supply system
<ul style="list-style-type: none"> Drought Workflow Planning 	Provides an overview of how operational drought monitoring system based on near real-time remote sensing data can be used to support decision makers in identifying emerging drought areas
<ul style="list-style-type: none"> Tools developed for supporting drought management within Thailand 	Provides an overview of what indices can be used to assess a drought situation and how this information can be used for planning.
Key Messages	Key messages have been developed to ensure consistency in the communication of project messages by partners and stakeholders.
Project website: http://fdmt.iwlearn.org/en	<p>The (IW:LEARN) project website is the primary platform where visitors can be directed to find information. It will remain the major communication channel for disseminating information and engaging stakeholders.</p> <p>Web content will include: media materials, blogs, news stories, multimedia products, Q&A,</p>

Product	Purpose
	<p>factsheets, basin profiles, relevant resources, events, project outputs (i.e. meeting reports), etc.</p> <p><i>NOTE: The website will be further developed in the upcoming phase of IW LEARN. It will be a test case to transfer to the new web platform under development by June 2016.</i></p>
Briefing notes	Briefing notes are developed to influence decision making by improving the understanding of an issue, around flood and drought management, and providing options and recommendations to address the issues.
<ul style="list-style-type: none"> Climate resilience and link between the catchment and urban area 	Briefing note explaining the importance of utilities addressing issues beyond their mandated boundaries to better plan for hazards owing to climate change (to be developed).
<ul style="list-style-type: none"> DSS and its value for planning around flood and drought management 	Briefing note addressing the value of a DSS for improved planning at different scales in the context of flood and drought management (to be developed).
IW:LEARN Experience notes <ul style="list-style-type: none"> How to use the information in the DSS in decision making processes 	Experience notes will enable the project to share its practical experience, including successful practices, approaches, strategies, lessons and methods that emerge from the project. The experience notes will address the key project output (a methodology incorporating flood and drought management into planning) and its significance. This can be useful when replicating the project for other regions.
Templates <ul style="list-style-type: none"> PPT slides/presentation content 	<p>Templates are developed and distributed to project stakeholders. These templates can be used when presenting the project to their partners and stakeholders. This approach will ensure consistency around the communication of the project and its outputs.</p> <p><i>NOTE: there is a physical template for the FDMT project and then there are updated project presentations for project stakeholders to use</i></p>
Newsletters/magazines	Dissemination tool for project stakeholders, to inform and engage.
<ul style="list-style-type: none"> Pre-packaged content for newsletters 	To inform and engage a wider audience on the project and the outputs and continue to build interest beyond project stakeholders.
<ul style="list-style-type: none"> Project newsletter 	To inform and engage stakeholders and a wider audience on new project developments, initiatives and activities around flood and drought management, relevant events, etc.
Blogs and news <ul style="list-style-type: none"> Pre-packaged blog article(s) 	<p>Provide an accessible platform for engaging a wider audience on the project; a channel for partners to share their knowledge and experience.</p> <p>The following blogs are planned for the next 6 months:</p> <ul style="list-style-type: none"> Technical Training: Lake Victoria and

Product	Purpose
	<p>Volta basins</p> <ul style="list-style-type: none"> • European River Symposium 2016 • Steering Committee meeting (30 March 1st April, 2016) • IW LEARN conference • Global Water Safety Conference (25-28 April 2016) – with link to WSP support • IWA World Water Congress (9-14 October 2016) – with link to cooperation and drought management
<p>Infographic(s)</p> <ul style="list-style-type: none"> • Developing a dynamic infographic to convey certain aspects of flood and drought management from catchment to cities <p><i>Will maintain a consistent image with other communication material</i></p>	<p>Easy to use way of disseminating key information, good for digital communication channels</p>
<p>Video(s)</p>	<p>Attractive platform for engaging stakeholders and disseminating information in a more appealing way.</p> <p>Multiple ‘thought’ pieces from project participants explaining the challenges and opportunities in each basin. A second video will be developed on the application of the DSS.</p>
<ul style="list-style-type: none"> • Videos to be developed include (to be confirmed): <ul style="list-style-type: none"> ○ Overview of the project (under development) ○ Video showing diversity of stakeholders and viewpoints in relation to the DSS (under development) ○ Technical overview of specific basins, what are the problems and how the DSS can be applied ○ Video footage explaining the functionality of the tools ○ Videos for different audiences: <ul style="list-style-type: none"> ▪ Users (water utilities) ▪ Users (basins) ▪ Decision makers <p>e.g. https://vimeo.com/160019283</p>	<p>Series of videos showcasing different stakeholders. The videos will address the problem around flood and drought and the concept of a DSS – they will provide an indication of the importance of planning and how to plan better using a DSS</p> <p>More appealing way to address the problem and how the project will help land, water and urban area managers operating in transboundary river basins to recognise and address the problem within planning.</p>
<ul style="list-style-type: none"> • Animation on the impact of flood and drought management 	<p>Illustrate the benefit of flood and drought management and how a DSS can help planning and making the right decisions to address the issues around flood and drought events</p> <p>The animation offers a simplified visual approach which can communicate the issue and the solution which the project is focusing on</p>
<p>Social Media</p> <ul style="list-style-type: none"> • Pre-packaged social media content 	<p>Platform for disseminating information to stakeholders and a wider audience, and</p>

Product	Purpose
	engaging stakeholders more proactively.
Media Pack (incl. press release) <ul style="list-style-type: none"> Press release, factsheet and information sheet, Q&A, basin profiles, op-ed article, presentation on project overview, photos/graphics, etc. <p><i>More information on the media pack is provided in the next section</i></p>	<p>Pre-packaged content for project stakeholders, which can be used for further promotion of the project within project stakeholder network.</p> <p>Required for media outreach and to make the project understandable and accessible to business and news media.</p>