



FLOOD & DROUGHT MANAGEMENT TOOLS

Technical Training: Chao Phraya Basin (Utility) Report

18-20 June 2017

Pullman Bangkok King Power Hotel

Bangkok, Thailand



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1. Executive summary

There is 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. The increased frequency and unpredictability of floods and droughts is a priority concern across scales from transboundary to local, along with the other multiple drivers that cause depletion and degradation of shared water resources.

The Flood and Drought Management Tools (FDMT) project (<http://fdmt.iwlearn.org/>) is funded by the Global Environment Facility (GEF) International Waters (IW) and implemented by UNEP, with the International Water Association (IWA) and DHI as the executing agencies. The project is developing online technical applications which can be applied individually or together at the basin or local level to facilitate the inclusion of information about floods, droughts and future scenarios into Integrated Water Resources Management (IWRM) planning, Transboundary Diagnostic Analyses (TDA) and Strategic Action Plans (SAP), and Water Safety Planning (WSP). The project is being implemented from 2014 - 2018, and 3 pilot basins (Volta, Lake Victoria and Chao Phraya) are participating in development and testing.

The Flood and Drought (FD) Portal (www.flooddroughtmonitor.com) is the main output of the project and has a series of technical applications supporting stakeholders to carry out baseline assessments using readily available satellite data, impact assessments through the analysis of the data, planning options and a means for disseminating information to relevant groups or individuals. Understanding how to use these tools is an important aspect of the future operational use and sustainability of the FDMT project, therefore, capacity on the use and application of the flood and drought portal, as well as giving stakeholders an opportunity to provide feedback on the functionality of the portal will go a long way to achieving this.

The project therefore held a technical training targeted at technical staff and junior to senior level water resource professionals from both the Metropolitan Waterworks Authority (MWA) and Provincial Waterworks Authority (PWA), as they are the key stakeholders identified in the Chao Phraya Basin for testing the tools and methodology developed.

The purpose of the training was to provide a basis for bringing water utilities together around a common planning tool with a special focus on Water Safety Planning, while being able to test and validate the technical applications (tools) available on the FD portal. Feedback from the workshop is being gathered and will be included in the final development and refinement of the tools in the FD portal.

The objectives of the technical trainings are to:

- Enhance stakeholders understanding of the tools on the FD portal
- Provide the stakeholders with an opportunity to give feedback on the functionality of the tools on the FD portal
- Refine the development of the FD portal and the associated tools based on stakeholder feedback

The training in the Chao Phraya Basin held in Bangkok was a 3 day training from 18-20 June 2018 with representatives from both the Metropolitan Waterworks Authority (MWA) and Provincial Waterworks Authority (PWA).

2. Project background

There is 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. The increased frequency and unpredictability of floods and droughts is a priority concern across scales from transboundary to local, along with the other multiple drivers that cause depletion and degradation of shared water resources.

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Understanding how to use the technical applications is an important aspect of the future operational use and sustainability of the FDMT project, therefore, capacity on the use and interpretation of the tool and their outputs, as well as giving stakeholders an opportunity to provide feedback on the functionality of the tools will go a long way to achieving this.

The project has been holding a series of technical trainings targeting technical staff and junior to senior level water resource professionals from key project stakeholder. Trainings intend to provide a basis for bringing the basin organisations and relevant basin level authorities, and water utilities together around a planning tool, while being able to test and validate the technical content of tools. Feedbacks from the trainings are integrated into the development and refinement of the tools.

The objectives of the technical trainings are to:

- Enhance stakeholders understanding of the methodology and tools developed under the FDMT project
- Provide stakeholders with an opportunity to give feedback on the technical content of the tools
- Refine the development of the methodology and tools based on stakeholder feedback

¹ The term tools and technical applications are used interchangeably. Tools in this context are defined as the technical applications being developed by the project and are available at <http://www.flooddroughtmonitor.com/home>

3. Technical training

3.1 Overview of training

Technical trainings on the use of the tools are scheduled on a yearly basis throughout the project phase within each of the pilot basins. The technical training provides capacity building as well as an opportunity for different stakeholder groups (e.g. water utilities and basin organisations/water agencies) to give feedback on the functionality and use of the developed tools to date. The feedback is included in the further development and refinement of technical content of the tools.

The technical training provides a basis for bringing water utilities around a common tool which can assist in planning considering information on floods, droughts and future scenarios. The training in Bangkok was a 3 day training from 18-20 June 2018 with representatives from both the Metropolitan Waterworks Authority (MWA) and Provincial Waterworks Authority (PWA).

See Annex 1 for the agenda.

The training sessions reflected the developed functionality to date, using real data from the Chao Phraya Basin.

Objective

The objective of the technical training was to:

- Enhance stakeholders understanding of the methodology and tools developed under the FDMT project
- Provide stakeholders with an opportunity to give feedback on the technical content of the tools
- Refine the development of the methodology and tools based on stakeholder feedback

Expected outcome of the workshop

The expected outcome of the technical training is for key stakeholders to understand the functionality, how to use the tools, and how the output from the tools could be used in decision making around flood and drought management and planning.

For the project, it was also an opportunity to gather valuable feedback on the functionality and how the developed tools could be used in decision-making.

Target group

The target group of the technical training is the technical staff within the water utilities, junior to senior level professionals as recommended by key stakeholders. See Annex 2 for full list of participants.

3.2 Technical training

The training is for technical staff and will focus on the capabilities and potential uses of the methodology and tools developed in the FDMT project with a special focus on Water Safety Planning (WSP). There will also be opportunities to explore other tools such as issue analysis, water indicator, and data and information. The training is a combination of lectures and hands on exercises, where the exercises will contain relevant issues within Thailand.

This technical training is the final joint PWA and MWA training on the tools from the Flood and Drought Management Tools project, however there is still the opportunity for follow up and refresher training until the end of 2018.

The following section will provide a brief overview of each day.

**all material (presentations, step-by step guides, etc.) can be accessed [here](#).*

Day 1. Project overview, Review and update of the WSP support application

Monday, 18 June 2018

The first day started with a welcome address and an overview of the workshop and FDMT project, looking at the general functionality of the Flood and Drought Portal (see Figure 1) and the workgroup concept. Participants went through an exercise to create a workgroup. Workgroups are users sharing information in a common group. The workgroup concept is developed to ensure that different types of information is kept confidential or only shared with a specific group of users.

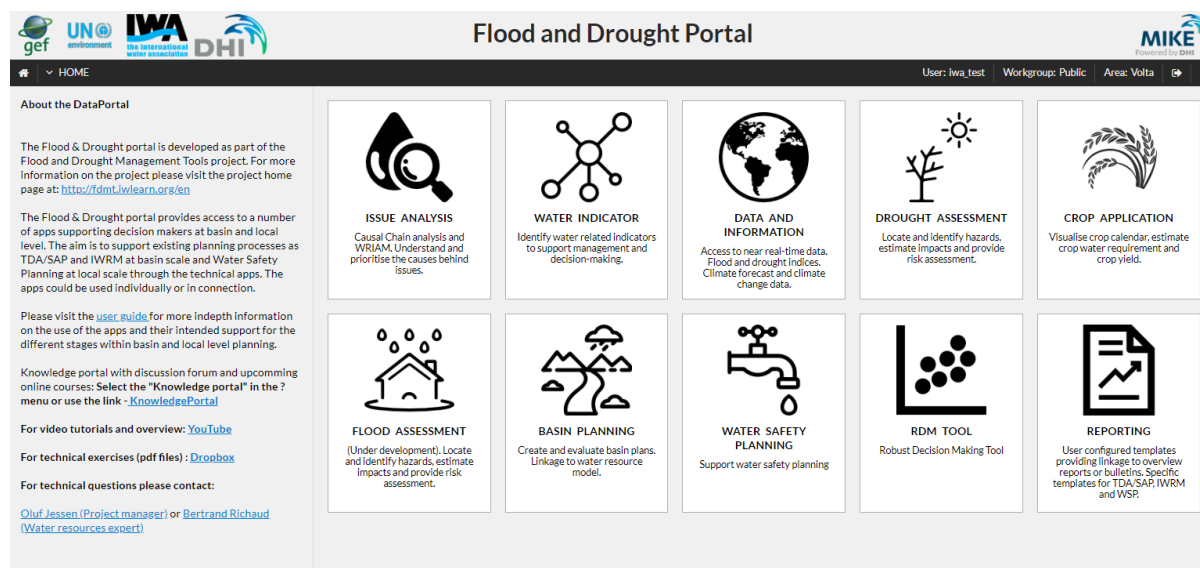


Figure 1. Flood and Drought Portal

This was followed by a presentation on the WSP supporting application. The application is the main entry point for water utilities. Through the application, water utilities are prompted to think about climate change impacts on their supply system and for hazard identification in order to ensure their WSP is climate resilient. The application supports the 11 modules (steps) identified in the WSP manual (<http://www.wspportal.org/what-are-water-safety-plans/>), each representing a key step in the WSP development and implementation process. Each module contains a brief overview and provides assistant for each key step on the development of the WSP.

Participants went through exercises addressing Modules 1-8 of the WSP process.

Day 2. Drivers or causes behind flooding and drought, indicators to measure the state, and required data and information

Tuesday, 19 June 2018

Day 2 started with the remaining Modules (9-11) and a presentation by MWA on their use of the WSP supporting application. This was followed by an overview of the support provided in identifying and prioritising the key environmental impacts from flood and drought events for water utilities affecting their operations.

The Issue Analysis application aims at analysing environmental issues and the causes behind their impacts. The application is based on the Causal Chain Analysis (CCA) method to identify the immediate, underlying and root causes behind the impact and the Water Resource Issues Assessment Method (WRIAM) is used to evaluate the key issues and prioritise the environmental impacts based on the a rapid assessment. Participants explored the application by identifying common environmental issues faced in their utility and assessed their impacts using the CCA and WRIAM methods. Some environmental issues identified by participants were chemical contamination high turbidity levels impacting the quality of water as well as limited water availability.

To help in assessing the state of an issue and the causes identified by participants, the Water Indicator application was presented. The water indicator application is a library of indicators providing information about indicators, including their relevance and how it can be used for planning and decision making. By default, a number of frameworks have been created which users have the option to use as a starting point when developing their own framework for their respective organisations. Most interesting is the link with the Issue Analysis application, enabling users to identify relevant indicators for the issues they have identified.

Towards the end of the day an overview of the Data and Information application was provided. The overview demonstrated the different climate data being made available to users in near real-time. The information can be used for flood and drought assessment.

Day 3. Climate information and applicability for water utilities

Wednesday, 20 June, 2018

Day 3 was spent on further exploring the Data and Information application, and the applicability of climate information for water utility operation and planning. Presentations and exercises focused on using climate information to identify historic and current climate hazards, and the relevance and use of indicators, to forecast climatic conditions and to project climate change for long-term planning (e.g. infrastructure development and management).

Before closing the day, the Drought Assessment and Flood Assessment applications were explored. The applications provide a workflow for drought early warning and flood management.

3.3 Next steps

The project is in its final stages and all the applications are being worked to completion based on feedback from participants. Learning materials and guidance documents will be provided to users. Tutorials, videos and a user guide will provide the required information on the tools to enable users to build their capacity around the use of the technical applications.

The knowledge portal (<http://www.flooddroughtmonitor.com/knowledgeportal/>) is expected to serve as a platform for users to interact with other users through the online discussion boards and also provide relevant material and information about all the available application through the online courses.

Once all the applications are completed, the focus of the remaining time will be on consultation to ensure better uptake of the methodology and technical applications.

Annex 1 – Agenda

18 June 2018 – Day 1: Water Safety Planning application – Review and update of the WSP support application and how it can be used in practice

Time	Item
09:00-09:15	Welcome and introduction – overview of workshop and introductions
09:15-10:00	Flood and Drought Portal – General Functionality and workgroups Exercise – Creating a workgroup
10:00-10:30	WSP Supporting Application Overview of application and link to climate hazards <i>Input information into WSP tool to develop risk assessment of water supply system</i> Outcome: Capacity and knowledge to integrate WSP tool as a resource into planning process
10:30-11:00	Break
11:00-11:30	Module 1 Assembling the team
11:30-12:30	Module 2: Water supply system
12:30-13:30	Lunch
13:30-15:00	Module 3: Hazards and risks Module 4: Control measures Module 5: Improvement plan
15:00-15:30	Break
15:00- 16:30	Module 6: Monitoring control measures Module 7: Verify the Effectiveness of the WSP Module 8: Prepare Management Procedures

19 June 2018 – Day 2: Introduction to the drivers or causes behind flood and drought, use of indicators to measure the state of specific causes and overview and knowledge of relevant data.

9:00-10:30	WSP Supporting Application Module 9: Develop Supporting Programmes Module 10: Plan and Carry Out a Periodic Review of the WSP Module 11: Review the WSP Following an incident
10:30-11:00	Break
11:00-11:30	MWA's use of WSP tool – Siwilai Kitpitak (TBC)
11:30-12:30	Flood and Drought – Causes and impact <i>Identify and prioritise the key environmental impacts from flood and drought events within the utility</i> Outcome: Identification of prioritised impacts and the underlying causes of flood and drought events that affect water utility operations in Thailand.
12:30-13:30	Lunch
13:30-14:30	Assessing the state with indicators <i>Identify relevant indicators for the underlying causes of flood and drought in the Chao Phraya Basin</i> Outcome: Identification of indicators and the required data for assessing the state of flood and drought in Thailand.
14:30-15:00	Break
15:00-16:30	Data and information - Climate Overview <i>Overview and understand available near real time data for flood and drought assessment.</i> Outcome: Knowledge and understanding of available data to be used for flood and drought assessment.

20 June 2018 – Day 3: Overview of climate information and applicability for water utilities

Time	Item
09:00-09:30	Data and Information Presentation: HAI
09:30-10:30	Climate hazard – flood and drought indicators and indices <i>Identify historic and current climate hazards, and the relevance and use of indicators</i> Facilitated by HAI
10:30-11:00	<i>Break</i>
11:00-12:00	Climate hazard – flood and drought indicators and indices <i>Forecasting climatic conditions</i> Facilitated by HAI
12:00-13:00	<i>Lunch</i>
13:00-14:00	Climate change <i>Projecting climate change for long term planning</i>
14:00-15:00	Drought application <i>Objective and workflow for drought early warning in Thailand.</i> Outcome: Practical understanding on application of drought early warning in Thailand.
15:00-15:30	<i>Break</i>
15:30-16:30	Flood application <i>Overview and status of the applications supporting flood management.</i> Outcome: Knowledge and understanding of flood related data and indices as well as state and uncertainty of short-term forecast.
16:30	Wrap up

Annex 2 – Participants

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