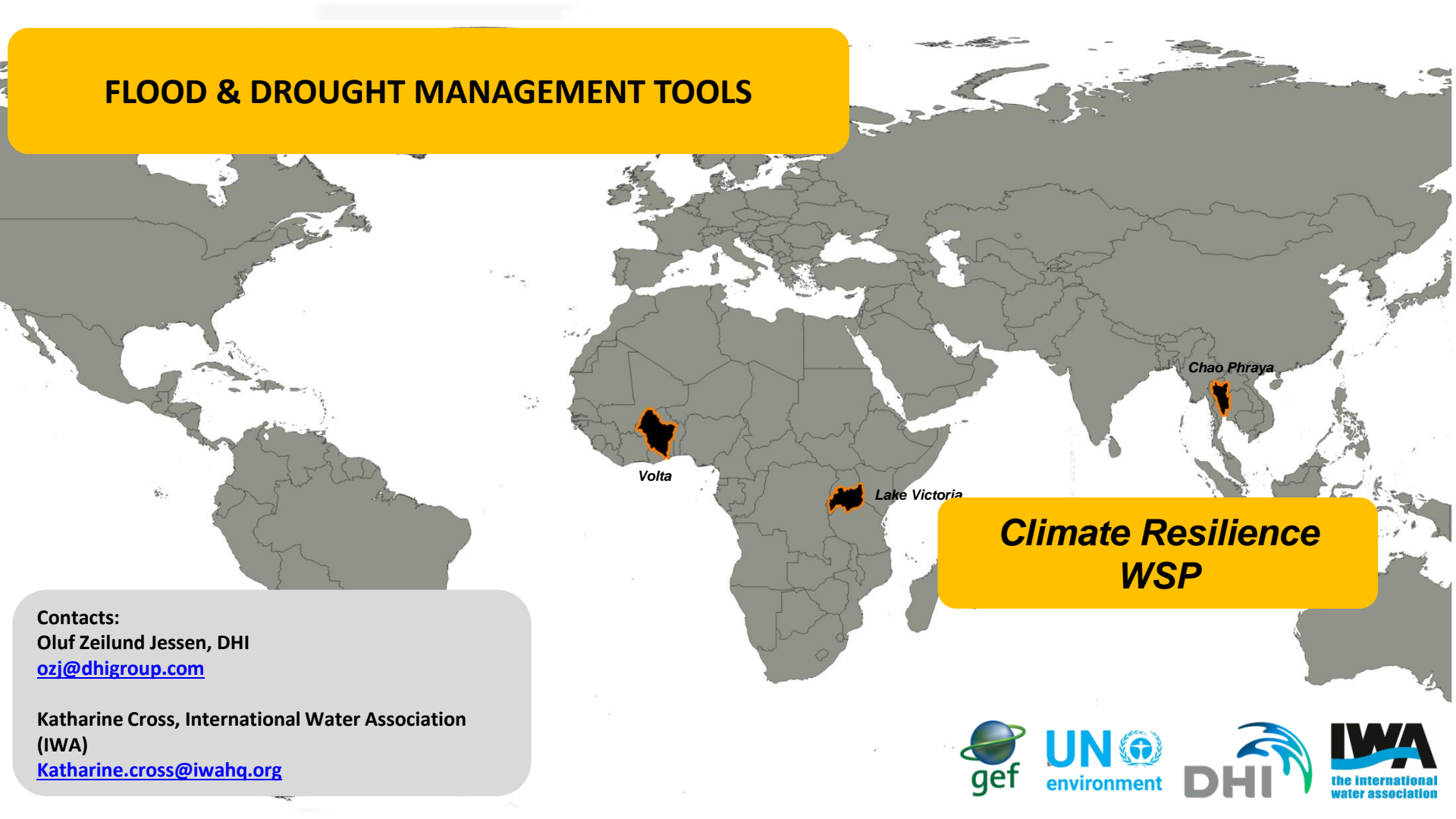


FLOOD & DROUGHT MANAGEMENT TOOLS



**Climate Resilience
WSP**

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Global threats impacting drinking water

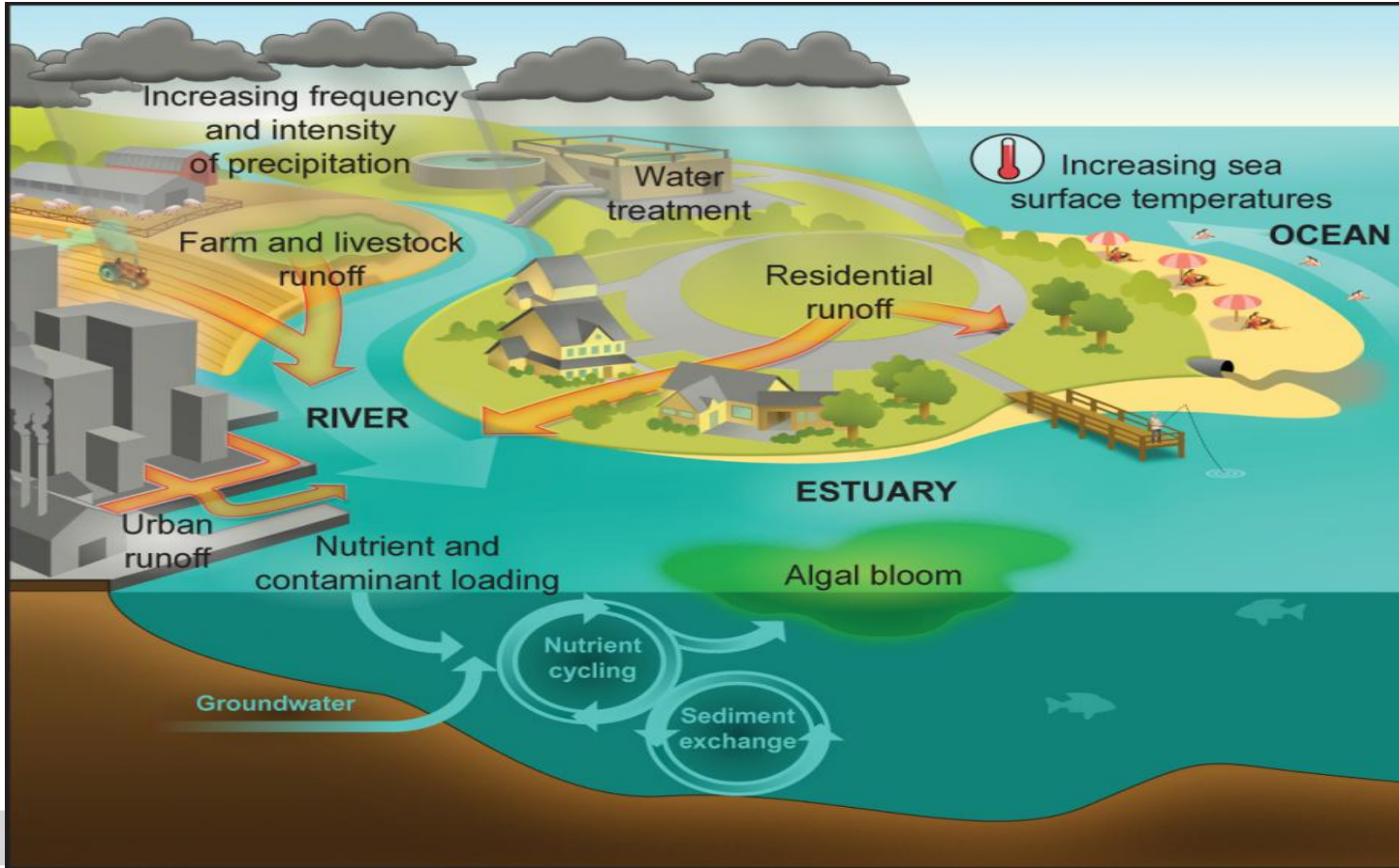


Figure: Links between Climate Change, Water Quantity and Quality, and Human Exposure to Water-Related Illness. Source: U.S. Global Change Research Program

<https://health.2016.globalchange.gov/water-related-illness>

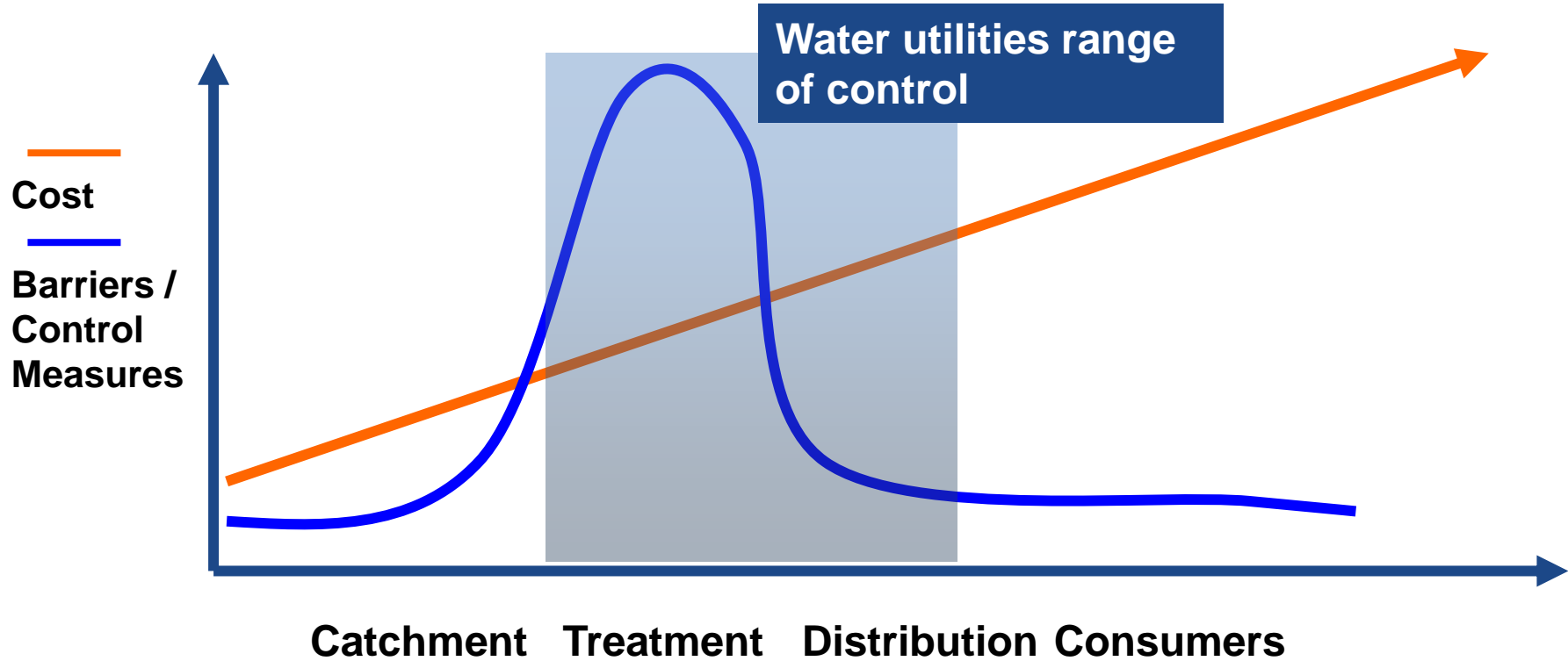
Impacts of global and local risks

The combination of increased nutrient loading and changes in temperature (due to climate variability and change) can result in algal blooms which can impact reservoirs and downstream water treatment plants



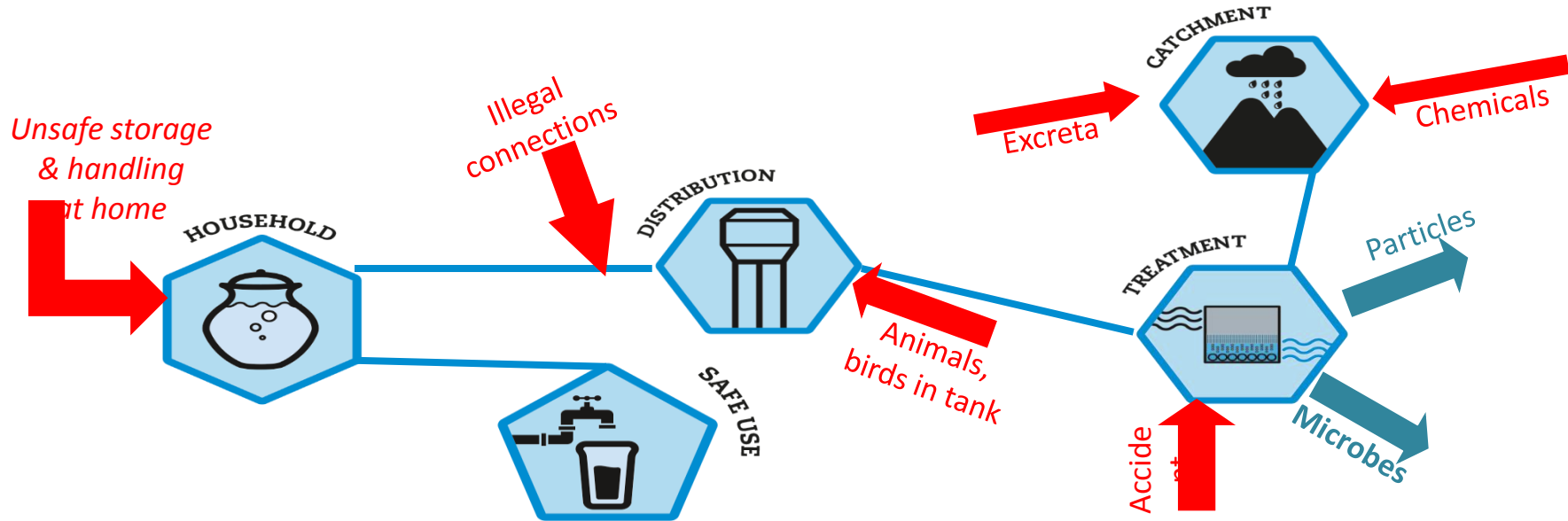
Picture Explanation: China's Chao Lake has been heavily polluted by agricultural operations. Photo credit: Cy Jones, WRI. Source: WRI <http://www.wri.org/blog/2012/08/tools-improve-water-quality>

Water utilities control



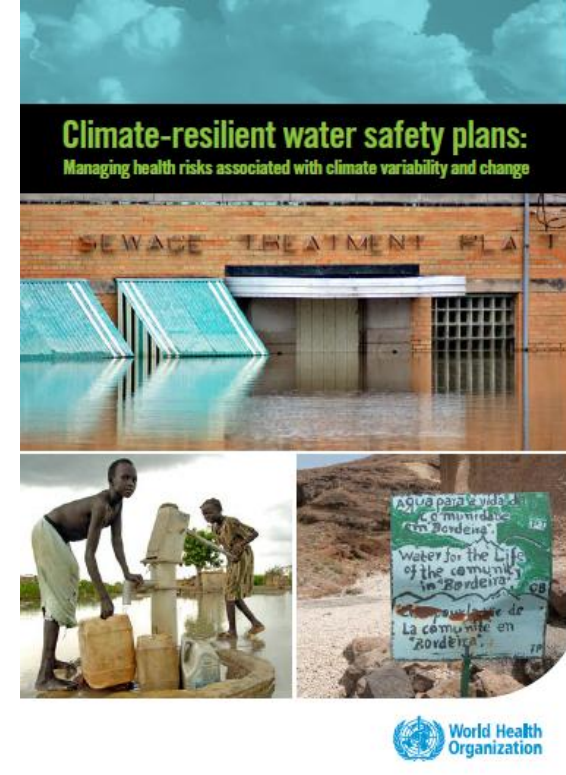
What is Water Safety Planning?

It is a **comprehensive risk assessment and risk management approach** that encompasses all steps in the water supply from catchment to consumer



Climate resilient water safety planning

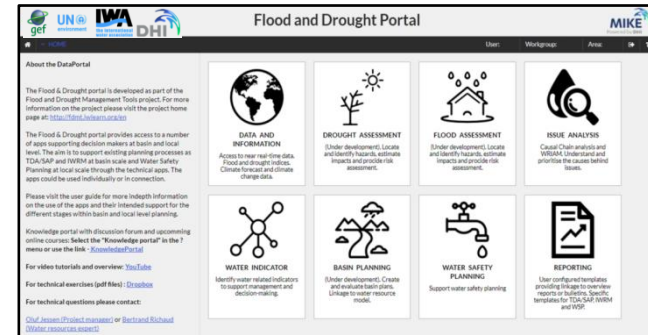
- Water safety plan (WSP) process offers a systematic framework to manage climate risks by considering the implications of climate variability and change
- Guidance provided by WHO on how climate considerations can be integrated into WSP
- Will provide greater resilience to the current and predicted impacts of climate change and variability on water supplies.
- Flood and Drought Project looking at how water utilities can understand and use climate information in WSPs



Impacts of Floods and Droughts on water supply system

Floods	Droughts
<p>Impact on quality of surface water through:</p> <ul style="list-style-type: none">- Erosion and instream turbulence- Pollutants from diffuse sources	<p>Impact on quality of surface water:</p> <ul style="list-style-type: none">- Increased pollution concentration due to reduced dilution- Eutrophication caused by high temperatures (associated with drought)- Release of dissolved organic matter by soils under drought
<p>Impact on water quantity includes threats to infrastructure</p> <ul style="list-style-type: none">- Damage; Reduce capacity; Overflow- Links back to quality	<p>Impact on water quantity includes</p> <ul style="list-style-type: none">- Reduced quantity of water
<p>Impact on groundwater</p> <ul style="list-style-type: none">- Drives contaminated water into aquifers through wells	<p>Impact on groundwater</p> <ul style="list-style-type: none">- Reduced recharge- Reduced dilution of contaminants due to reduced recharge

FLOOD & DROUGHT MANAGEMENT TOOLS



- **Why?** Increasing frequency, unpredictability and severity of flood and drought events. A need for adaptive planning and management of water resources at basin and local level
- **How?** Developing web-based tools to support planning and decisions to address flood and drought risks from the transboundary basin to water utility level
- **Who?** The project is being implemented by UNEP; Executed by DHI and IWA from June 2014 to June 2018. End users are water resource agencies and water utilities.
- **Where?** Technical applications are being tested across 3 pilot basins (Volta, Lake Victoria and Chao Phraya).

Flood and Drought Portal

The screenshot displays the 'Flood and Drought Portal' interface. At the top, it features logos for gef, UN environment, IWA, and DHI, along with the MIKE logo. The main content area is divided into a left sidebar and a grid of tool categories. The sidebar contains an 'About the DataPortal' section with introductory text and links. The grid contains eight tool categories, each with an icon, a title, and a brief description. Two categories, 'DATA AND INFORMATION' and 'WATER SAFETY PLANNING', are highlighted with red borders.

About the DataPortal

The Flood & Drought portal is developed as part of the Flood and Drought Management Tools project. For more information on the project please visit the project home page at: <http://fdmt.iwlearn.org/en>

The Flood & Drought portal provides access to a number of apps supporting decision makers at basin and local level. The aim is to support existing planning processes as TDA/SAP and IWRM at basin scale and Water Safety Planning at local scale through the technical apps. The apps could be used individually or in connection.

Please visit the user guide for more indepth information on the use of the apps and their intended support for the different stages within basin and local level planning.

Knowledge portal with discussion forum and upcoming online courses: Select the "Knowledge portal" in the ? menu or use the link - [KnowledgePortal](#)

For video tutorials and overview: [YouTube](#)

For technical exercises (pdf files) : [Dropbox](#)

For technical questions please contact:

[Oluf Jessen \(Project manager\)](#) or [Bertrand Richaud \(Water resources expert\)](#)

<p>DATA AND INFORMATION Access to near real-time data. Flood and drought indices. Climate forecast and climate change data.</p>	<p>DROUGHT ASSESSMENT (Under development). Locate and identify hazards, estimate impacts and provide risk assessment.</p>	<p>FLOOD ASSESSMENT (Under development). Locate and identify hazards, estimate impacts and provide risk assessment.</p>	<p>ISSUE ANALYSIS Causal Chain analysis and WRIAM. Understand and prioritise the causes behind issues.</p>
<p>WATER INDICATOR Identify water related indicators to support management and decision-making.</p>	<p>BASIN PLANNING (Under development). Create and evaluate basin plans. Linkage to water resource model.</p>	<p>WATER SAFETY PLANNING Support water safety planning</p>	<p>REPORTING User configured templates providing linkage to overview reports or bulletins. Specific templates for TDA/SAP, IWRM and WSP.</p>

Planning steps supported with technical applications assessable from the Flood and Drought Portal, www.flooddroughtmonitor.com

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