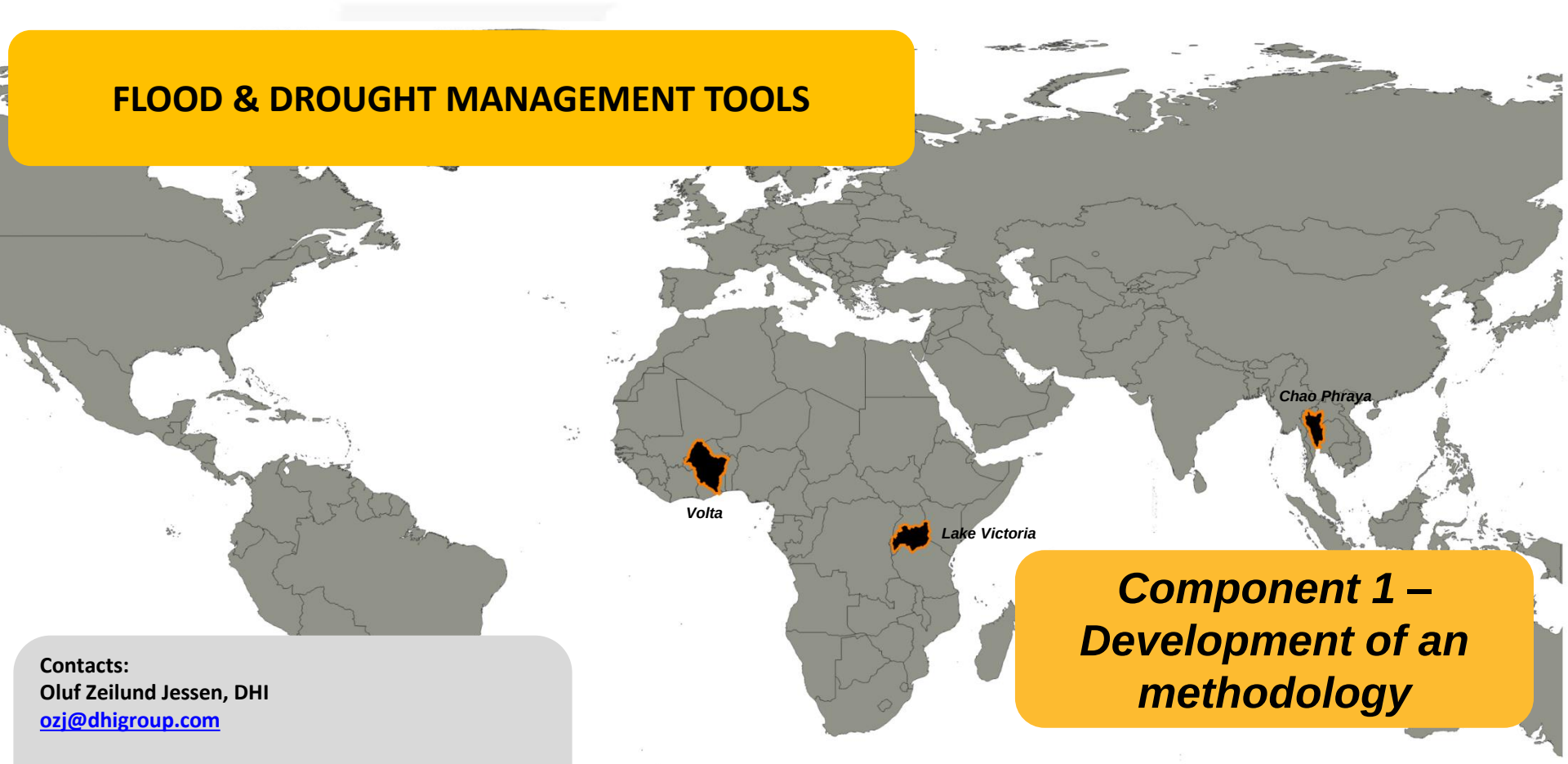
FLOOD & DROUGHT MANAGEMENT TOOLS

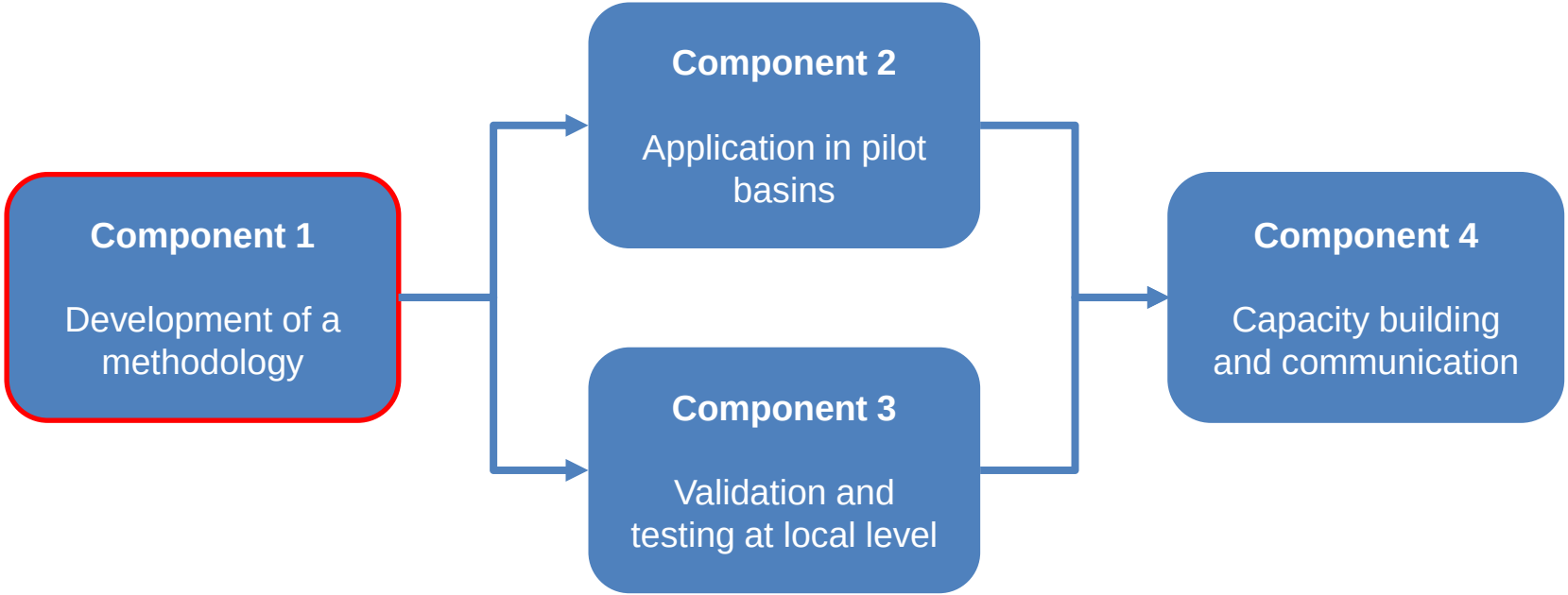


Component 1 – Development of an methodology

Contacts:
Oluf Zeilund Jessen, DHI
ozj@dhigroup.com

Katharine Cross, International Water Association (IWA)
Katharine.cross@iwahq.org

Components


Component 1
Development of a methodology
Component 2
Application in pilot basins
Component 3
Validation and testing at local level
Component 4
Capacity building and communication

Outcomes – Component 1

<u>Outcome 1.1</u>: Methodologies with tools aimed at increasing understanding of flood and drought dynamics and impacts at transboundary and local levels and including enhancement of commonly used decision support systems, fully developed jointly with pilot basins stakeholders.

How do we design the functionality of the project outputs so it assists decision makers in incorporating flood and drought issues into planning?

Output 1.1.1: 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

Background

- Facilitating a scientific approach to decision-making (TDA/SAP, WSP etc.)
- Support decision processes at basin and local level
- Technical tools supporting the inclusion of flood and drought issues into existing planning processes

Implemented by UNEP

Executed by IWA and DHI

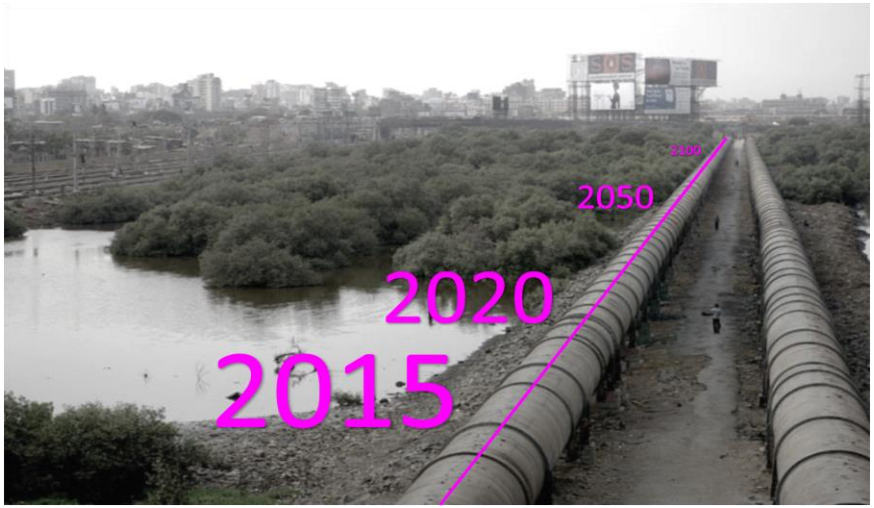
2014 to 2018

Types of planning supported

Operational planning

Short-term and seasonal management
Climate variability and water management
National, basin or catchment planning

Strategic planning



Long-term investments
Climate change and population growth
TDA/SAP, IWRM

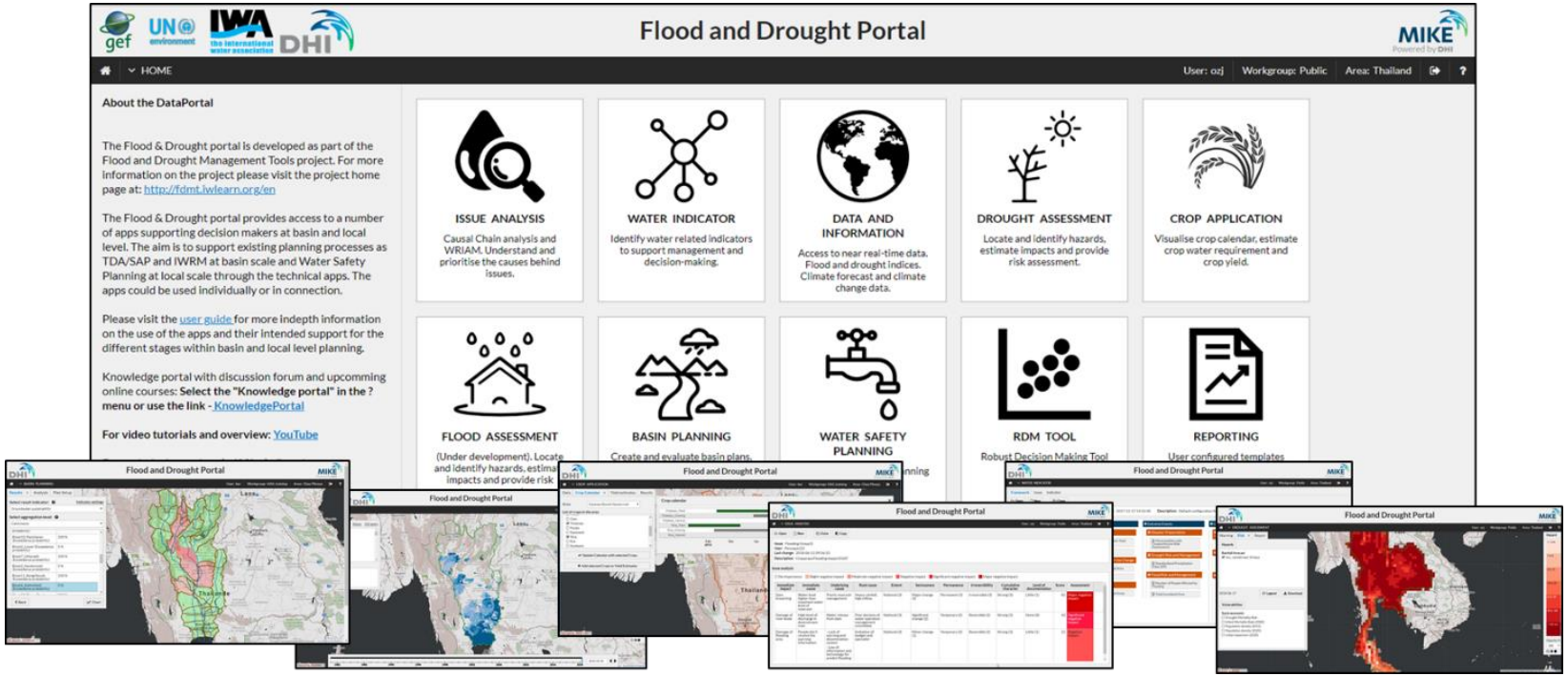
Background

Steps for designing the functionality of the project outputs:

1. Need assessment based on 50+ stakeholder meetings, workshops etc.
2. Awareness workshops bringing key stakeholders together
3. First round of technical training in all pilot basins
4. Development of specific applications based on user feedback
5. Testing and validation through a number of specific use cases
6. Technical training within the pilot basins during 2017 and 2018

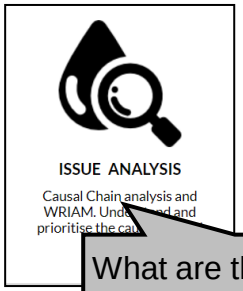
User oriented development!

Project methodology – web based portal

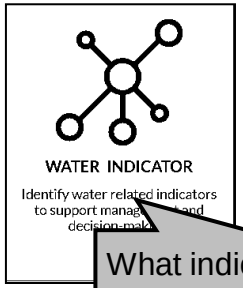


www.flooddroughtmonitor.com

Project methodology

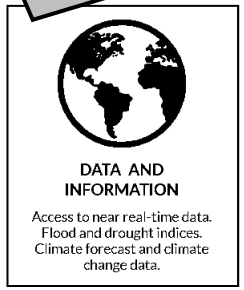


What are the issues and underlying causes in my area?

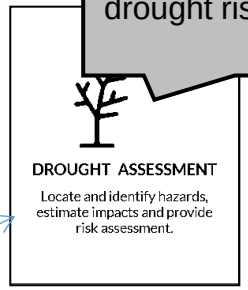


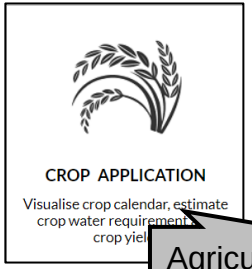
What indicators can be used to monitor the state of the issues?

What data can be used to calculate the indicators?

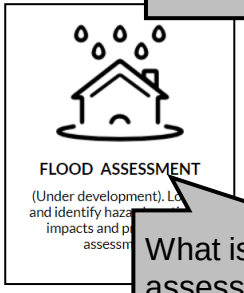


What is the level of drought risk in my area?

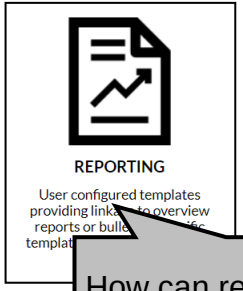




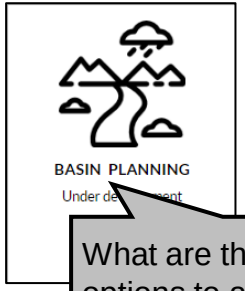
Agricultural impact



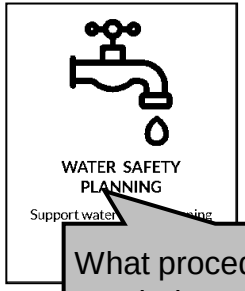
What is the assessment of flood risk in my area?



How can results and data be disseminated?



What are the planning options to address issues and impacts?



What procedures are needed to address risks to water supply?

Key activities in 2018

WEB based applications

- Finalise the development of web based applications supporting the planning processes

Technical workshops, trainings and webinars within the pilot basins

- User feedback used for further improvements

Overall Methodology

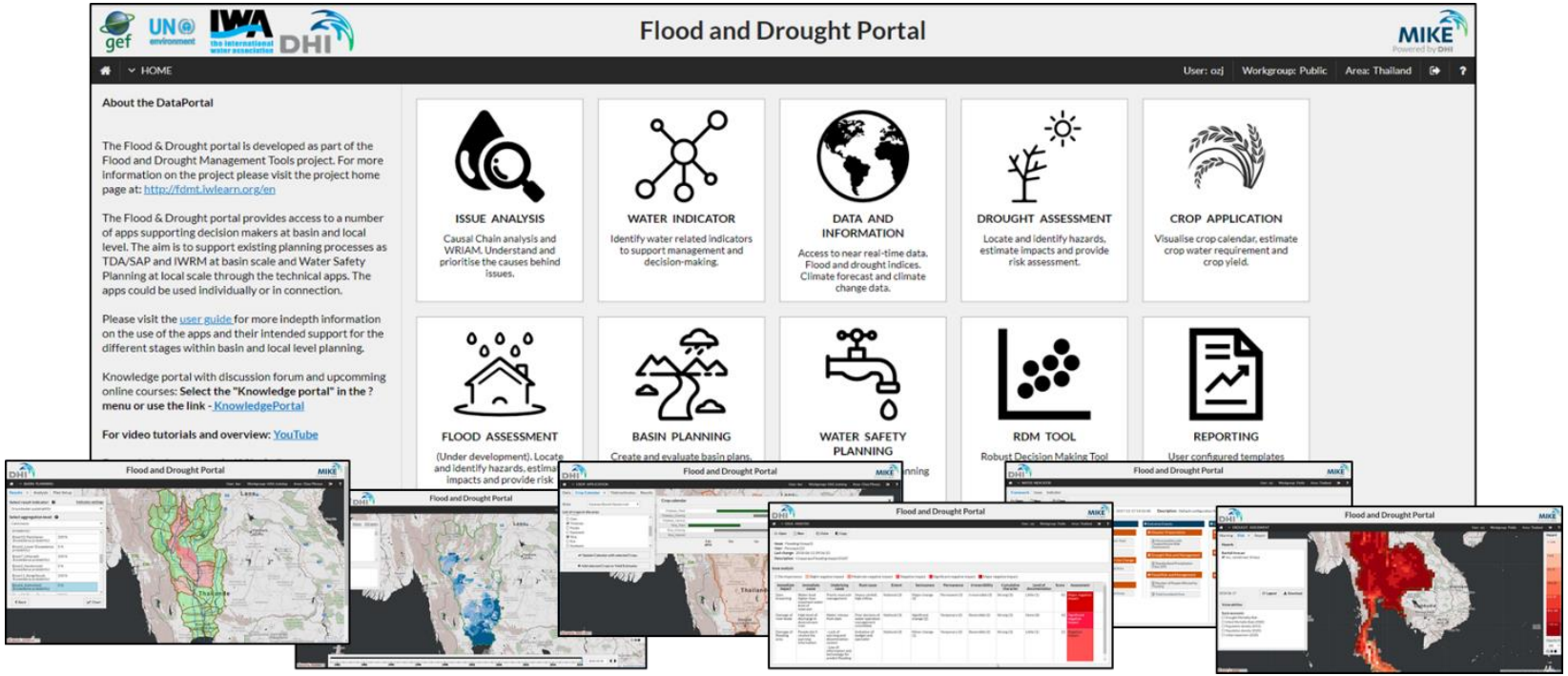
Specific and targeted apps

- Number of very specific apps each targeting a technical area
- Simplified functionality within each app
- Each app works as a stand alone and supports the overall methodology

WEB based platform

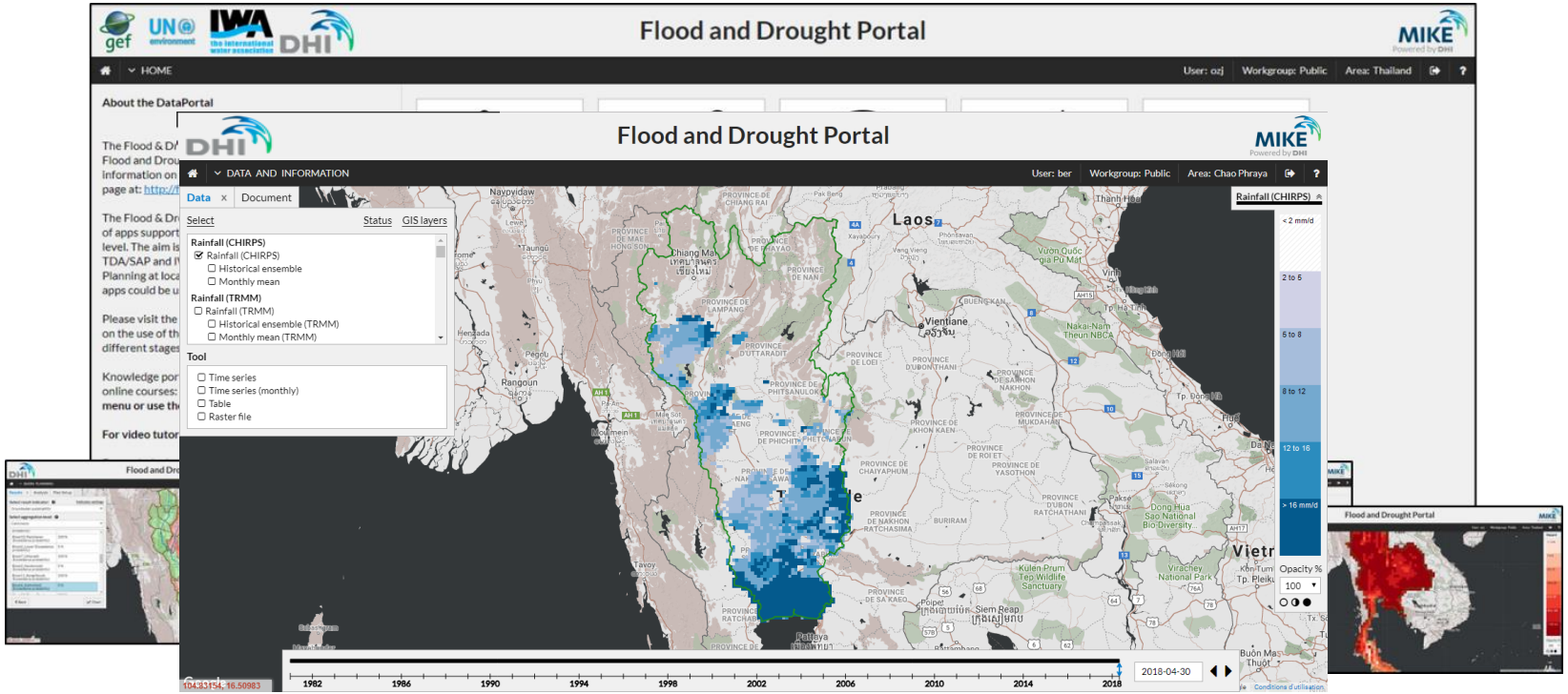
- Bug fixing and improvements are available for all users at the same time
- No local installations
- Internet access required

Project methodology – web based portal



www.flooddroughtmonitor.com

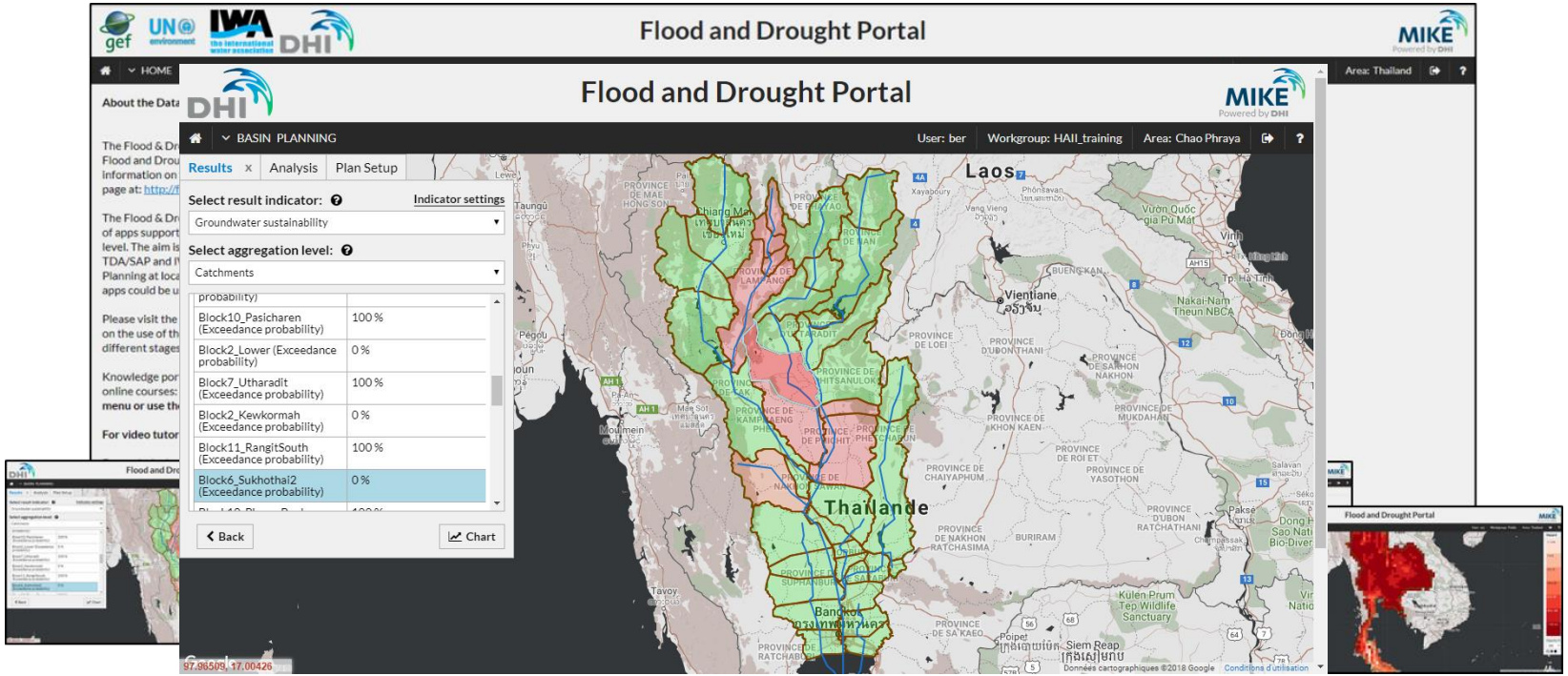
Project methodology – web based portal



www.flooddroughtmonitor.com

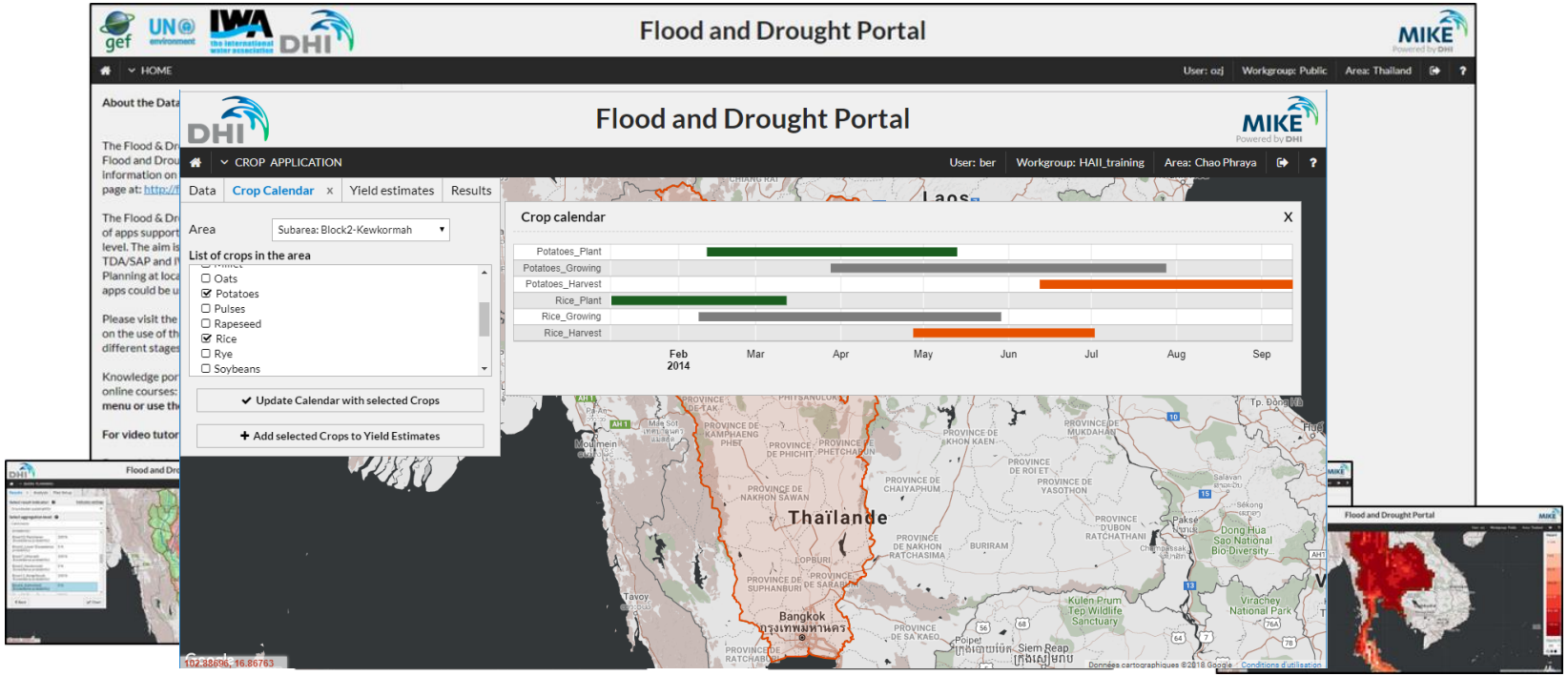
Flood and Drought Management Tools Project

Project methodology – web based portal



www.flooddroughtmonitor.com

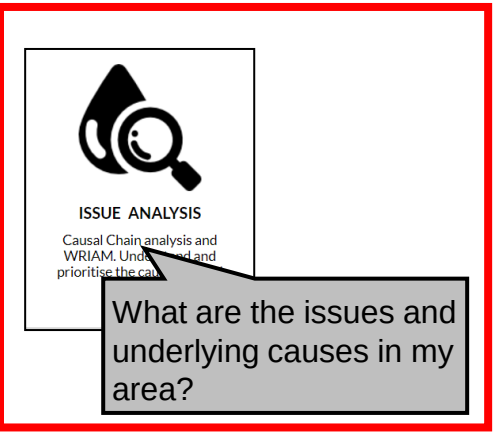
Project methodology – web based portal



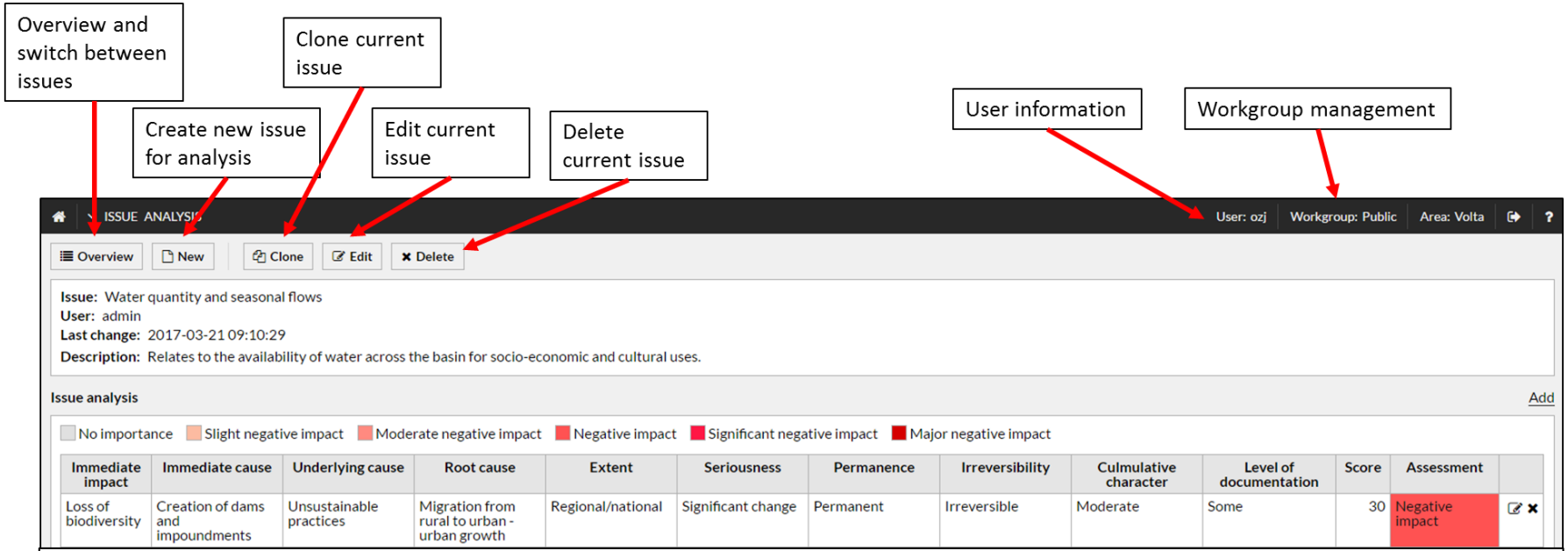
www.flooddroughtmonitor.com

Flood and Drought Management Tools Project

Project methodology – Issue Analysis



Project methodology – Issue Analysis

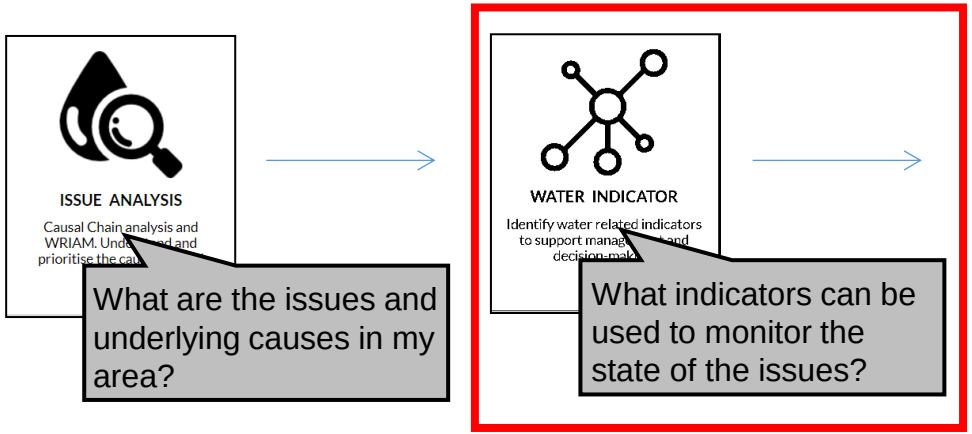


Objectives:

- Identify the key environmental issues
- Understand the causes behind the issues

Stakeholder facilitation tool used in the early planning stages

Project methodology – Water Indicator



Project methodology – Water Indicators

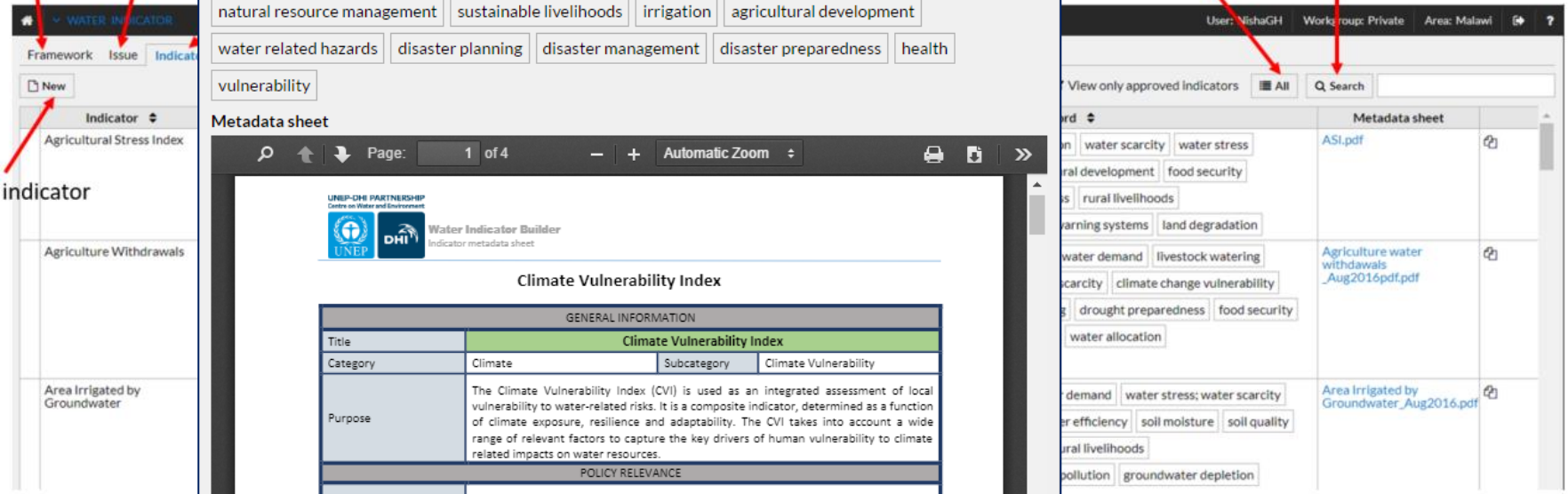
Framework view

Issue tab

New indicator

Show all indicators

Indicator search



Climate | Climate Vulnerability

X

Indicator

Climate Vulnerability Index

Description

The Climate Vulnerability Index (CVI) is used as an integrated assessment of local vulnerability to water-related risks. It is a composite indicator, determined as a function of climate exposure, resilience and adaptability. The CVI takes into account a wide range of relevant factors to capture the key drivers of human vulnerability to climate related impacts on water resources.

Keyword

climate change adaptation | freshwater availability | water scarcity | water stress | natural resource management | sustainable livelihoods | irrigation | agricultural development | water related hazards | disaster planning | disaster management | disaster preparedness | health | vulnerability

Metadata sheet

Page: 1 of 4 Automatic Zoom

UNEP-DHI PARTNERSHIP Centre on Water and Environment

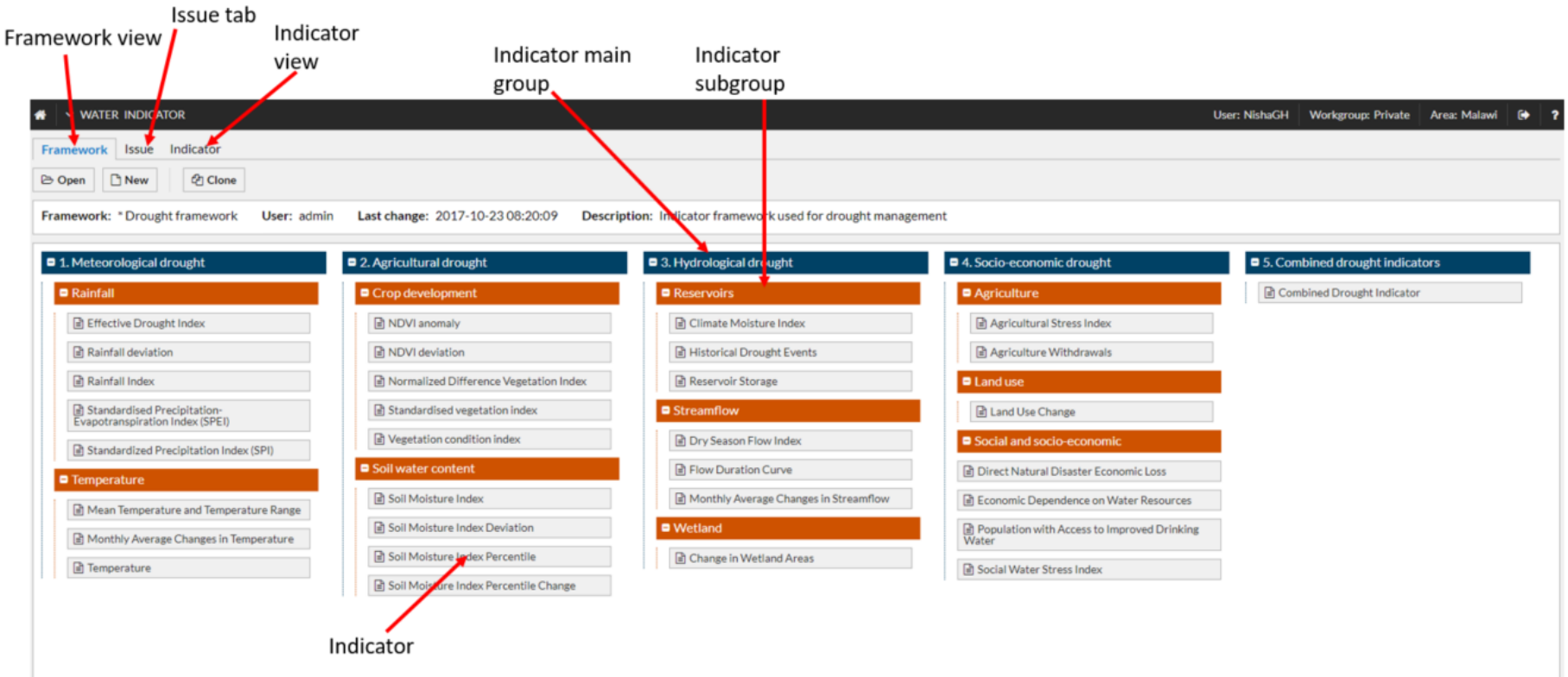
Water Indicator Builder

Indicator metadata sheet

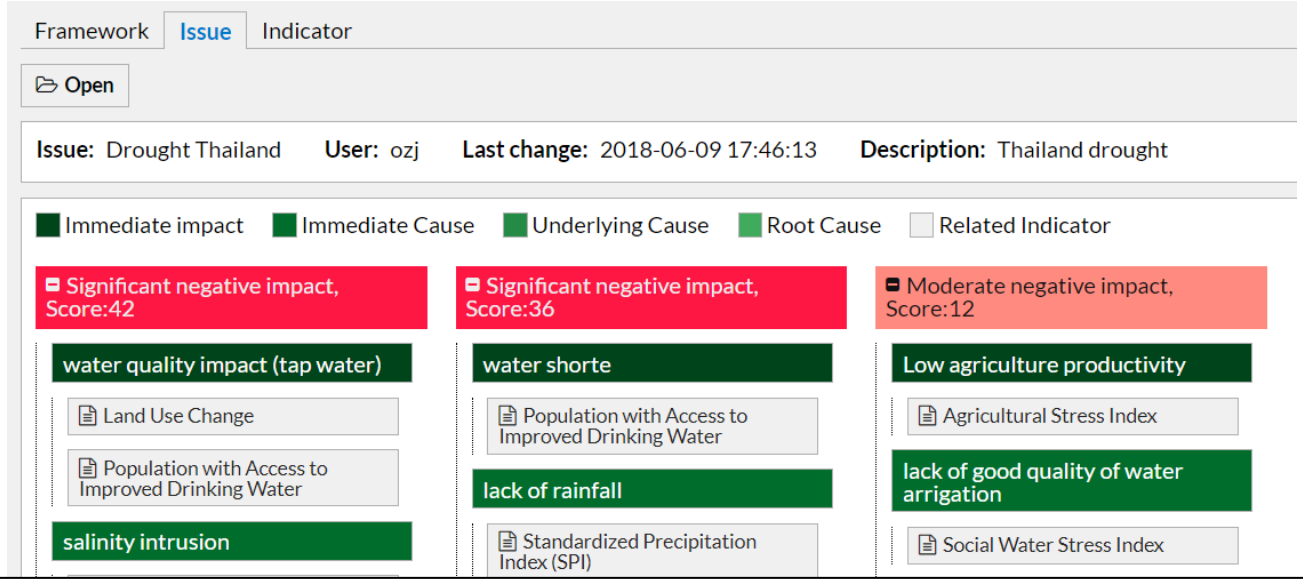
Climate Vulnerability Index

GENERAL INFORMATION			
Title	Climate Vulnerability Index		
Category	Climate	Subcategory	Climate Vulnerability
Purpose	The Climate Vulnerability Index (CVI) is used as an integrated assessment of local vulnerability to water-related risks. It is a composite indicator, determined as a function of climate exposure, resilience and adaptability. The CVI takes into account a wide range of relevant factors to capture the key drivers of human vulnerability to climate related impacts on water resources.		
POLICY RELEVANCE			
Policy Relevance	This indicator is relevant for identifying regions or populations that are vulnerable to climate change impacts in relation to water resources. It can be useful in prioritizing policy actions related to disaster planning and preparedness, as well as natural resource allocation. When combined with socioeconomic or demographic variables, the CVI may help to identify trends in equity and may contribute to poverty reduction efforts. Reporting on this indicator supports ongoing assessment of climate related risks and strategic action to combat human vulnerability to climate change.		

Project methodology – Water Indicators



Project methodology – Water Indicators

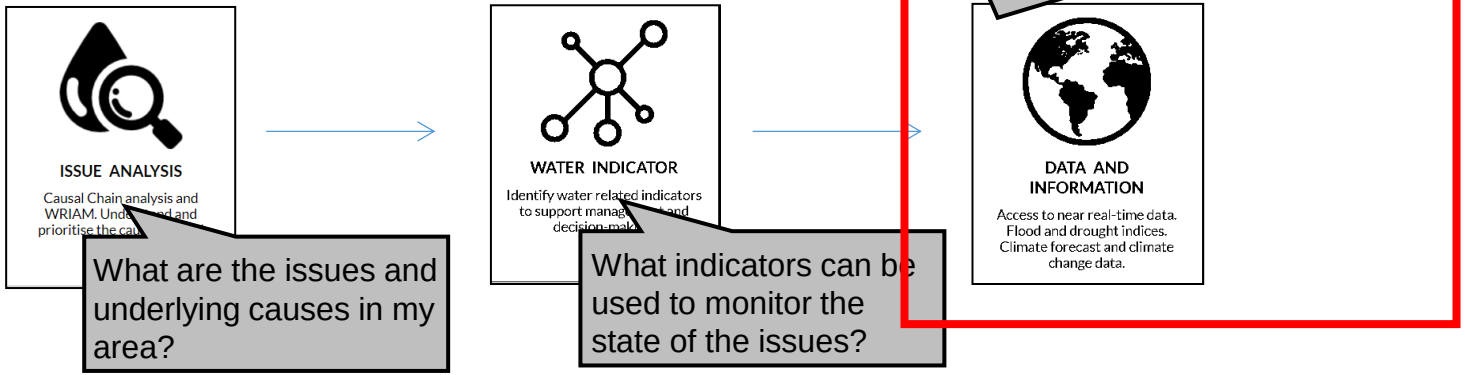


Objectives:

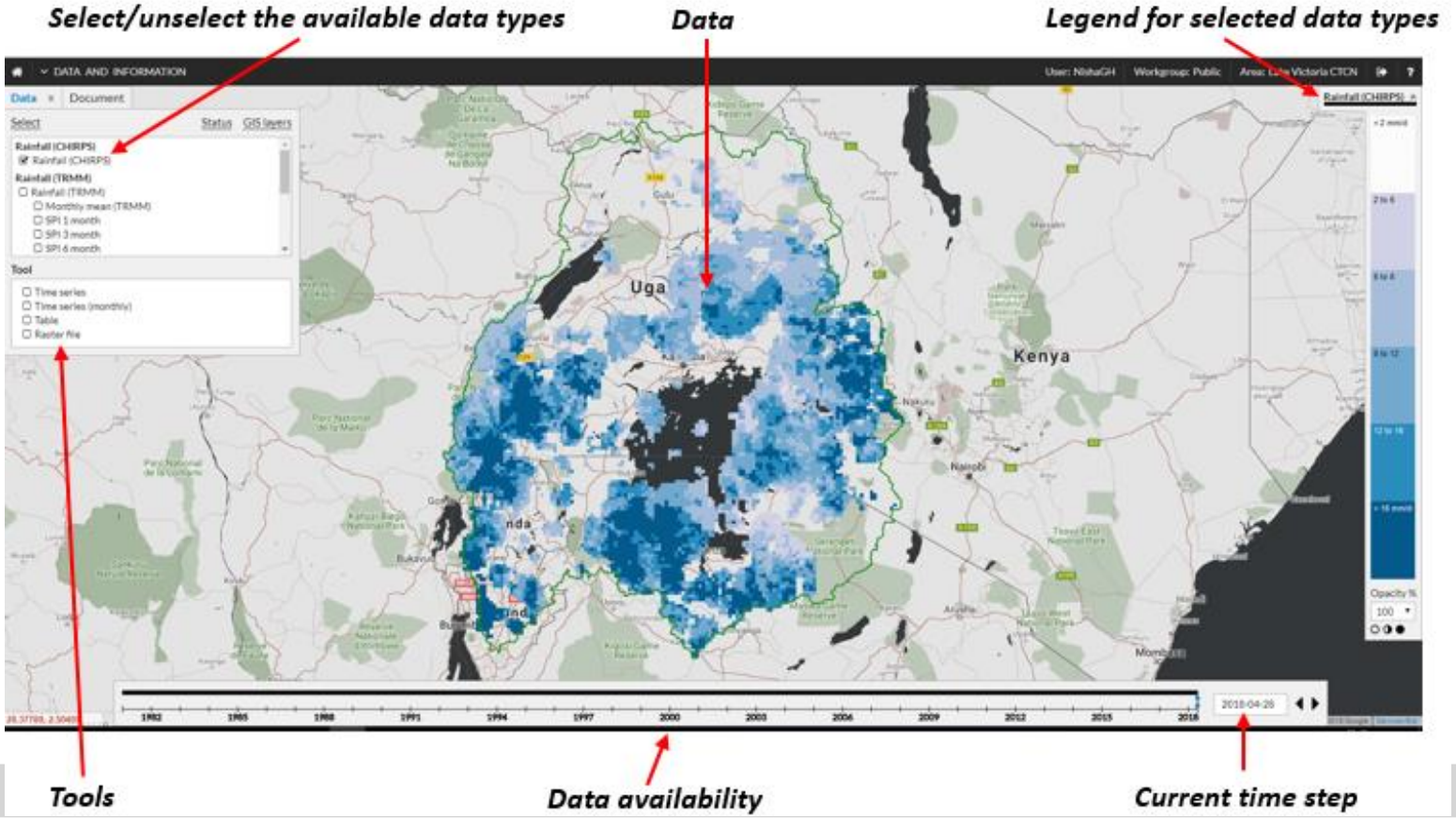
- Identify the relevant water indicators for the key environmental issues
- Facilitate stakeholder agreement on monitoring and evaluation indicators

Selection of few relevant water indicators for monitoring and evaluation

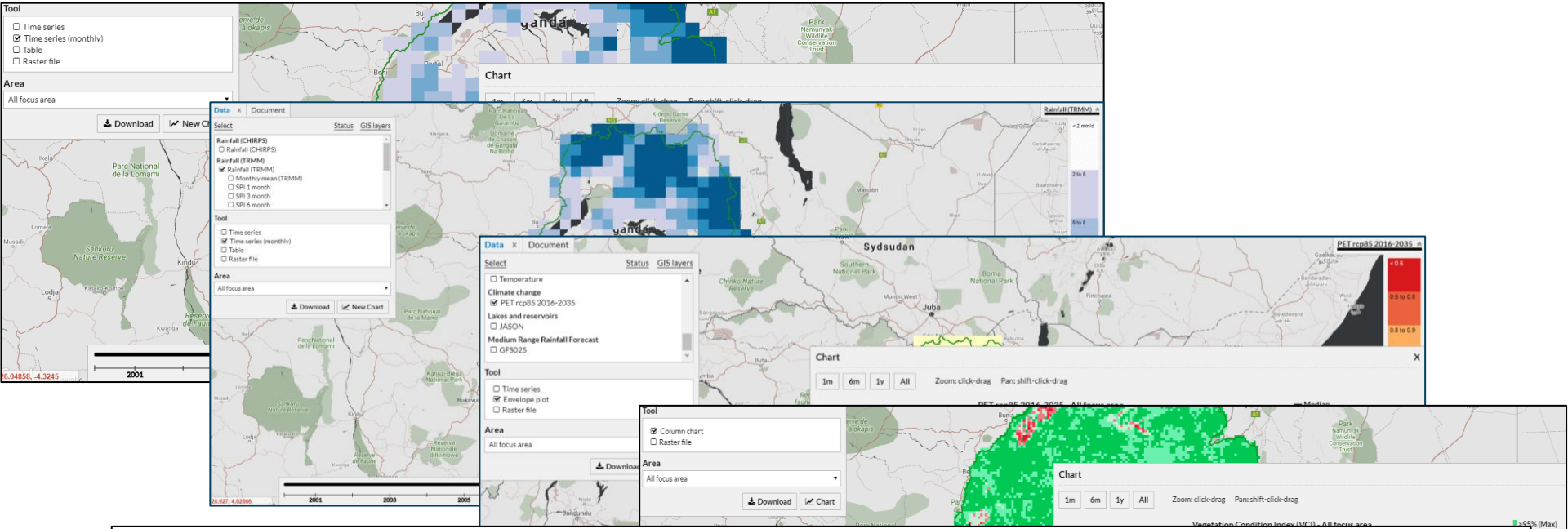
Project methodology – Data and Information



Project methodology – Data and Information



Project methodology – Data and Information

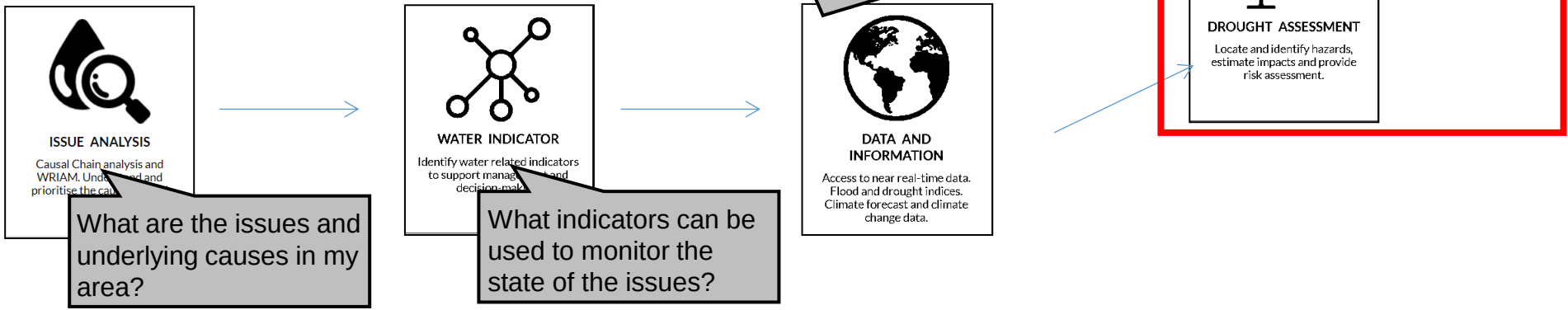


Objectives:

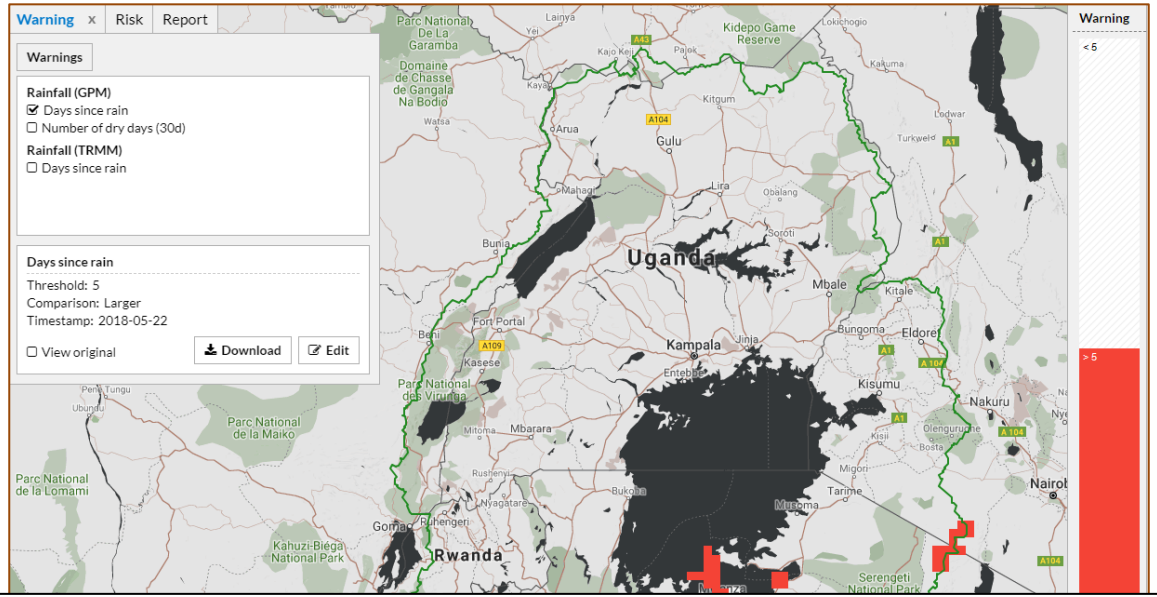
- Data availability – historic, near-real time, forecast and projected
- Free access to basic dataset for water related planning

Facilitate improved decision making

Project methodology – Drought



Project methodology – Drought

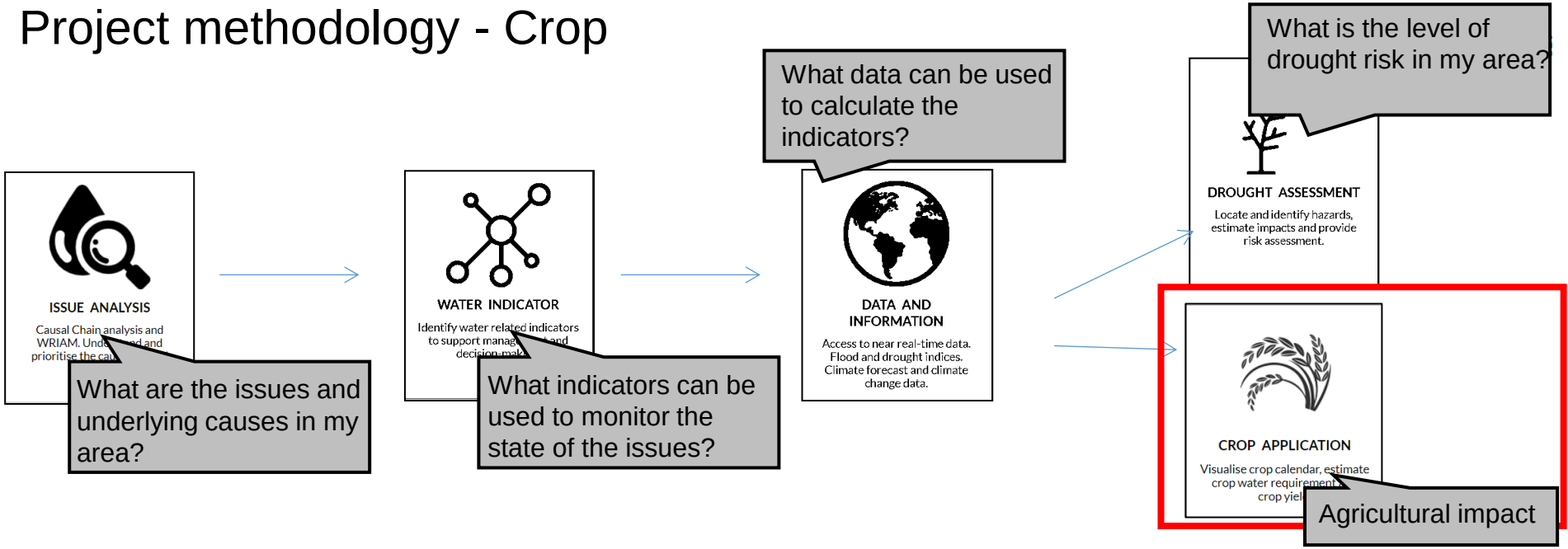


Objectives:

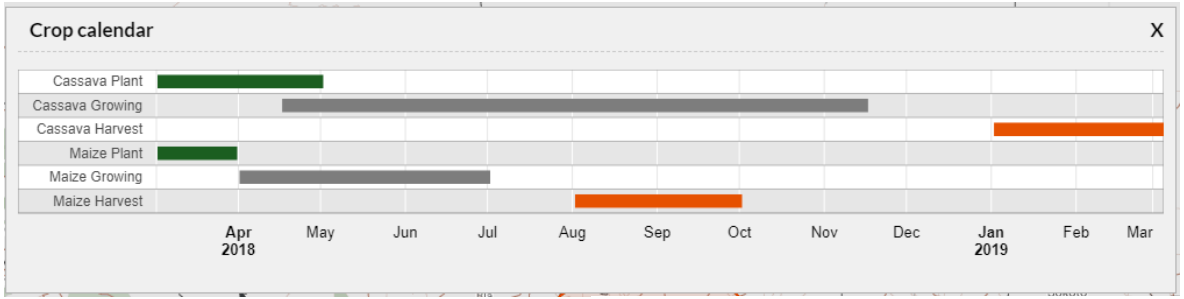
- Drought hazard identification and early warning
- Drought risk assessment

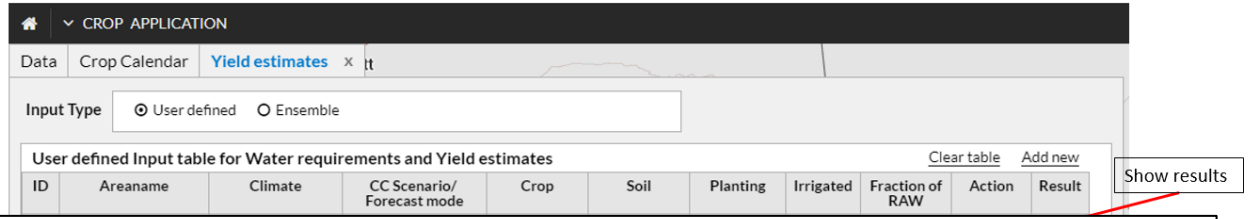
Drought assessment and early warning

Project methodology - Crop



Project methodology – Crop



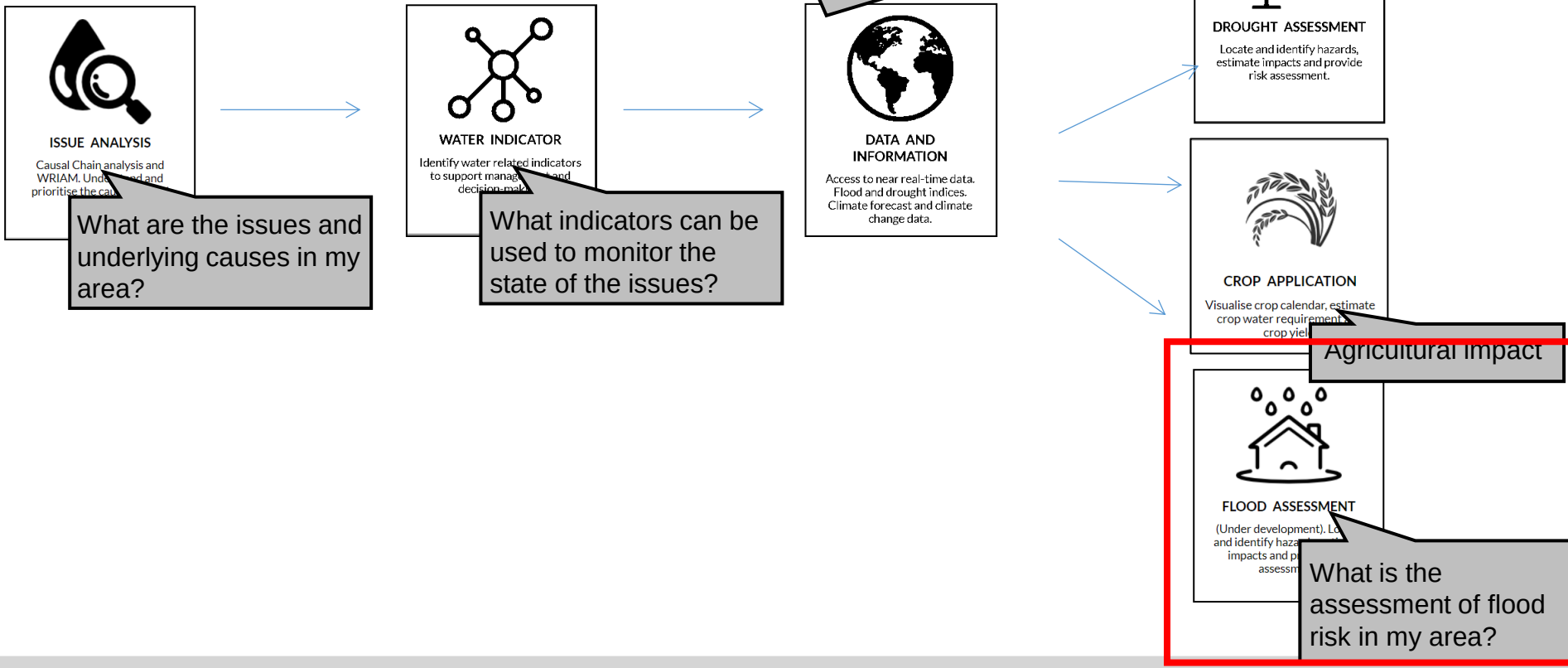


Objectives:

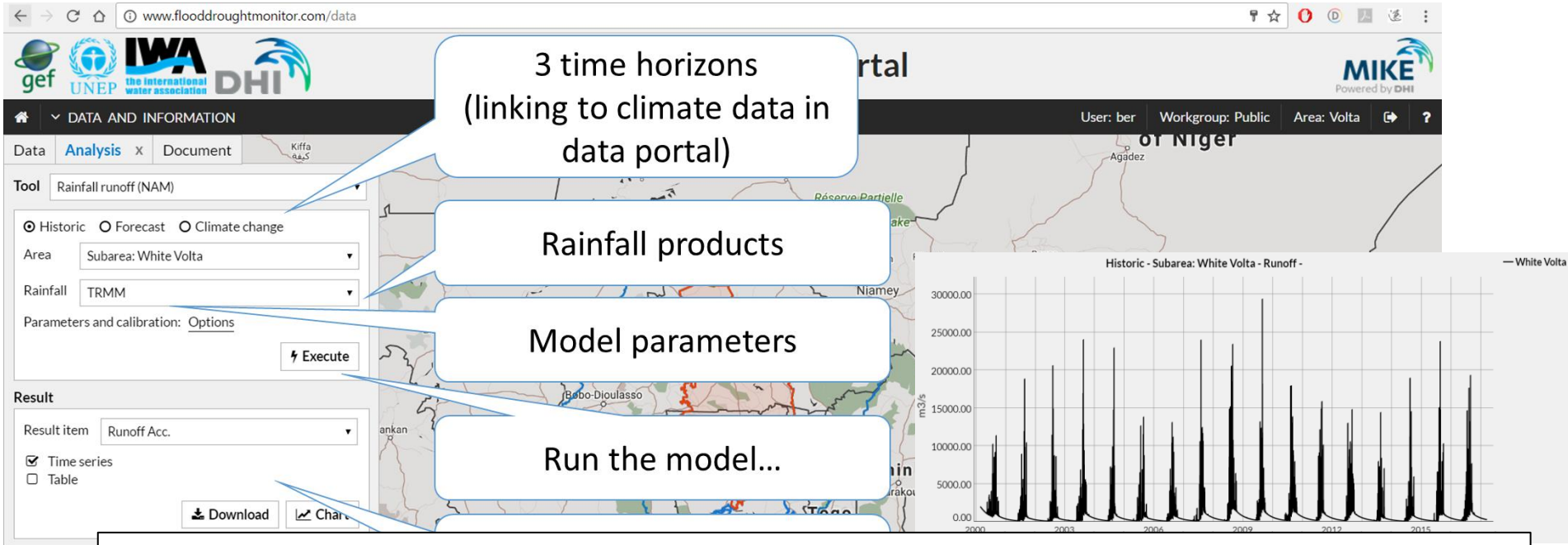
- Crop related information source
- Assessment of crop water requirement and crop yield (current and future)

Impact assessment on agricultural sector

Project methodology - Flood



Project methodology – Flood

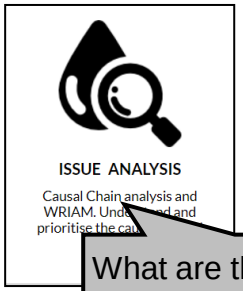


Objectives:

- Flood related information base (flood maps, flood indicators…)
- Hydrograph calculation and evaluation (rainfall runoff)

Flood information and assessment

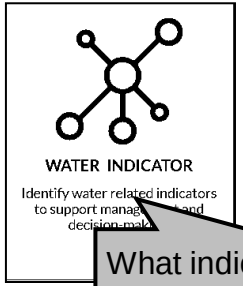
Project methodology – Basin Planning



ISSUE ANALYSIS

Causal Chain analysis and WRIAM. Und[illegible]d and prioritise the ca[illegible]

What are the issues and underlying causes in my area?

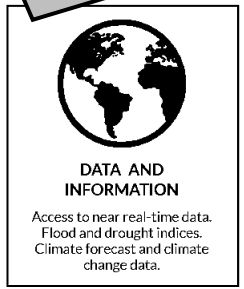


WATER INDICATOR

Identify water related indicators to support manag[illegible] and decision-mak[illegible]

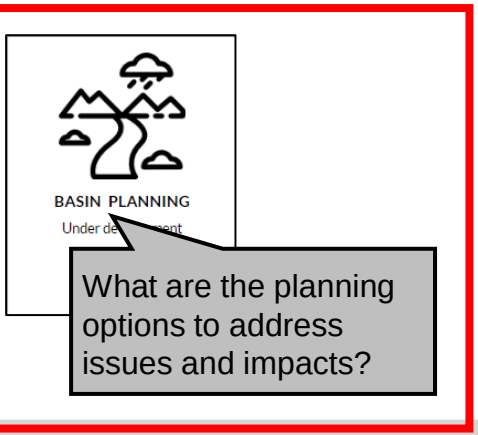
What indicators can be used to monitor the state of the issues?

What data can be used to calculate the indicators?



DATA AND INFORMATION

Access to near real-time data. Flood and drought indices. Climate forecast and climate change data.

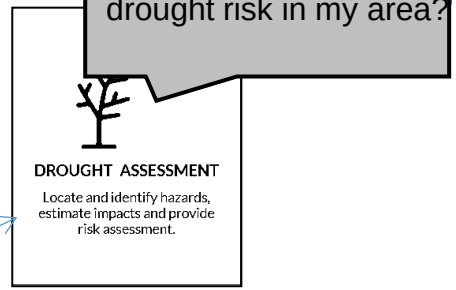


BASIN PLANNING

Under de[illegible]ent

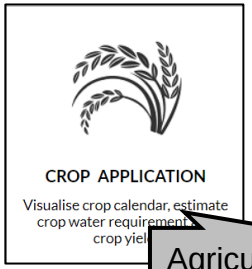
What are the planning options to address issues and impacts?

What is the level of drought risk in my area?



DROUGHT ASSESSMENT

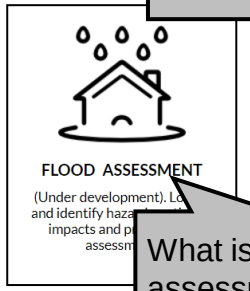
Locate and identify hazards, estimate impacts and provide risk assessment.



CROP APPLICATION

Visualise crop calendar, estimate crop water requirement[illegible] crop yiel[illegible]

Agricultural impact



FLOOD ASSESSMENT

(Under development). Lo[illegible] and identify haza[illegible] impacts and p[illegible] assessm[illegible]

What is the assessment of flood risk in my area?

Project methodology – Basin Planning

A baseline plan is established by the tool. New plans created will incur in alterations to the baseline model.

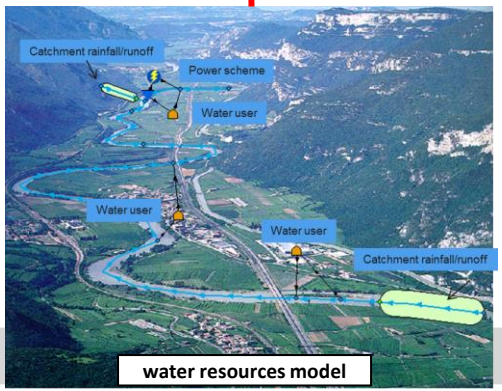
PLAN
Combination of investments and external factors

INVESTMENTS	EXTERNAL FACTORS
Water supply Irrigation Multipurpose Storage Reservoirs Hydropower Environmental flow	Climate change Population growth

MODIFY
Water demand and climate

EVALUATE
Multiple Criteria Analysis (MCA)

A user uploads the baseline model to the application



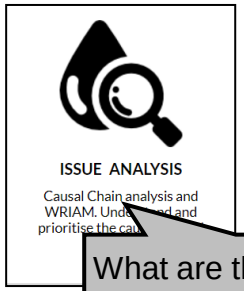
Project methodology – Basin Planning

Objectives:

- Evaluate existing plans (basin, catchment, local…)
- Create new plans and evaluate

Facilitating basin planning for decision makers (non model experts)

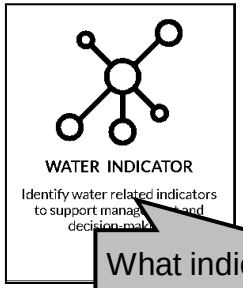
Project methodology – Water Safety Planning



ISSUE ANALYSIS

Causal Chain analysis and WRIAM. Understand and prioritise the cau

What are the issues and underlying causes in my area?

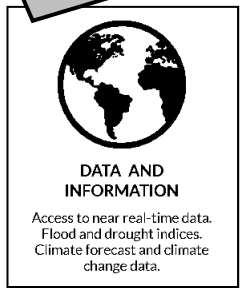


WATER INDICATOR

Identify water related indicators to support manag and decision-mak

What indicators can be used to monitor the state of the issues?

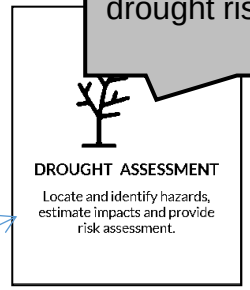
What data can be used to calculate the indicators?



DATA AND INFORMATION

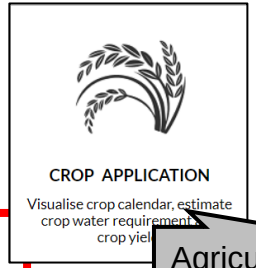
Access to near real-time data. Flood and drought indices. Climate forecast and climate change data.

What is the level of drought risk in my area?



DROUGHT ASSESSMENT

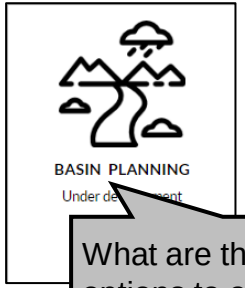
Locate and identify hazards, estimate impacts and provide risk assessment.



CROP APPLICATION

Visualise crop calendar, estimate crop water requirement crop yiel

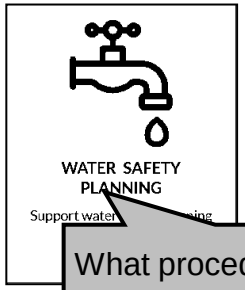
Agricultural impact



BASIN PLANNING

Under de ent

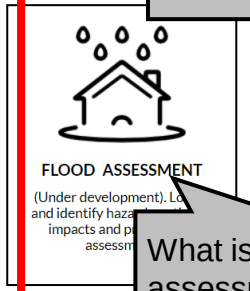
What are the planning options to address issues and impacts?



WATER SAFETY PLANNING

Support water ing

What procedures are needed to address risks to water supply?

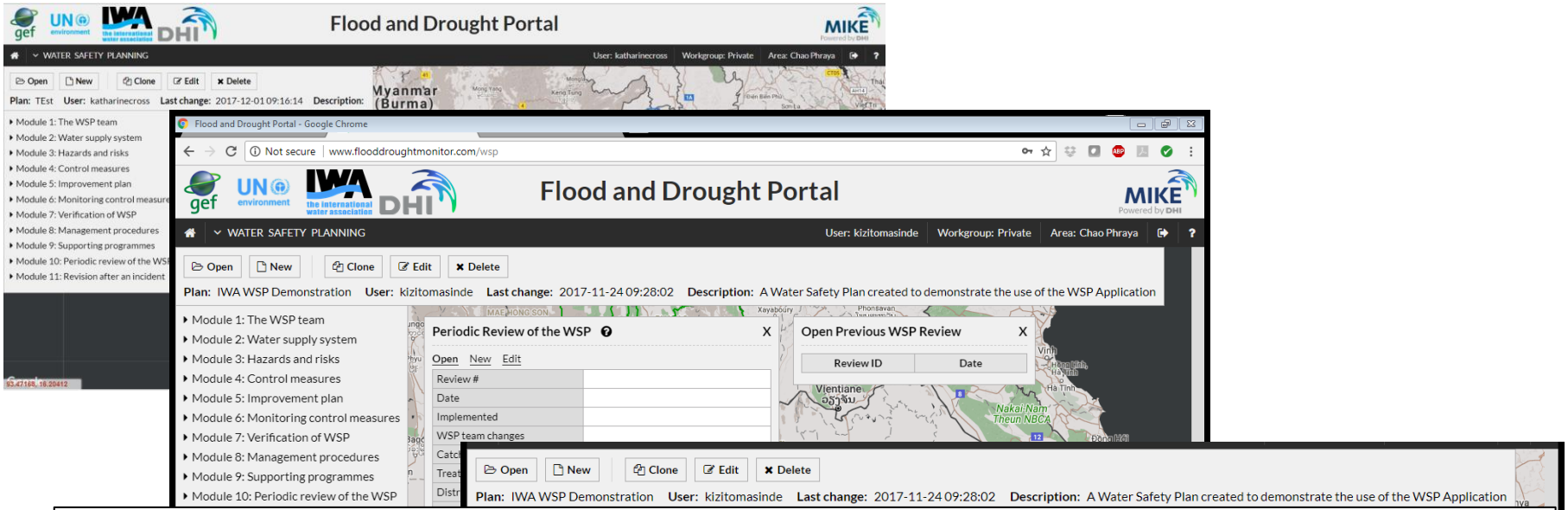


FLOOD ASSESSMENT

(Under development). Lo and identify haza impacts and p assessm

What is the assessment of flood risk in my area?

Project methodology – Water Safety Planning

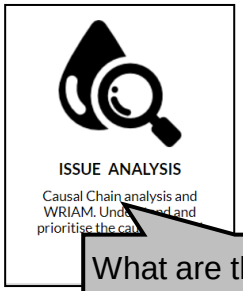


Objectives:

- Support the WSP modules
- Provide new approach for WSP

Risk assessment across a water utility scheme (catchment to tap)

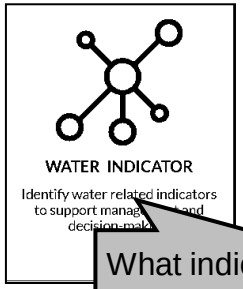
Project methodology – Reporting



ISSUE ANALYSIS

Causal Chain analysis and WRIAM. Und[illegible] and prioritise the cau[illegible]

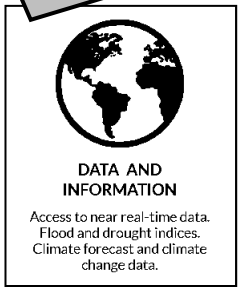
What are the issues and underlying causes in my area?



WATER INDICATOR

Identify water related indicators to support manag[illegible] and decision-mak[illegible]

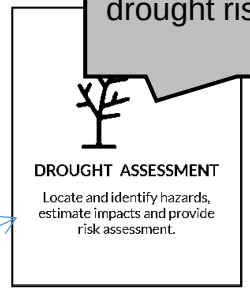
What indicators can be used to monitor the state of the issues?



DATA AND INFORMATION

Access to near real-time data. Flood and drought indices. Climate forecast and climate change data.

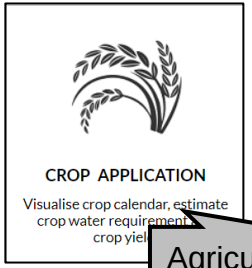
What data can be used to calculate the indicators?



DROUGHT ASSESSMENT

Locate and identify hazards, estimate impacts and provide risk assessment.

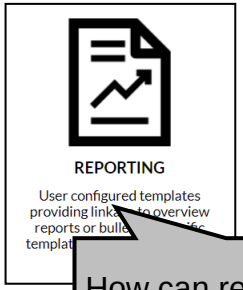
What is the level of drought risk in my area?



CROP APPLICATION

Visualise crop calendar, estimate crop water requirement[illegible] crop yiel[illegible]

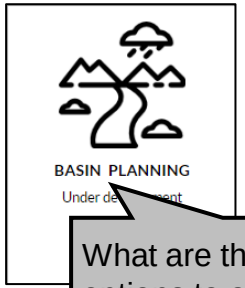
Agricultural impact



REPORTING

User configured templates providing link[illegible] to overview reports or bulle[illegible] templat[illegible]

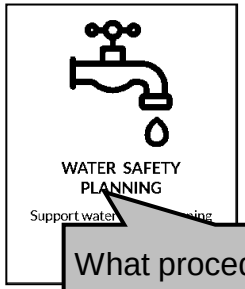
How can results and data be disseminated?



BASIN PLANNING

Under de[illegible]ent

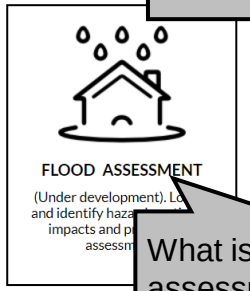
What are the planning options to address issues and impacts?



WATER SAFETY PLANNING

Support water[illegible]ning

What procedures are needed to address risks to water supply?

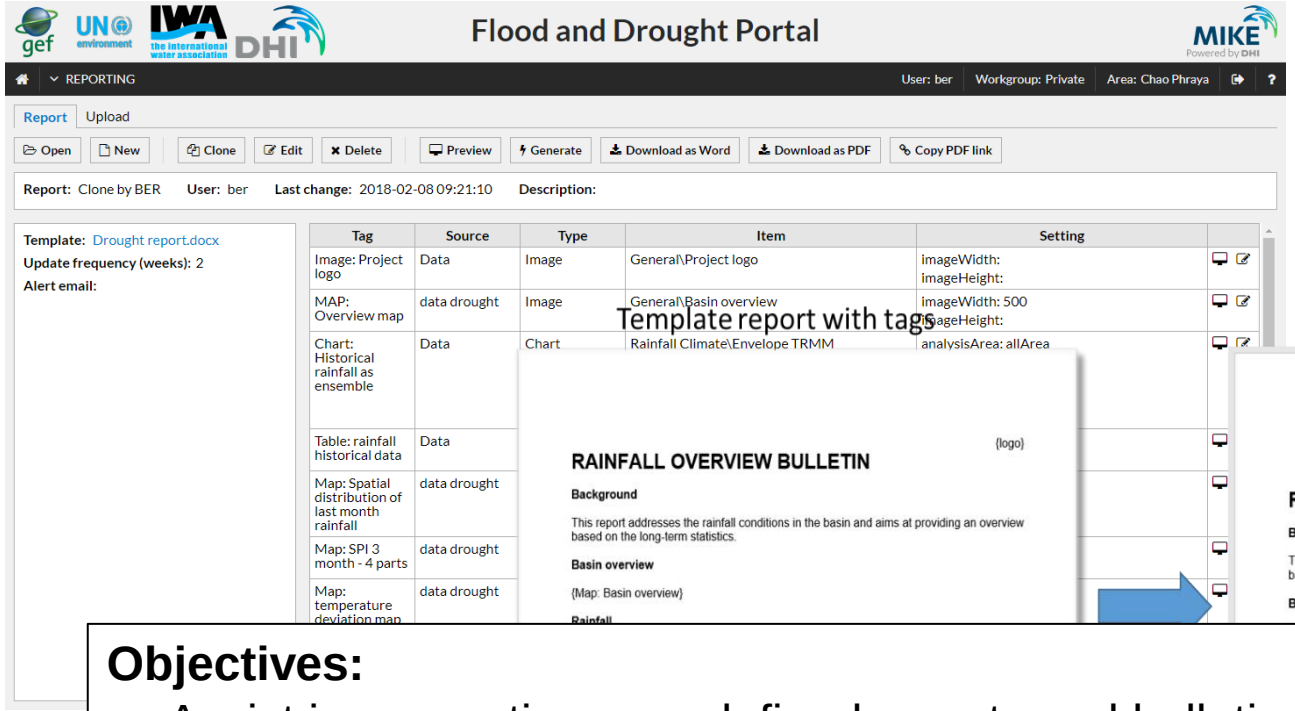


FLOOD ASSESSMENT

(Under development). Lo[illegible] and identify hazar[illegible] impacts and pr[illegible] assessm[illegible]

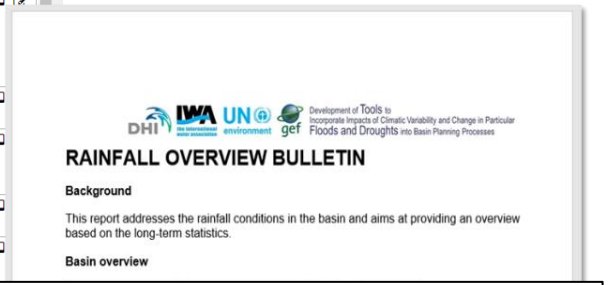
What is the assessment of flood risk in my area?

Project methodology – Reporting



Template report with tags

Final report with input



Objectives:

- Assist in generating user defined reports and bulletins
- Automated submission of reports and bulletins

Facilitate automated reports and bulletins

Status and next steps

- Development of all applications are finalized
  - Ongoing adjustments based on user feedback
  - Ongoing dissemination through webinars, workshops and training events

- Increased focus on dissemination and putting the project outcomes into context
  - Spin off projects and use of the web portal in a wide range of projects

www.flooddroughtmonitor.com

For more information, contact

DHI, Oluf Zeilund Jessen
ozj@dhigroup.com

IWA, Katharine Cross
katharine.cross@iwahq.org

Or learn more at

fdmt.iwlearn.org

gef

UN environment

DHI

IWA the international water association

Design: www.chris-wells.com