



# ***INTEGRATED WATER RESOURCES MANAGEMENT AND WATER INFORMATION SYSTEM IN LAO PDR***

**Study visit in France**

**July 2018**



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**International Office for Water**  
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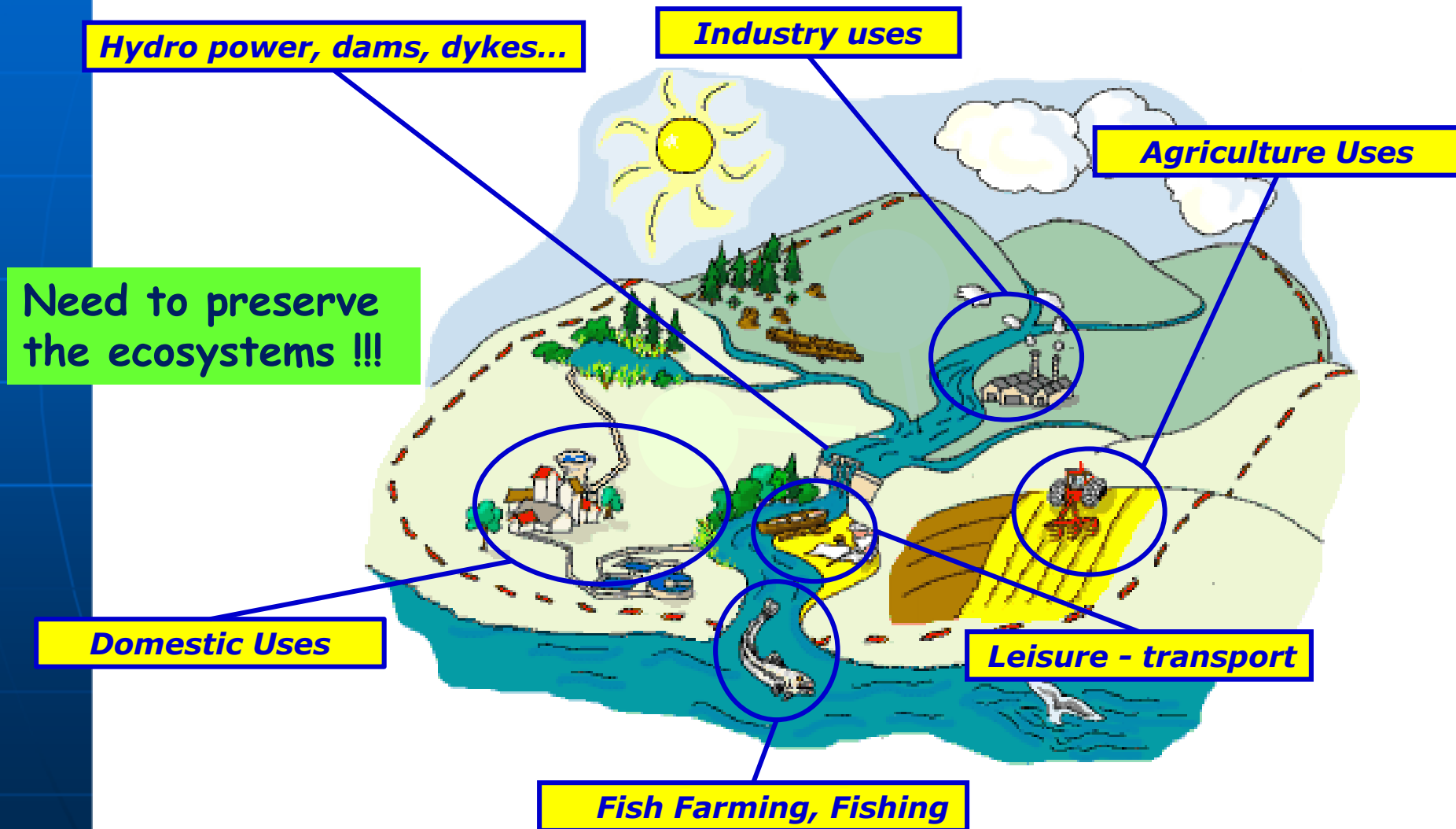
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# **Water Information System place in IWRM**



## IWRM overall objective:

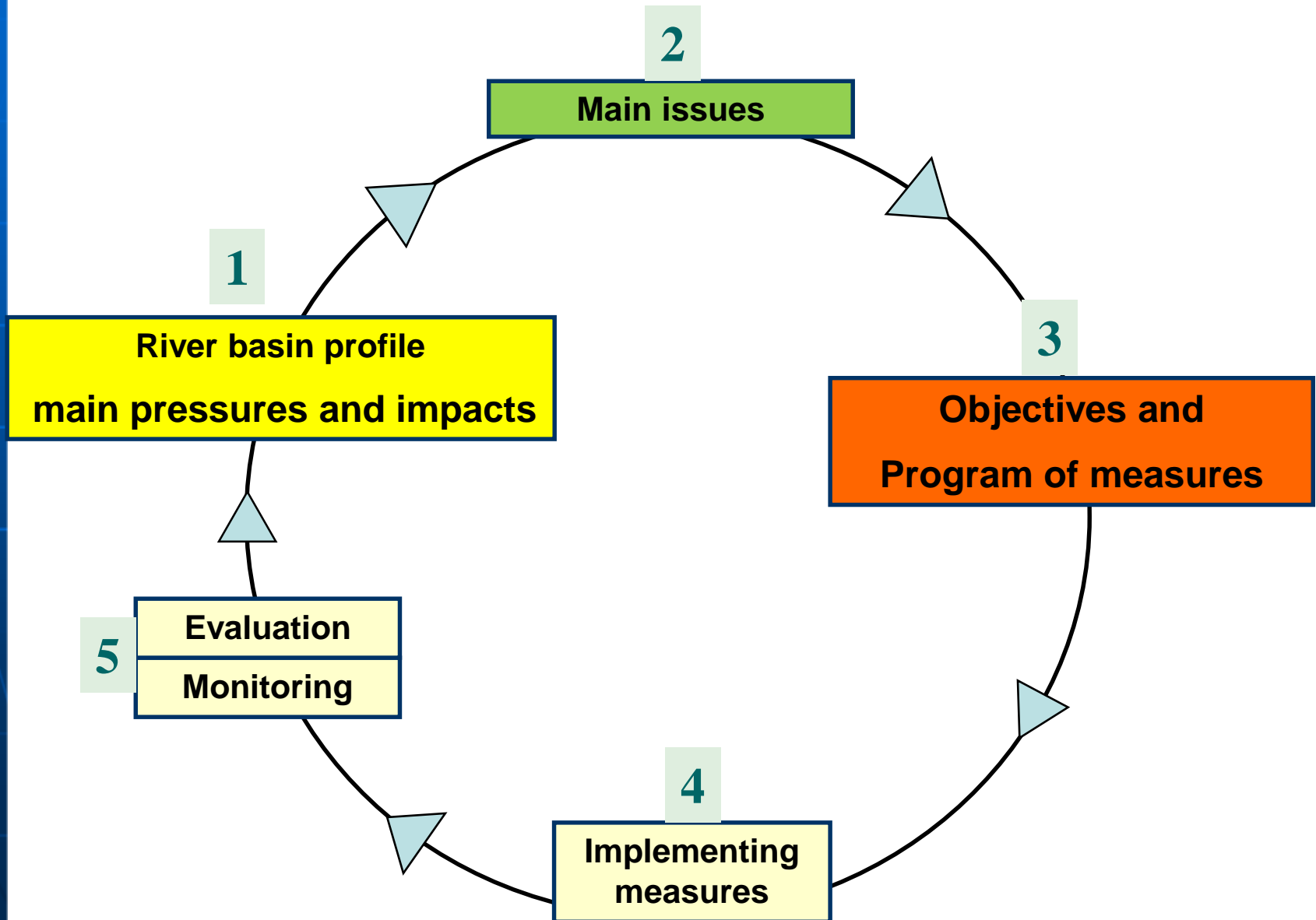
To ensure an equitable water use between the different sectors without compromising the quantity and quality of water resources





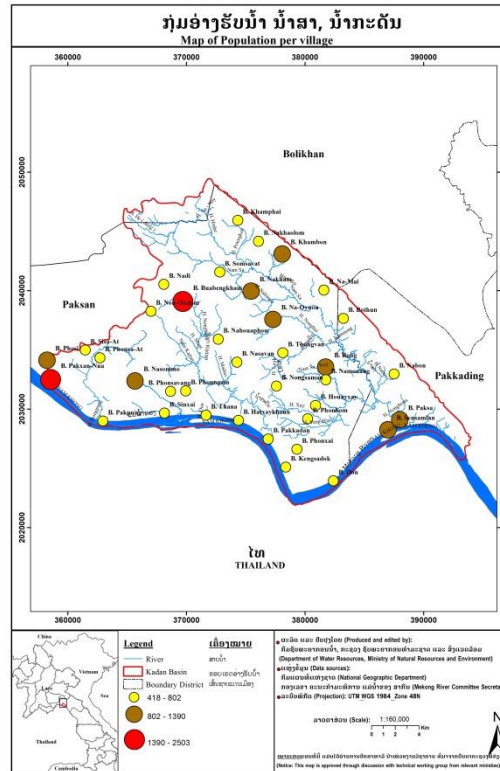


# Steps for planning process





# Step 1 : River basin profile



**Inventory:**  
To understand the hydro-ecological characteristics of the basin  
-> Description of the watershed

**Diagnosis:**  
Analysis of the pressures and their impact

- To understand the uses and the needs
- To define the pressures : sources of pollution, water withdrawals, etc.







# Main components of water data management

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## Governance of water related data management

Data production

Shared and  
integrated data  
management

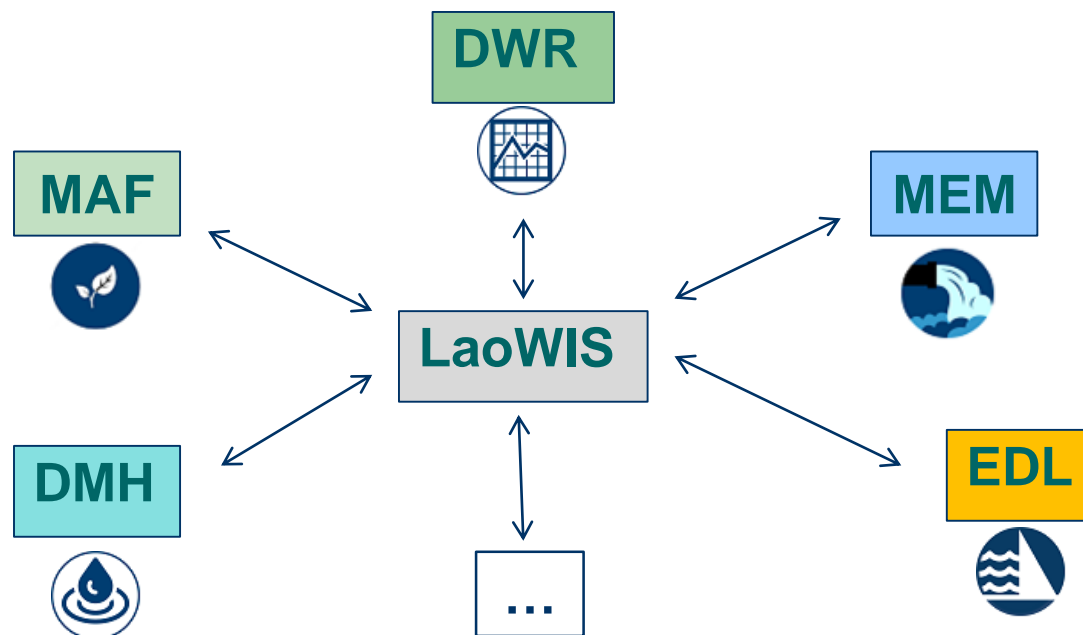
Data processing  
and valorization

Information/  
knowledge  
dissemination



# Needs for data/information/knowledge

- Each sector needs and produces particular types of data
- Data is scattered
- LaoWIS enables to centralise water related data, in order to improve access to it
  - Better information, better management!







# Existing situation related to data management

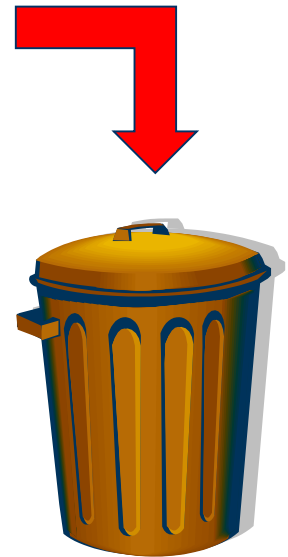
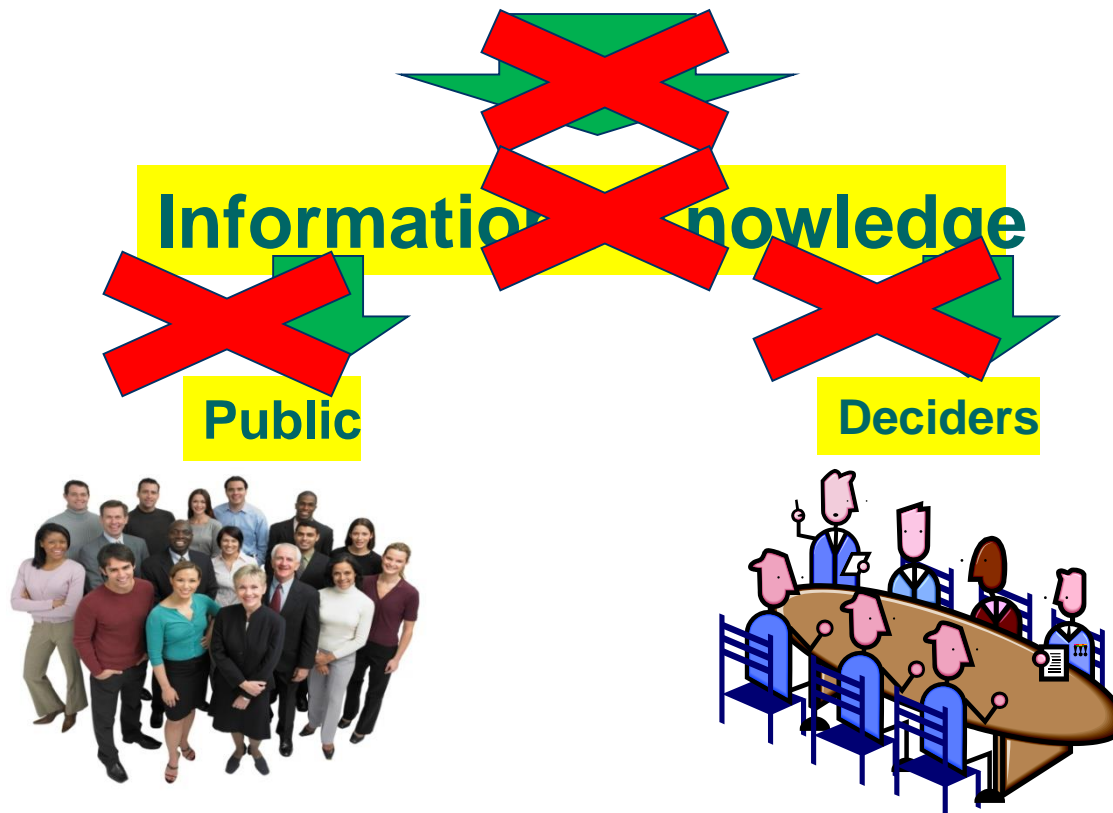
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- Many topics to deal with in a basin (hydropower, irrigation, mining, water supply and sanitation, flood management, ...)
- The necessary data to elaborate the requested information is produced/managed by various organisations
- Information is **fragmented, incomplete dispersed and heterogeneous** way

**=> need efforts to make this information readable, easily accessible and available in order to produce useful information**

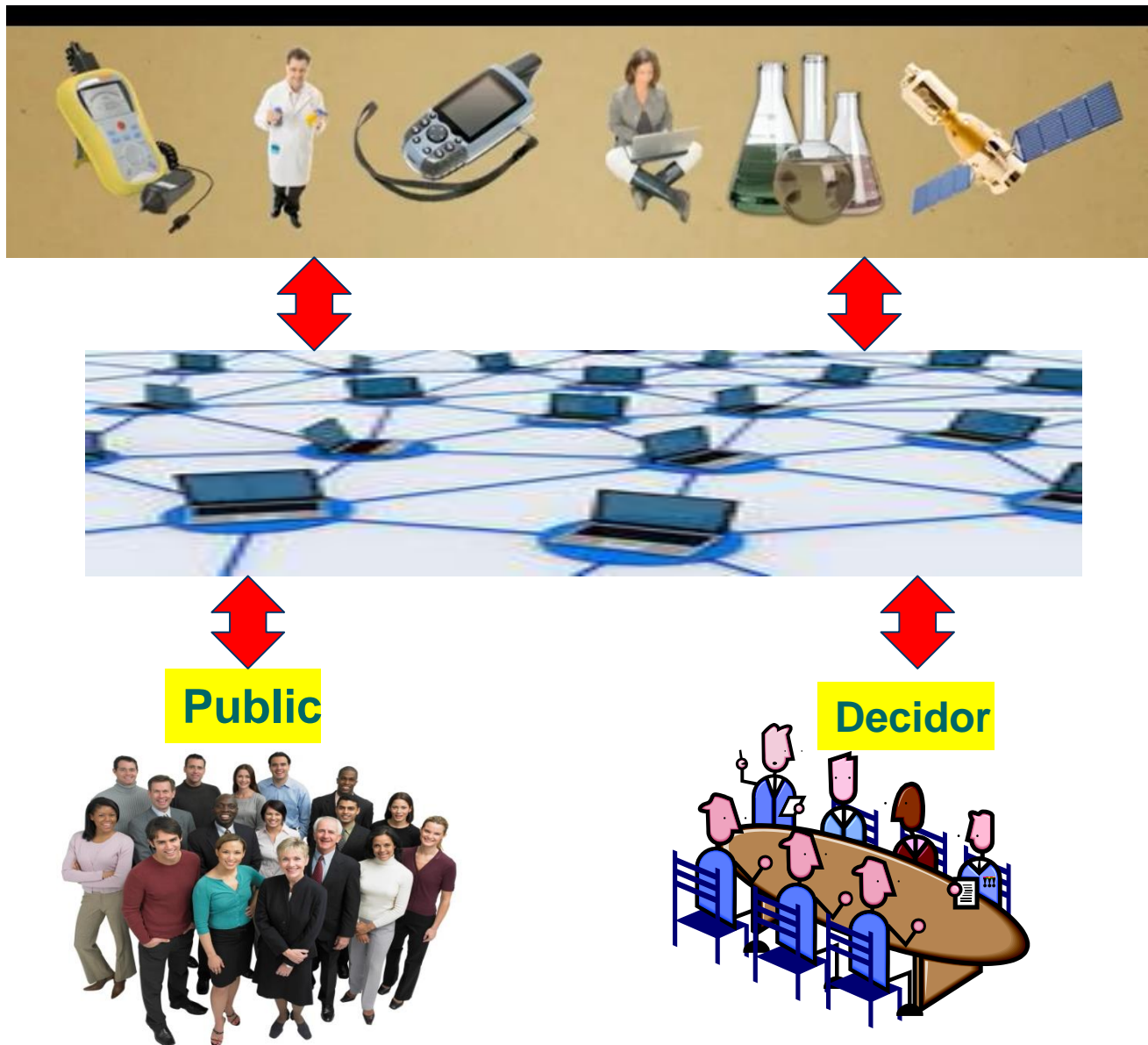


# Consequences of lack of easy access to data





# Developing networks of data exchange between actors





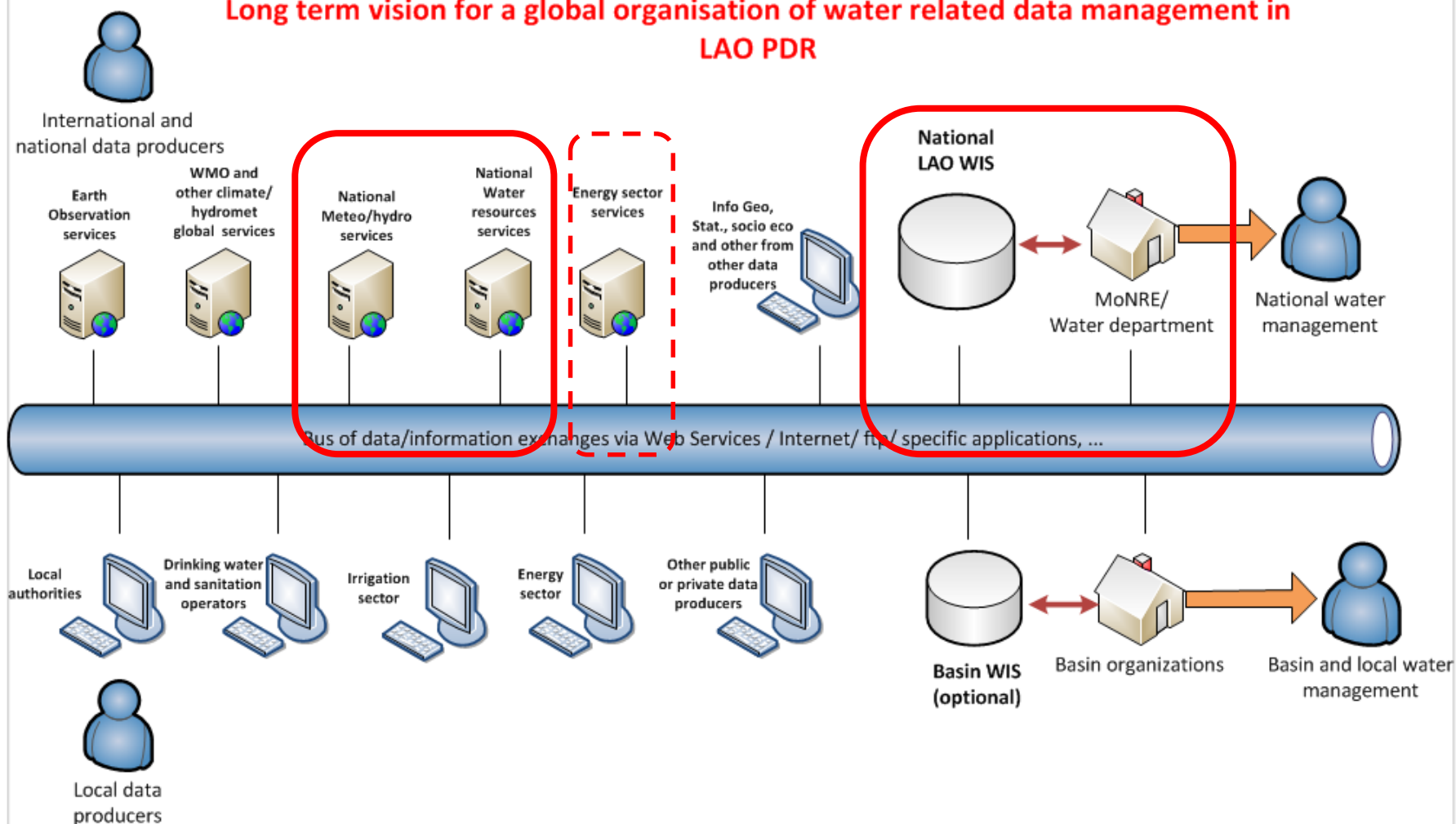


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# **Vision for the Water Information System for Lao PDR**



## Long term vision for a global organisation of water related data management in LAO PDR



**First priority action**



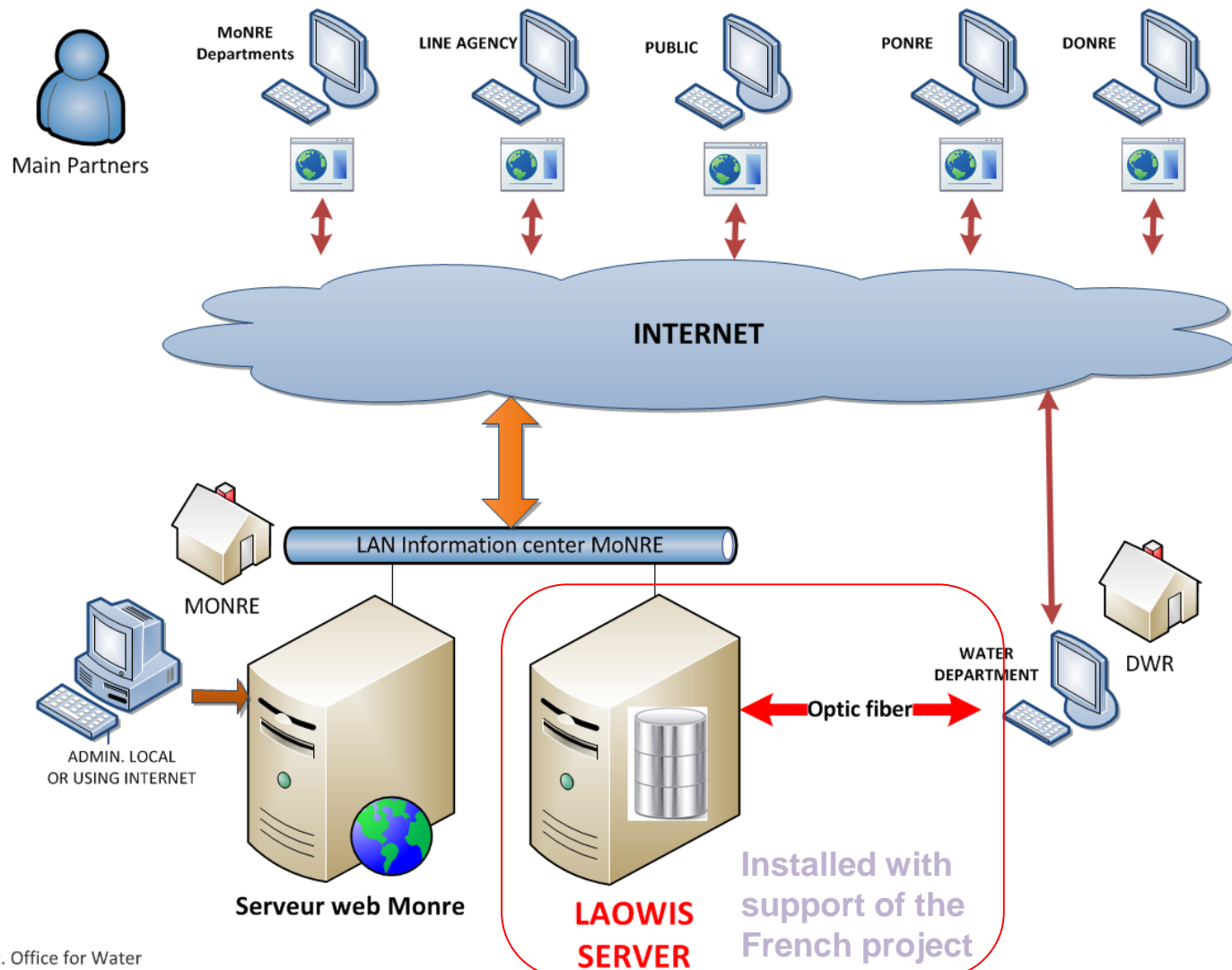
**Second priority action**



International Office for Water  
P. HAENER













# LAOWIS communication network organisation



Int. Office for Water  
P. Haener



# Datasets classification











Acronym	Topics	Corresponding symbol
AD	Administrative context	
ENV	Environmental context	
SW	Surface water entities	
GW	Groundwater entities	
MO	Monitoring aspects	
UP	Water users/polluters	
INFR	Hydraulic infrastructures	
IUD	Intake/uses/discharge	
RISK	Risks	
IND	Indicators	



# Datasets in LaoWIS

## Already input

- Provinces/dist ricts/villages boundaries...
- Hydrological basins/sub-basins...
- Hydro/meteo/ quality stations...
- Dams and pumps...
- Dams/pumps intakes...

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## Missing

- DEM, soil occupation...
- Aquifers...
- Population, industrial activities...
- Flood/drought risks...
- Performance indicators...





# LaoWIS development

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- Setting-up of the server configuration
- Inventory of the DWR data
  - Excel files
  - 7 divisions
- Capacity-building
  - Database management
  - Website





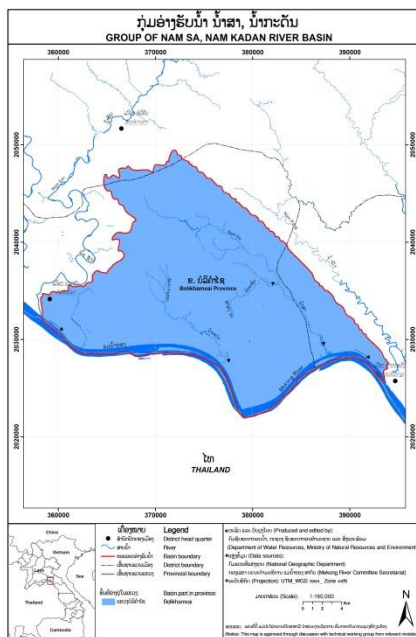
# Data valorisation and sharing



# How to have a map on 1 of the 62 basins

On the LAOWIS website  
<http://laowis.monre.gov.la/>

1. Select menu “Atlas of river basins in Lao PDR”
2. Select 1 basin
3. Download and visualize the map



## Water Information System in Lao PDR Managed by DWR-MONRE

Home

Welcome to LAOWIS

Lao PDR Water Information System

LAOWIS is the unique web portal to access public information and data related to water and aquatic environments in Lao PDR

IWRM in Lao PDR

About DWR-MONRE

Webmapping of Lao PDR

Atlas of river basins in Lao PDR

Catalogue of data sources

IWRM national actors

Monitoring stations

List of hydrological stations

List of meteorological stations

List of quality stations

Nam Ngum pilot basin

Webmapping of Nam Ngum basin

Data at Phenglouang station

Documents

Public documents

Atlas of the 62 river basins in Lao PDR



Web mapping Lao PDR



Web mapping Nam Ngum basin



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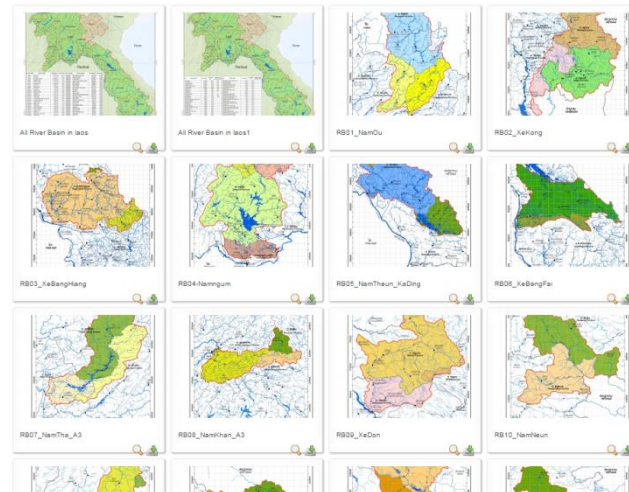
Nam Ngum pilot basin

Webmapping of Nam Ngum basin

Data at Phenglouang station

Documents

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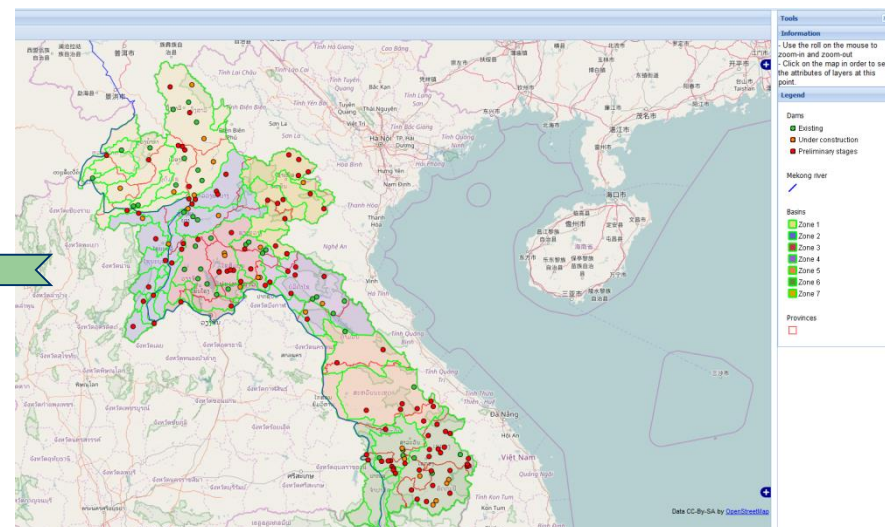
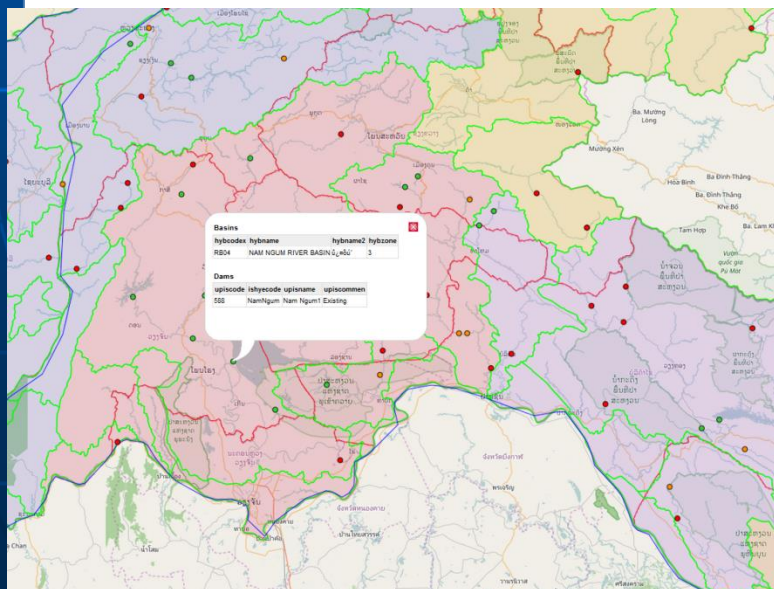
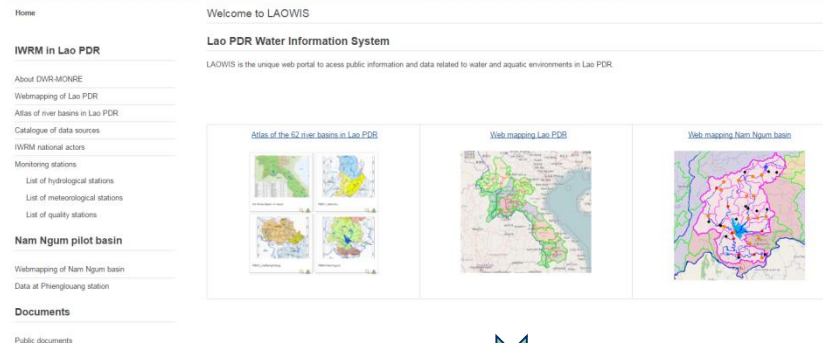


# How to visualise location of dam projects in Laos

On the LAOWIS website  
<http://laowis.monre.gov.la/>

1. Click on Web mapping Lao PDR
2. Add layer on “Dam”
3. Zoom as you want
4. Click on 1 point to have its characteristics

## Water Information System of Lao PDR Managed by DWR-MONRE

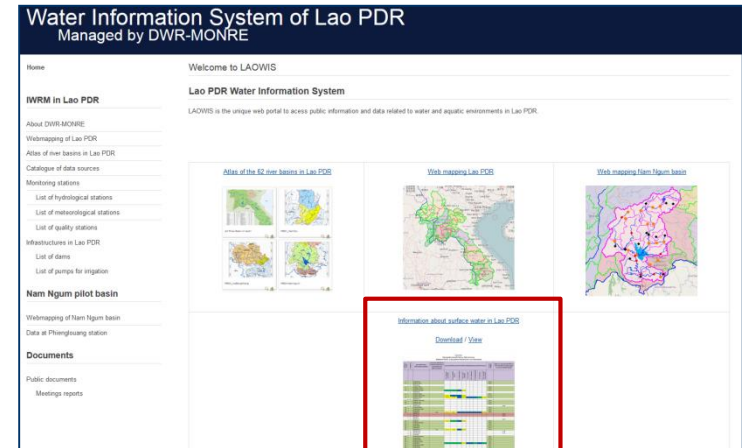
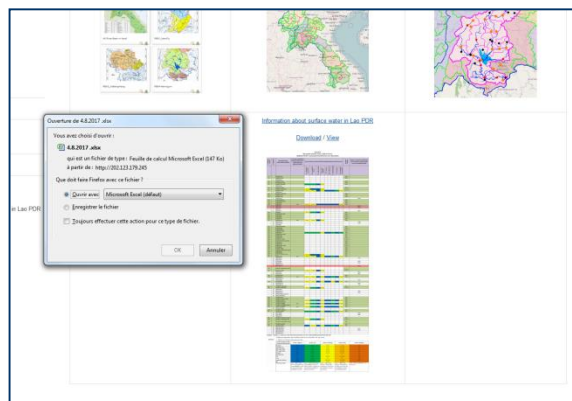




# How to get monthly water surface status in Lao PDR

On the LAOWIS website  
<http://laowis.monre.gov.la/>

1. On the main page click on "Information about surface water in Lao PDR → View"
2. A window open, you can visualize the file
3. Or click on "Download" to download but login first

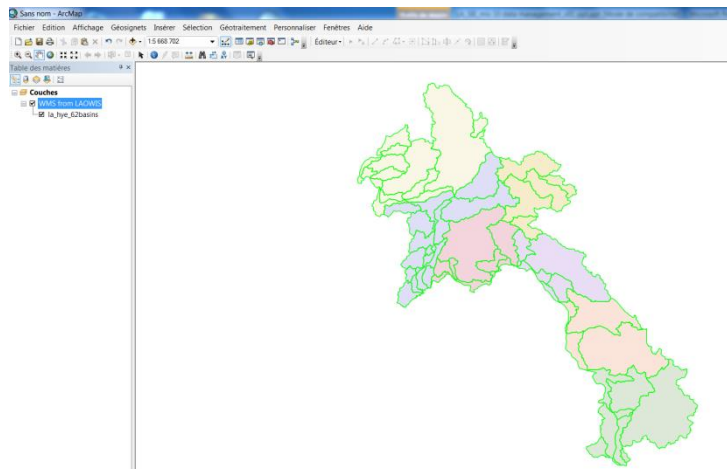
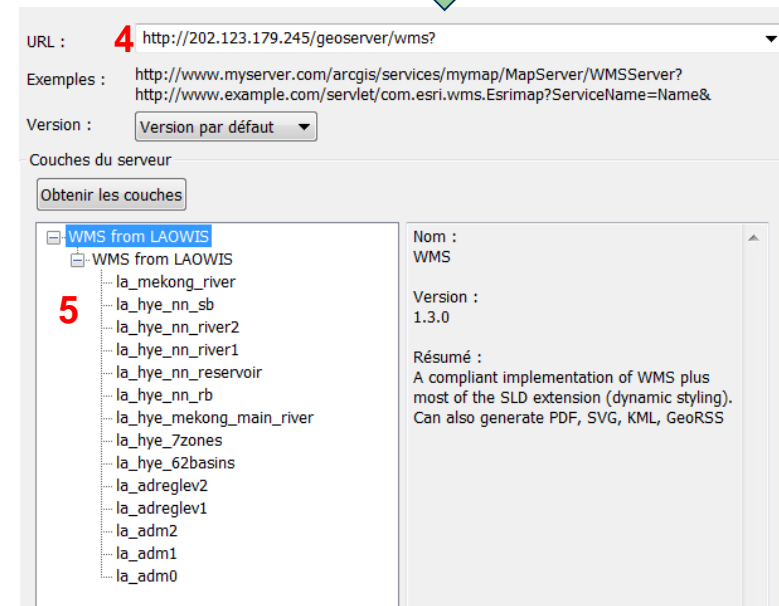
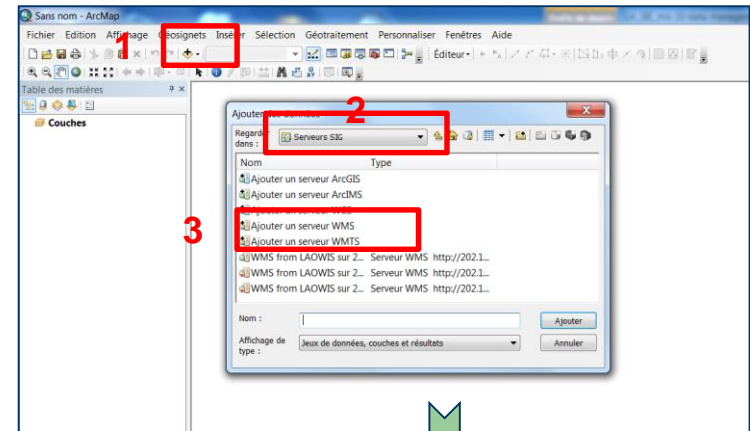
[illegible]



# How to use the layer of 62 basins updated by the DWR

## In ArcMAP/Esri

1. Add layer
2. Select From GIS server
3. Select “Add WMS server”
4. Indicate server LAOWIS :  
<http://202.123.179.245/geoserver/wms?>
5. Select the layer you want to see





# Metadata catalogue

Search data by topic, by localisation, by keyword  
Detailed information for each data and contact

Map of the provinces on the Nam Ngum basin

Browse by **IWRM theme** **ISO Topic**

Surface water <sup>4</sup> Administrative c

Download and links

About this resource

Categories **Boundaries**

Language • English

Contact for the resource **International Office for Water**  
• Point of contact : p.sennhauser@oieau.fr

Credit -- Map credit --

Technical information

Update frequency

Coordinate reference system • WGS 84

Format **SHP**

Metadata information

[Download metadata](#)

Contact **International Office for Water**  
• Point of contact : Philippe SENNHAUSER

Metadata language • English

Identifier e74b257a-ecec-4f7f-b8f6-816a435576d8

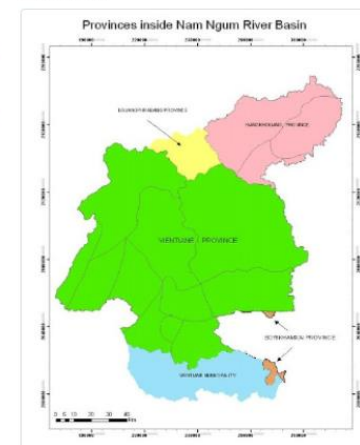
Latest news **Most popular**

GIS layer of the sub basins over the Nam Ngum watershed  
*Dataset*

Map of the provinces on the Nam Ngum basin  
*Map*

Map of major basins in Lao PDR  
*Map*

Overview



Map of the provinces on the Nam Ngum basin

Spatial extent





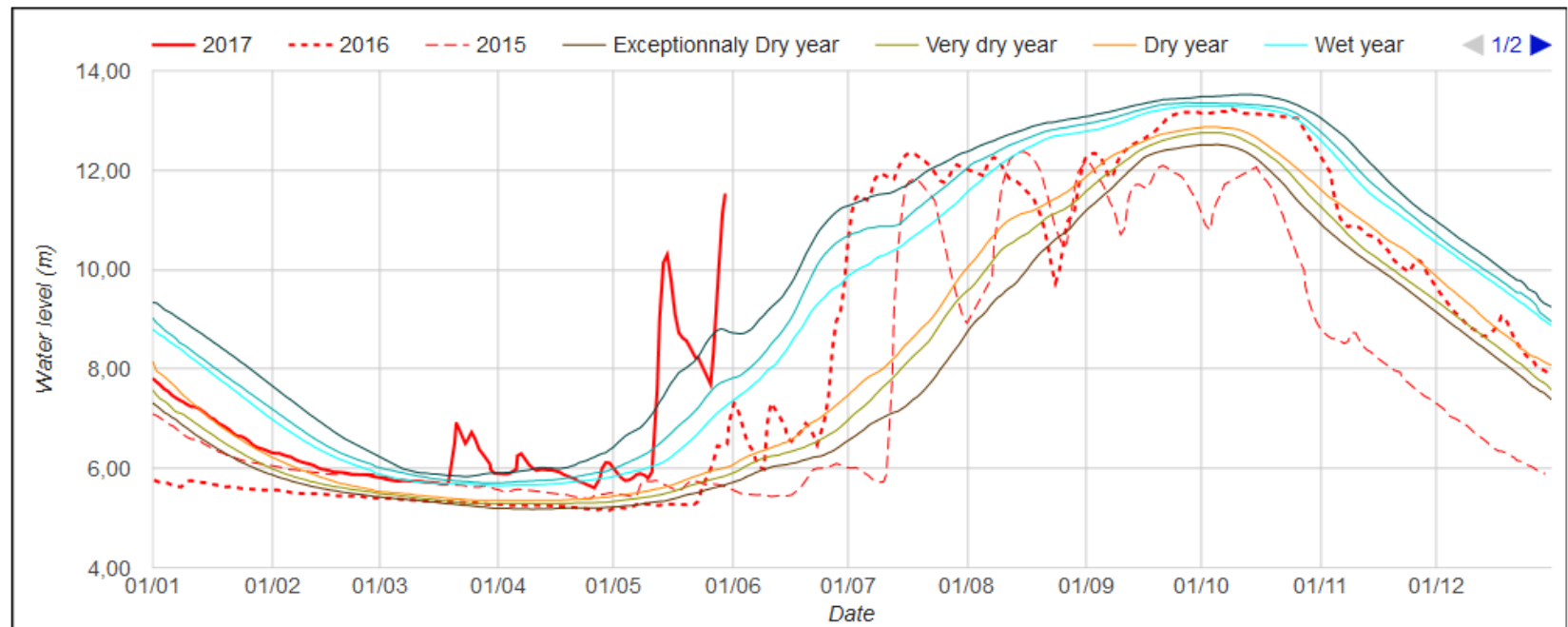


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## **Example of use in other countries**



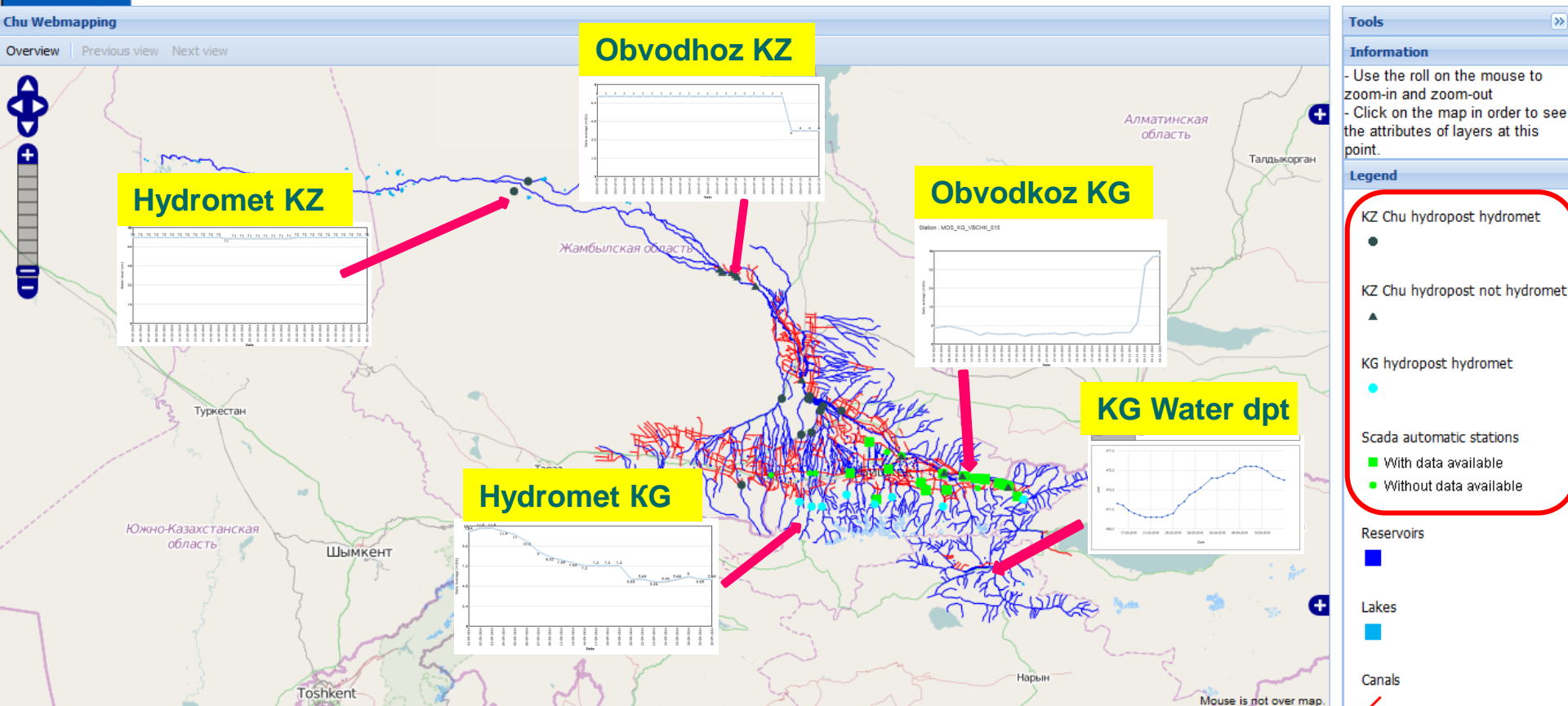
# Online data from automatic monitoring station





# Possibility to combine data coming from various organization Example of output of the SDC/IMoMo project

- The Chu basin web mapping application prototype: a common tool for visualization of water resource situation, regularly actualized by 5 partners at transboundary level

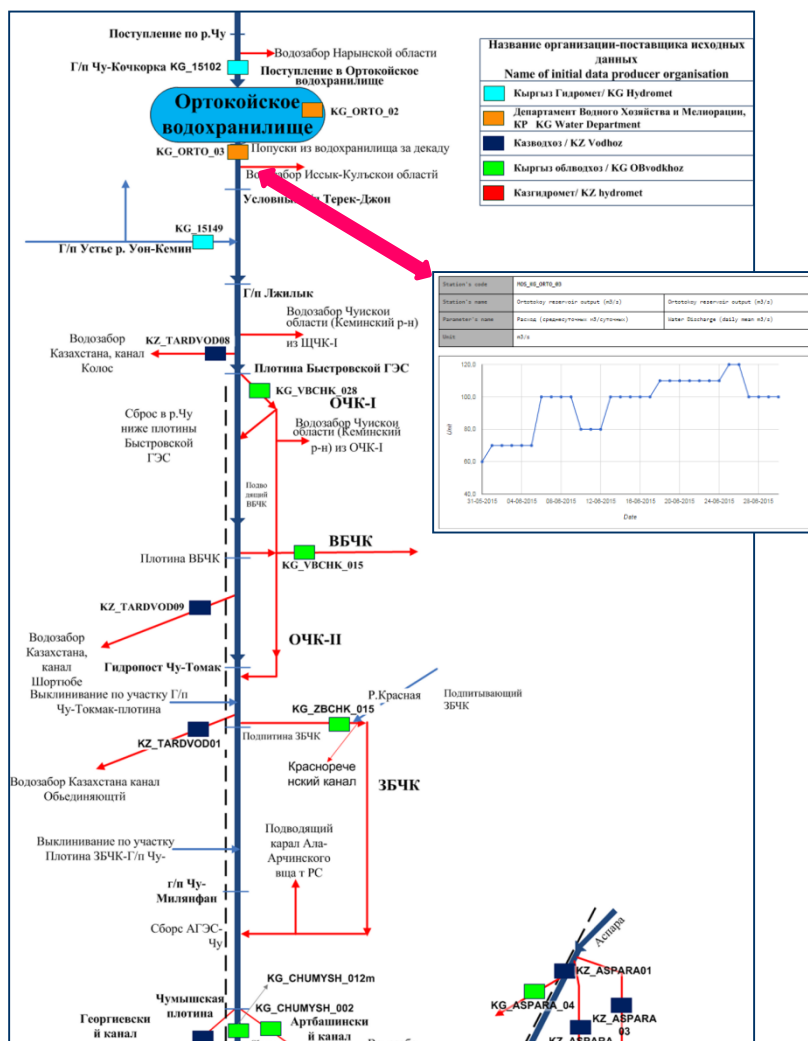


<http://37.187.128.205/webmapping/ca/chu/>

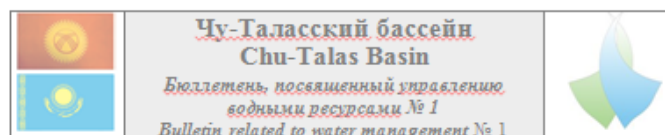


# Hydrological bulletin developed with/by the members by the Chu/Talas transboundary Commission

## # Online scheme regularly actualized



## # Quarterly pdf bulletin



### ГИДРОЛОГИЧЕСКИЙ БЮЛЛЕТЕНЬ

ПО БАСЕЙНУ РЕКИ ЧУ  
Бюллетень № 1, Июль 2015 г.

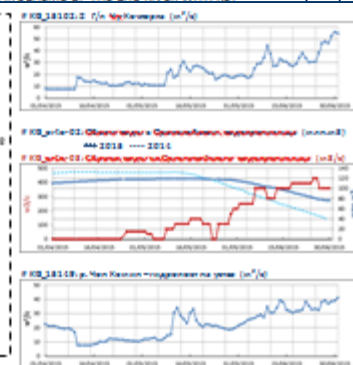
HYDROLOGICAL BULLETIN  
RELATED TO THE BASIN OF THE CHU  
Bulletin n°1 - July 2015

#### СОДЕРЖАНИЕ

I. ЛИНЕЙНАЯ СХЕМА Р.ЧУ С КЛЮЧЕВЫМИ ПУНКТАМИ  
II. ОБЩЕЕ СОСТОЯНИЕ  
III. БАСЕЙН РЕКИ ЧУ/ВОДОХРАНИЛИЩА  
IV. БАСЕЙН РЕКИ ЧУ/ ОСНОВНОЙ ВОДОСБОР В КЫРГЫЗСТАНЕ  
V. БАСЕЙН РЕКИ ЧУ/ ОСНОВНОЙ ВОДОСБОР В КАЗАХСТАНЕ  
VI. ОСНОВНОЙ ВОДОЗАБОР ПО ПРИТОКАМ  
VII. БАСЕЙН ТАЛАС (будет разработан)

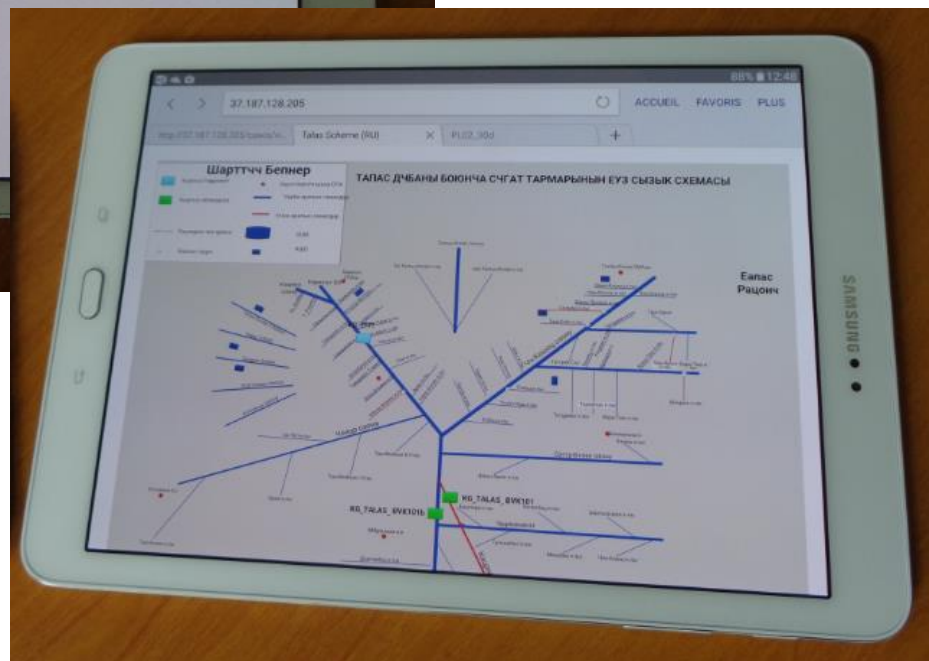
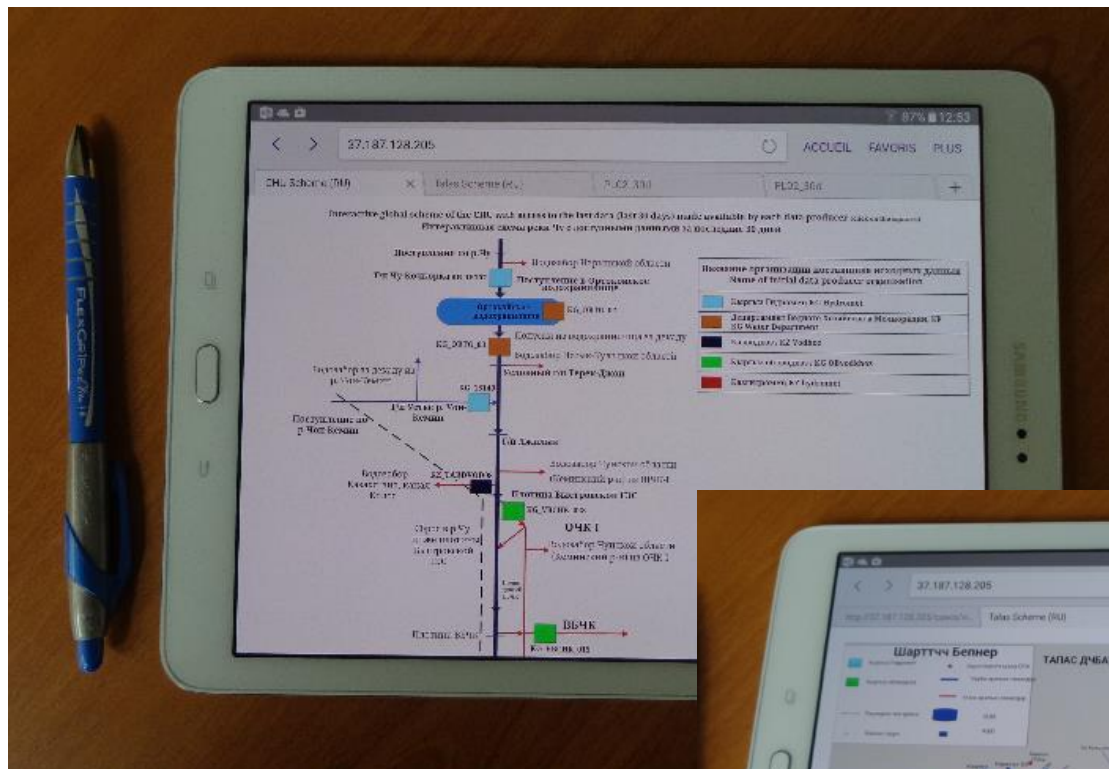
#### CONTENT

I. LINEAR SCHEME OF THE CHU RIVER WITH KEY





# Visualizing water resources status on tablet











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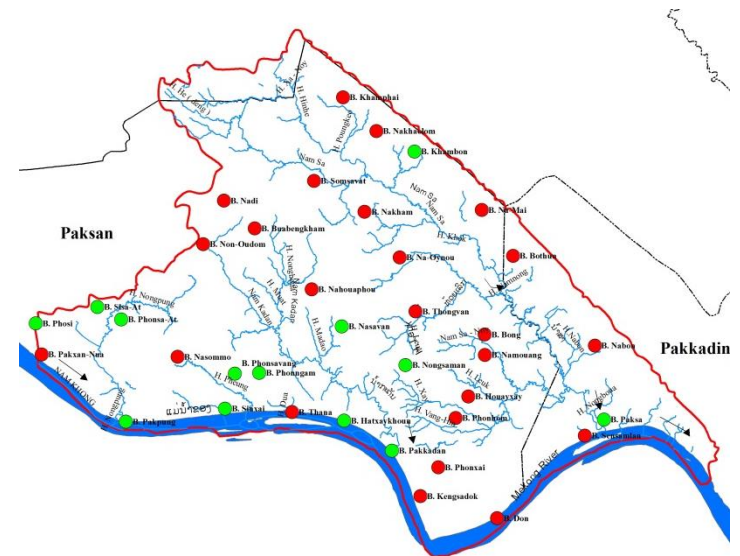
## **Next steps for the Lao Water Information System**



# About future actions

## ■ What priorities?

- Agreement for data sharing between departments of MONRE (and other Ministries) → **Regulation on Water and Water Resources Data and Information Management**
- Water quality monitoring
  - Visualisation tool



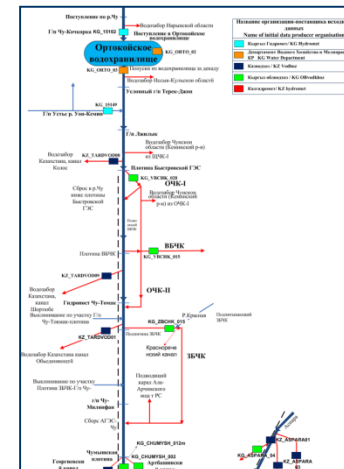


# About future actions

## ■ What priorities?

- Assessment of water available
  - Hydrological data (from DMH)
  - Dams discharges data (from EDL/MEM)
- Evaluation of water uses per sector
  - Water intake
    - Domestic
    - Industries

→ Water balance







***THANK YOU FOR YOUR ATTENTION***

**Agathe GUITTARD**  
**International Office for Water**

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