

Stockholm World Water Week 2019 | 25-30 August, Water for society: Including all

# Practical IWRM

## How it works in different context

Sunday 25 August | 11.00-12.30 | Room: L12

IRAN



INDONESIA



SUDAN



BOLIVIA



# Status of IWRM Implementation (SDG 6.5.1) in 2017/2018

(Good IWRM implementation)

High Group



38%

62%



Low Group

(No/Less IWRM implementation)

Very high

High

Medium high

Medium low

Low

Very low

## Indicators of SDG 6.5.1:

1. **Enabling Environment** for IWRM implementation
2. **Institutions and participation** for IWRM implementation
3. **Management Instruments** for rational decisions
4. **Financing** for IWRM.

# Practical IWRM

not only refer to the four indicators to achieve SDG 6.5.1, but also solve water resources problems to accomplish the results.

## “Problem-solving-oriented Implementation of IWRM”

### In implementing “Practical IWRM”

- Focus on **the local context** such as the history, the culture, the society, the peoples’ lives and the environment.
- Utilize both natural and **social science** technologies.
- Analyze local problems and get **lessons learnt for solutions**.
- Provide **multi-stakeholders partnerships that effectively function**.
- **Solve water resources problems** on the ground rooted in local governance.

# “Practical IWRM” is a tool for all the people to be happy.

- Not only water resources development and management,
- Not only environmental and social consideration,
- Not only researches and investigations,

## “Practical IWRM” must solve water resources problems, and make all the people happy.

**GWP’s Definition:** Integrated Water Resources Management (IWRM) is a process which promotes the coordinated development and management of water, land and related resources in order to **maximize economic and social welfare** in an equitable manner **without compromising the sustainability** of vital ecosystems and the environment.



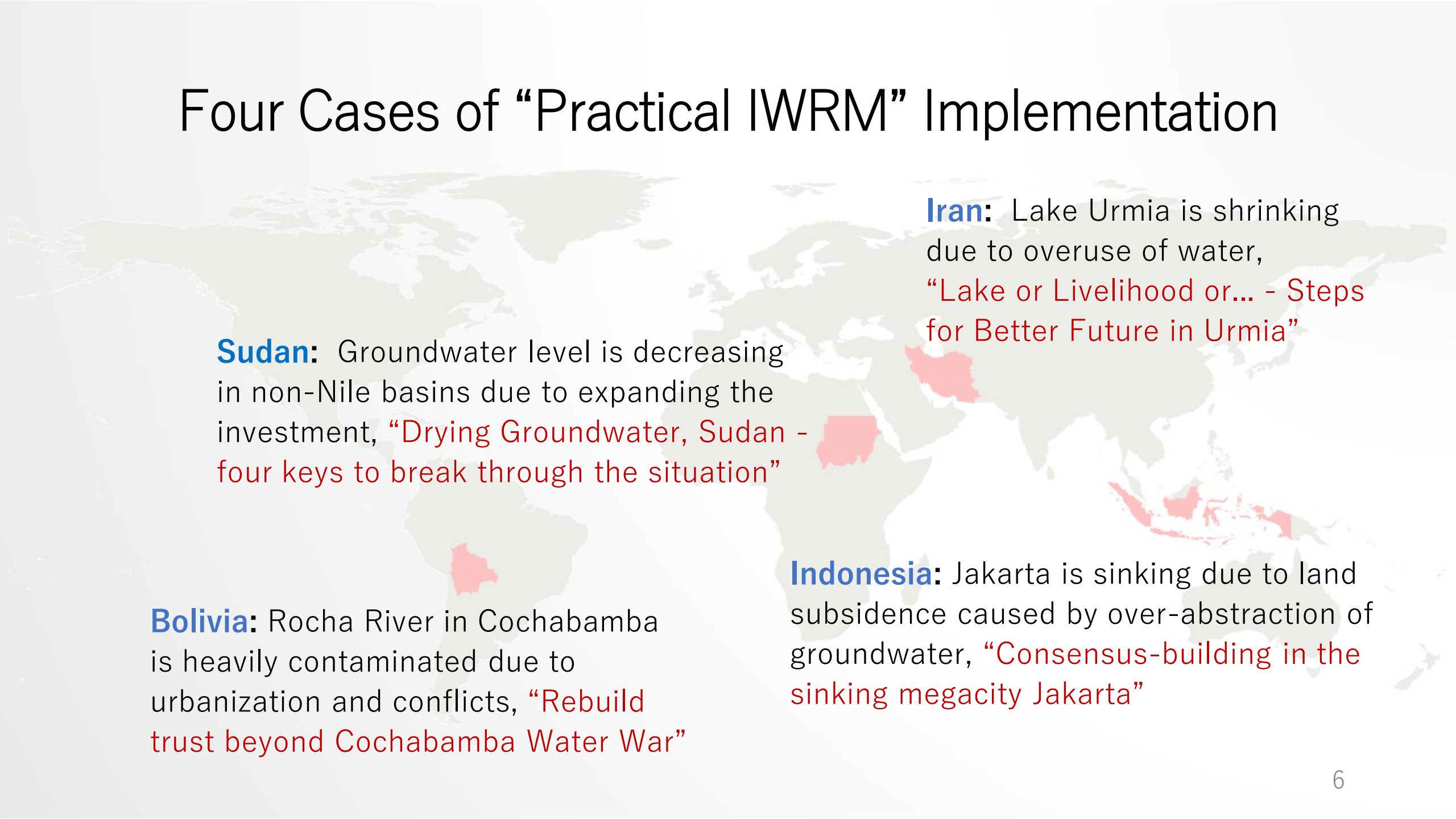
# HOW Do We Implement “Practical IWRM”?

- The concept of IWRM is beautiful, but...
- IWRM is difficult to do.
- It's impossible for all the people and sectors to be integrated.

**You may also raise the question:**



# Four Cases of “Practical IWRM” Implementation



**Sudan:** Groundwater level is decreasing in non-Nile basins due to expanding the investment, “Drying Groundwater, Sudan - four keys to break through the situation”

**Bolivia:** Rocha River in Cochabamba is heavily contaminated due to urbanization and conflicts, “Rebuild trust beyond Cochabamba Water War”

**Iran:** Lake Urmia is shrinking due to overuse of water, “Lake or Livelihood or... - Steps for Better Future in Urmia”

**Indonesia:** Jakarta is sinking due to land subsidence caused by over-abstraction of groundwater, “Consensus-building in the sinking megacity Jakarta”

# Co-convenor's Speech

Honorary Professor Howard Bamsey,  
Chair of Global Water Partnership (GWP)



# IWRM and Multi-stakeholder partnership approach

*Howard Bamsey*  
*Chair*  
*Global Water Partnership*

# THE URGENCY



Decreasing water quality  
Pollution  
Poor coordination  
Urbanisation  
Competing demands  
Migration  
Floods  
Water scarcity  
Population growth  
Droughts  
Fragmentation  
Ecosystem degradation  
Water-borne disease  
inequalities  
Climate change  
Conflicts  
Water-related risks

## THREATS

Investment  
Sustainable Development Goals (SDGs)  
Infrastructure  
'voices of water'  
Nature-based solutions

## OPPORTUNITIES

Sendai framework  
Technology  
Transboundary cooperation  
Gender equality  
Nexus  
Private sector  
New business practices  
Youth engagement  
Innovation  
Valuing water  
Paris Agreement  
Employment

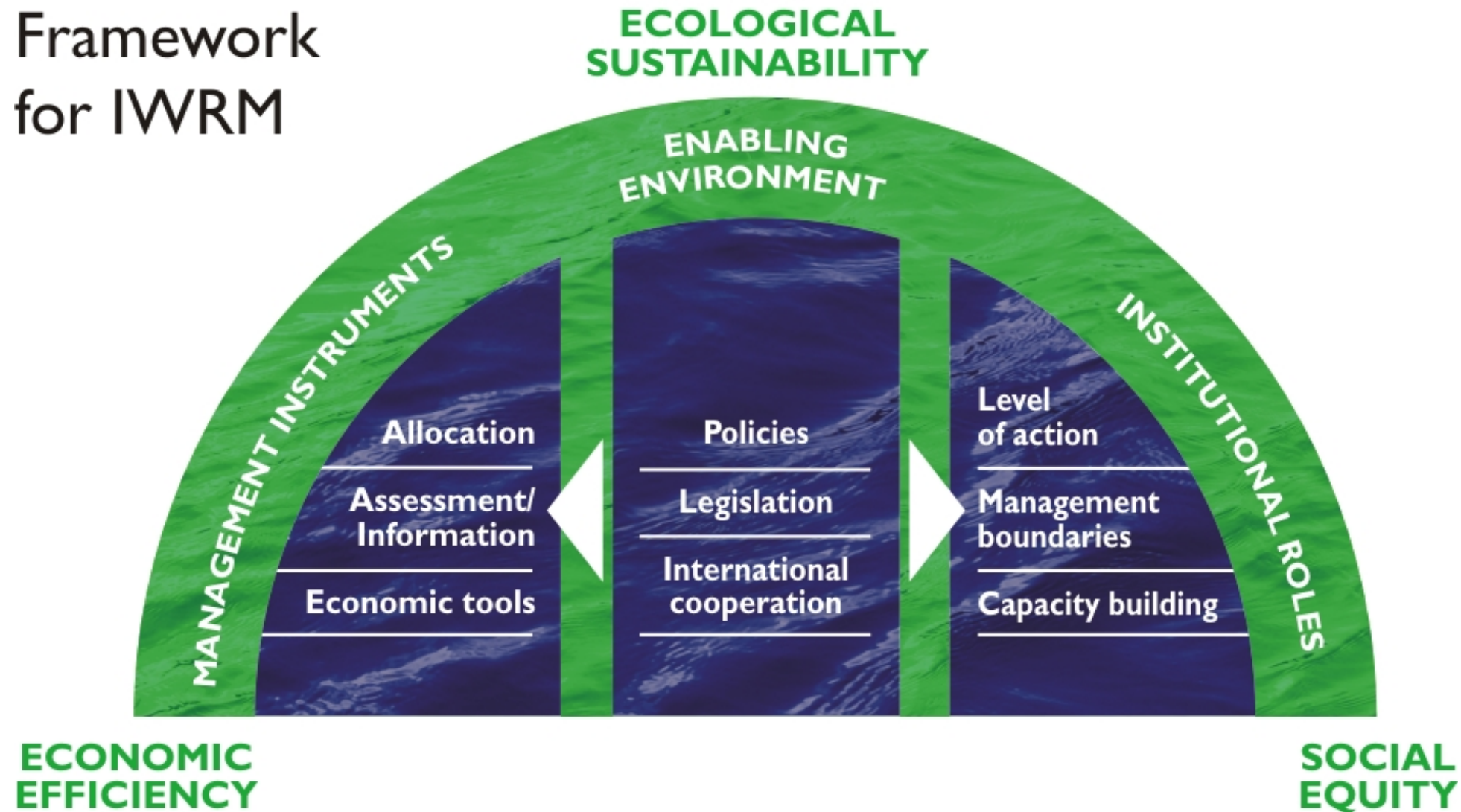
**AGENDA**  
for action  
to address the  
world's water  
challenges



# Importance for approaching 'water' in integrated manner: Integrated Water Resources Management (IWRM)



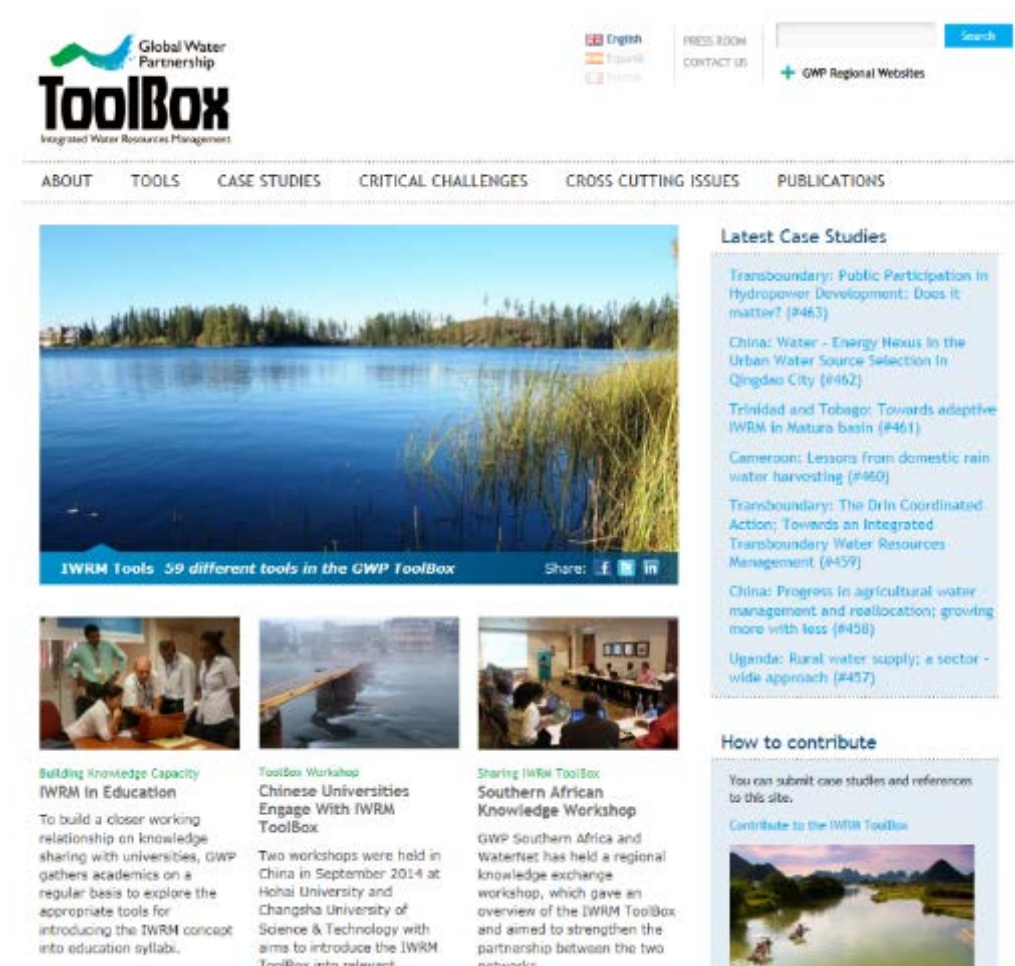
# General Framework for IWRM





# GWP IWRM ToolBox

- Free online database
- Tools help the user understand the concepts of integrated water resources management
- Contains a library of case studies and references on how to apply an integrated approach





# Technical resources

GWP provides technical leadership for water resources management:

- Background Papers
- Policy Briefs
- Perspectives Papers
- Technical Focus Papers

All online at [www.gwp.org](http://www.gwp.org)



# GWP: network promoting IWRM since 1996

GWP Region	No. of Partners (2019)
Caribbean	105
Caucasus and Central Asia	146
Central Africa	173
Central America	216
Central and Eastern Europe	184
China	99
Eastern Africa	303
Mediterranean	91
South America	359
South Asia	404
South East Asia	247
Southern Africa	338
West Africa	235
Global	290
<b>Total</b>	<b>3,190</b>

We're a large, diverse, inclusive, multi-stakeholder partnership that supports communities and countries to improve the way they manage water.

Put simply, we're about bringing water users together - that's everyone - to solve water problems.

## Our reach

We comprise 3,000+ partner organisations in over 180 countries, influencing change from local to global levels.

## Our network

65+ Country Water Partnerships and 13 Regional Water Partnerships convene and broker coordinated action of government and non-governmental actors.

## Our knowledge

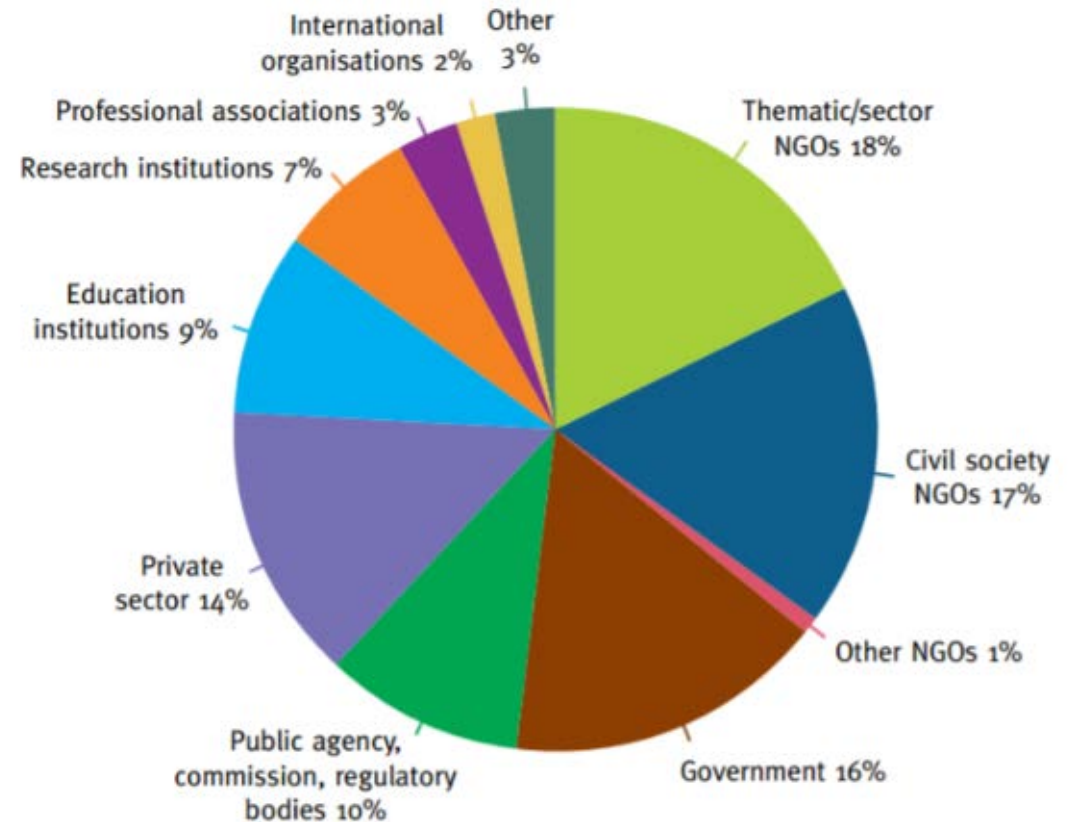
We draw on implementation experience at the local level and link it across our Network and to global development agendas.

The presentation of material on this map does not imply the expression of any opinion whatsoever on the part of GWP concerning the legal status of any country, territory, or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

# A Network of Partners

- **Advocating, facilitating, and supporting change** processes for sustainable water management.
- **A neutral platform for multi-stakeholder dialogue** at global, national, and local levels that connects water resources planning and operations.
- **Contributing technical knowledge and building capacity** for improving water management.

GWP Partners by type





Water crises need **ATTENTION** and **COORDINATED ACTION** for systemic change.



GWP influences needed systems change through its **UNIQUE VALUE PROPOSITION.**

## STRATEGY 2020–2025:

leverage global policy frameworks, **MOBILISE, ACT, and LEARN**



**Water Solutions for the SDGs**



**Climate resilience through water**



**Transboundary water cooperation**



**Mobilize youth**



**Work towards gender equality**



**Engage the private sector**



# Look forward to vibrant discussions on practical examples of IWRM



Go to **Get Involved** at: [www.gwp.org](http://www.gwp.org)

And visit our online library for water resources management: [www.gwptoolbox.org](http://www.gwptoolbox.org)



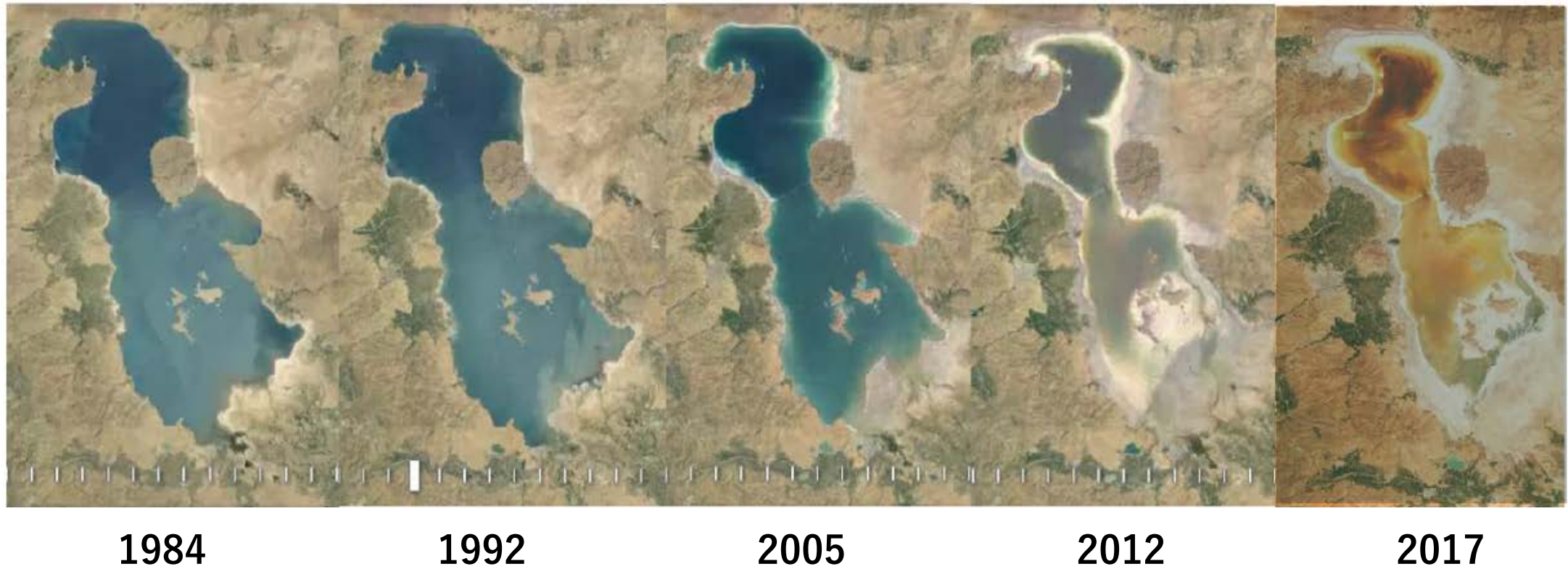
# Lake or Livelihood or ...

## - Steps for Better Future in Urmia -

Urmia Lake Restoration Program  
Japan International Cooperation Agency



# Lake Shrinking Due to Increase of Irrigation Use and Climate Change





# Case Study: Aral Sea Crisis



**Lack of consensus** for the strategy  
among stakeholders



# Policy & Countermeasures of Iranian Government



**Education for Environment**



**Establishment of ULRP**

**Water-saving Irrigation**



**Plantation**

# Progress of the Countermeasures and Challenges

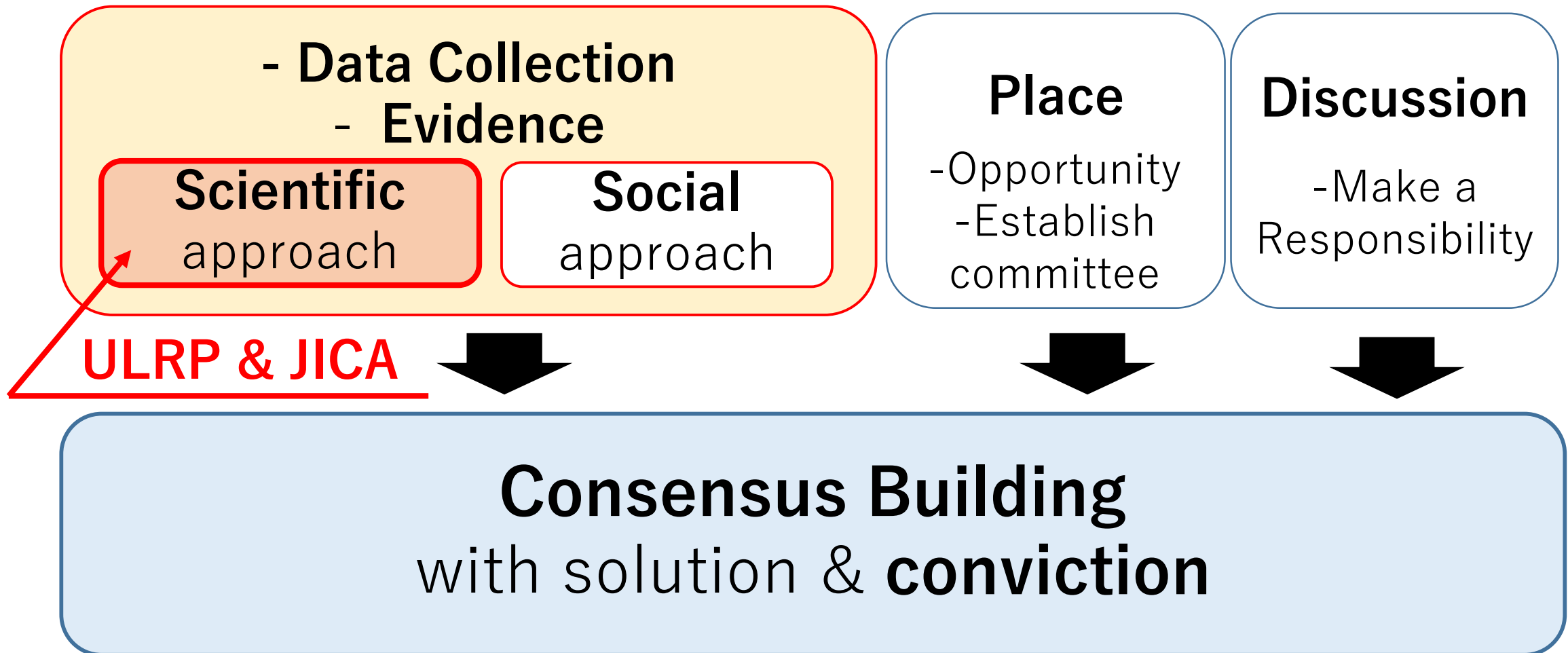
## Progress

- Fortunately recovering water level of the lake
- Never know whether it results from the countermeasures or not.

## Challenges

- Data Collection
- Residents' Awareness
- Wide-Spread Regulation and Rules

# Scientific & Social approach for “Conviction”

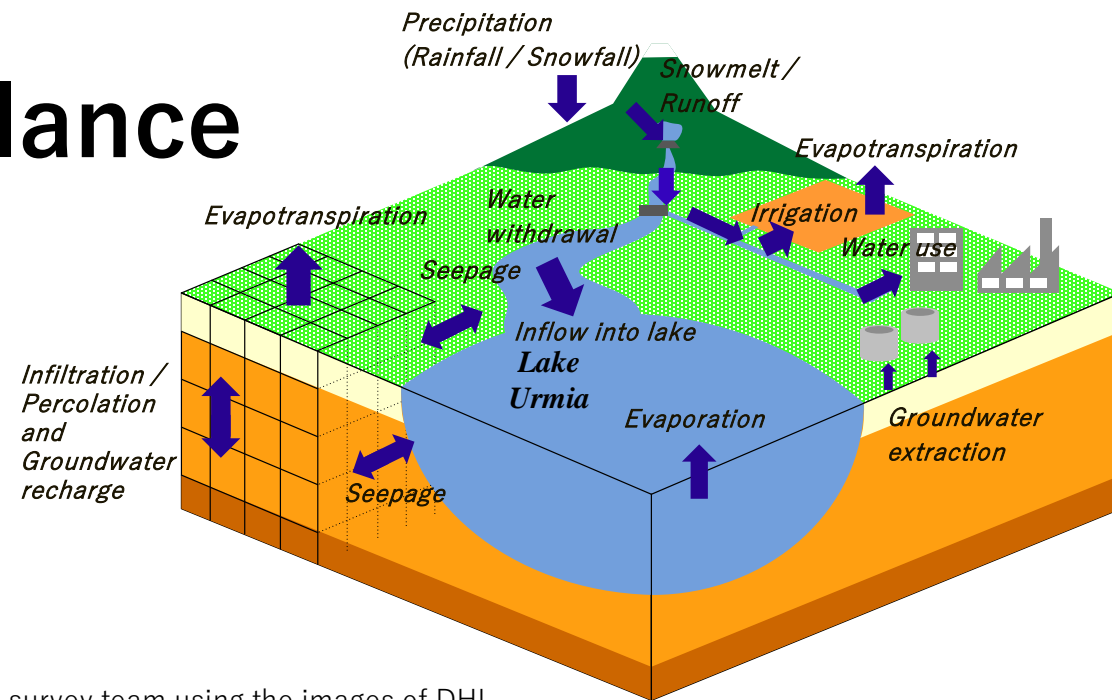


# JICA's SURVEY: Data Collection

Create a **water circulation model** using water **evapotranspiration** analysis through **satellite images** and data of precipitation, dam and weir etc.

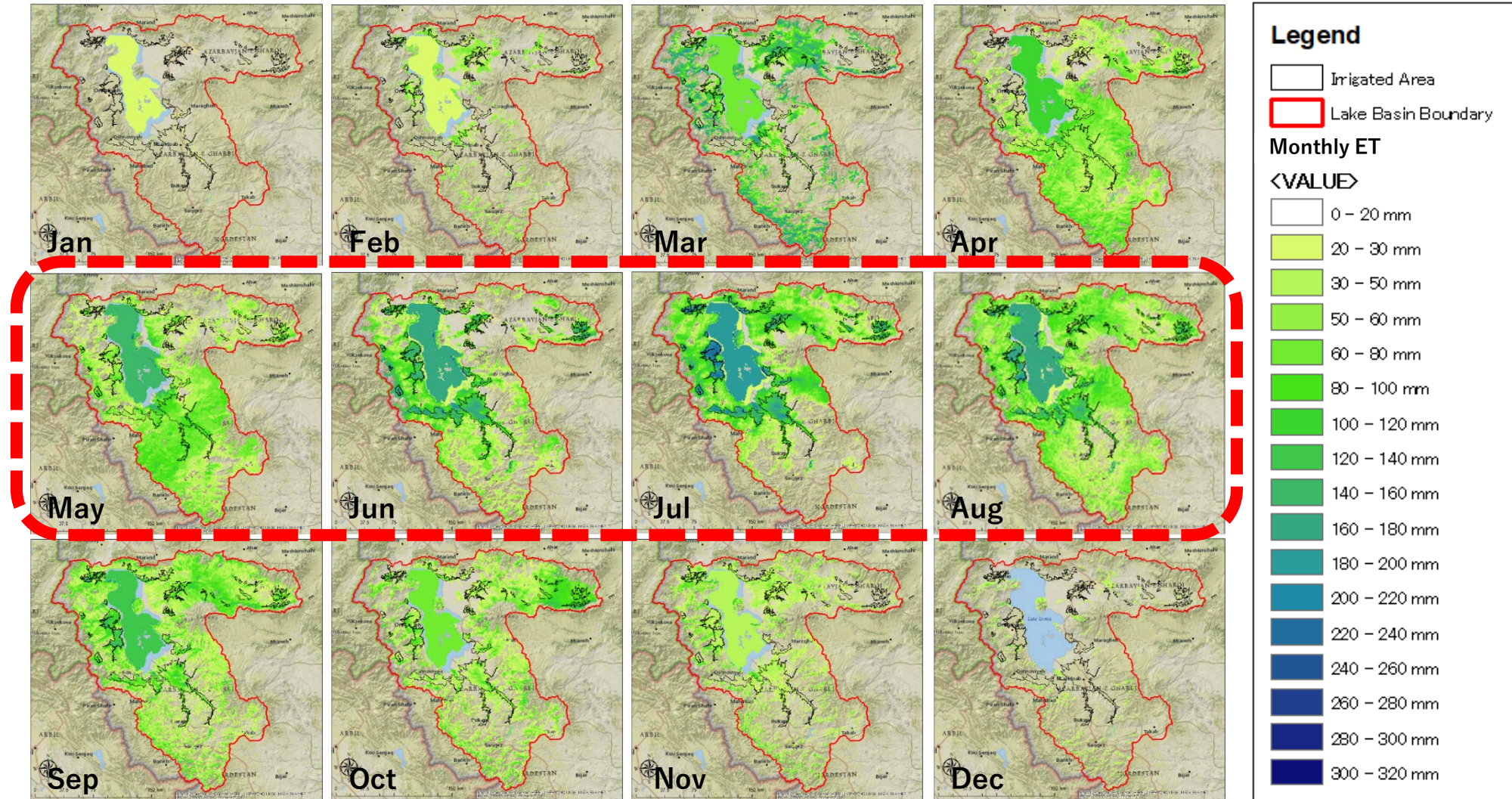
➤ Clarification of water balance

➤ Making Case Scenario

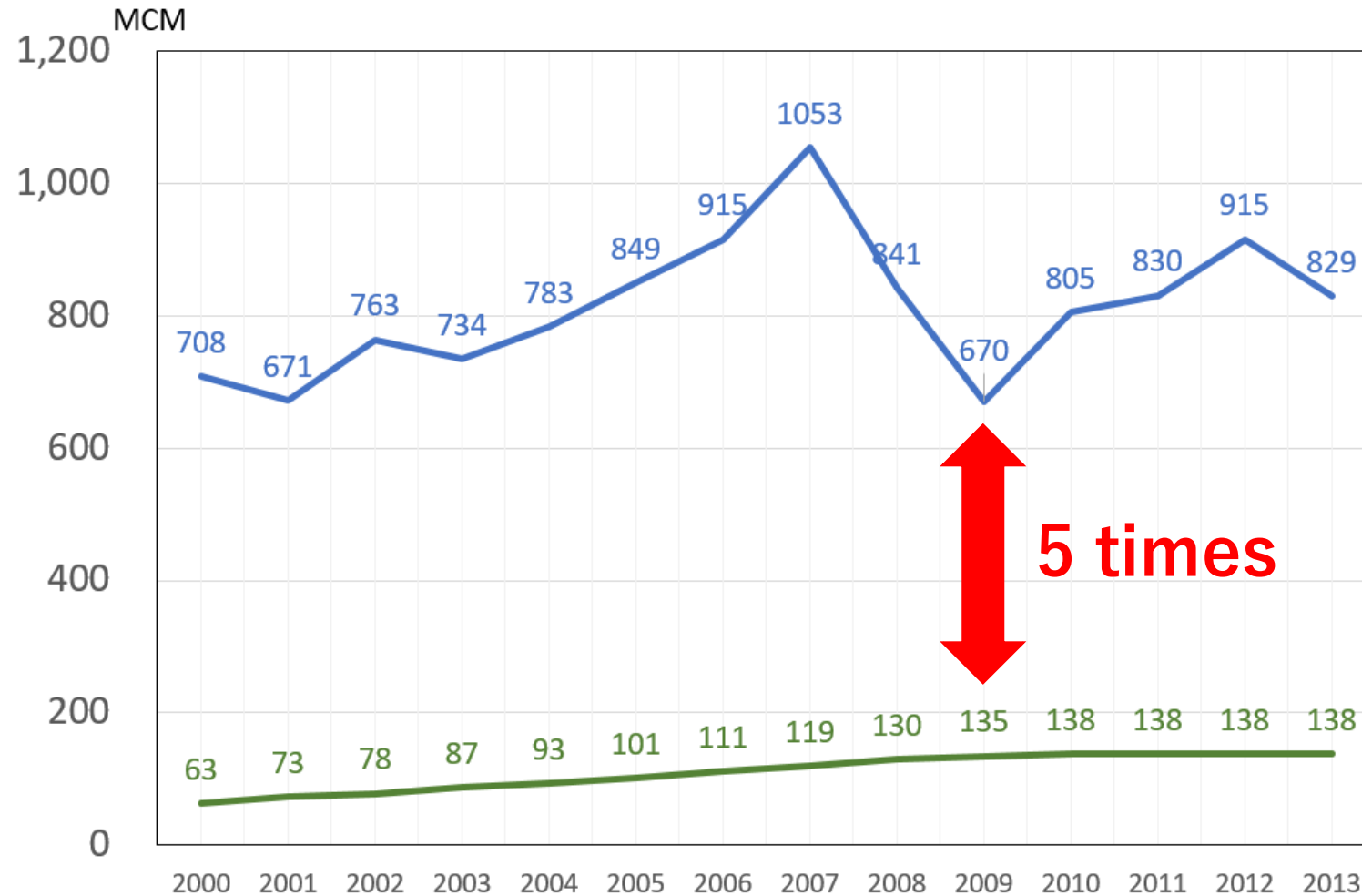




# Changes of water use volume revealed by evapotranspiration



# Finding : Significant Illegal Groundwater Use



(blue) Groundwater Extraction calculated in the survey

(green) Legal and illegal well extraction grasped by Water Resource Management Company

# Thank You for Your Kind Attention

## Contact:

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Global Environment Department of JICA  
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**Dr. Masoud Tajrishy**

Urmia Lake Restoration Program (ULRP)  
tajrishy@sharif.edu



# Consensus building in the sinking megacity Jakarta

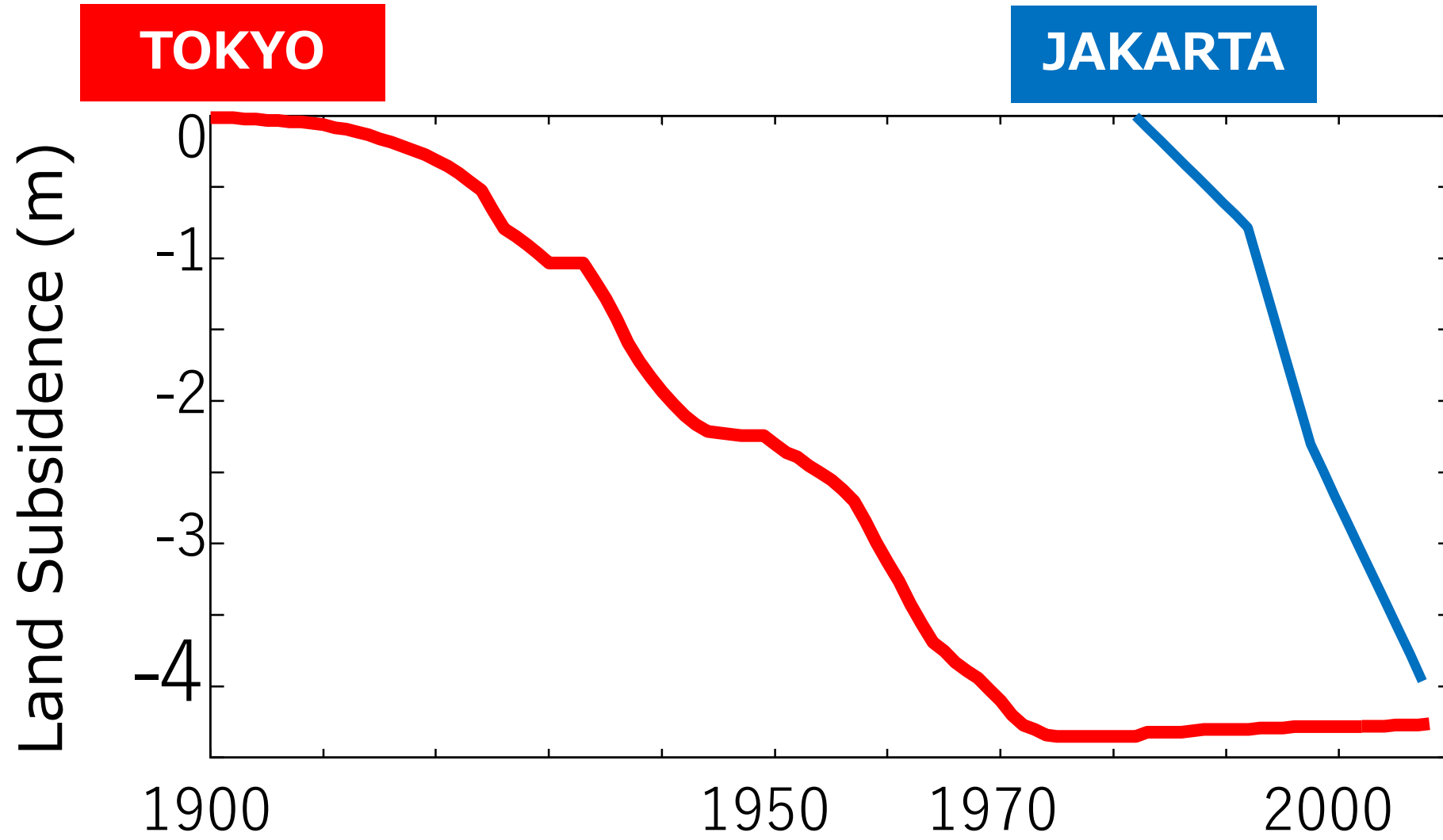
- Stop the land subsidence -

Jarot Widyoko, Ministry of Public Works and Housing in Indonesia  
Miha Matsubayashi, JICA





# The fastest-sinking city in the world : JAKARTA



# CURRENT SITUATION COASTAL AREA IN JAKARTA



# TIDAL FLOOD (ROB) AT MUARA BARU



# **LAND SUBSIDENCE COUNTERMEASURES IN JAKARTA**



# The efforts that already and will be made to overcome Land Subsidence countermeasure in Jakarta :

## 1. Law Enforcement

- Well registration need to be expanded
- Groundwater conservation area
- Groundwater management in Groundwater Basin and River Basin

## 2. National Capital Integrated Coastal Development (NCICD) Project As Adaptation Measures

## 3. Water Supply Planning

# 1. LAW ENFORCEMENT

1. **Well registration need to be expanded**
2. **Groundwater conservation area**
  - It is necessary to designate critical zones where the groundwater abstraction should be controlled.
3. **Groundwater management in Groundwater Basin and River Basin**

1. Revitalitation Reservoir on Jabodetabek



2. Sukamahi and Ciawi Dam Project



3. Infiltration wells



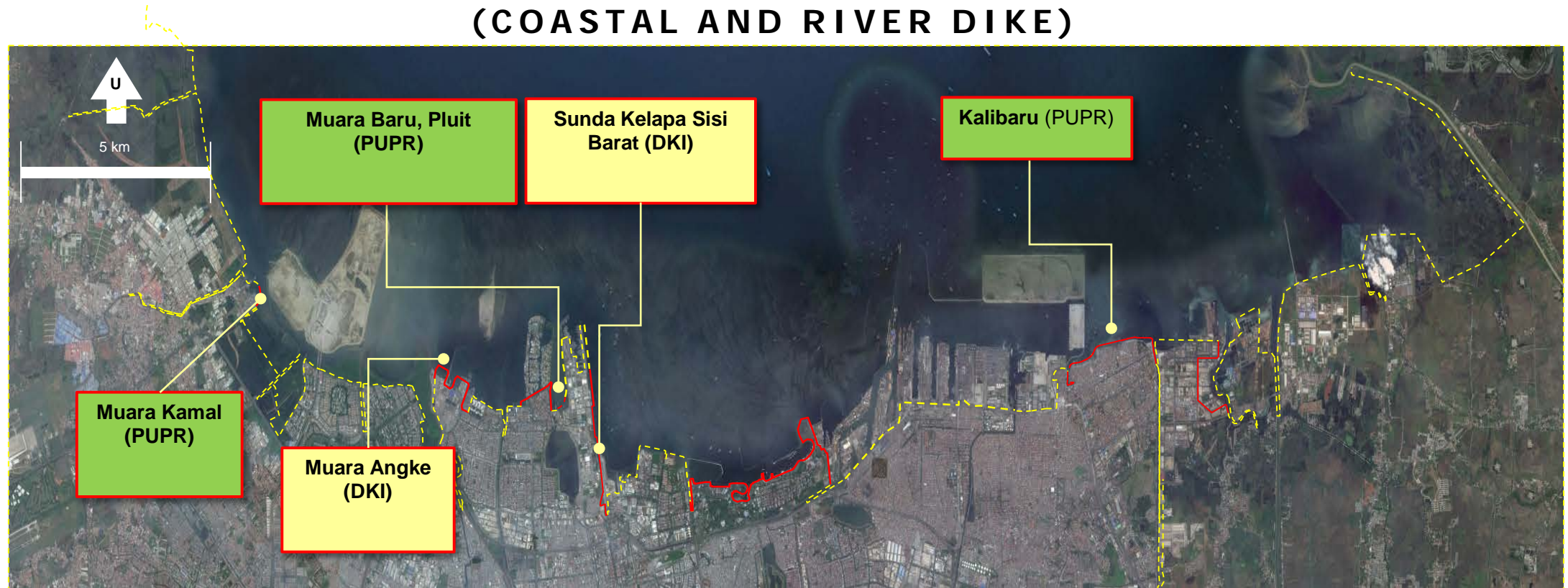


## 2. NATIONAL CAPITAL INTEGRATED COASTAL DEVELOPMENT (NCICD) PROJECT AS ADAPTATION MEASURES





# PRIORITY PROGRAM (COASTAL AND RIVER DIKE)



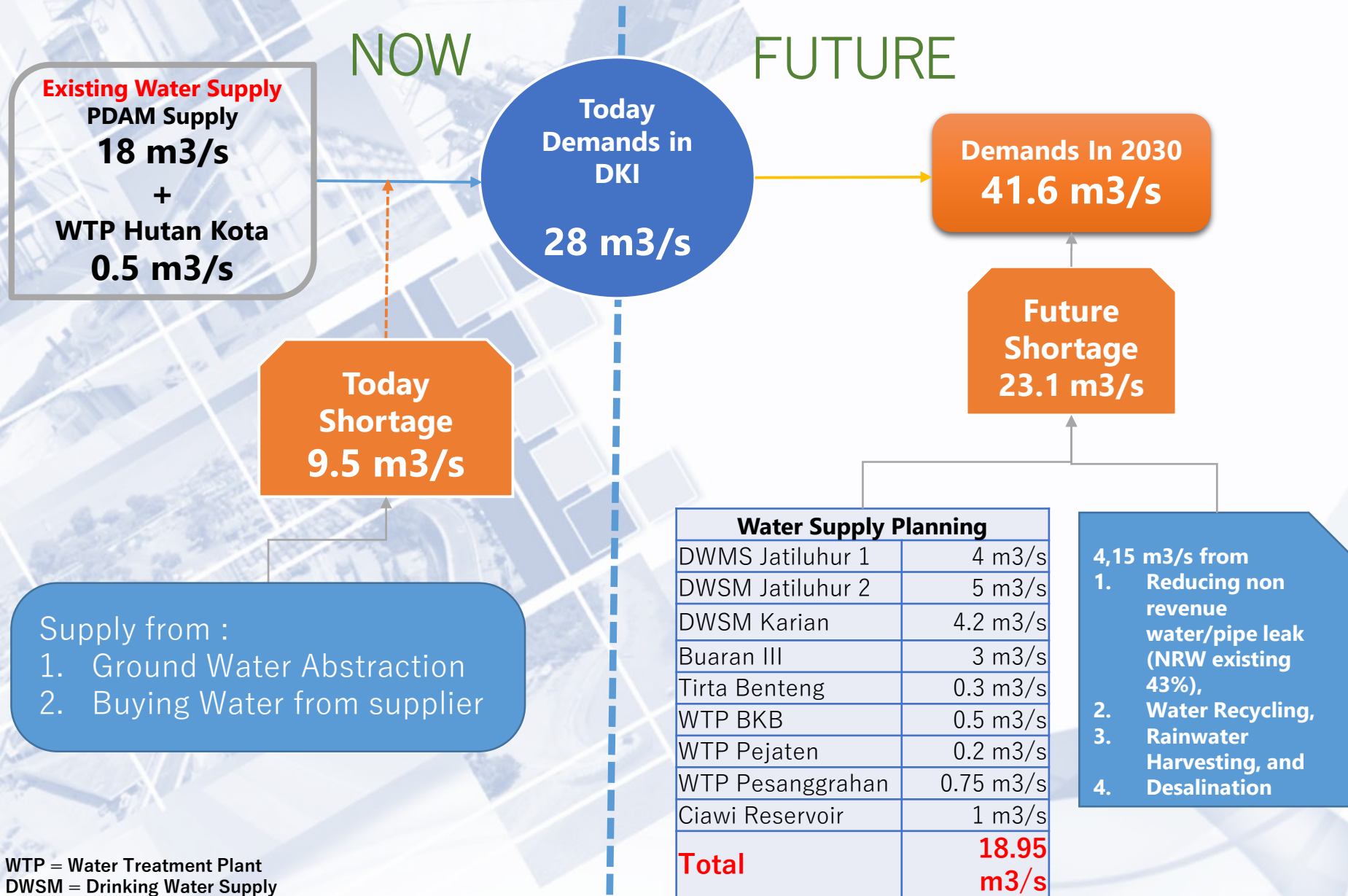
**PUPR Authority = 7,2 Km**  
**Realization = 4,5 Km**  
**Remaining Progress = 2,7 Km**  
**Target 2023 completed**

**DKI Authority = 7 Km**  
**Realization = 4,6 Km**

No	Stakeholders	Project Location	Length (m)	Realization (m)
			DED PUPR	
1	Kementerian PUPR	Total	7,223	4,500
		PPI Kamal Muara (Beach)	813	-
		Pluit (Muara Baru, Utara Waduk Pluit)	2,300	2,300
		Kalibaru	4,110	2,200
2	Pemprov. DKI Jakarta	Total	7,030	4,675
		PPI Kamal Muara (Sungai sisi Barat)	810	475
		Pelabuhan Muara Angke	2,520	-
		Pelabuhan Sunda Kelapa (Sisi Timur Pelabuhan Perikanan Nizam Zachman)	3,700	4.200
	Grand Total		14,253	9,175



# 3. WATER SUPPLY PLANNING



WTP = Water Treatment Plant  
DWSM = Drinking Water Supply Management

# **“Bring Back Water To The Earth”**



# How important IWRM is in Jakarta

Lack of water resources in Jakarta

Over-abstraction of the groundwater

Land subsidence

**IWRM**

- Establishment of coordination mechanism:  
with National government and local government
- Diversification of water resources:  
rainwater utilization, Recycled Water(sewage),  
Dams are outside of Jakarta, etc.

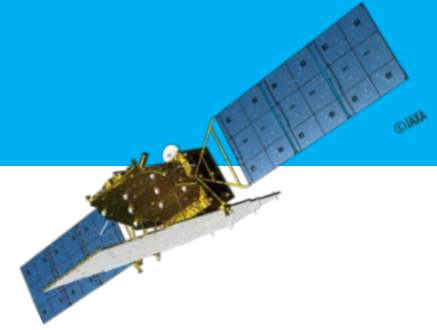


# Various stakeholders make consensus building difficult





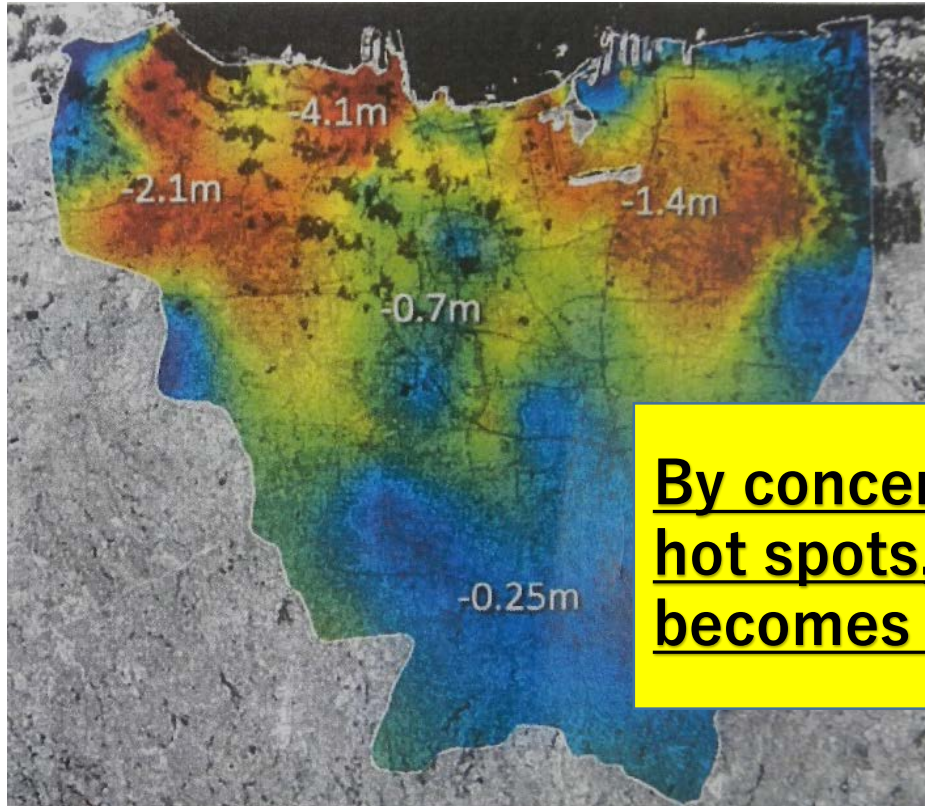
# Actions to solve problems



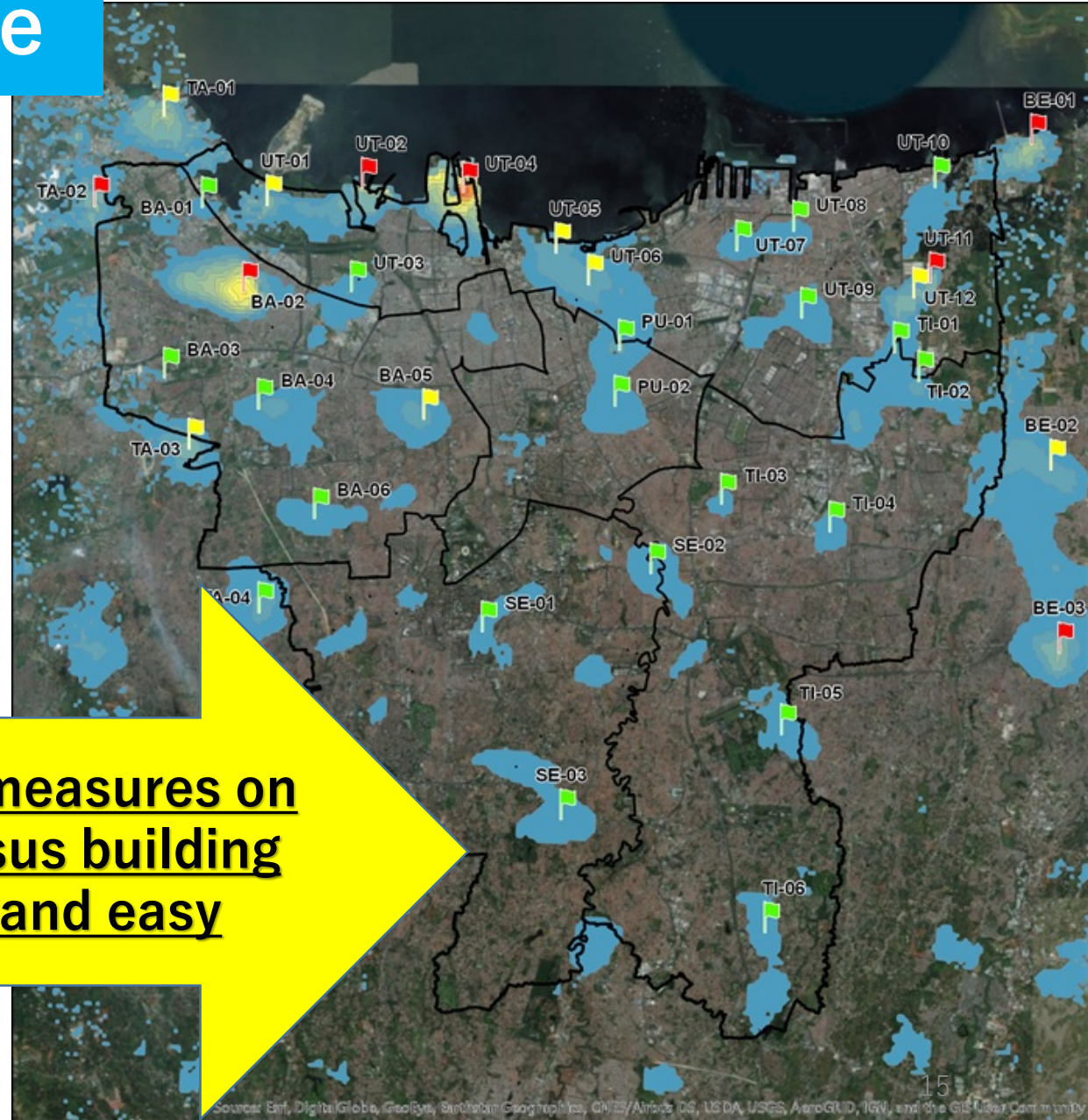
- ① Reliable data(Satellite and observation well) is effective for consensus building.
- ② Making action plans for practical solution with national government and local government

# Getting reliable and high resolution data using satellite

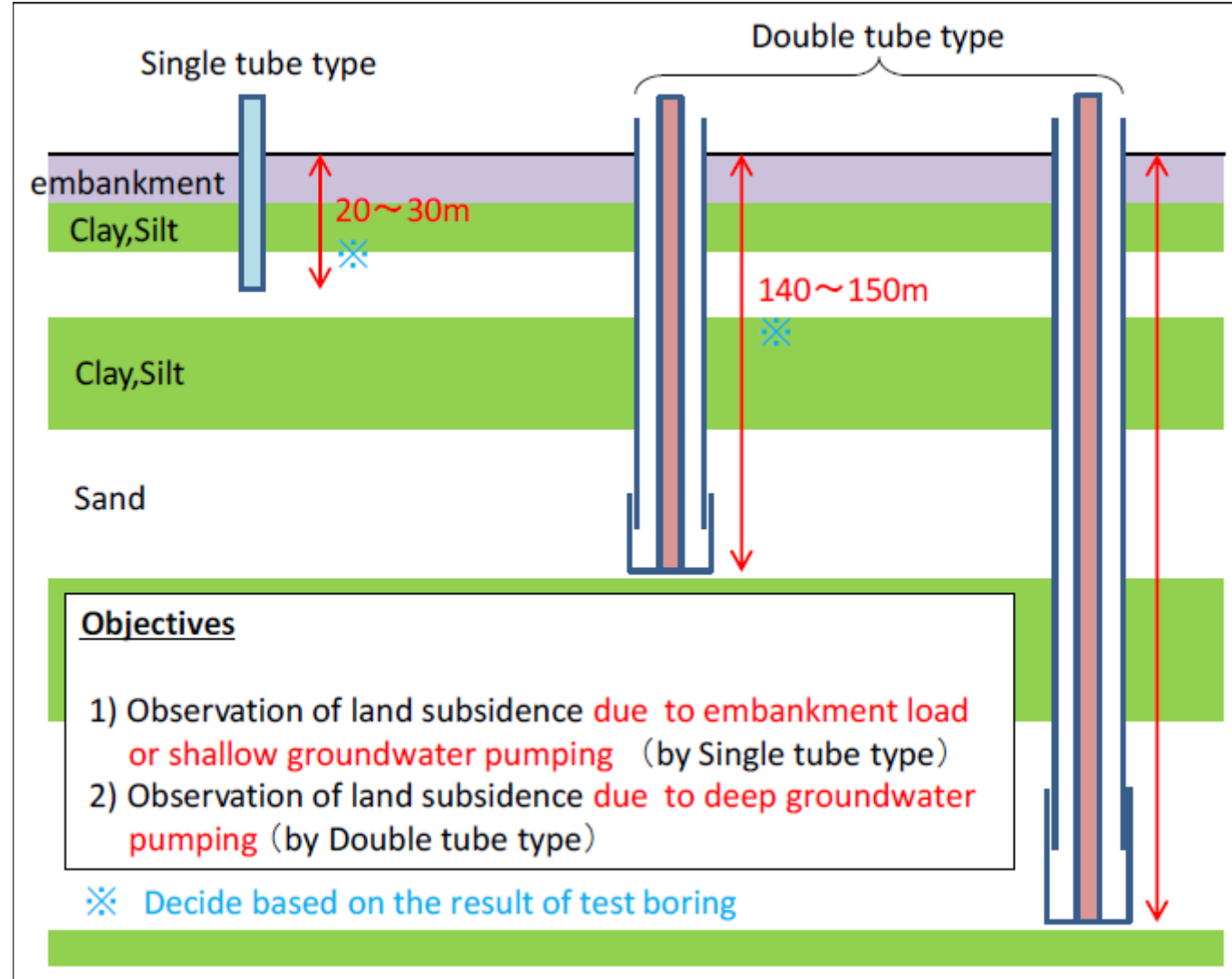
Land Subsidence in Jakarta 1974 - 2014



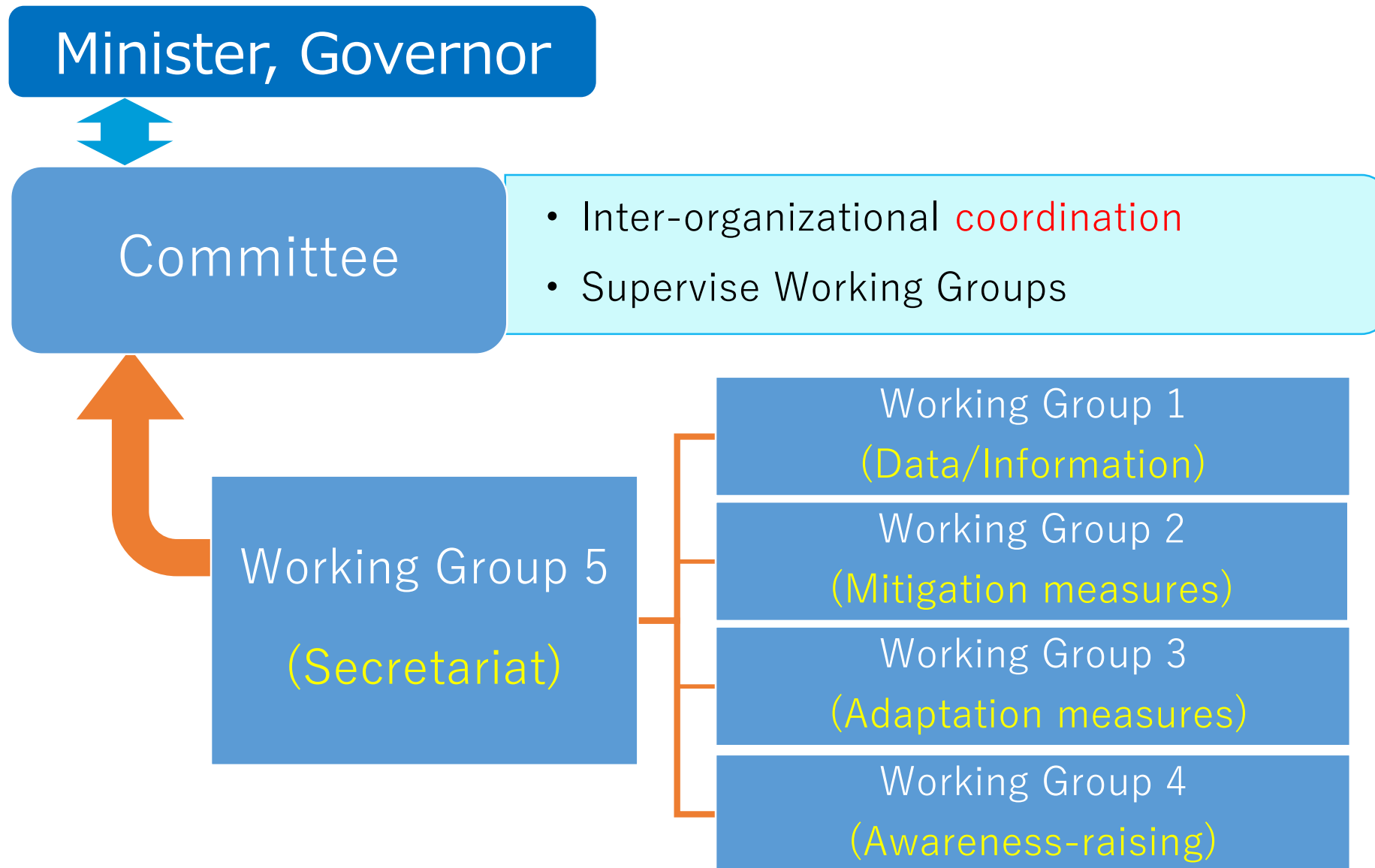
**By concentrating measures on hot spots, consensus building becomes efficient and easy**



# Identify which layer is causing the land Subsidence by using observation well



# Establishment of coordination mechanism





# Awareness raising

## Achievement so far

- Establishing implementation team
  - directly under governor and minister
- Succeeded in making a common understanding that groundwater pumping regulations are effective countermeasures
  - among national and local government, and academic researchers

## Next Step

- Engagement of local people, including industries to be affected by strengthened regulations

Execute action plan step by step



**THANK YOU**

**TACK and GOD EFTERMIDDAG**

ありがとう

**TERIMA KASIH**

Programme “Practical IWRM” : How it works in different context  
Sunday 25 August | 11.00-12.30 | Room: L12

WRT0, Sudan /JICA



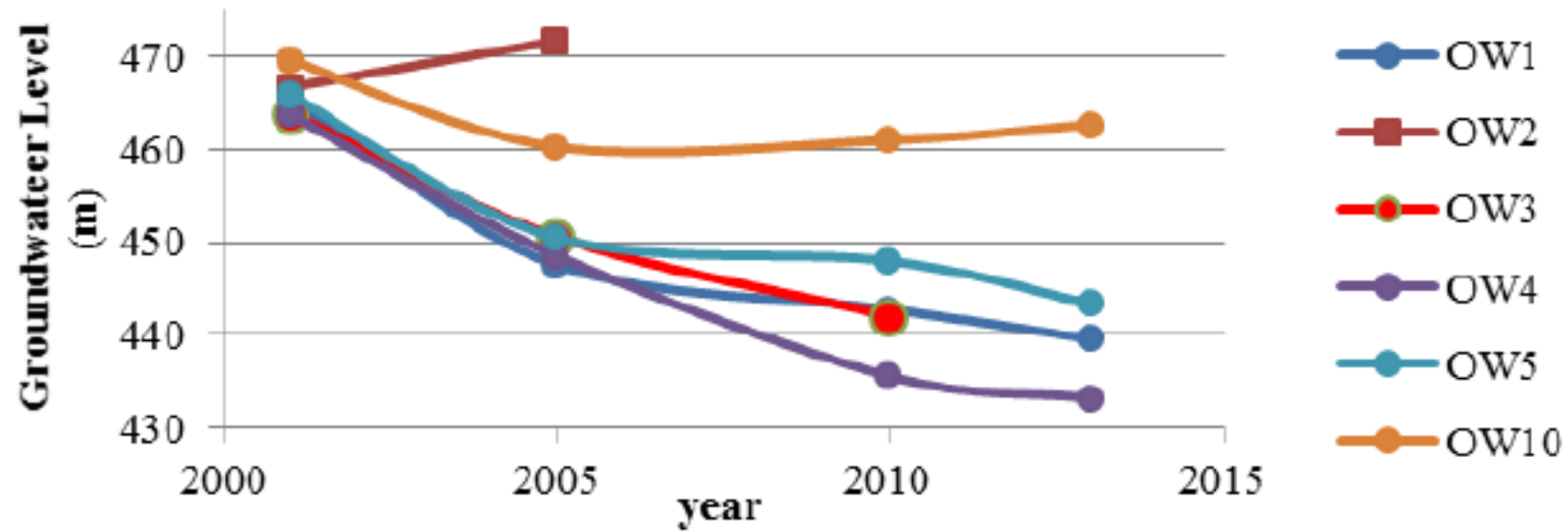
# Drying Groundwater, Sudan

## - four keys to break through the situation-



# Groundwater is at Risk

## Deep wells



Note) OW1 to OW10: monitoring wells  
Source: DIP

# Groundwater is at Risk

## Shallow wells



Pumping



Watering farmland with hose

# Groundwater is at Risk

**Stakeholders use groundwater as they want and need more**

- ◆ Drinking water service provider
- ◆ Irrigation farmers
- ◆ Investors



# Causes of over pumping of groundwater

1. Lack of **data** (natural / social)
2. Lack of **understanding by stakeholders**
3. Lack of **coordination mechanism**

# Actions in the past

## Federal Government

- IWRM Strategy (2007)
- Regulation of license of using groundwater for the year (2016)



*not fully implemented yet*

# Actions in the past

## North Kordofan State

- Monitoring system after 1990's

➡ *weakened*

- Plan to use surface water in south area (2010)

➡ *partly implemented*





# 4 Keys to break through the situation

**Capacity  
Development  
(Fed. / State)**

**Reveal local  
context**

**Awareness  
raising of  
stakeholders**

**IWRM unit**

# 4 Keys' Contribution to the challenges

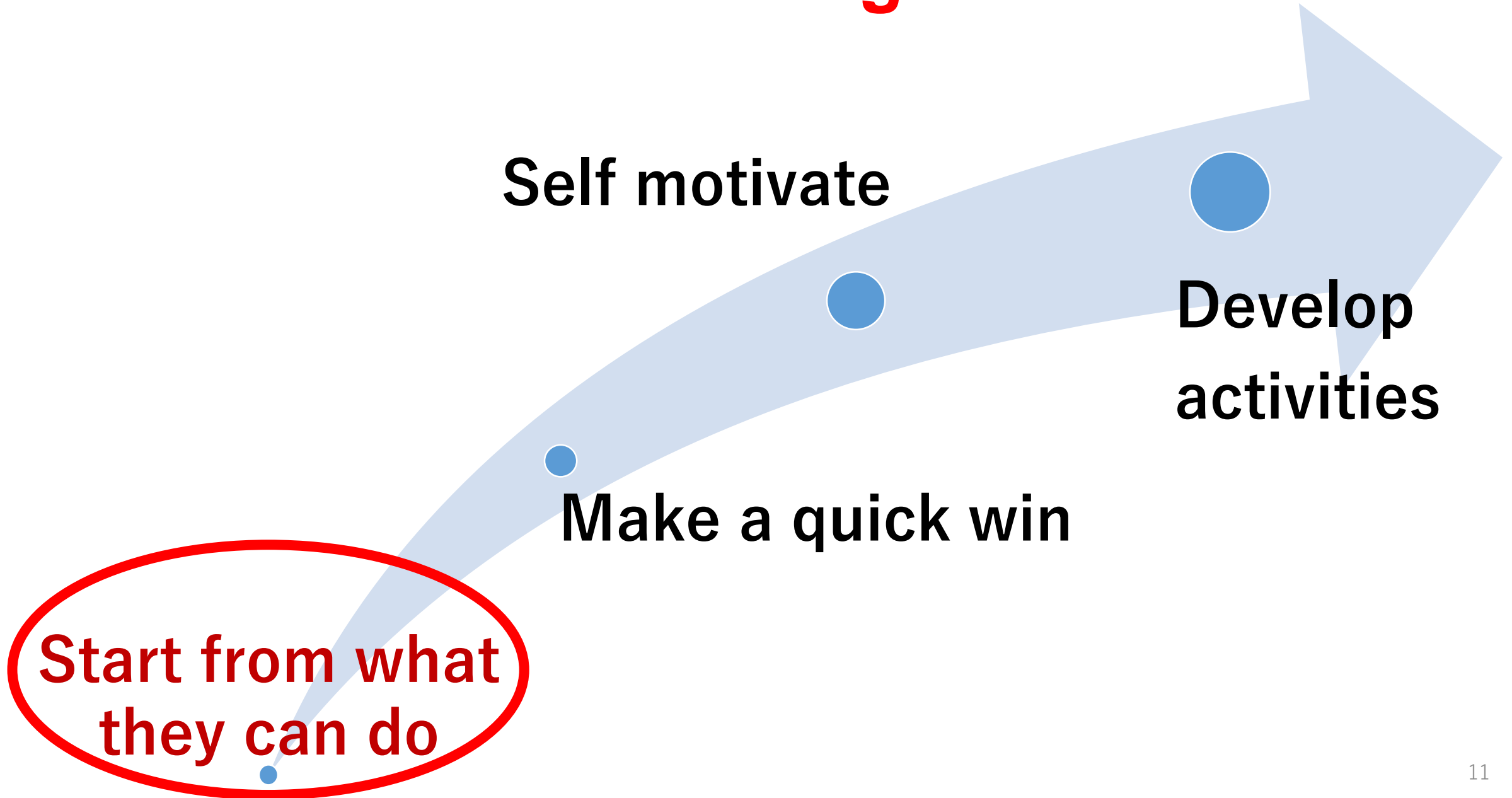
Challenges	4 keys			
Data	Capacity Development		Reveal local context	
Stakeholders' understanding	Awareness raising		Reveal local context	
Coordination mechanism	IWRM unit	Capacity Development	Awareness raising	Reveal local context







# Process to break through the Situation



# Thank you for your kind attention

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**Ms. Izumi Shoji**

Global Environment Dept., JICA, Japan  
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# **Rebuild trust beyond Cochabamba Water War ~Rocha River, Bolivia~**

Gonzalo Muñoz, Secretary, Departmental Secretariat for the  
Rights of Mother Earth, Autonomous Government of  
Cochabamba Prefecture, Bolivia

Noriko Yamada, Ex-Project Formulation Adviser, JICA

Tomohiro Arima, Global Environment Department, JICA



# Challenges in Cochabamba

- Environment of Rocha River Basin is seriously getting worse. Main contamination source is sewage.
- Not enough and effective countermeasures (e.g. Construction of Wastewater Treatment Plant)
- No functioning Platform among stakeholders
- Master Plan (Plan Director de la Cuenca del Rio Rocha) is not implemented fully.



# Cochabamba and Rocha River Basin

- One of the three major metropolitan areas in Bolivia (**Population: 1.8million**).
- Rocha river basin include Cochabamba metropolitan area and is selected as **one of the 14 priority basin in Bolivia**.



Photo by Autonomous Government of Cochabamba Prefecture





# Rocha River



In Cochabamba Central Area  
(**Black water with white bubble**)



Albarrancho Wastewater  
Treatment Plant (Lagoon)



# “Cochabamba Water War”

- “Cochabamba Water War” occurred from 1999 to 2000.
- **Protest campaign by citizens** against privatization of water supply and increasing water tariff
- As lesson learned, **importance of consensus building** among stakeholders is recognized in Cochabamba.

# Challenges and Actions so far

- Many platforms but not functioning well
  - ✓ No legal personality due to lack of legitimization (No compelling power and budget management)
  - ✓ No provision of appropriate agenda toward stakeholder's interest
- Many planned projects but not implemented well
  - ✓ Distrust of residents towards government (e.g. Albarrancho Wastewater treatment plan)
  - ✓ No consensus building among stakeholders

# Vicious Cycle in Cochabamba

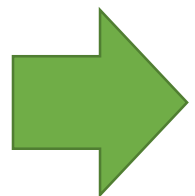


**Break the Vicious Cycle**



# Key Approach

- To establish space for dialogue among stakeholders with legitimacy for practical consensus building (Formulation of Platform)
- To resolve real problems and show visible outputs even small through Platform (Problem Solution)



Successful experiences to rebuild trust between Government and residents

# Platform among stakeholders

~ Rocha river basin inter-organization Platform ~

- New Platform was established in 2018 based on national policy
- Participation from 24 municipalities in Rocha river basin
- Board Meeting is chaired by the Governor and consists of 24 mayors
- Technical Council and its sub-committees were established.
- Management Unit and Social Council are under formulation

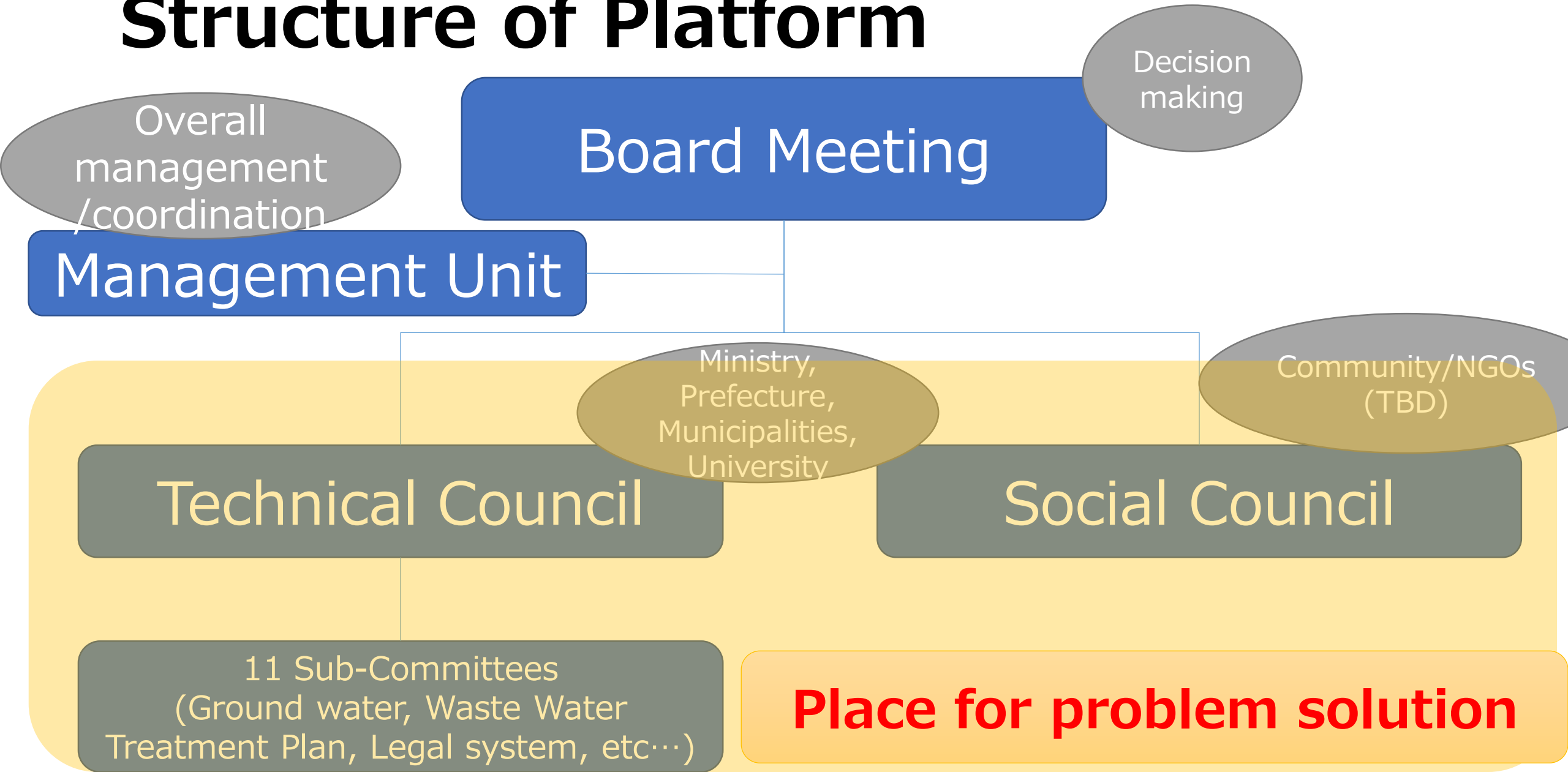
# Board Meeting of Platform



Photo by Autonomous Government of Cochabamba Prefecture



# Structure of Platform



# Approach to functional Platform

- Legitimacy of the Platform have to be secured.
- Immediate establishment of Management Unit is needed. Management Unit plays key role for sustainable operation. (e.g. Agenda setting)
- Social Council shall be place for dialogue among stakeholders to rebuild trust with each other.

# Approach for problem solution

- Platform has to be a **place for problem solution.**
- **Start from small yet practical and realistic** agenda.
- 4 pilot activities are going on to solve challenges.
  - Wastewater treatment plant (Conflict Management/Knowledge sharing)
  - Water quality improvement
  - Mutual interference of tube wells
- Achievement and lessons learned will be shared in sub-committees of the Platform



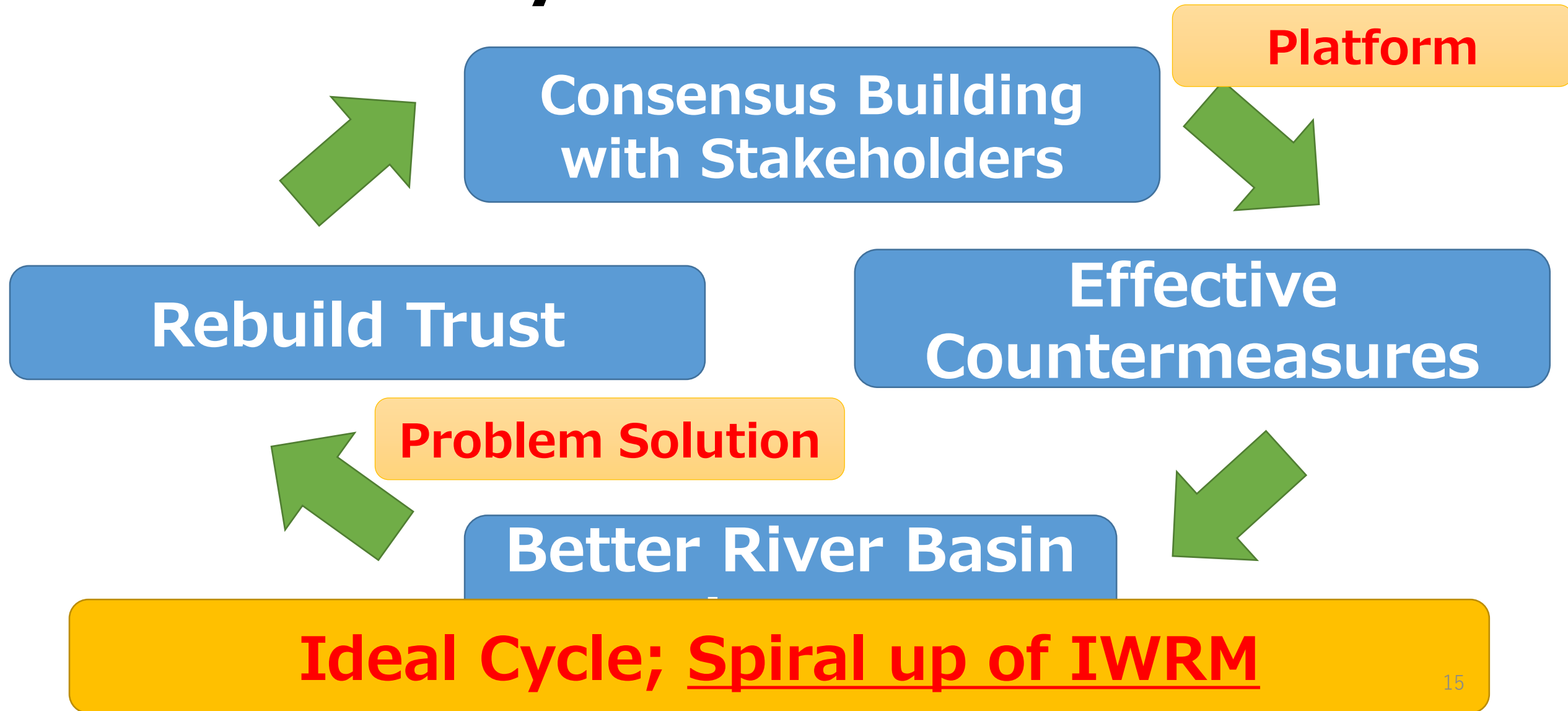
Photo by Autonomous Government of Cochabamba Prefecture



# Vicious Cycle in Cochabamba



# Virtuous Cycle in Cochabamba



# Conclusion

- Have a functional Platform is the most important first step.
- Accumulating successful experiences even small through problem solution in the Platform
- Successful experiences will lead to rebuilding trust between Government and Residents.
- Rebuilding trust must change “Vicious Cycle” into “Virtuous Cycle”.
- Virtuous Cycle will achieve “Clean Rocha River”.





# Thank you for your attention

# Discussion on “Practical IWRM”

1. **Iran:** What can we do to balance between the lake environment and the people's livelihood/happiness, not being either-or?
2. **Indonesia:** What is most important to mobilize various stakeholders related and advance land-subsidence measures together in the megacity?
3. **Sudan:** How to develop and conserve groundwater aquifers where the groundwater has been decreasing?
4. **Bolivia:** What are the keys to rebuild people's trust to the government?

## **“Practical IWRM” is a problem-solving-oriented approach.**

- The pro forma indicators of the SDG 6.5.1 is **not enough** to evaluate the progress of IWRM Implementation.
- We might **add some indicators** of clarifying problems and moving into action to solve, in order to identify the accomplishment of IWRM implementation.

# Closing Remarks