

GWP-SAS "Training needs and Gaps Assessment on Adaptation and Resilience to a Changing Climate in South Asia

Sharing the Output of ADB Regional TA 7547: Supporting Investments in Water Security in River Basins

- Lessons from IWRM Cases in Nepal, Indonesia and Uzbekistan -

5th September

Dr. Takeyoshi Sadahiro

NARBO Secretariat, Team Leader of ADB TA 7547

Japan Water Agency



Contents

1. Background
2. Overview of the TA 7547
3. Improving Water Security in Bagmati River Basin
4. Conclusion



1. Background

- The TA is an extension activities of NARBO to improve Water Security

NARBO: Network of Asian River Basin Organizations

Since Feb.2004 (71 organizations, 16 countries)

Goal: To help achieve IWRM in river basins throughout Asia.

Objective: To strengthen the capacity and effectiveness of RBOs in promoting IWRM and improving water governance, through training & exchange of information and experiences - - -common objective with the TA



1. Background

- The TA is an extension activities of NARBO to improve Water Security -Conti

RBO sit in the driver's seat

JWA, ADB, ADBI and CRBOM have lead activities as secretariat

9 years experiences in the region

5 categories of members



1. Background

➤ NARBO Activities to help achieve IWRM

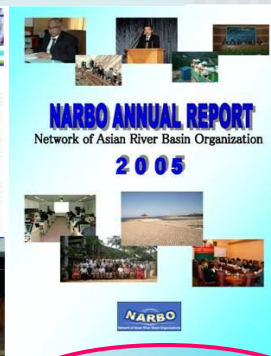
1 Information Sharing Activities



Website



News Letter



Annual Report

2 Thematic workshops



Water Allocation & Water Rights

3 Twining Program



Twining Program between JWA & Indonesia NARBO

4 IWRM Training



1st IWRM Training Program in Thailand

5 RBO Performance Benchmarking



Benchmarking Workshop in Indonesia

1. Background

➤ LOI between ADB and JWA to improve Water Security

1. Collaborative work of JWA and ADB of NARBO from Establishment of NARBO in 2004

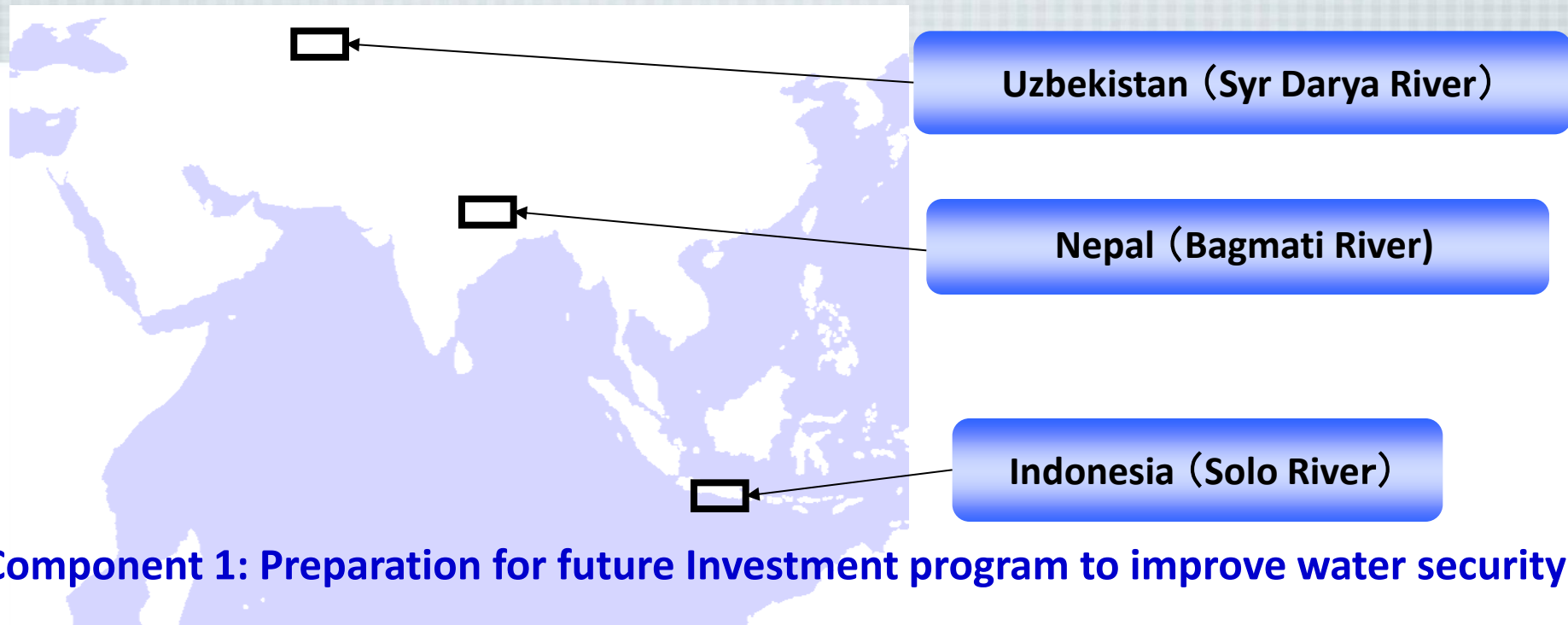
**2. Letter of Intent between ADB and JWA; 12,Jan.2009
ADB and JWA presidents signed the Letter of Intent for further collaboration on water security improvement**

Collaborative works on Technical Assistance for Water Security



2. Overview of the TA

➤ Structure of the TA



Preparing future investment program to increase water security in the basin,

Improving existing river basin management plans

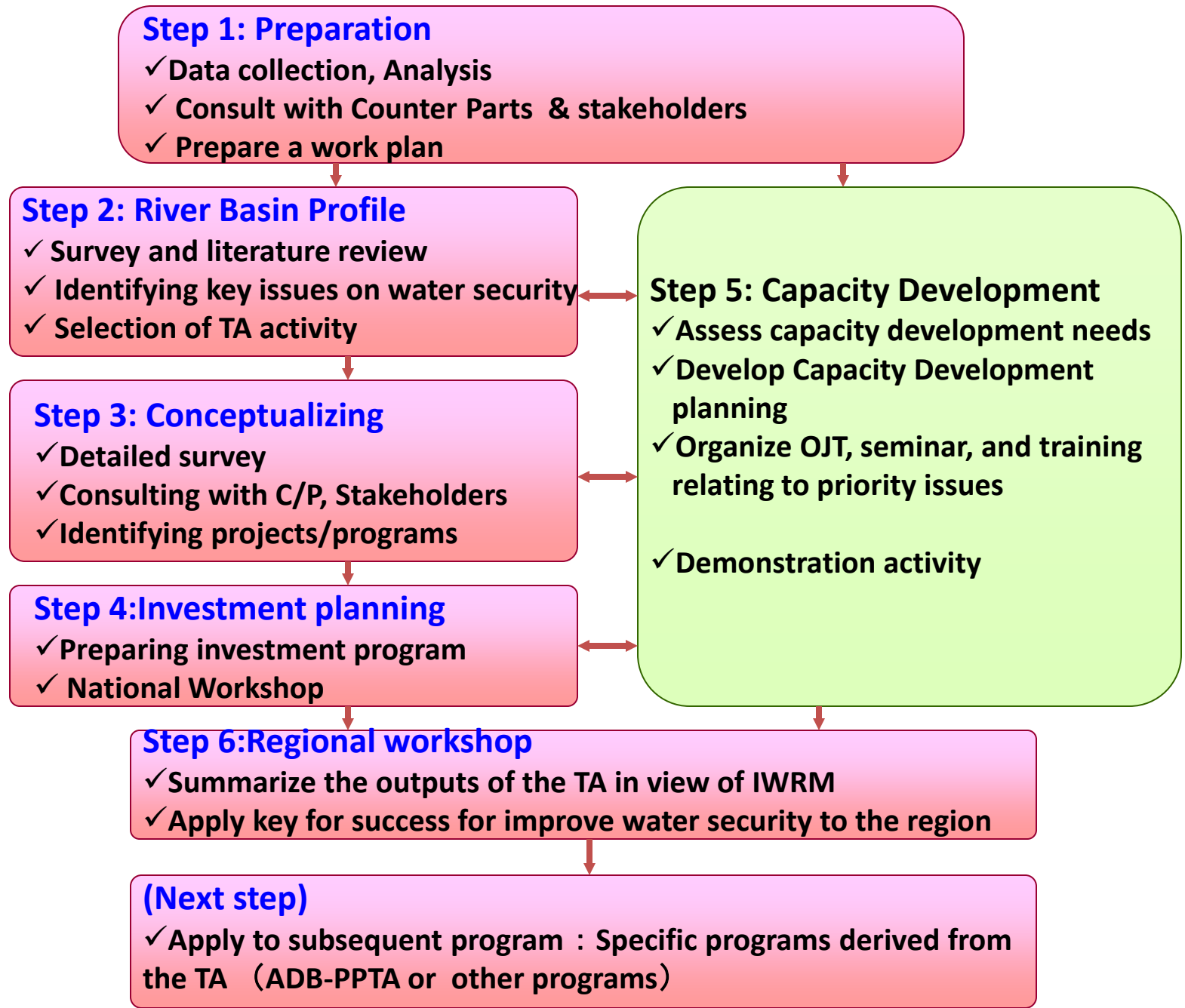
Component 2: Capacity Development

Strengthening RBOs and relevant agencies for their capacity to cope with

issues on water security and to plan and implement investment programs



2. Overview of the TA :Steps of TA implementation



2. Overview of the TA

Dissemination of the TA Output through Regional Workshop

- Extract “Key for success” to improve water security from the TA and share them to the countries in the region
- Identify issues and next step for your own basins of participants ,and step up for improving water security in the region with NARBO Network

Key for Success

- ✓ Institutional Tools; Multi sector coordination scheme, Multi administrative territories coordination scheme
- ✓ Water dialogue Tools
- ✓ Decision and management tools

TA output

- Disseminate through NARBO network
- Collaborative work with NARBO

- ✓ Participatory approach of stakeholders
- ✓ Cooperative work with PPTA, donors
- ✓ Apply experiences of the region for institutional, water management and engineering parts
-

- Contribute to strengthening the capacity of RBOs and water governance in the region
- Improve water security in the region

2. Overview of the TA **Water Security Areas**

Water Security Areas

- Water Scarcity
- Flood risks
- Water Quality

2. Overview of the TA

Water Security Issues – Different Issues but quite Similar Risks and Areas of Actions

Case Studies	Main Issues of Water Security	
Bagmati River Basin	- Water availability cannot cover the needs of the rapid growing population of Kathmandu - Groundwater use is not sustainable - The Bagmati River is a “dead river” due to nearly no water treatment facilities and nearly no environmental flow during the dry season - Severe Floods affect the lower-Bagmati River section (Terai)	RISKS •Global Social and Economic development •Population and Assets •Water conflicts •Loss of Ecosystems and Biodiversity AREAS OF ACTION : •Improve Infrastructures (<i>Water Distribution, Water Quality, Flood Protection</i>) •Improve Water Use Efficiency (<i>awareness, stakeholders involvement</i>) •Improve Water Resource Development (<i>reduce run off, increase infiltration</i>) •Maintain and restore Ecosystem Services
Solo River Basin	- The use of water for irrigation canal is poorly efficient causing unbalance sharing of water and potential conflicts - Weaknesses in efficient operation and safety management of dams and - Flash Flood risks have increased recently due to degradation of upper-parts of watersheds (deforestation and soil degradation)	
Syr Darya River Basin	- Uncertainty of water availability as the consequence of water restitution rules with the upstream country (transboundary issue) - The economy and incomes for the habitants is highly depending on water availability for irrigation - Still in transition process of agricultural system efficient water management for irrigation is not ensured. Deteriorated distribution facilities can not secure reliable operation. Generally, unadapt practices for conducting “on farm” irrigation. (limited use of new irrigation technologies)	

2. Overview of the TA Framework for addressing Water Security in an ideal world...



2. Overview of the TA Framework for addressing Water Security in the real world...

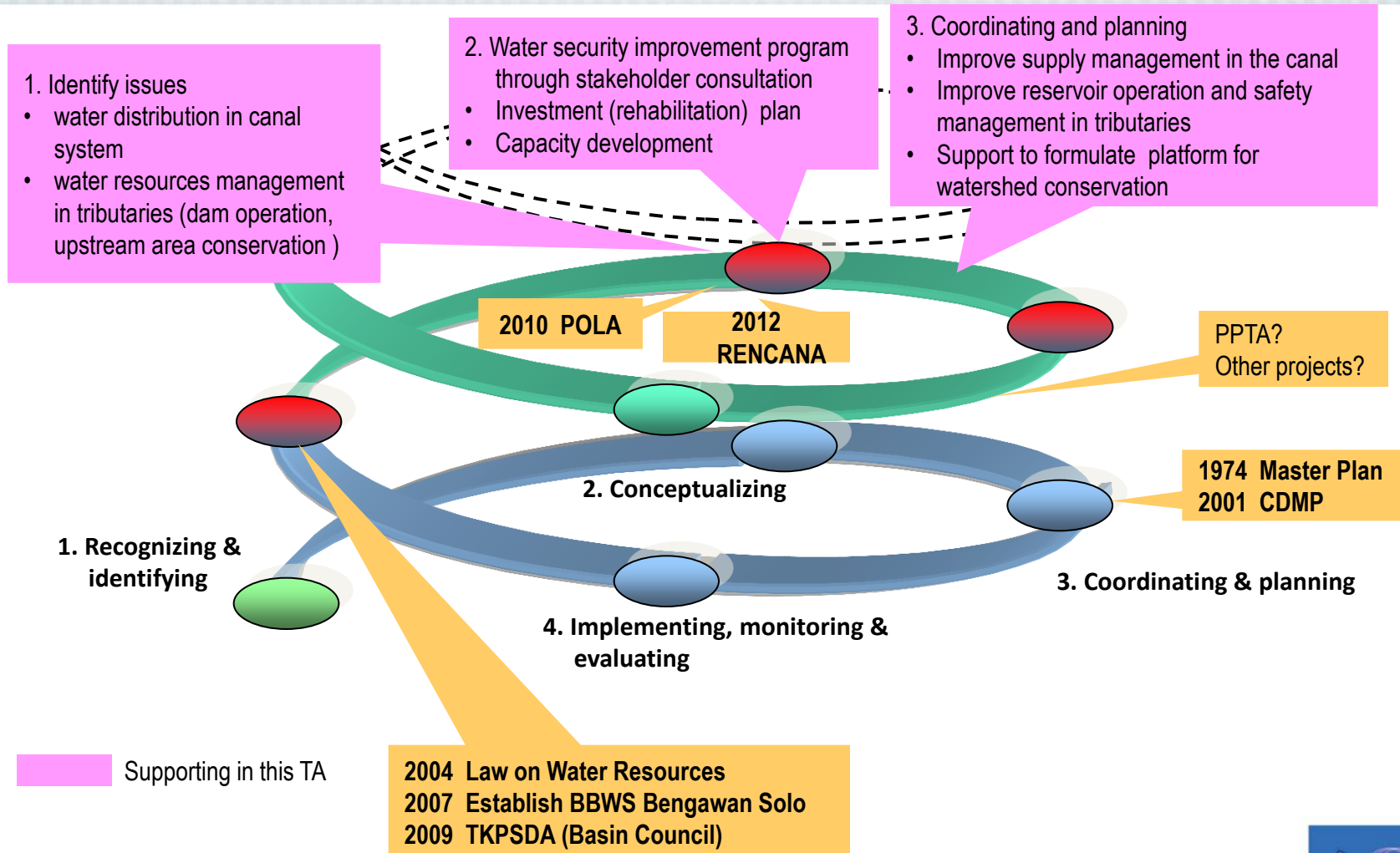
What can be the real world...

- Multi-Sectors Cooperation not yet achieved (e.g. RBO not running well ...)
- Stakeholders have limited Knowledge and Awareness
- Lack of data and information and/or not shared between sectors
- Water issues are partially analysed but often not actually quantified by lack of decision tools (data, master plan)
- Prioritization and trade off not based on Objectively Verifiable Indicators
- Actions and Investments for addressing Water Security not always consistent
- Lack of funds for ensuring sustainability of Water Governance Tools and IWRM mechanisms

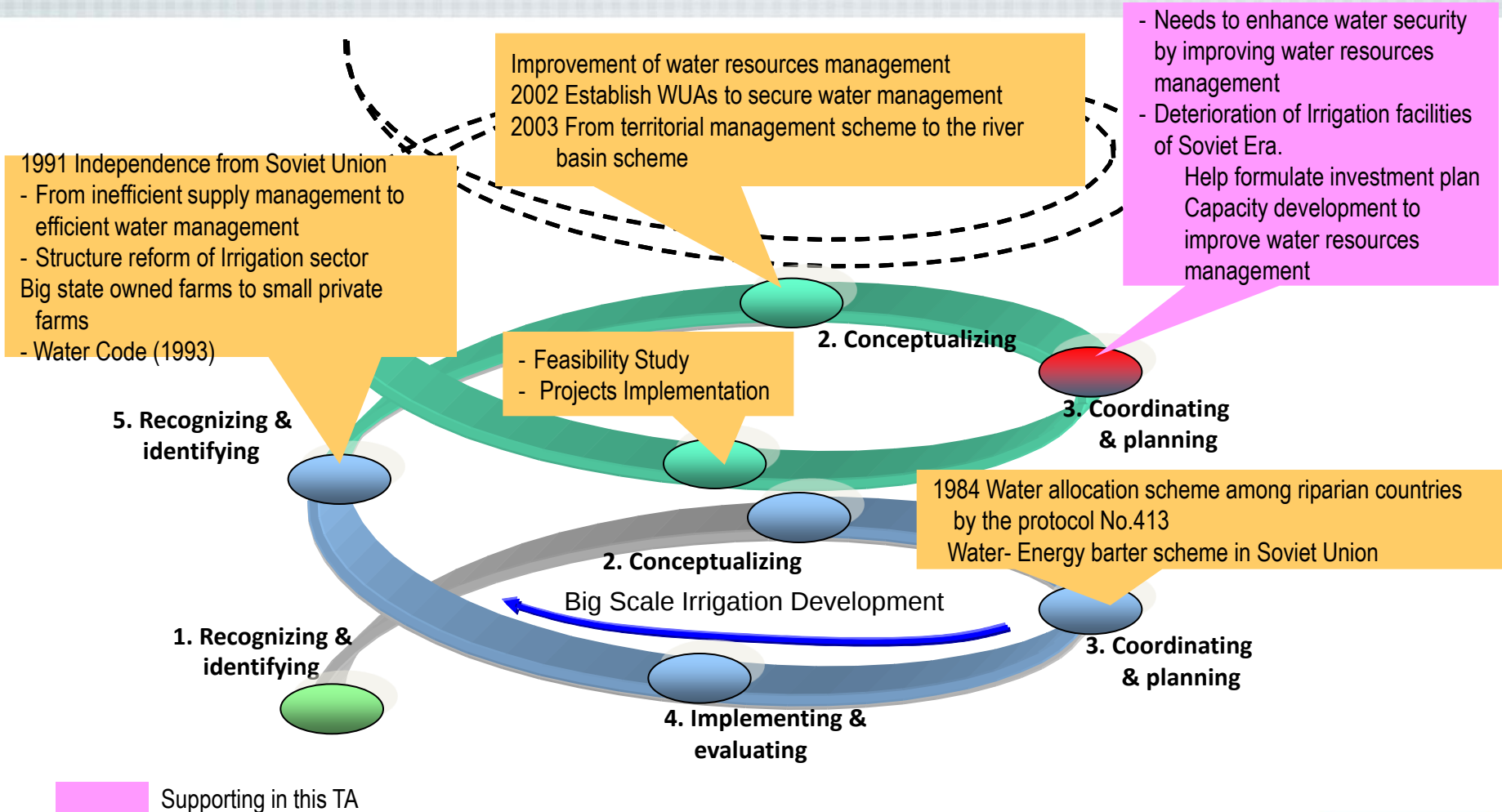
Going from the real world to the ideal one...

- Improve knowledge (Basin Profile)
- Analyse Strengths and Weaknesses, Threats and Opportunities (from Basin Profile)
- RBO formulation/Strengthen capacity of RBO
- Define priority/demonstrative Actions that can be implementable immediately (Case-Studies – learning by doing)
- Build implementable steps for addressing the most urgent issues and take profit of the opportunities for their implementation (e.g. provisional informal multi-sector-platforms) (Investments plans and capacity building)
- Strategic Road Map for improving the Water Governance Tools and IWRM planning mechanisms (IWRM spirale)

IWRM Spiral: (1) Solo River Basin



IWRM Spiral: (2) Syr Darya River Basin



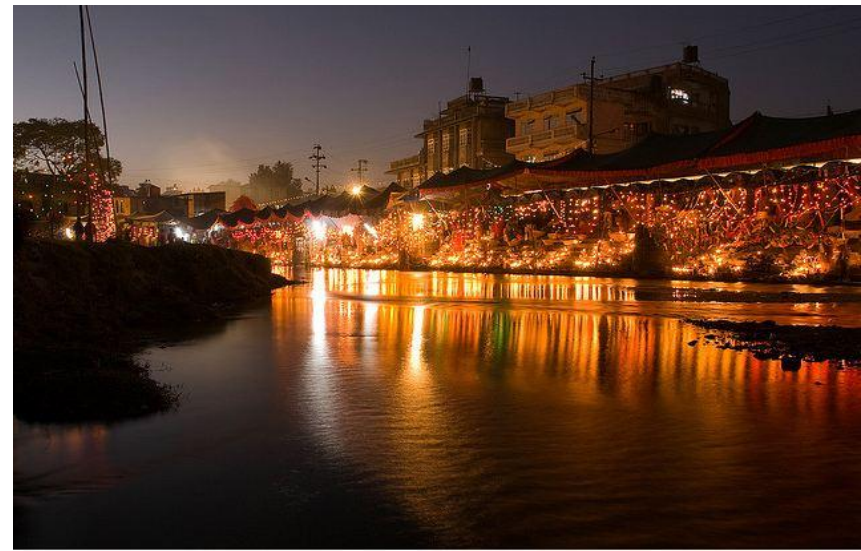
TA Support for making Steps Forward...

Steps	Bagamati River Basin	Solo River Basin	Syr Darya River Basin
Improve knowledge (e.g. Basin Profile)	-Detailed basin profile -Supplementary Studies (Groundwater, Surface Water Development)	Updating of the former Basin Profile	-Proposal of investment plan (economic efficiency)
Analyse Strengths and Weaknesses, Threats and Opportunities (from Basin Profile)	SWOT analysis of the Water Issues, Water Governance Tools and IWRM implementation mechanisms	(Analysis, conceptualization set up in POLA), -Proposal of investment plan (economic efficiency) -within POLA, identify areas needing specific methodological inputs and related capacity building "	-Proposal of investment plan (economic efficiency)
Define urgent and/or demonstrative Actions that can be implementable immediately (Pilot area activities)	-Suggestions for formulation of basin level RBO -Suggestions for river environmental plan -Suggestions for holistic ground water management plan -Pilot Waste Water Treatment	-Pilot irrigation scheme : Improve water distribution efficiency -Pilot dam : improve operation and safety management -Pilot upper Watershed : conservation management through stakeholder coordination	-Improvement of the water management -Improvement of the safety management of the Hydro technical facilities
Build implementable steps for addressing the most urgent issues. Take profit of strengths and opportunities for implementation	(Support to PPTAs : Waste Water Treatment and Water Conservation)	Investments and Capacity Building Plans	-Proposal of investment plan (economic efficiency)
Strategic Road Map for improving the Water Governance Tools and IWRM planning mechanisms (IWRM spiral)	Strategic Road Map covering the full steps	(Strategic steps defined in POLA, RBO set up and IWRM mechanisms implementation on going) Focus on specific themes with necessary investment and capacity development planning	Pre-feasibility study and investment planning

3.Improving Water Security in Bagmati River Basin

Shishir Koirala (WECS,Nepal) in Regional WS in Chiang Mai

- Part I: TA 7547
 - Objectives
 - Process/Activities
 - Outputs
 - Outcomes
- Part II: Bagmati River Basin
 - Introduction
 - Report Findings
 - Key Issues
 - Strategic Roadmap
 - Recommendations
 - Way Forward



3.Improving Water Security in Bagmati River Basin

Objectives

- Prepare River Basin Profile for Bagmati River
- Review, assess and expand the Bagmati Action Plan to middle and lower reaches
- Conduct a Project Demonstration Activity (PDA)
- Assist in prioritizing candidate investment projects for water security in the Bagmati Basin
- Institutional Capacity Building for IWRM implementation in Nepal

3.Improving Water Security in Bagmati River Basin

Outputs

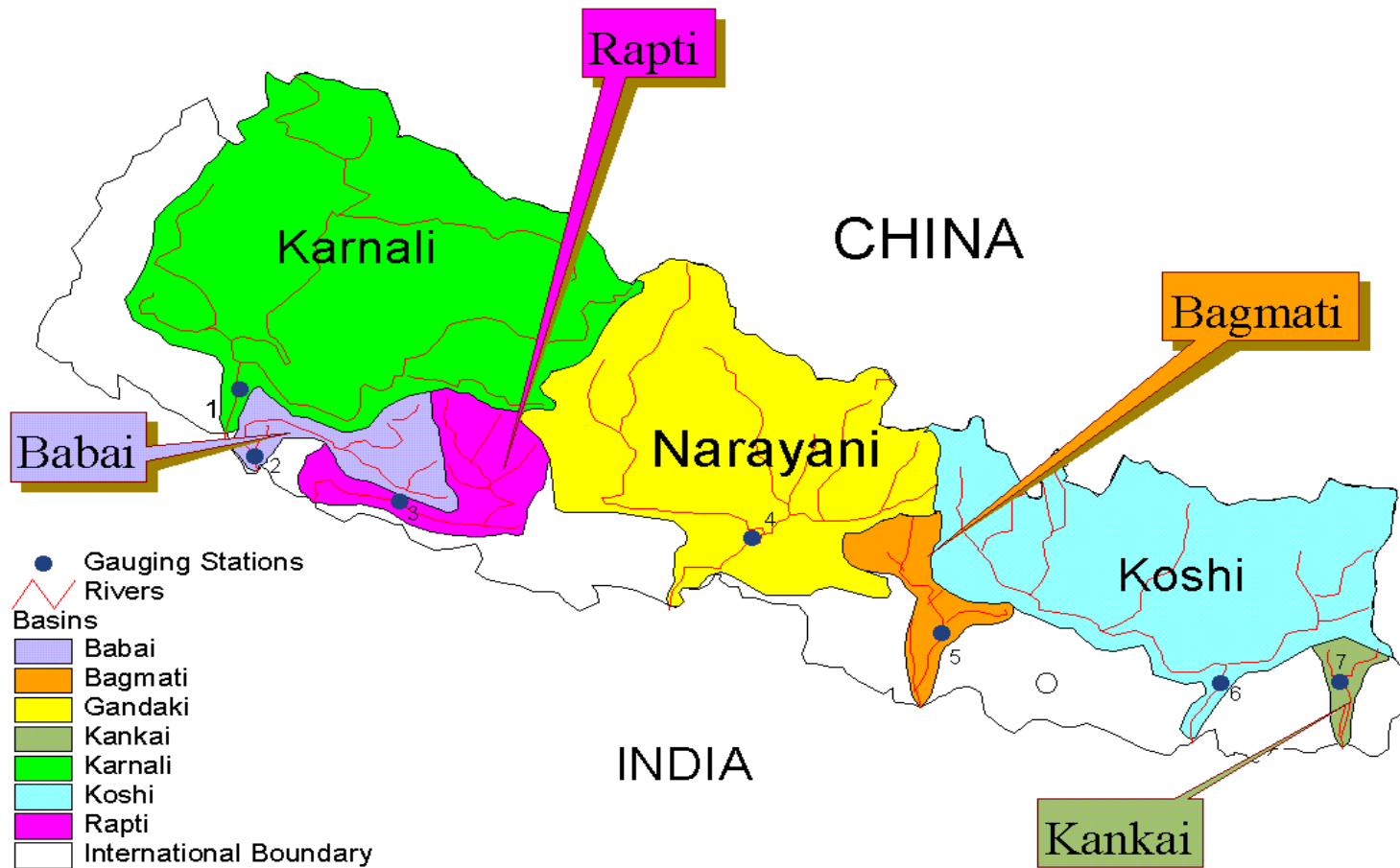
- Bagmati River Basin Profile
- Strategic Roadmap for water security improvement in Bagmati Basin
- Supplementary Studies
 - Surface water development in Kathmandu Valley
 - Groundwater development in the Kathmandu valley
 - Conceptual Bagmati river environment management program
 - Water resources development and management in the Marin Valley (middle reach)
- Project Demonstration Activity (Slanted Soil Chamber Method: small scale community based waste water treatment system)
- Capacity development in IWRM
 - IWRM training (two days), NARBO seminar

3.Improving Water Security in Bagmati River Basin

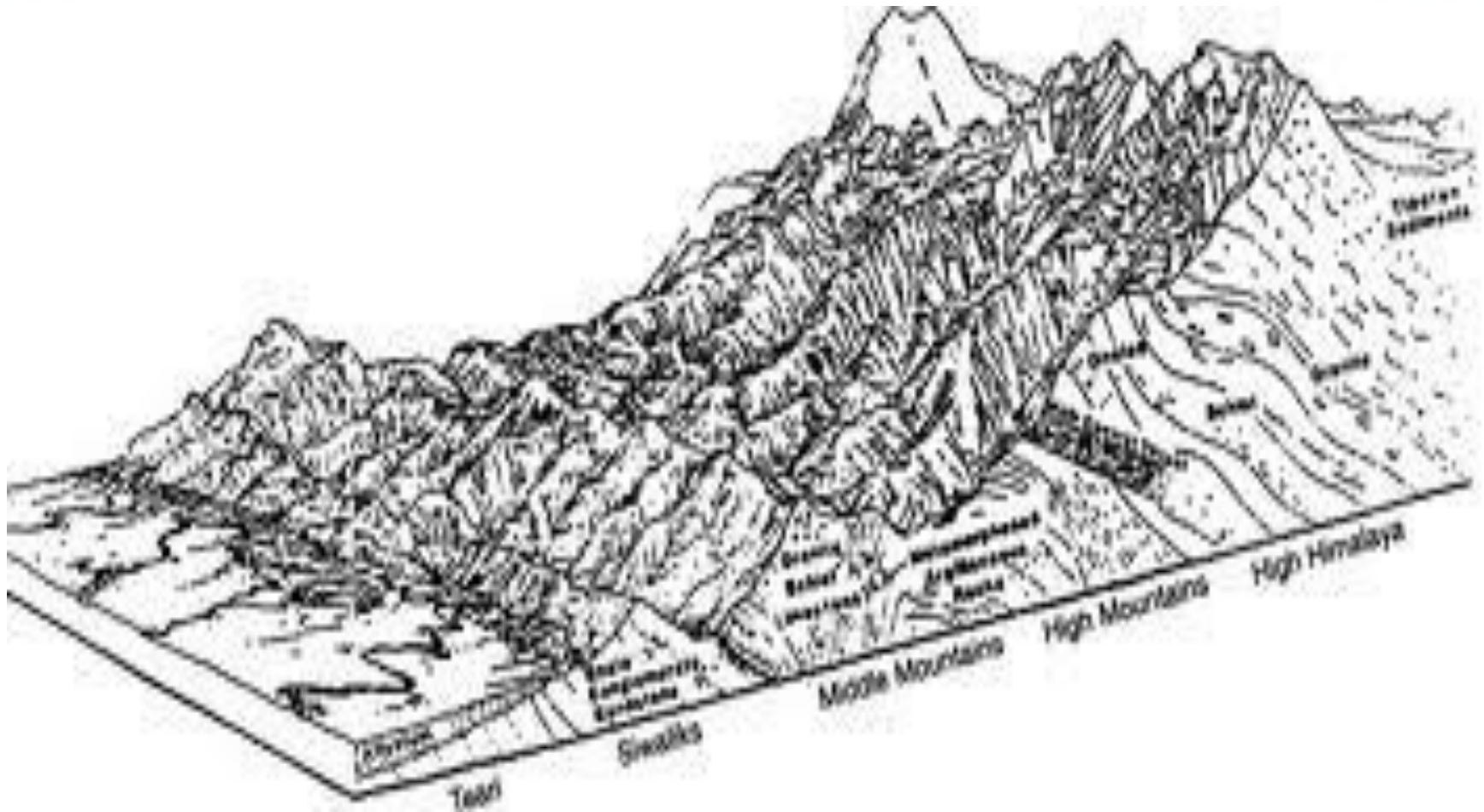
Outcomes

- Support for materialization of ADB PPTA 8050: Preparing Bagmati River Basin Improvement Project
- Identification and prioritization of no regret investment projects
- Capacity developments in IWRM to some extent
- Identification of potential surface water development schemes in Kathmandu valley
- Identification of potential groundwater development in Kathmandu valley (Chandragiri hidden valley: study ongoing)
- Relatively Successful pilot testing of PDA: SSCM (recommended for further testing : second test scheme underway)

Introduction contd...



Introduction contd...



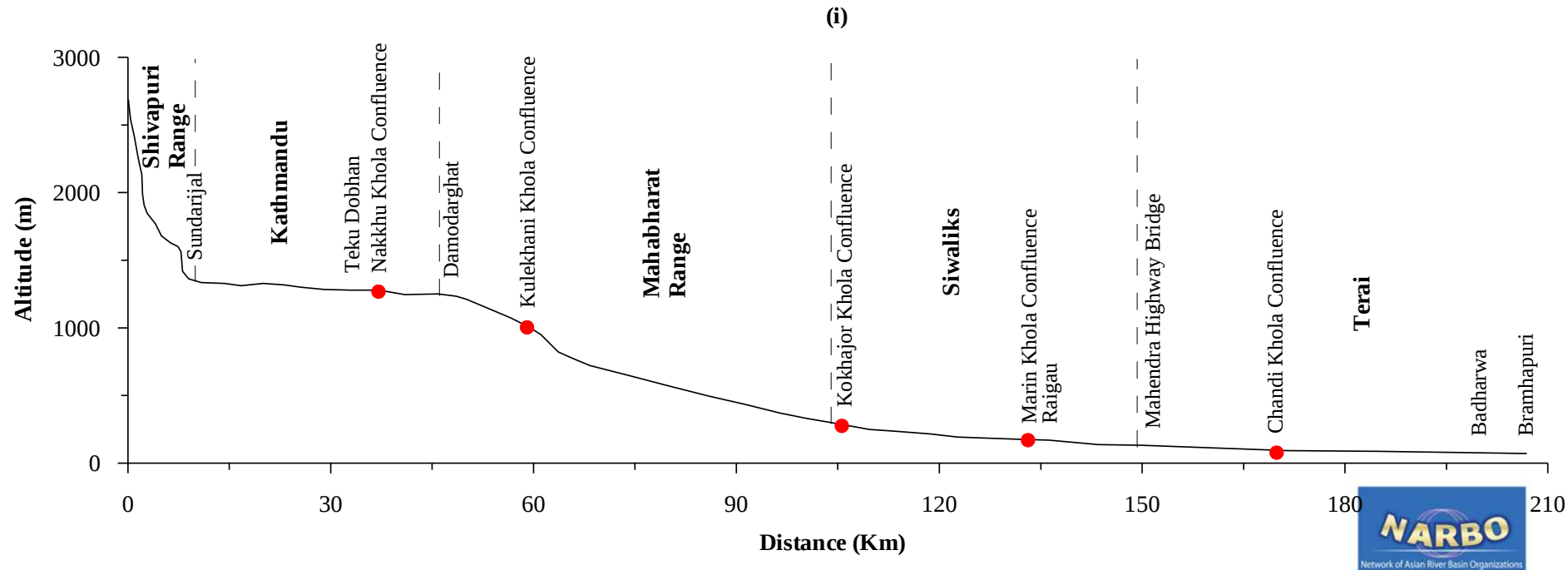
3.Improving Water Security in Bagmati River Basin

Introduction contd...

Upper Part

Middle part

Lower Part



Bagmati River Basin and administrative border



3.Improving Water Security in Bagmati River Basin

Introduction contd...

- The Bagmati River is a tributary of the Koshi River (Ganges River) originating from the north of the Kathmandu valley in the Shivapuri hills with the catchment of 3,710km².
- It has a catchment area of 3,710km² in Nepal.
- It is very important for Nepal strategically, religiously, culturally, economically, socially and environmentally.
- Available water is utilized for water supply, irrigation, hydropower, religious, cultural, industrial and recreational use within the basin.

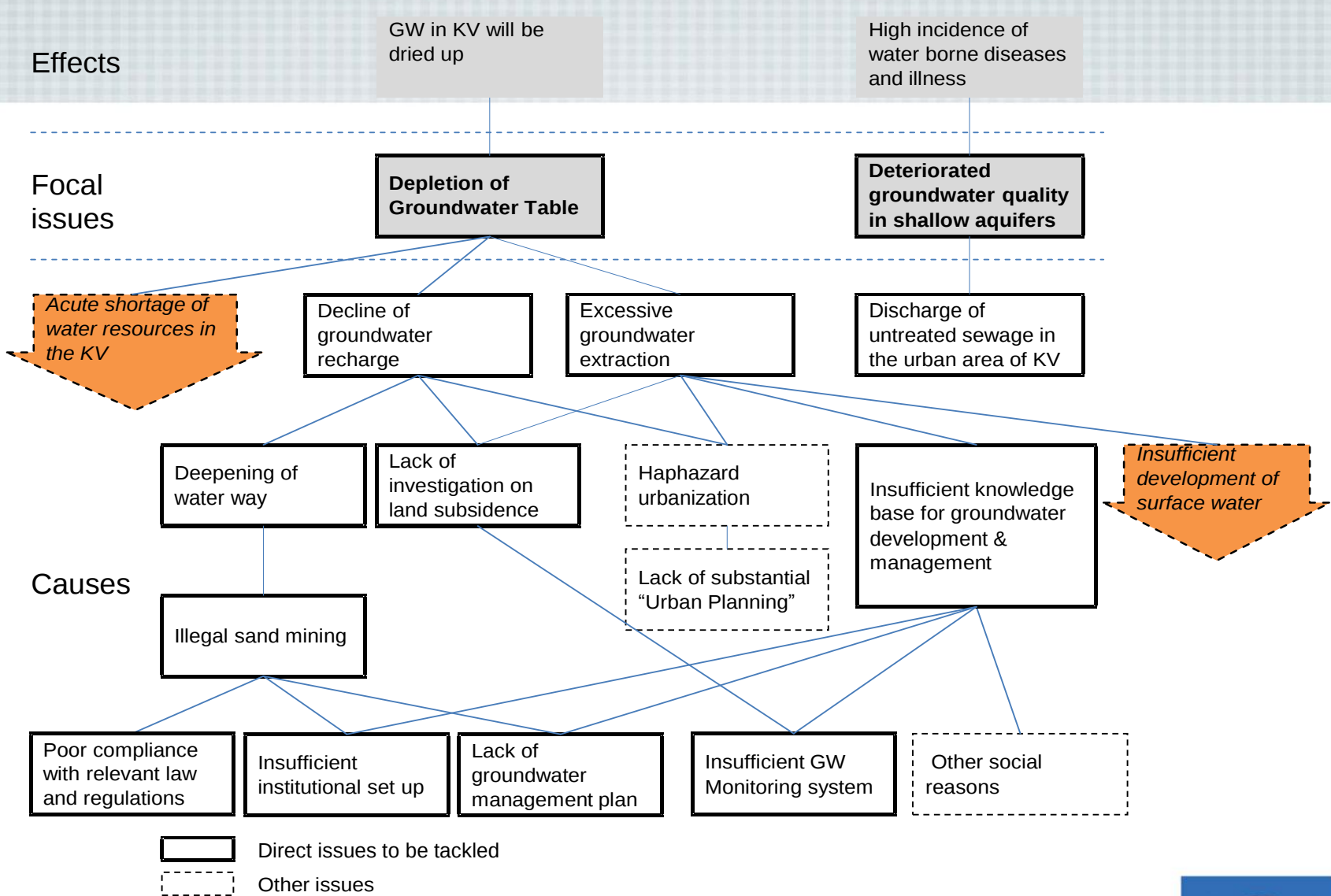


Figure 10.2 Issue tree on Water Resources Development & Management in Upper Bagmati – Groundwater

3.Improving Water Security in Bagmati River Basin

Key issues and challenges

Upper Reach

- **Unplanned haphazard urbanization**
(Migration due to high level of insecurity, lack of job opportunities, health & education facilities)
 - Pollution and Ecosystem degradation
 - Water Scarcity
 - Degrading Cultural and heritage sites
 - River banks encroachment
 - Sand mining
 - Over extraction of groundwater



3.Improving Water Security in Bagmati River Basin

Key issues and challenges (Cont...)

➤ Pollution



➤ Water Scarcity



3.Improving Water Security in Bagmati River Basin

Key issues and challenges (Cont...)

➤ Degrading Cultural and heritage sites



3.Improving Water Security in Bagmati River Basin

Key issues and challenges (Cont...)

➤ River banks encroachment



3.Improving Water Security in Bagmati River Basin

Key issues and challenges (Cont...)

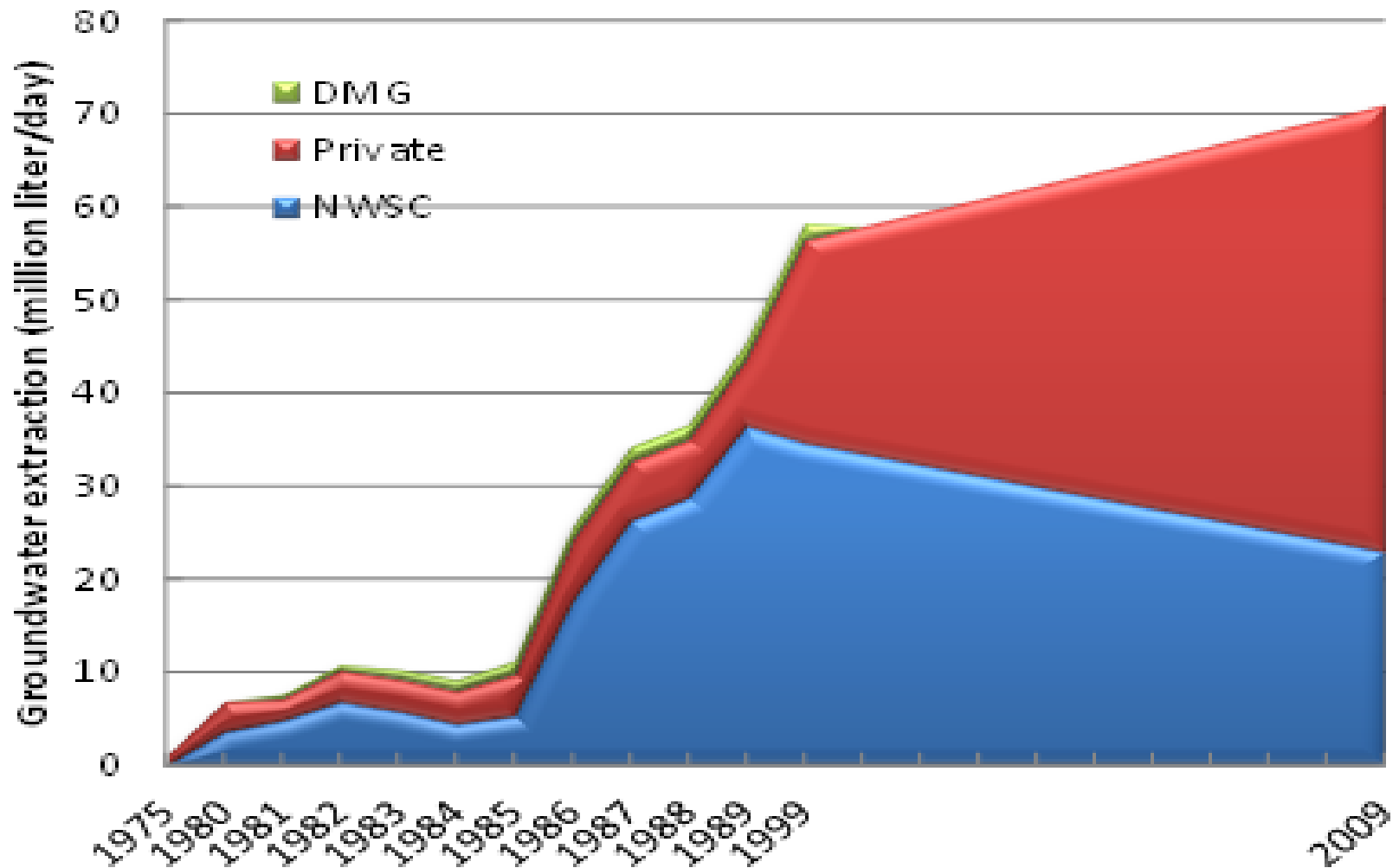
➤ Sand mining



3.Improving Water Security in Bagmati River Basin

Key issues and challenges (Cont...)

➤ Over extraction of groundwater



3.Improving Water Security in Bagmati River Basin

Key issues and challenges (Cont...)

Other common issues

- Institutional overlap and lack of coordination and integrated planning
- Lack of Central level planning , coordinating and regulating body with proper mandates
- Lack of basinwide Integrated Water Resources Development and Management master plan.
- Lack of River Basin organizations
- Lack of finance and infrastructure development

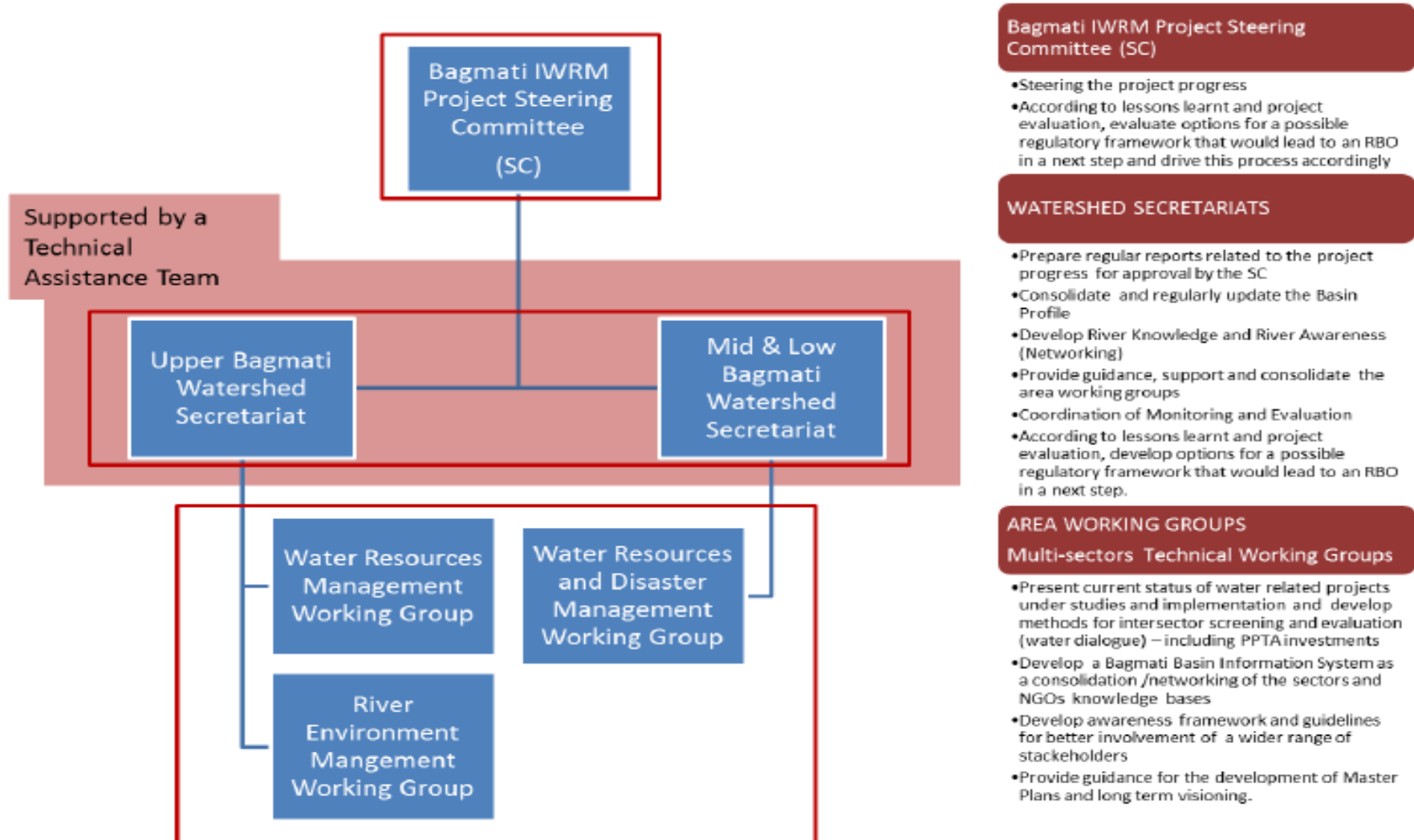
3.Improving Water Security in Bagmati River Basin

Strategic Roadmap for Water Security Improvement in Bagmati Basin



3.Improving Water Security in Bagmati River Basin

Multi-stakeholder Mechanism for mainstreaming IWRM in Bagmati Basin (RBO Institutional Arrangement)



3.Improving Water Security in Bagmati River Basin

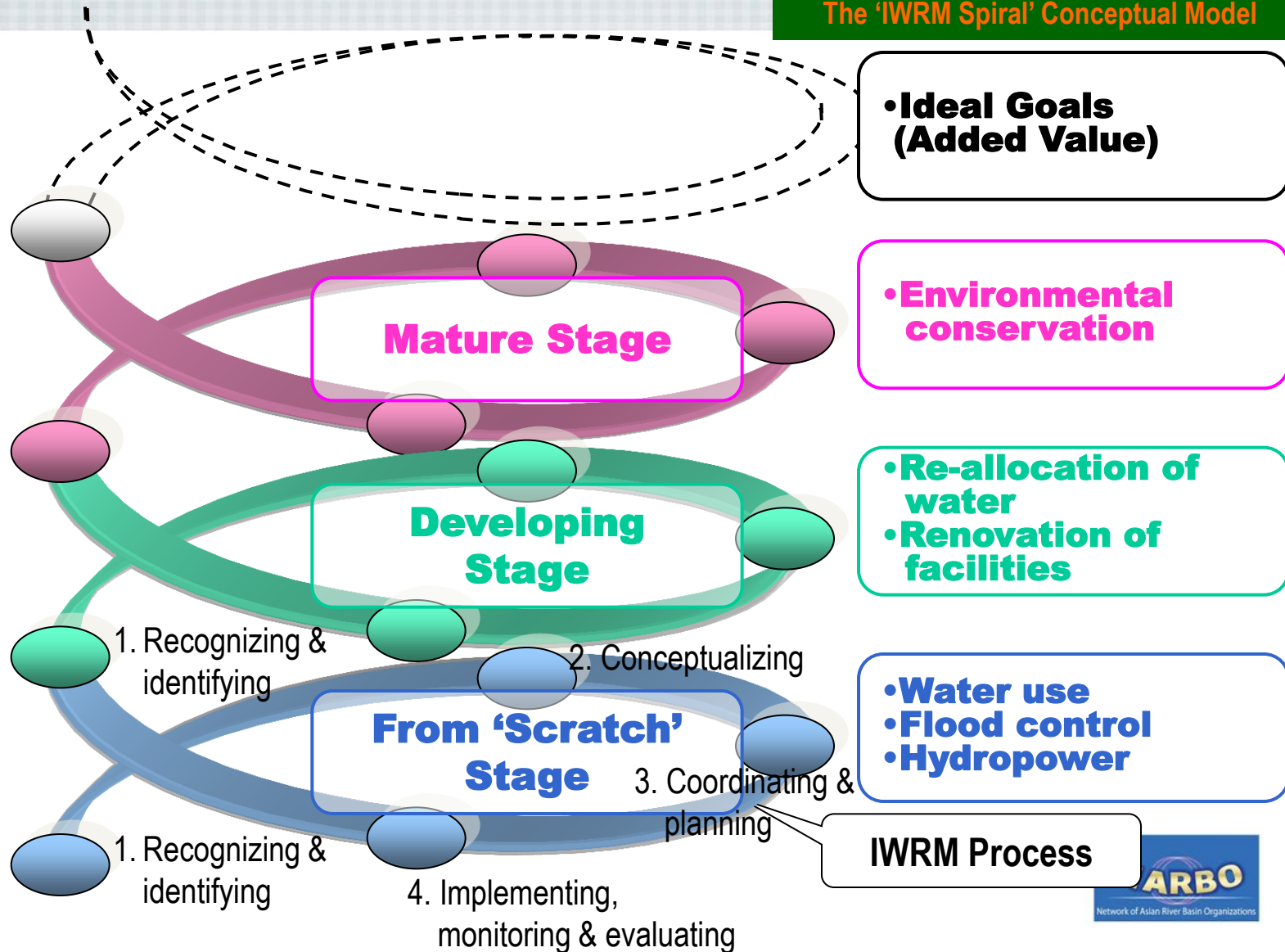
Recommendations

- I. Developing a long term water demand and supply plan and sustainable groundwater use in Kathmandu valley
- II. Developing river environment management program in Kathmandu valley
- III. Flood management and sediment control in the lower and middle reach
- IV. Agriculture development in Terai plain and augmentation of dry season flow
- V. Collaboration scheme among stakeholders and functioning river administrations

Way Forward (cont...)

Progress of IWRM

Guidelines Part2-1
The 'IWRM Spiral' Conceptual Model

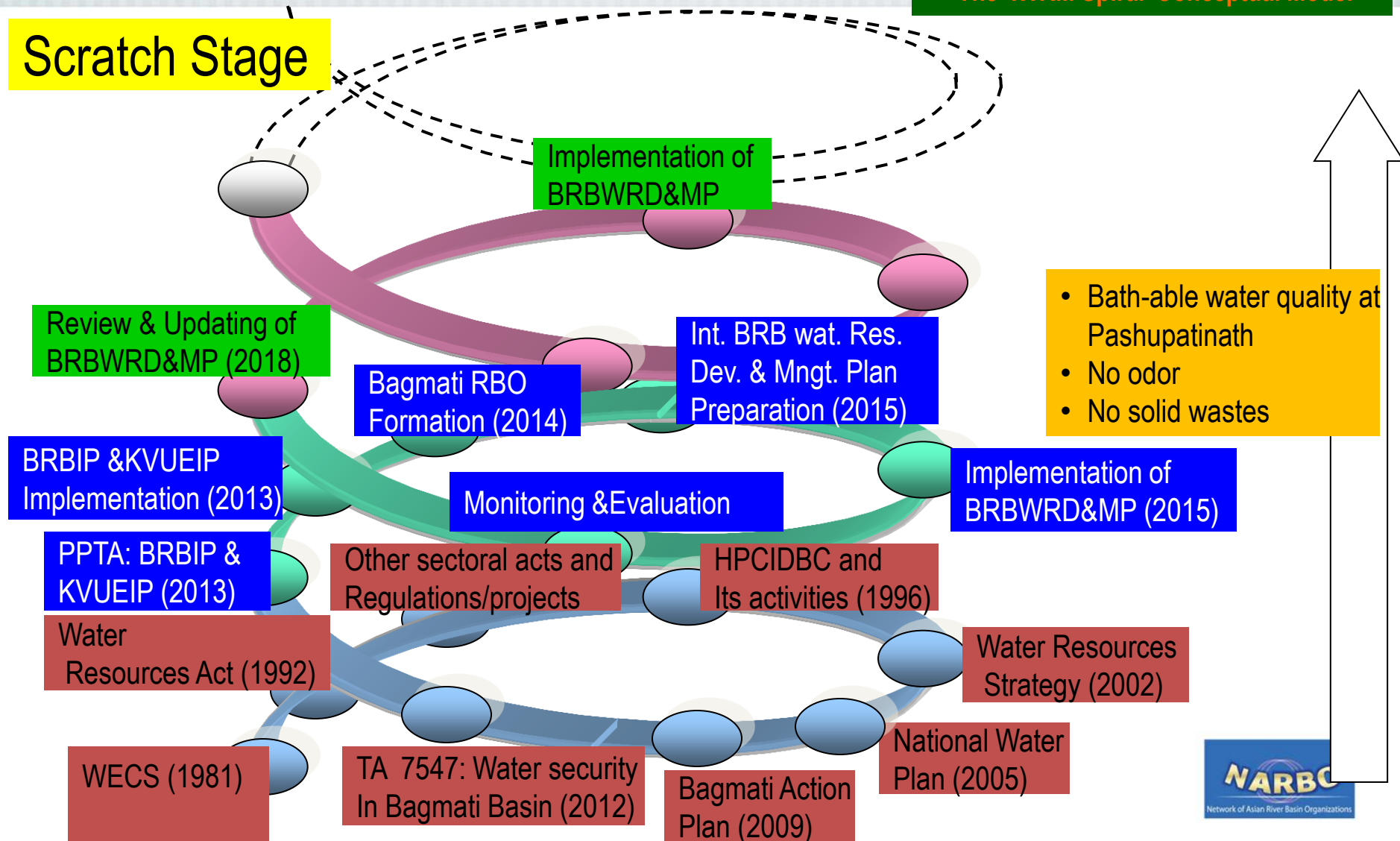


Way Forward (cont...)

Progress of IWRM for Bagmati Basin

Guidelines Part2-1
The 'IWRM Spiral' Conceptual Model

Scratch Stage



4. Conclusion

1. Variety of issues in Water Security of the pilot basins according to the background of each country, however similar concerns
 - ✓ water scarcity risks
 - ✓ Flood risks
 - ✓ Operation and safety management of facilities
2. Effectiveness of the TA activity is identified
 - ✓ The TA identified key issues in each basin, and supported specific countermeasures. The TA got outcomes in different phase of IWRM progress, and NARBO members recognized this.
 - ✓ The TA scheme is useful and applicable to irrespective IWRM stage
3. The TA focused Water Governance to enhance IWRM and took action
 - ✓ Institutional tools for IWRM implementation
 - Multi sector Cooperation:
 - platform of watershed management (Indonesia)
 - plan for establish River Basin Organization (Nepal)

4.Conclusion-conti

- Skilled and trained human resources (Nepal)

✓ Water Dialogue Tools

- Multi stakeholder platform (Indonesia)
- Awareness of knowledge sharing

✓ Financial Tools

- Strategic Roadmap and investment plan(Nepal)
- Rehabilitation plan for irrigation canal (Indonesia)
- Pre-fs of irrigation facilities (Uzbekistan)

4.Verious needs for water security improvement were revealed in the Summarization workshop. The Adaptation of TA scheme to other basin Or other country is effective in collaboration with NARBO network.

Thank You

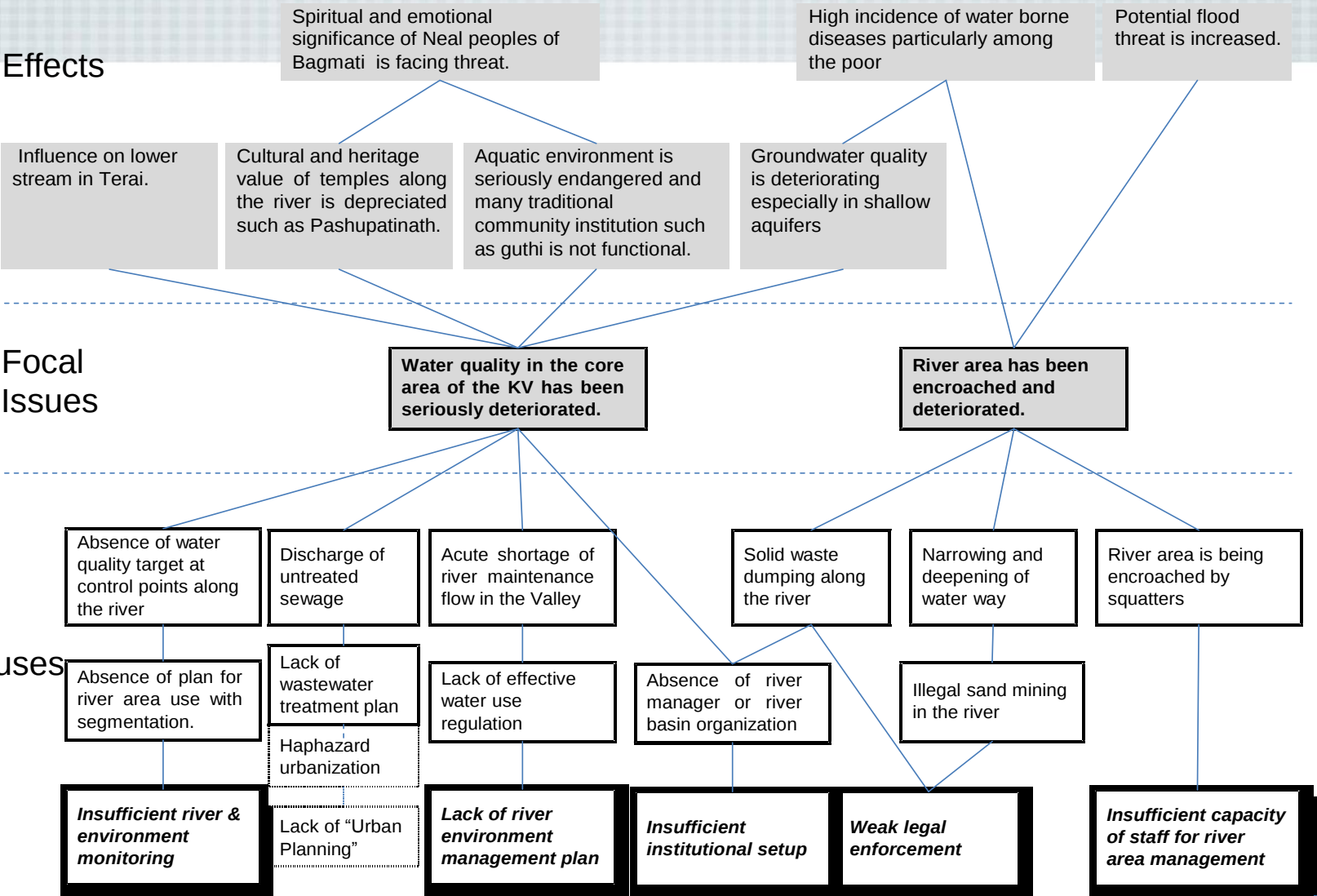


Figure 10.3 Issue tree on River Environment Management in Upper Bagmati



3.Improving Water Security in Bagmati River Basin

Way Forward

- Utilize the opportunities available to meet the challenges
 - Proper implementation of Bagmati River Basin Improvement Project (BRBIP) and Kathmandu Valley of JWA Urban Environment Improvement Project (KVUEIP)
 - The WECS to be given a *de facto* central leading role in planning, guiding and policy formulation within the water resources and energy sectors.
 - Formation of a RBO for the BRB.

3.Improving Water Security in Bagmati River Basin

Way Forward

- Diverse Issues
- Multiple Challenges
- Keys for Success
 - Committed and strong political backup
 - Adequate institution, resource and legal mandate
 - Stakeholder involvement / consultation from the very early stages of planning
 - International Knowledge and Experience Sharing

2. Overview of the TA

Water Security Issues and Intervention

Impact

- ✓ Population Growth
- ✓ Economic Development
- ✓ Urbanization
- ✓ Environment Degradation



Water Security Issues

- ✓ Water Scarcity
 - ✓ Water related disaster flood/drought
 - ✓ Water quality
-



Intervention

Improve/Enhance/Introduce

- Water balance-N,I,U
 - Water conservation-N,I,U
 - Water storage management-N,I,U
 - Water rights and allocation-I
 - Environmental flow-N-
 - Ground water *management*-N
 - Establish and strengthen RBO-N,I,U
 - Coordination scheme for IWRM-N,I, U
 - O & M of facilities-I,U
 - Rehabilitation of HTS-I,U
 - Information management –N,I
- (I:Indonesia,N:Nepal,U:Uzbekistan)



Vision

- Satisfy household water/sanitation
- Support productive economies in agriculture
- Develop vibrant, liable cities
- Restore healthy rivers/ecosystem
- Build resilient community

Improve water governance

by AWDO