Institutionalizing Water Safety Plan : Perspective, Significance and Applicability in Jordan

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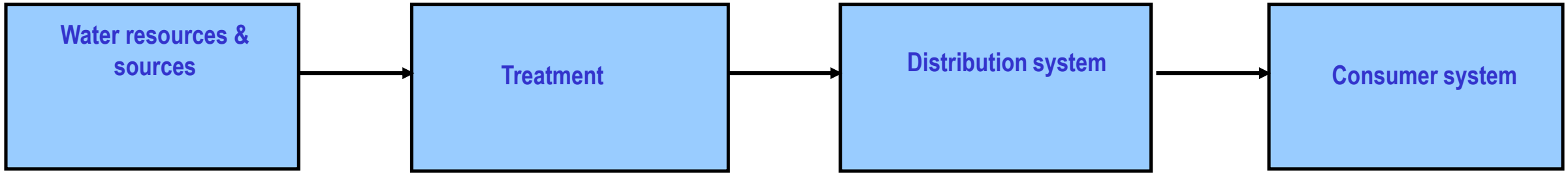
Presentation Outline

- Background on WSP
- WSP implementation Globally
- Why its important for Jordan?
- Water Outbreaks in Jordan
- WSP Road mapping in Jordan

Water Safety Plan Concepts



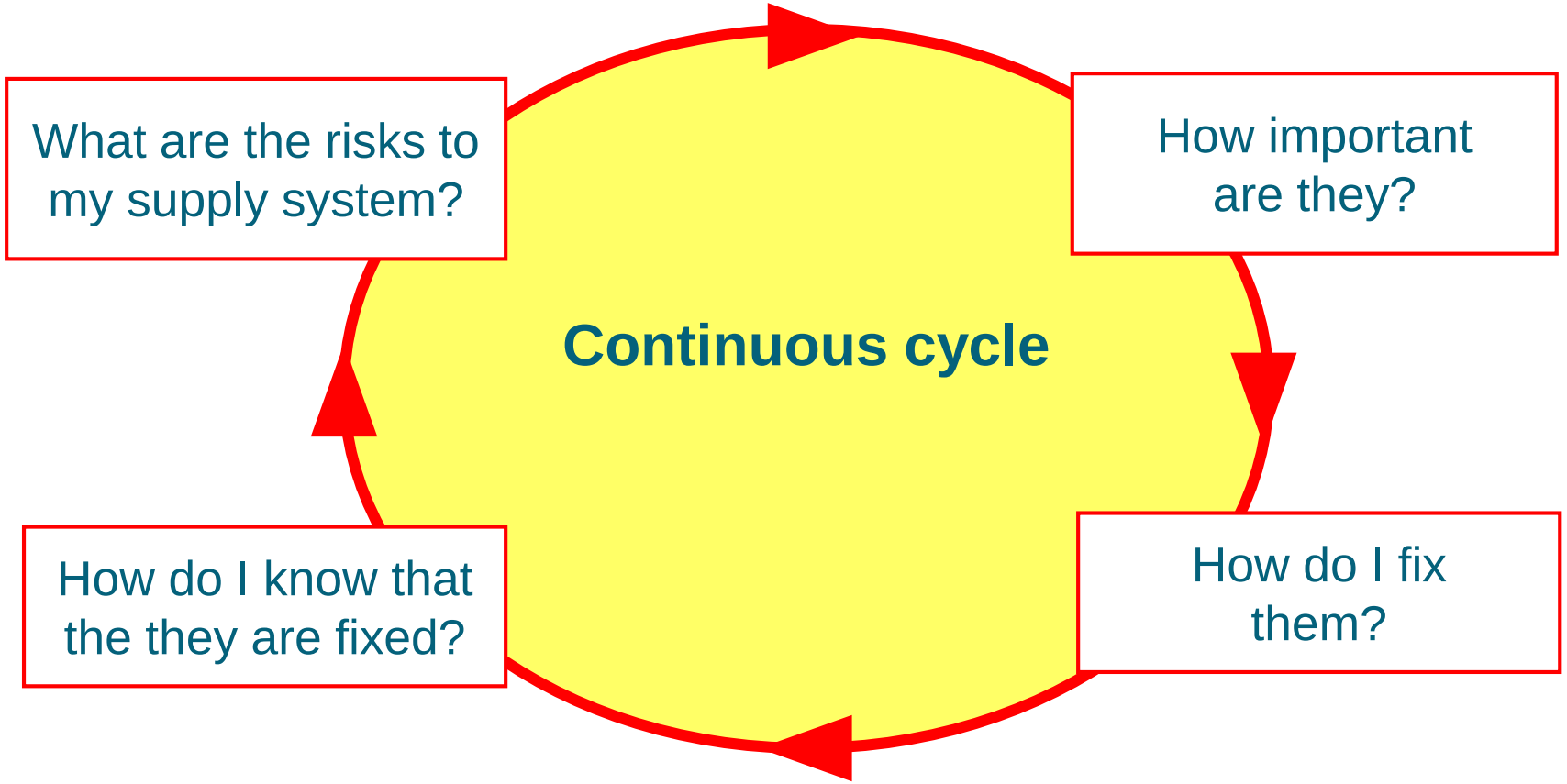
A documented plan that:

- ***Identifies*** hazards, ***assesses*** risks from catchment to consumer
- ***Prioritises*** risks ⟶ focus on highest risks
- ***Mitigates*** risks through control measures

Meaning:

- Less ***output*** monitoring (final water)
- More ***input*** monitoring (is the system working?)

WSP is a process and an ongoing piece of thinking (Plan-Do-Check and Act)



Water safety plan
Prevention better than cure

The **objectives** of a water safety plan are to ensure safe drinking-water through good water supply practice to:

- Prevent contamination of source waters;
- Treat the water to reduce or remove contamination to the extent necessary to meet the water quality targets; and
- Prevent re-contamination during storage, distribution and handling of drinking-water.

WSP: Why ?

- Improve monitoring of water quality aiming to reduce the impacts of hazards and their frequency of occurring.
  - Move away from over-reliance on end-product testing
  - More emphasis on prevention
  - More focus on input monitoring
  - More focus on process control
- Raise public awareness on water quality and re-gain consumer trust to enhance their cooperation.
- Increasing the level of data sharing.
- Improve reliability and consistancy of water supply.
- Strengthen water quality standards

Advantages

- Holistic approach to ensure safe drinking water from catchment to consumers.
- Water Supply system utility managers and operators will be able to understand their system and the risks that must be managed.
- Enables operators identifying and controlling risks rather than just analyzing them.
- Fosters team work, planning, coordination and documentation.
- Increase reliance on actual field sanitary inspection rather than relying just on water quality testing at laboratory.

Challenges

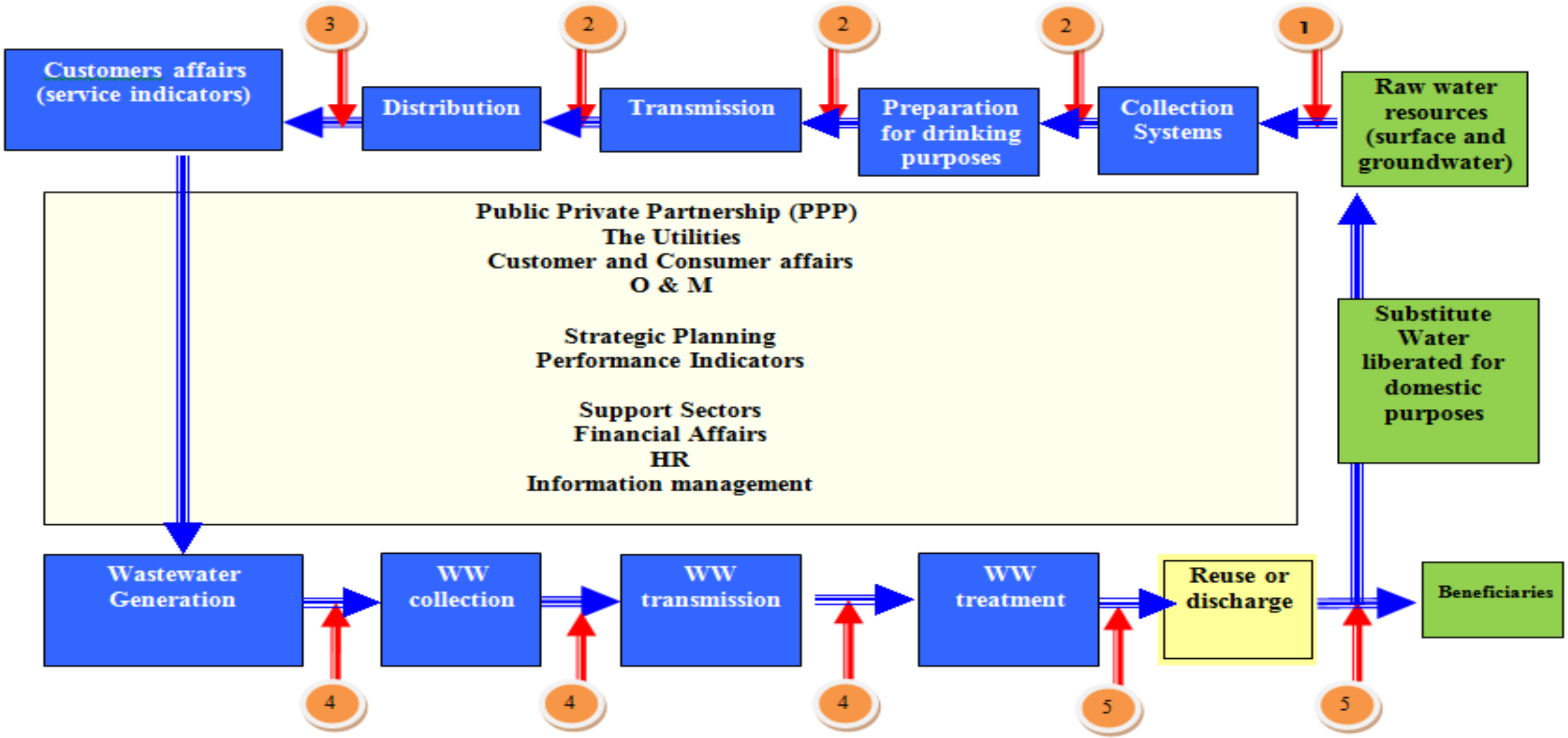
- Needs qualified technical expertise in the WSP team which may not be available in all water supply systems particularly in rural areas
- Requires Certified training and capacity building initiatives, based on WHO Manual for WSP 2023.
- May require capital investment for large water supply systems.
- Need thorough and systematic monitoring, supervision and validation process which may be time consuming and tedious

Requirements for Effective WSP Implementation

- Defining existing tools, building blocks and enablers to start i.e., certified operators, accredited laboratories, etc…
- Legislations: standards, guidelines, regulations.
- Competent staff: laboratory, field, auditors and inspectors.
- Tools: Accredited state of the art labs, models, GIS, etc..
- Supportive Institutional arrangement : Regulatory body – utilities - MoH

The big picture – The full Scope of Safety Plans

Sound implementation of WSP concept requires inclusion of the full water cycle (supply chain) from **C**atchment to **C**ustomer and from **T**oilet to **T**able.

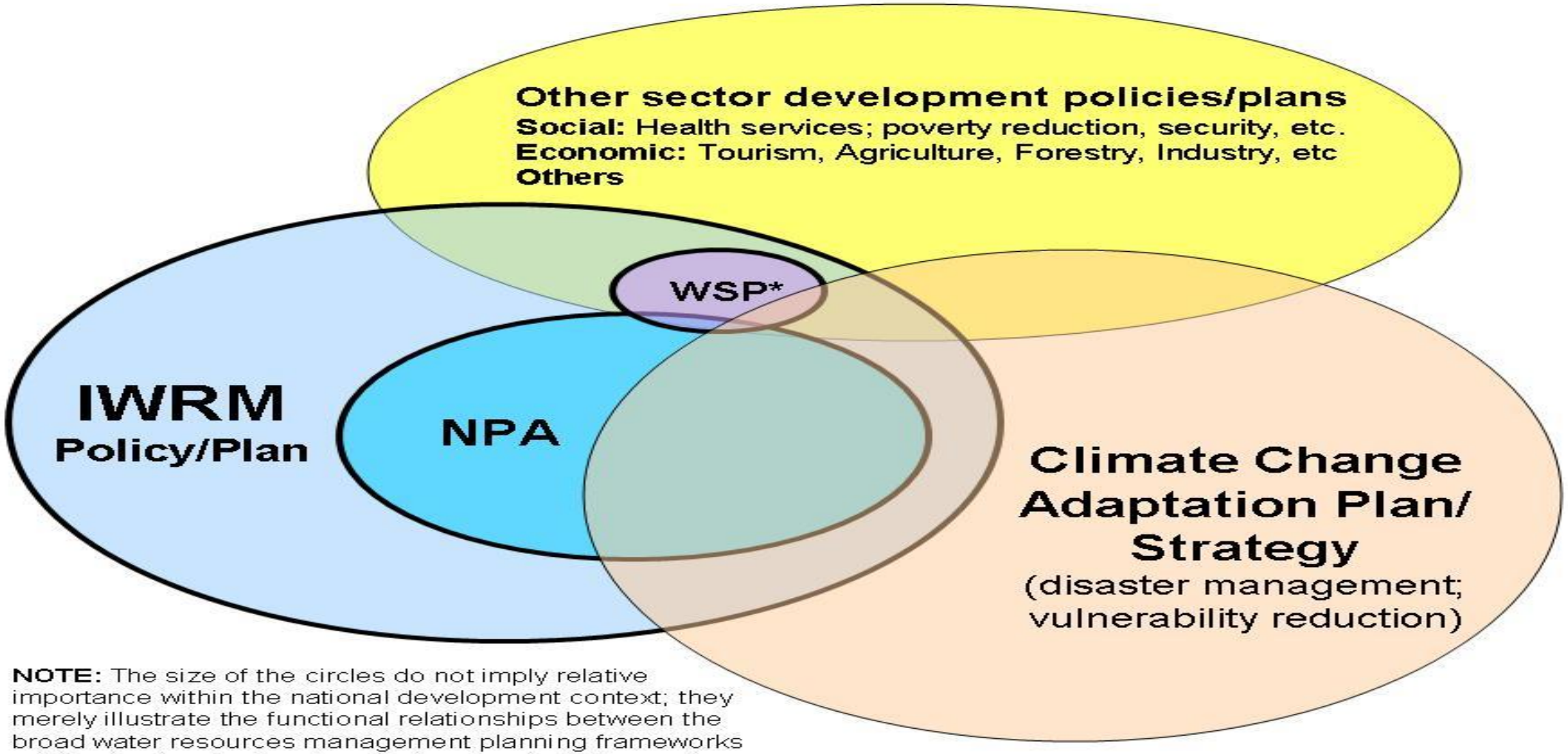


(The supply chain business model)

The national standards, regulations and guidelines on the Supply Chain

1	تعليمات حماية المصادر المائية لسنة ٢٠١١ . Guidelines for the water resources protection (2011)– Catchment management
	مذكرة تفاهم بين وزارة الصحة وسلطة المياه حول الرقابة على مياه الشرب من حيث اجراءات إجازة المصادر والتعامل مع الخليط. MoU between MWI & MoH on drinking water quality monitoring related to water source licensing for drinking purposes and handling and quality verification of the water blends.
	وثيقة المعايير الميكروبيولوجية لنوعية المياه الخام لمصادر مياه الشرب ومتطلبات الحد الأدنى من المعالجة لاستغلال تلك المصادر لعام ٢٠١١ . The Microbiological criteria for the raw water quality and minimum treatment requirements to produce drinking water for the year 2011.
	آلية التعامل مع إيقافات المصادر المائية إحترازياً. The methodology for the preventative stopping of water supply
2	اسس ومعايير تطهير شبكات مياه الشرب ٢٠٠٤ . The guidelines and principles to disinfect the supply network
	خطط مزودي المياه لسلامة مياه الشرب . The operators Water Safety Plans (WSP)
	الخطة الوطنية لطوارئ نوعية المياه. The National water quality Emergency Response Plan
3	القاعدة الفنية – المواصفة القياسية الأردنية لمياه الشرب رقم ٢٠١٥/٢٨٦ JS Drinking Water Standard (286/2015) .
4	تعليمات تصريف المياه العادمة غير المنزلية إلى شبكة الصرف الصحي لسنة ٢٠١٧ The National Guidelines for Trade Effluent Discharge to the Public Sewer for year 2017
	نظام الصرف الصحي رقم (٦٦) لسنة ١٩٩٤ م The wastewater By–Law No 66 for the year 1994
	المواصفة القياسية الأردنية للمياه العادمة الصناعية المستصلحة رقم ٢٠٠٧/٢٠٢ JS Standard for Reclaimed Industrial Wastewater (202/2007)
	تعليمات تنظيم تفريغ صهاريج النضح في محطات التنقية التابعة لسلطة المياه والشركات المملوكة من قبلها Guidelines for the wastewater tank discharge in the receiving plants of the WAJ and its companies
	خطط مزودي المياه لسلامة انظمة معالجة المياه العادمة واعادة الاستخدام. Operators Sanitation Safety Plans (SSP)
5	الخطه الوطنية لنظام رصد وادارة المخاطر المرتبطة باستخدام المياه المعالجة في الري.
	القاعدة الفنية – المواصفة القياسية الأردنية لمياه الصرف الصحي المنزلية المستصلحة رقم ٢٠٠٦/٢٨٣ . JS Standard for Reclaimed Domestic Wastewater (893/2006) under revision
	دليل نوعية مياه الري . The National Manual on Irrigation Water

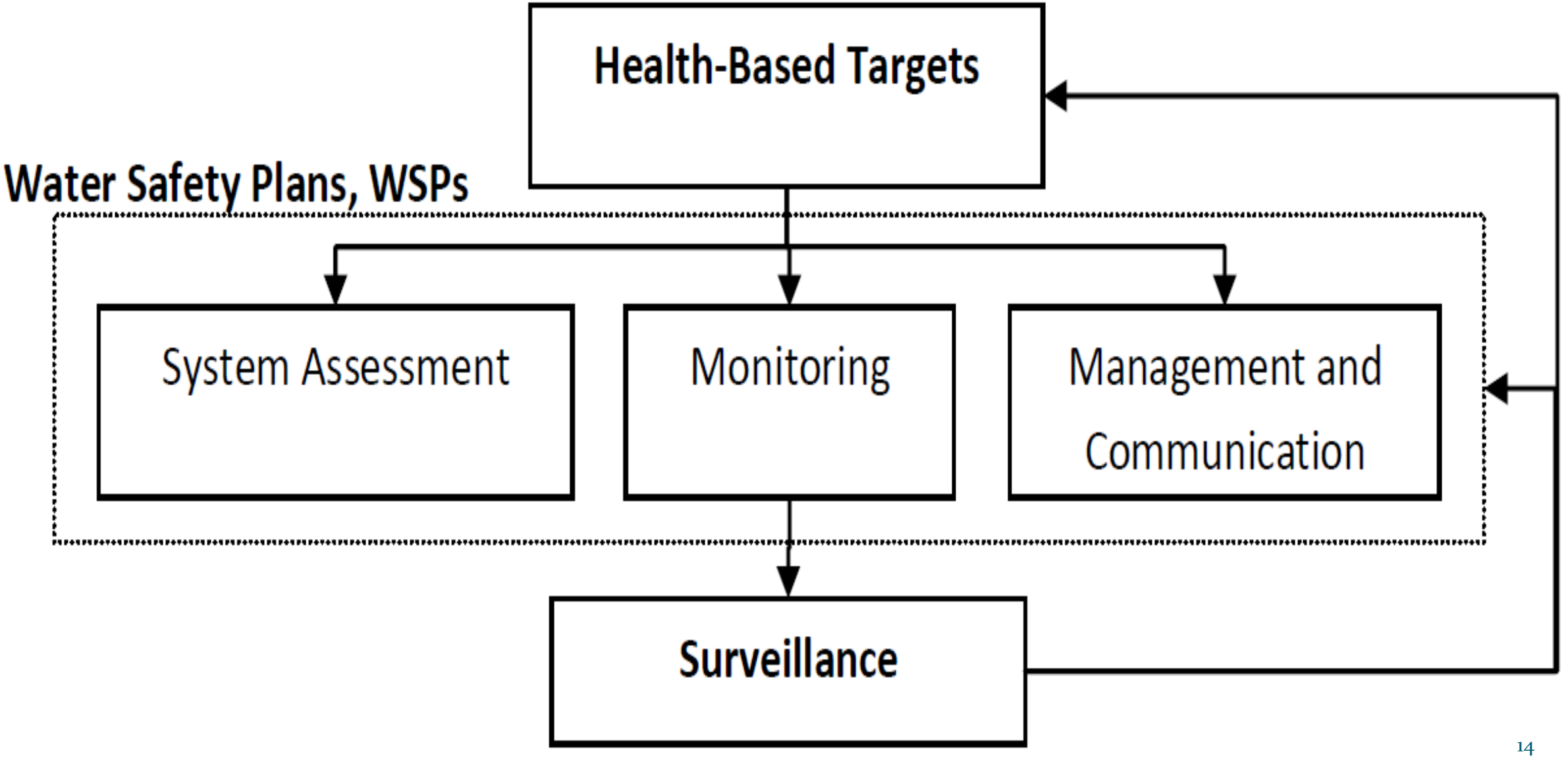
Where might an WSP Plan fit?
To be regarded as part of existing frameworks



NOTE: The size of the circles do not imply relative importance within the national development context; they merely illustrate the functional relationships between the broad water resources management planning frameworks relative to planning for climate change adaptation, and other socio-economic development sectors in the country.

* There could be multiple WSPs depending on the number of water supply/treatment systems in the country.

WHO Framework for WSP



Two principal concepts

- Product Quality Control (QC) monitors compliance with standards

  QC tells us that something has gone wrong after it had happened.

- Process Quality Assurance (QA) uses risk management for water processes.

  QA tries to stop that something is going wrong.

WSP Implementation in the WORLD

- WSPs have been implemented in nearly every region of the world, and awareness and application of the approach continues to grow.
- Jamaica was the first country in the western hemisphere to implement a WSP.
- UK (2007) implement WSP in legislation form.
- Water Safety Plans enter the policy arena. A number of countries have introduced or proposed legislation to require providers to implement Water Safety Plans, as is the case in Jamaica, UK, Brazil, India, China, Sweden, Nigeria, Ghana, etc.

Global WSP Activities

WSPs as a Matter of Policy

★ = *Legislation introduced or proposed to require WSPs*

WSPs as norms of practice

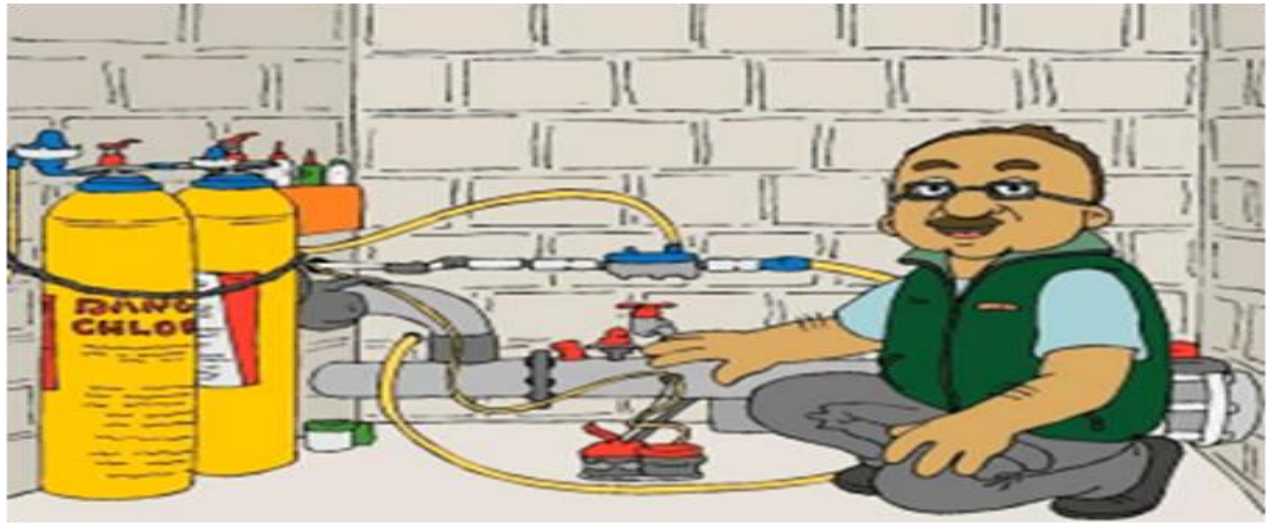
- WSP may become internalized into norms such as “best practices,” which are often integrated into guidance documents that do not carry the mandate of regulations (e. g. Bangladesh).
- WSPs may also be incorporated into drinking water regulations, making them mandatory (e.g. Jamaica, need 8-10 years to enacting).

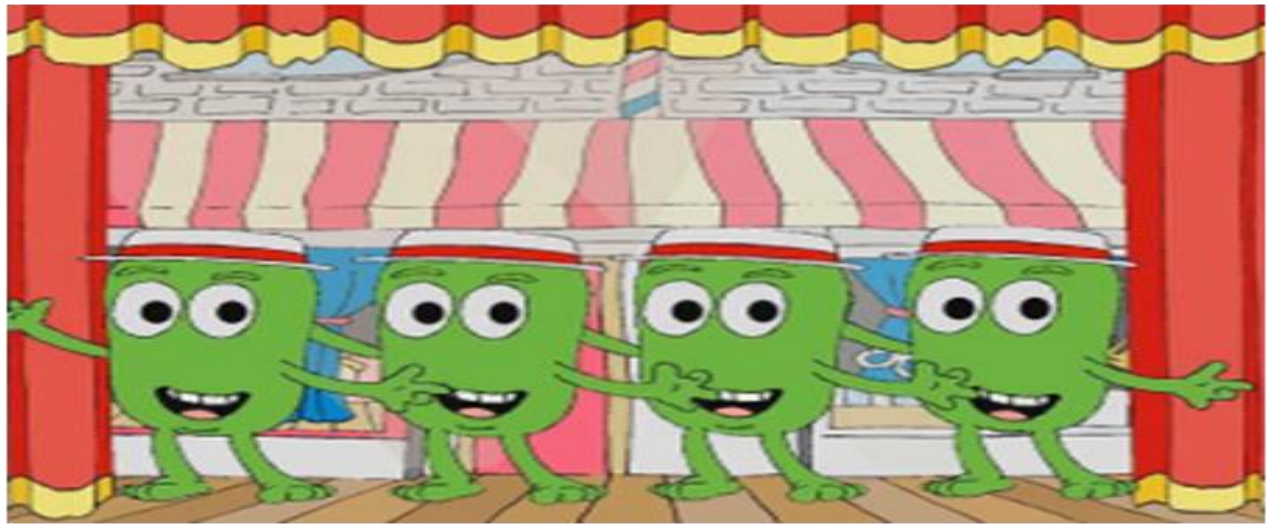
Arab/Gulf Region

- Jordan, Sultanate Oman, Iran, Saudi and UAE currently involved in WSP projects.

- These projects are at various stages in their development and implementation.

WHY WSP Important For Jordan





Water Borne Outbreaks in Jordan

- 1976: An outbreak of water borne infection in the town of Salt.
- 1986: Water Quality Failure (Color and Taste, Algae).
- 1998: Zai Treatment Plant (Taste and Odor, Free Living Nematodes and Algae).
- 2008: Mansheiat Bani Hassan, near Mafraq city, drinking water contamination by *Cryptosporidium* oocysts.

WHY WSP Important For Jordan

- **Many types of WS systems are in operation:**
  - Different types of facilities/technologies/operators
- **Quality:**
  - choice of the community
  - self assessed by the operators

- **Independent assessment is limited to epidemic situations/by request (complaints)**
- **Lack of plans to prevent overall system pollution**

What was needed?

- The WSP team structure
- The top management commitment buy in – Forming Steering committee?
- Review of existing legislations and appropriate adjustments (Assignment agreements and MoUs) adjustments
- Start small – Think big – build to scale up
- Move from voluntary to mandatory (need for regulatory body)

What was enhanced

1) Collaborative Approach

- The WSP framework brought many partners, stakeholders and beneficiaries to work together independently but at the same time in a complementary manner.

- Sound communication and protocols were developed among involved parties:
  - i.e. WAJ – Utilities- MoH- MoEnv- MoI, Customers & consumers –Stakeholders.

Preventative Water Safety Management

2) Quality of Services improved

WSP implementation requires assessment of the level of service: Adequacy of supply, accessibility, affordability, acceptance, that are important to gain customer and consumer satisfaction, trust, cooperation and willingness to pay for the provided services.

3) The Water supply Systems improved

- The process is in control always ensuring safe water delivered at all times this resulted in decrease in the number of end-product Testing and reduced cost.

- The shutdown of the system was dramatically decreased resulting of availability of more water.

- The investment in operational monitoring and proper preventative maintenance reduced the overall cost and kept systems in a good shape.

4) Recognized the vital role of WSP audits

- WSP audit is vital to keep WSP implemented properly and in continual improvement
- We are in the process to built the capacity of the group of competent auditors and to develop the internal and external audit protocols.
- The regulator in Jordan will be further empowered to do the required WSP audit.

5) Improved risk assessment tools

- We recently adopted a new approach in Hazard identification, hazard causes, the needed controls and scoring.
- We are now applying the 5X5 risk matrix for the first time
- We came up with new adequate definitions for the likely hood and severity that is appropriate for Jordan

6) Capacity Building Alliances

- Partnership & twinning arrangements:
  - Mentoring & peer-to-peer support
  - Knowledge exchange
- Networks for sharing knowledge & experience.
- Building the capacity for WSP auditing

WSP Progress Implementation in Jordan

- Political will in advancing the WSP process.
- Success Story: WSP Pilot sites at Wadi Al Seir, Zai Water treatment Plant, Mujeb Dam, etc.
- Training Modules on WSP in Arabic Language (WHO).
- Five Pilot WSP sites in Jordan.
- Water suppliers became interested in the process and committed to implementing WSPs.
- Institutionalizing WSP: Legislation, Regulations, Training and capacity building, WSP Department.

Wadi Al Arab drinking water supply system ٢٠١١

Zai drinking water supply system ٢٠١١

Wadi Elseer Water Supply System
WSP

Al Karamah Dam drinking water supply system ٢٠١١

Al lajoon drinking water supply system ٢٠١١

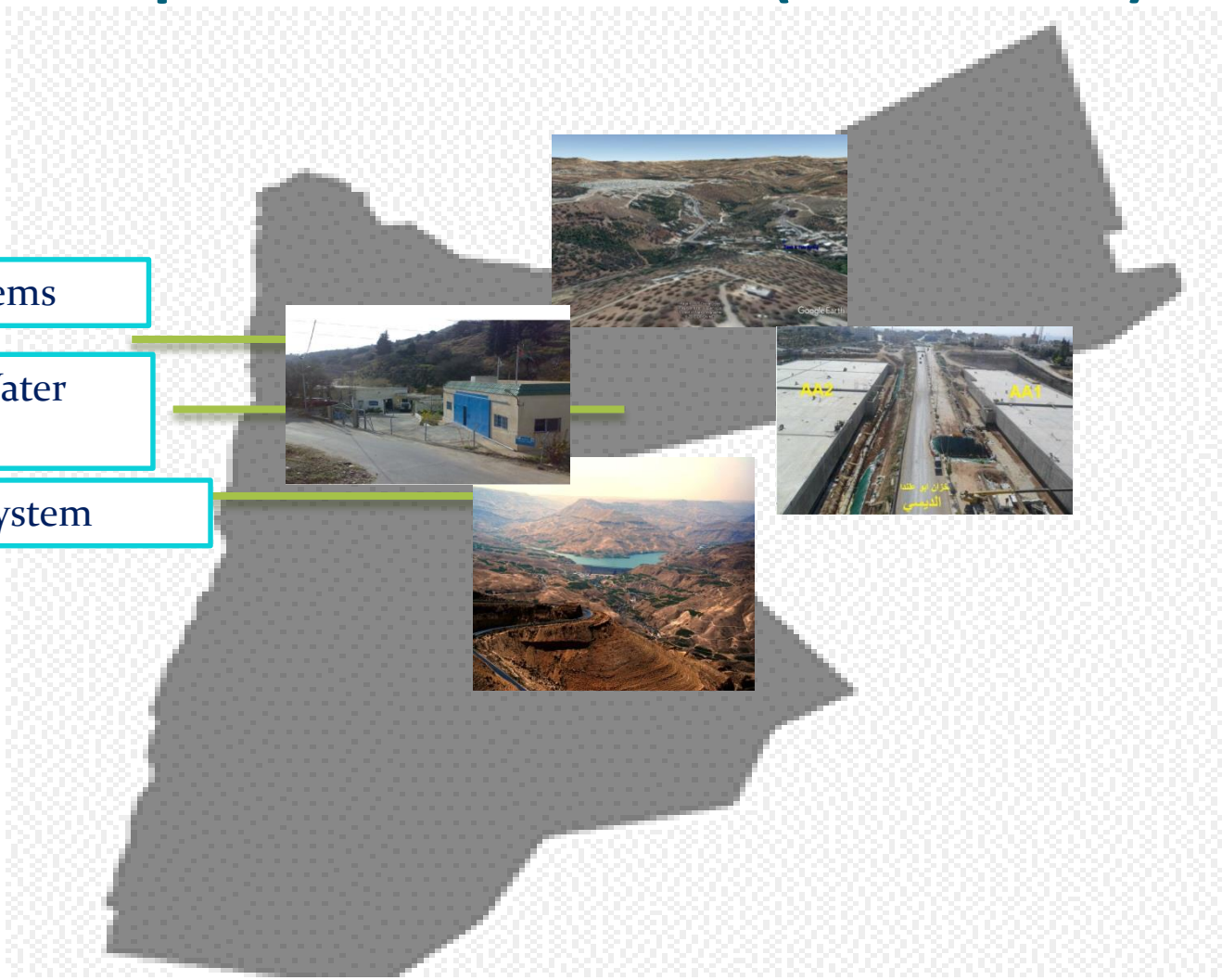
The Aqaba drinking water supply system 2011

The new “WSP” Implementation Sites (2016-2019)

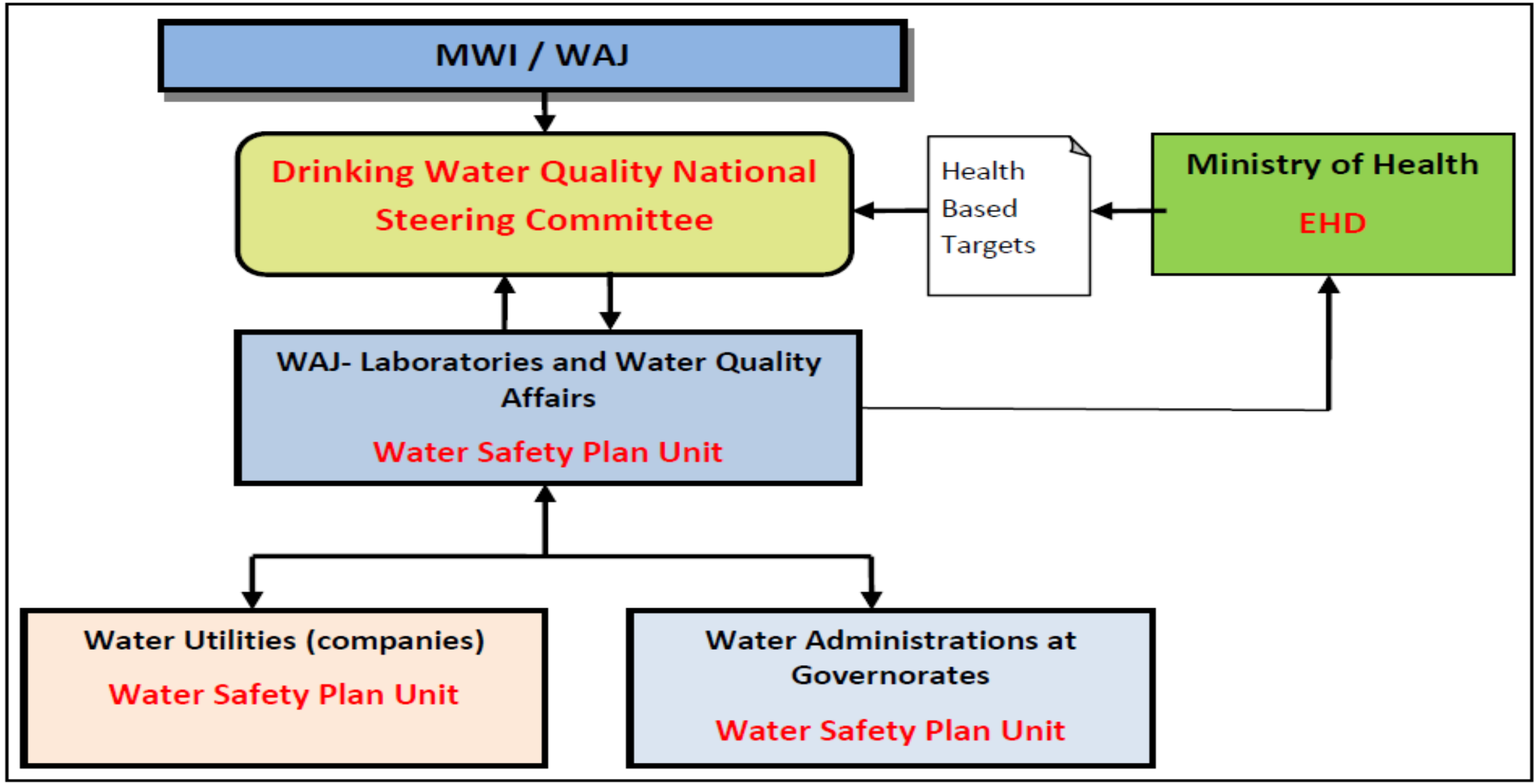
Deek & Tais Water Supply Systems

Wadi Esser and AbU Alanda Water Supply Systems

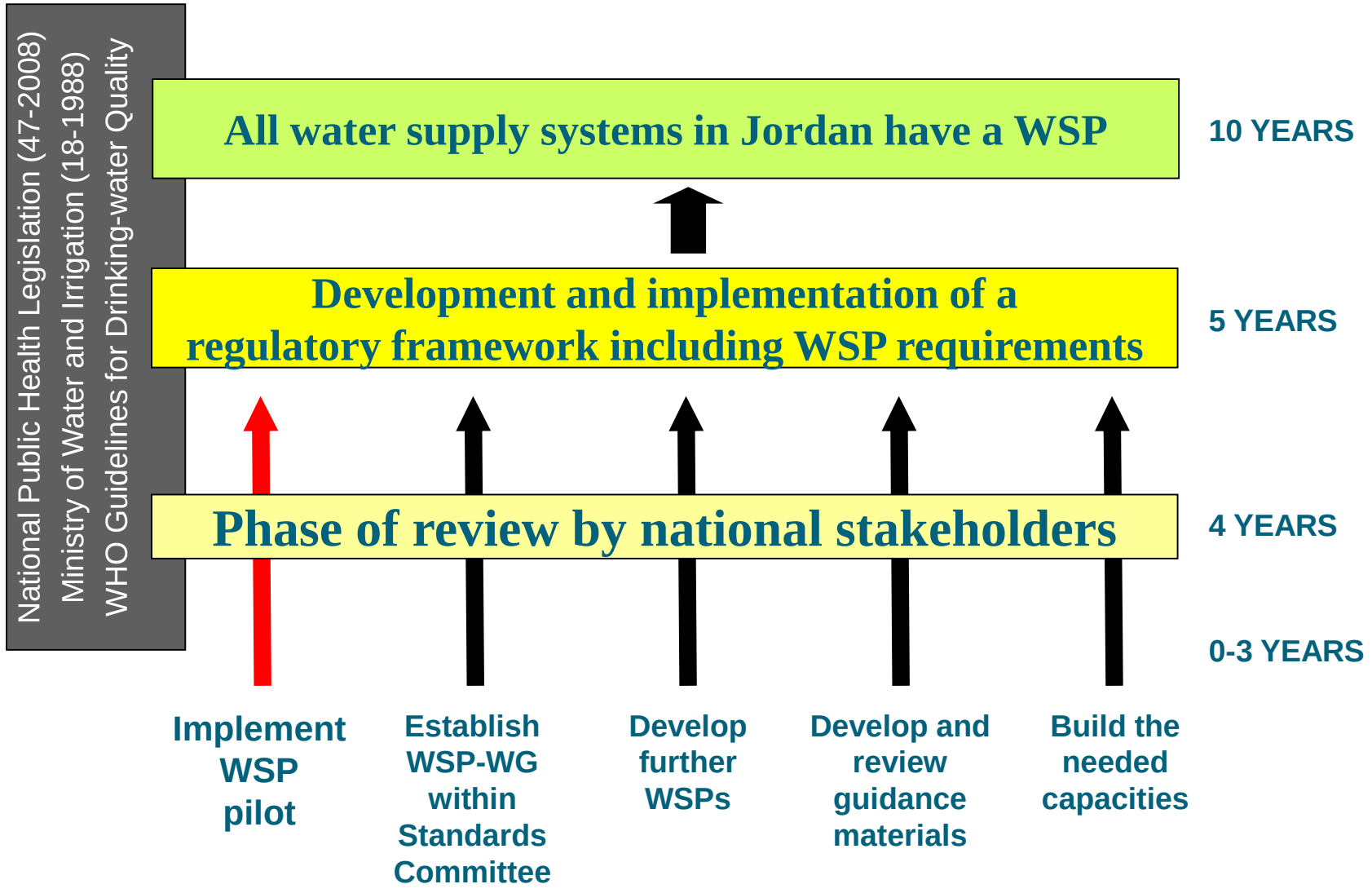
Mujib Dam Water Supply System



Institutional set up



Building blocks of vision in Jordan



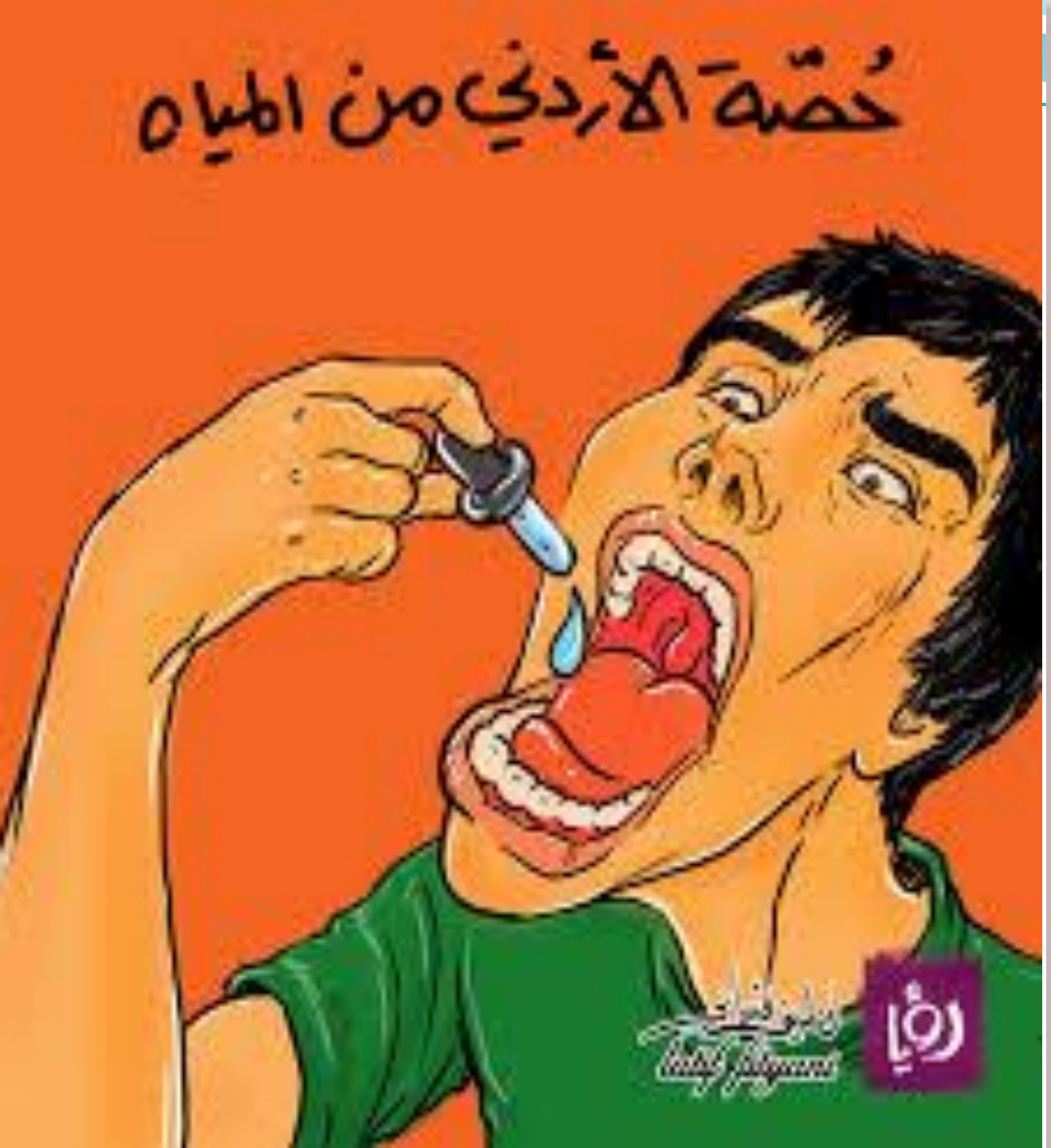
Key Components

- Standard Operating Procedures (SOP) for operation of water supply system from the catchment to consumer including Operational Manuals.
- Procedures for programmed and unscheduled (emergency) maintenance activities
- Emergency and Incident Management Protocols and Manuals
- Equipment calibration and maintenance programs
- Asset information data capture and management systems

- Key Performance Indicators (KPI)
- Monitoring, reporting & review of KPI (government regulated/self regulated)
- Long term asset management strategy and funding arrangements
- Staff and contractor training programs
- Quality Control / Quality Assurance systems, internal and third party Auditing (of WSP, O&M process and KPIs)

Looking Forward to

- Inter-Ministerial agreement between the Water Ministry and the Ministry of Health.
- WSP Awareness raising at different governorates.
- Feed back to operators, strengthening of Laboratories.
- Involving NGO and University Students.
- Dissemination of knowledge and lessons learned about WSPs in informal way before setting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