
# A holistic stepped approach for transitioning from Intermittent to Continuous Water Supply

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inspiring change

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# INTERMITTENT WATER SUPPLY

**Definition:**

**Intermittent Water Supply (IWS) refers to piped water supply service that is available to consumers less than 24 hours per day**

**(Related terms often used: irregular, unreliable, inadequate, poor supply…)**

Frequency of Intermittency:

- **Regular** – Rationing schedule daily / every 2 days / etc..
- **Seasonal** due to increase in demand which could not be met (tourism, hot weather, etc.)
- **Occasional** related to source issues (lower yields, quality deterioration, etc.)

Does not relate to temporary cut-offs due to fixing of breaks….

# MAJOR CAUSES OF IWS

- **Growing demand-supply** imbalance
- **Ageing infrastructure** with high frequency of water mains failure
- **Poor management of systems** - high leakage & wastage, poor O & M practices, governance issues….
- **Source scarcity** - insufficient quantity at the source – exacerbated by climate change

# IWS – GLOBAL ISSUE

- **MIDDLE EAST AND NORTH AFRICA**: For about **75%** of the population the supply is often intermittent
- **AFRICA**[1]: It is estimated that about **30%** of urban water supplies operate intermittently
- **ASIA**[1]: Approximately **50%** of the systems operate intermittently **(SOUTH ASIA**: practically all cities operate intermittently – this is even considered standard water supply practice …)
- **LATIN AMERICA AND CARIBBEAN**[2]: Over **60%** of the population receive rationed water supply

Source: 1- WHO & UNICEF
2- PAHO & WHO

# IWS WORLDWIDE

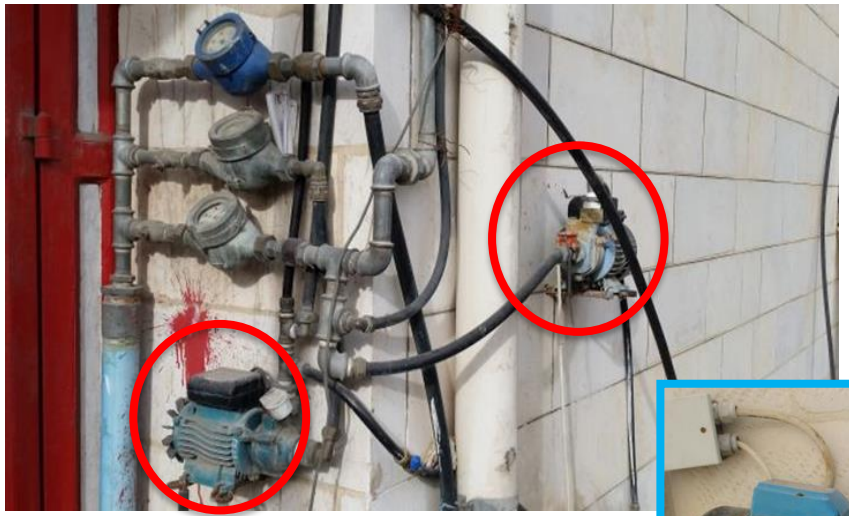
| Description | Population 2017 (billion) |
|---|---|
| Worldwide population | 7.3 |
| Population in High Income countries (with piped water on premises) | 0.9 |
| Population in Low and Middle Income countries | 6.4 |
| Population in Low and Middle Income countries with piped water on premises | 3.2 |
| Population in Low and Middle Income countries with piped water on premises affected by IWS | 1.3 |

Source: B. Charalambous and C. Laspidou, “Dealing With The Complex Interrelation Of Intermittent Supply And Water Losses” IWAP 2017, ISBN 9781780407067

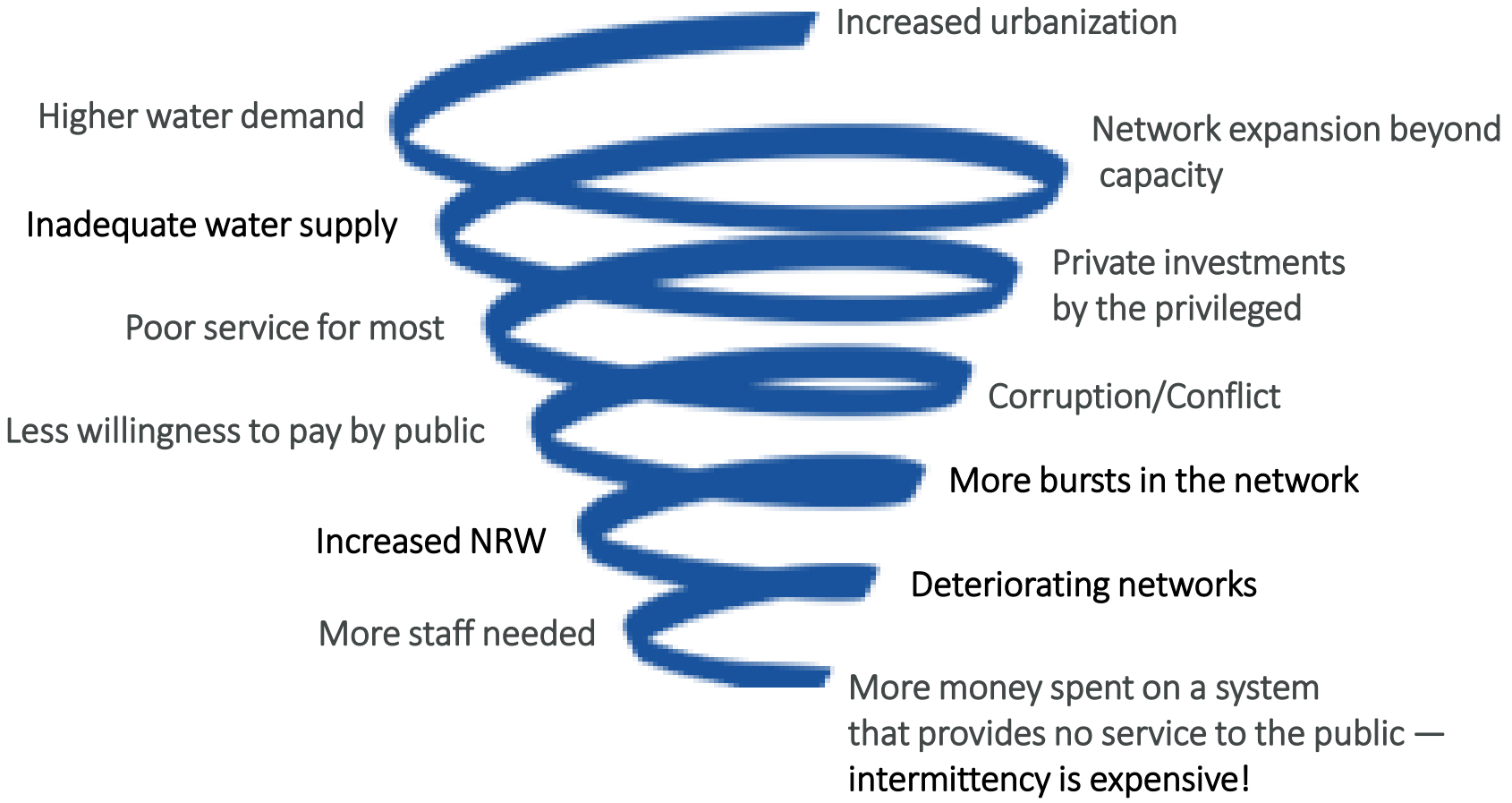
# DETRIMENTAL EFFECTS OF IWS


Water **quality deterioration** / Health hazard, **Inequitable distribution** within a network, **Increased** mains and service connections **failures**, Increased **difficulties** in **detecting** and **fixing leaks**, **Illegal connections**, Meter tampering, **Meter malfunctioning** and Accelerated **wear & tear**

# HOW DO THE CUSTOMERS COPE?

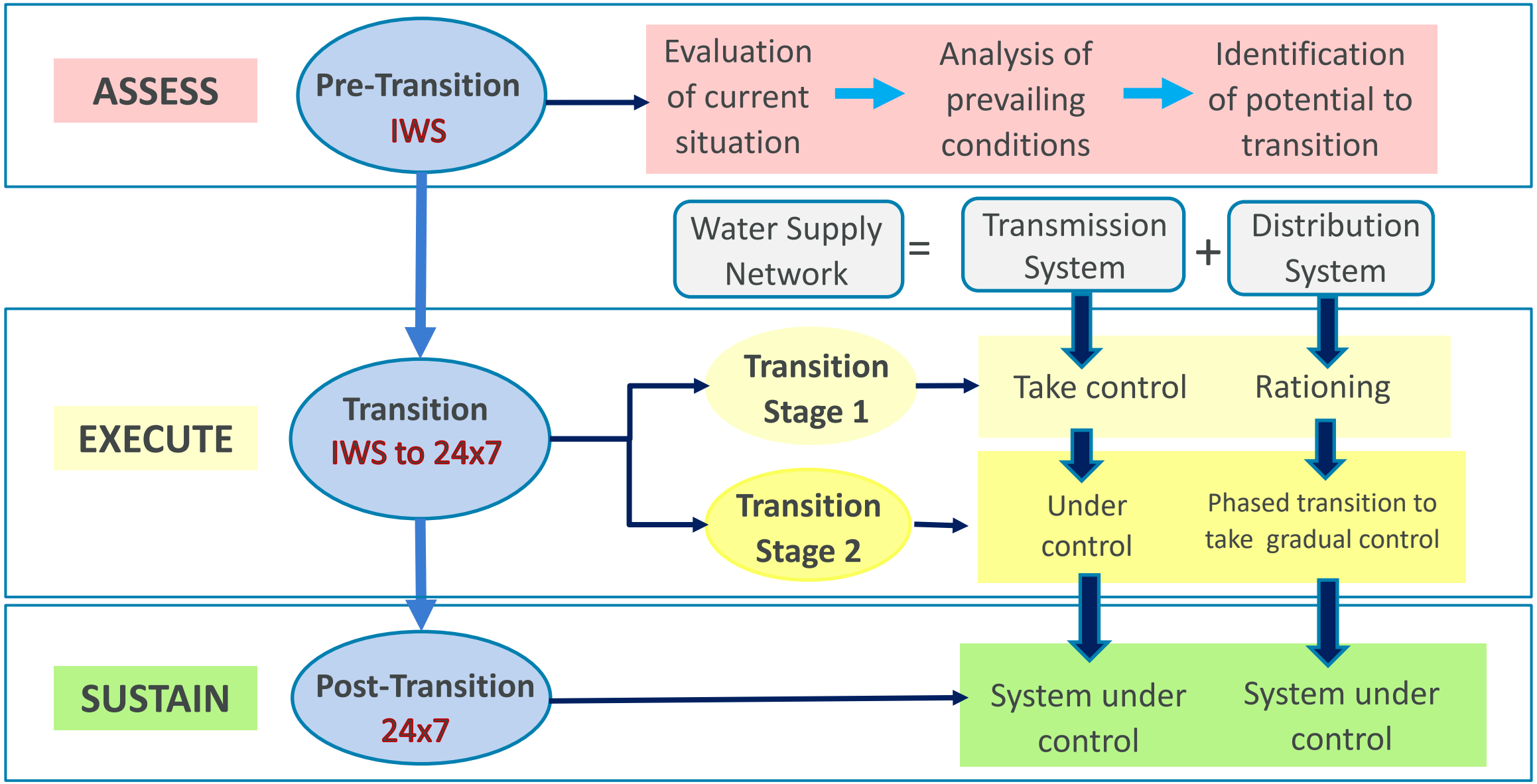


# THE DOWNWARD SPIRAL OF IWS




Source: B. Charalambous and C. Laspidou, "Dealing With The Complex Interrelation Of Intermittent Supply And Water Losses" IWAP 2017, ISBN 9781780407067

# METHODOLOGY FOR TRANSITIONING TO 24X7



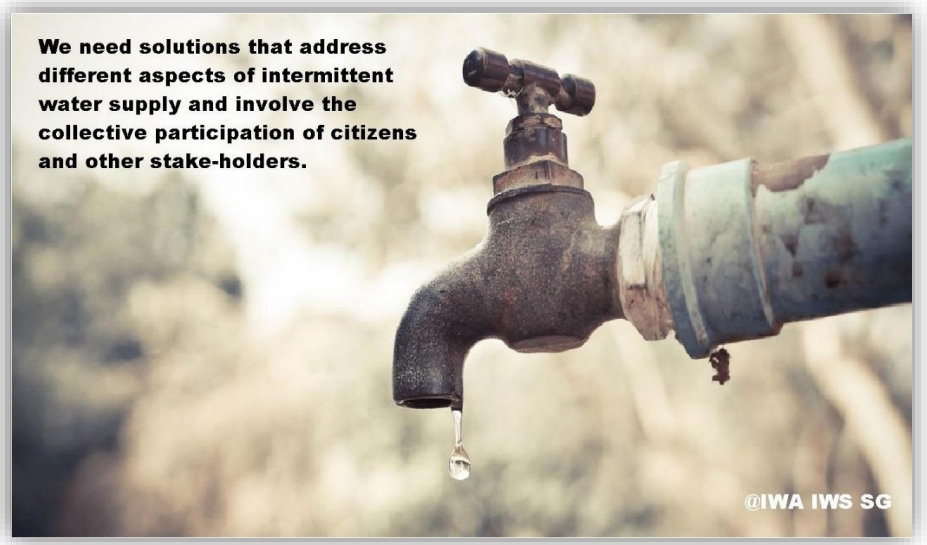
# PRE-TRANSITION

Identify potential for transitioning:

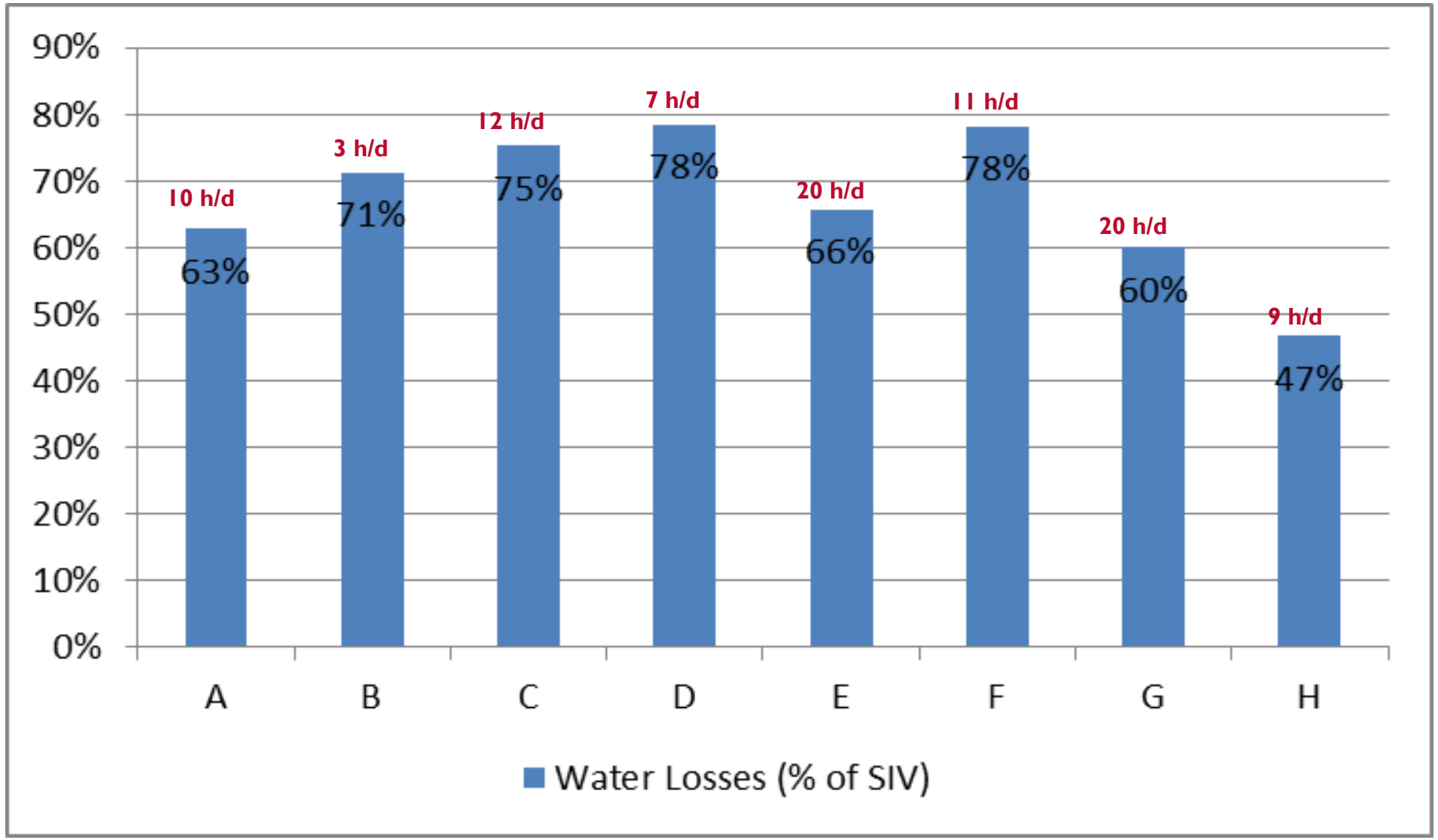
- Evaluation of **current situation**
- Analysis of **prevailing conditions**

Basic prerequisites for transitioning:

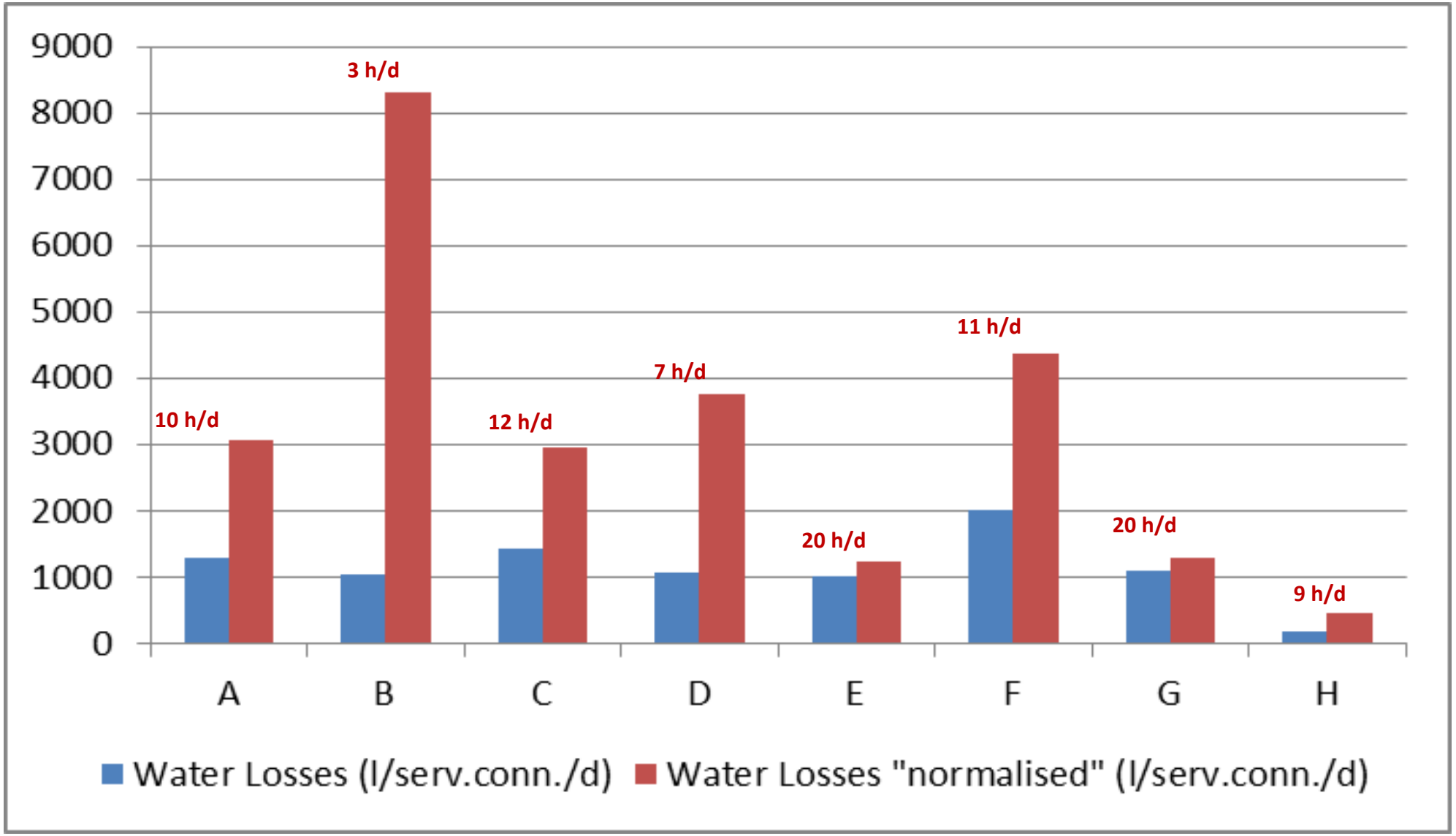
- Availability of **source water**
- Robust **transmission mains** system
- Potential for **phased continuous supply**
- Distribution network **suitable for DMAs**
- Some **NRW activities** already in place
- **Enabling environment** for shifting to 24x7
- Sufficient **information and data**, e.g. metering, pressure network maps, etc.



# WHAT IS THE SUPPLY TIME?

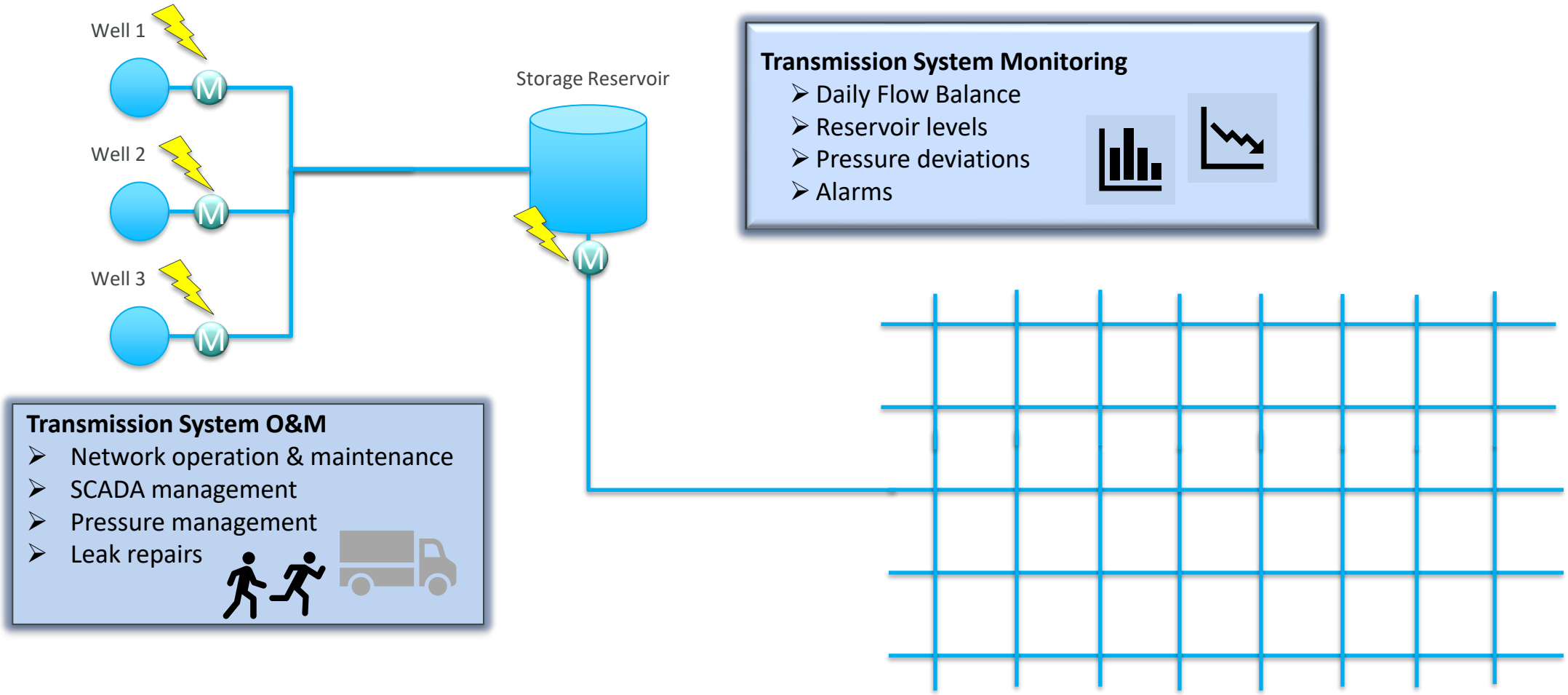


# IS THERE SUFFICIENT WATER FOR 24X7?

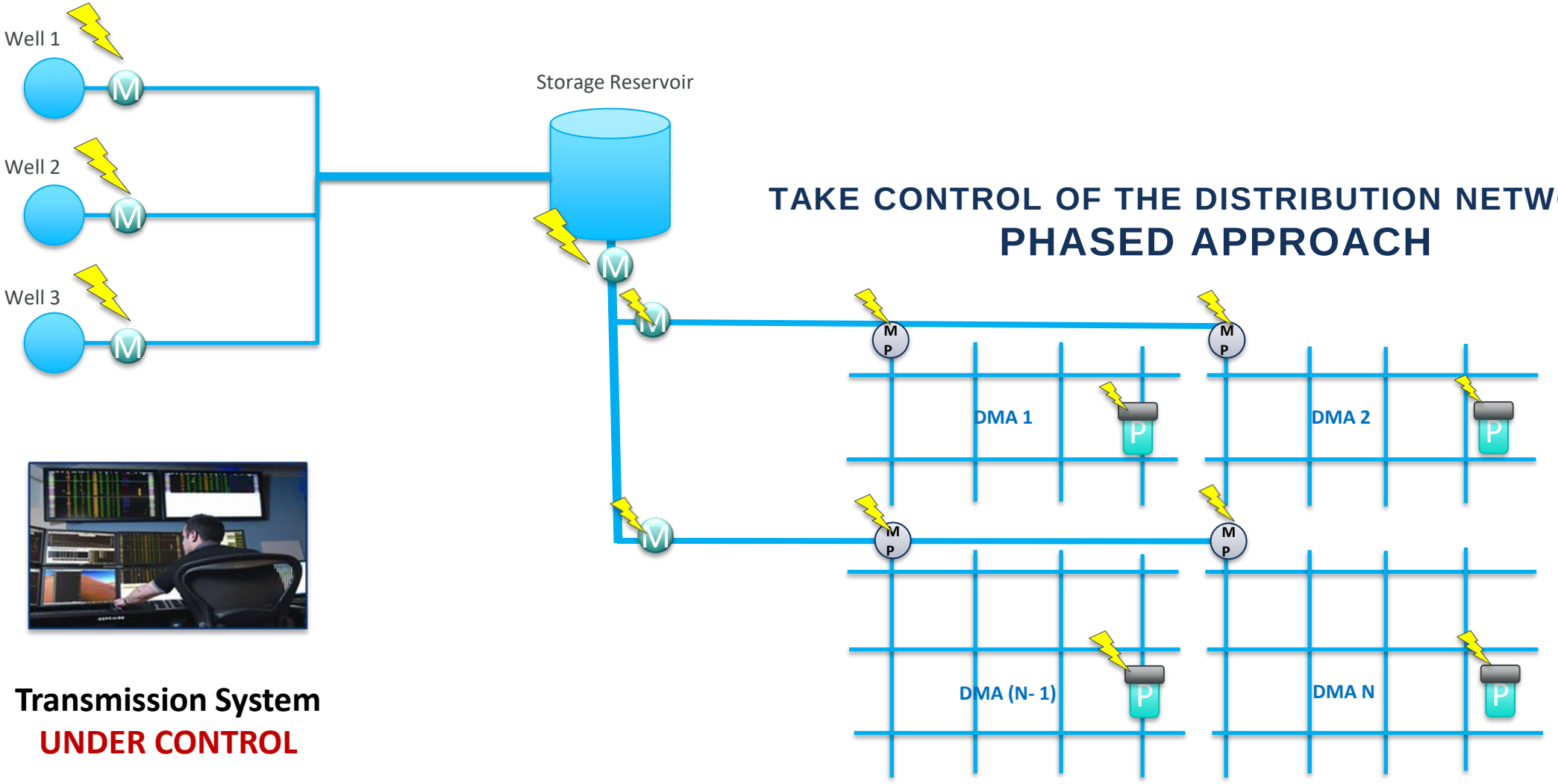


# TRANSITION – STAGE 1

## TAKE CONTROL OF THE TRANSMISSION SYSTEM

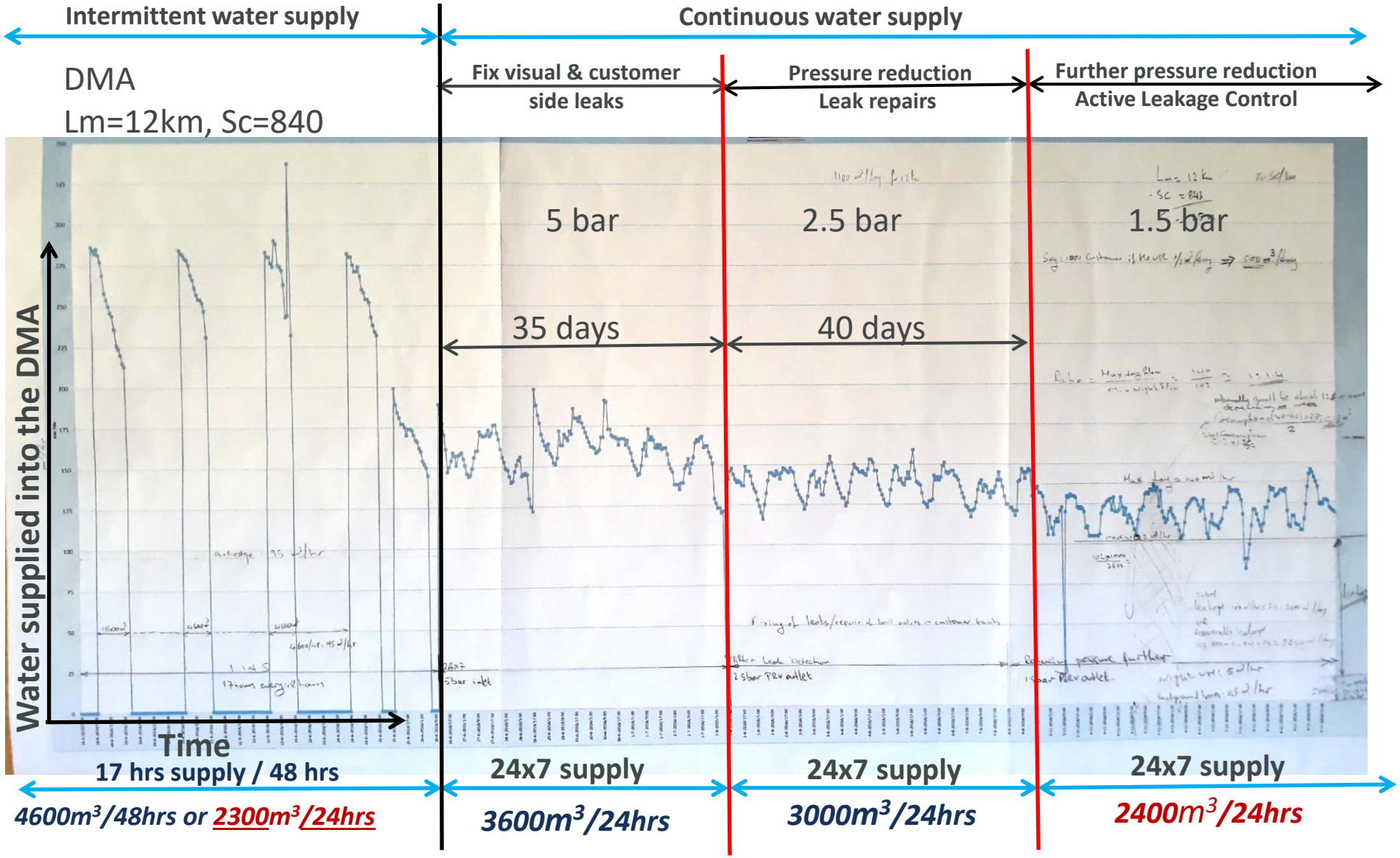


# TRANSITION – STAGE 2




**Transmission System**
**UNDER CONTROL**

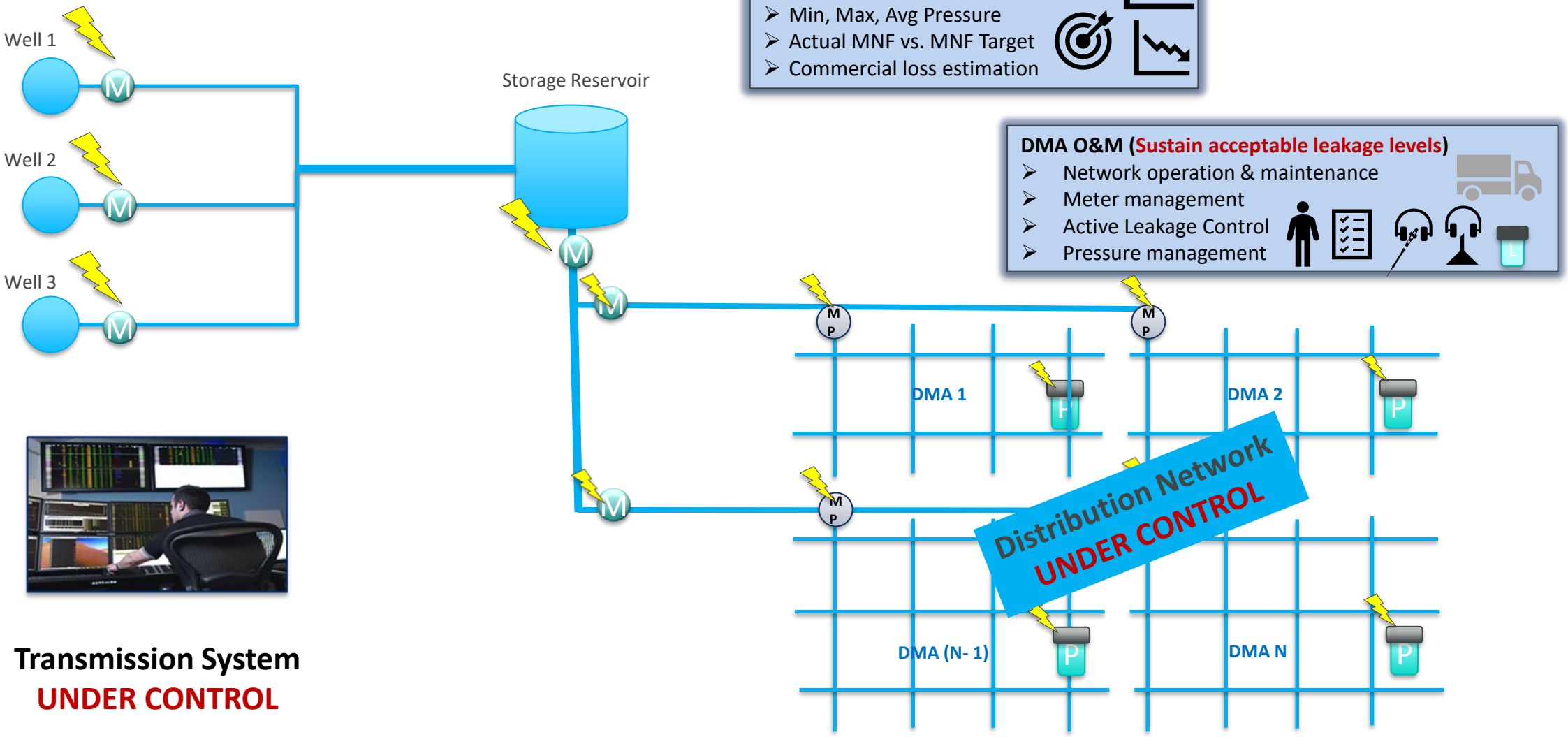
# AN EXAMPLE OF TRANSITIONING TO 24X7



# POST-TRANSITION

**DMA Monitoring**
- Quarterly Water Balance
- Pipe breaks
- Min, Max, Avg Pressure
- Actual MNF vs. MNF Target
- Commercial loss estimation

**DMA O&M (Sustain acceptable leakage levels)**
- Network operation & maintenance
- Meter management
- Active Leakage Control
- Pressure management






**Transmission System**
**UNDER CONTROL**

# TRANSITIONING FROM IWS TO CONTINUOUS SUPPLY

The approach for a successful and sustainable transition requires:

- Moving from IWS to 24x7 in a cost-effective manner by:
  - improving **operations and maintenance**
  - restructuring the **supply network** if required
  - replacing part of the **distribution system** as needed,
  - introducing **active leakage control** to reduce losses
  - applying appropriate **customer metering policies** and management
- Creating a well-functioning utility that can **sustain the improvements** in operations by introducing modern management **systems, procedures, protocols and equipment**

# RECOMMENDATIONS FOR SUCCESSFUL TRANSITION

Key factors for implementing an IWS transition program:

- The **strategy** needs to be **cost effective and realistic**.
- The **strategy** should be **consistent** with **operational systems** in **the water utility**.
- There needs to be adoption and implementation of **policies** and **operational practices.**
- The adopted systems need to **reflect good asset management practices**.
- The strategy must include **specialised and dedicated on-going training of staff**.

# Thank you!

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