

What is PBC and how it can help deal with the challenges of reducing NRW?

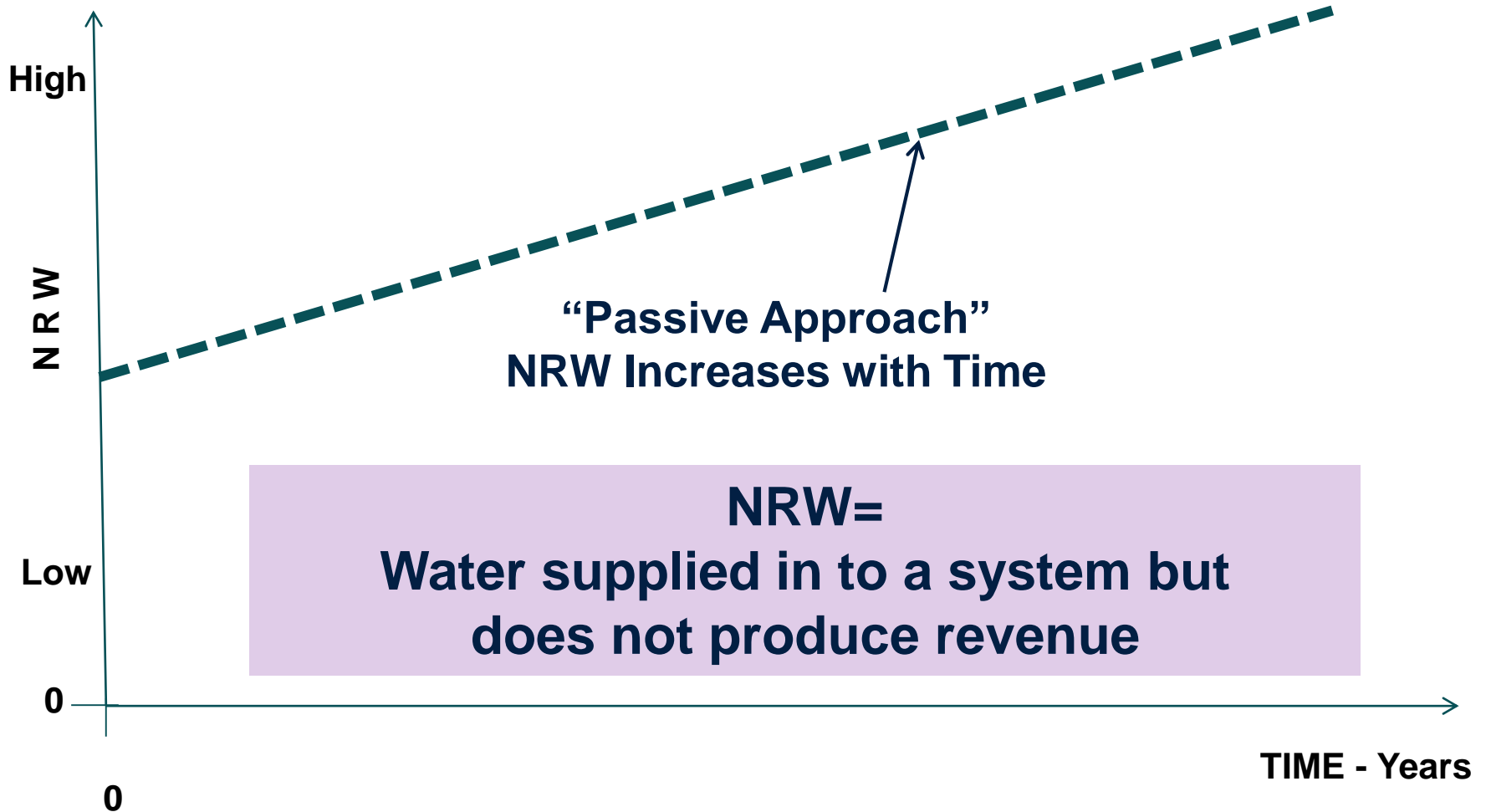
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Bucharest – February 12, 2018

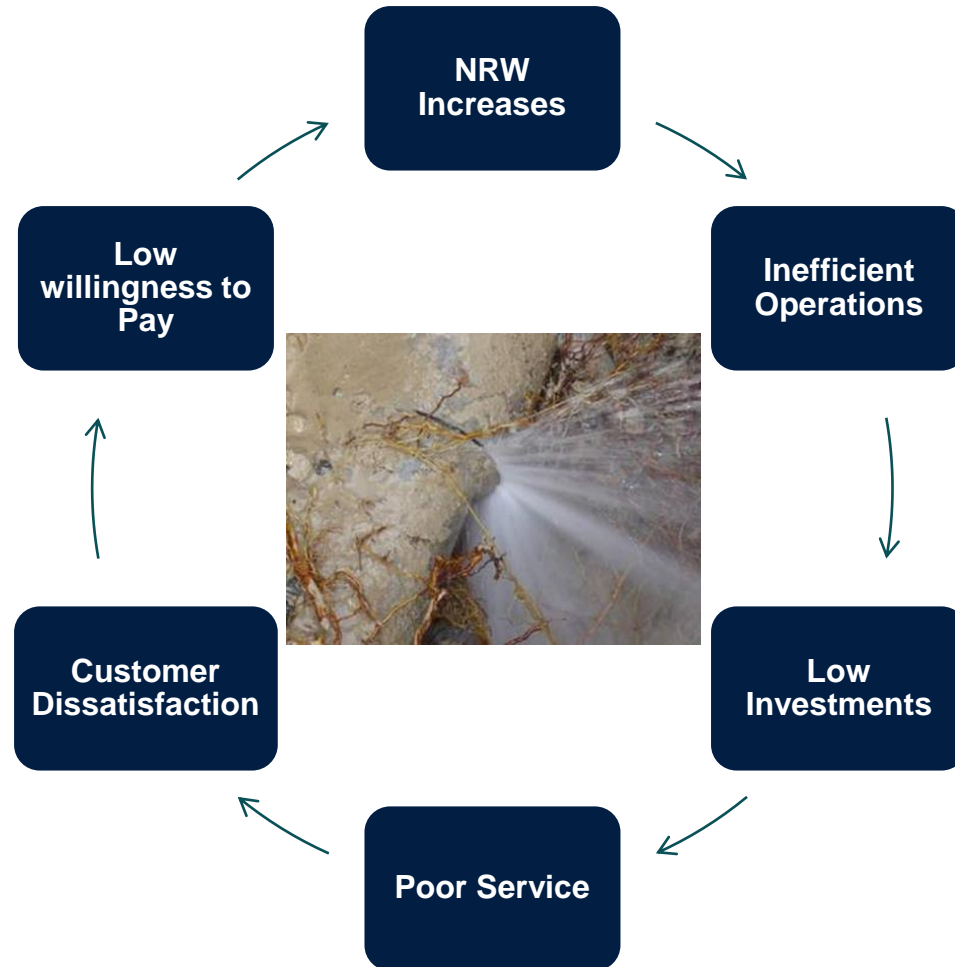
“Business as Usual”



Result of “Business as Usual”



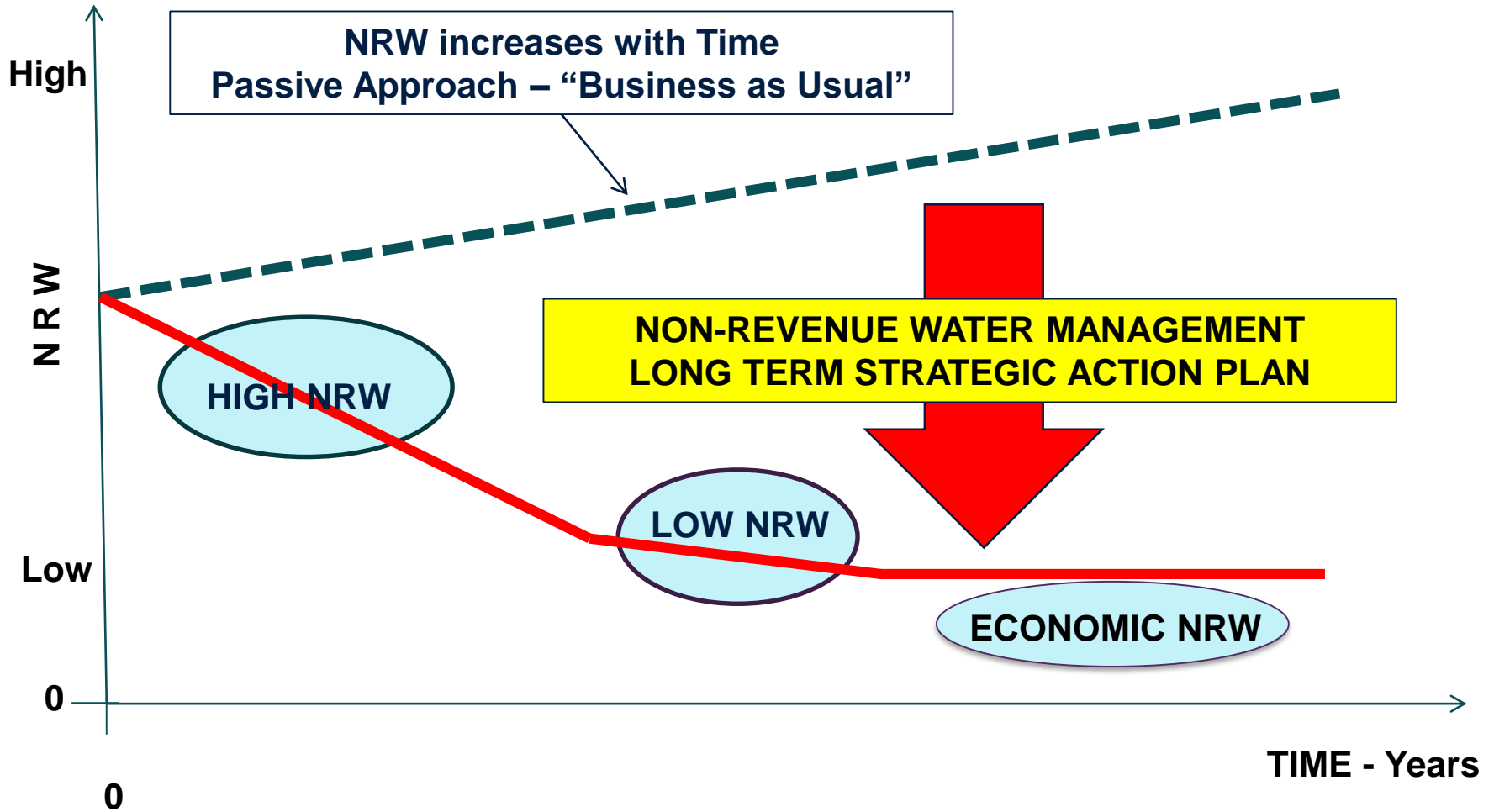
A **Vicious** NRW Cycle



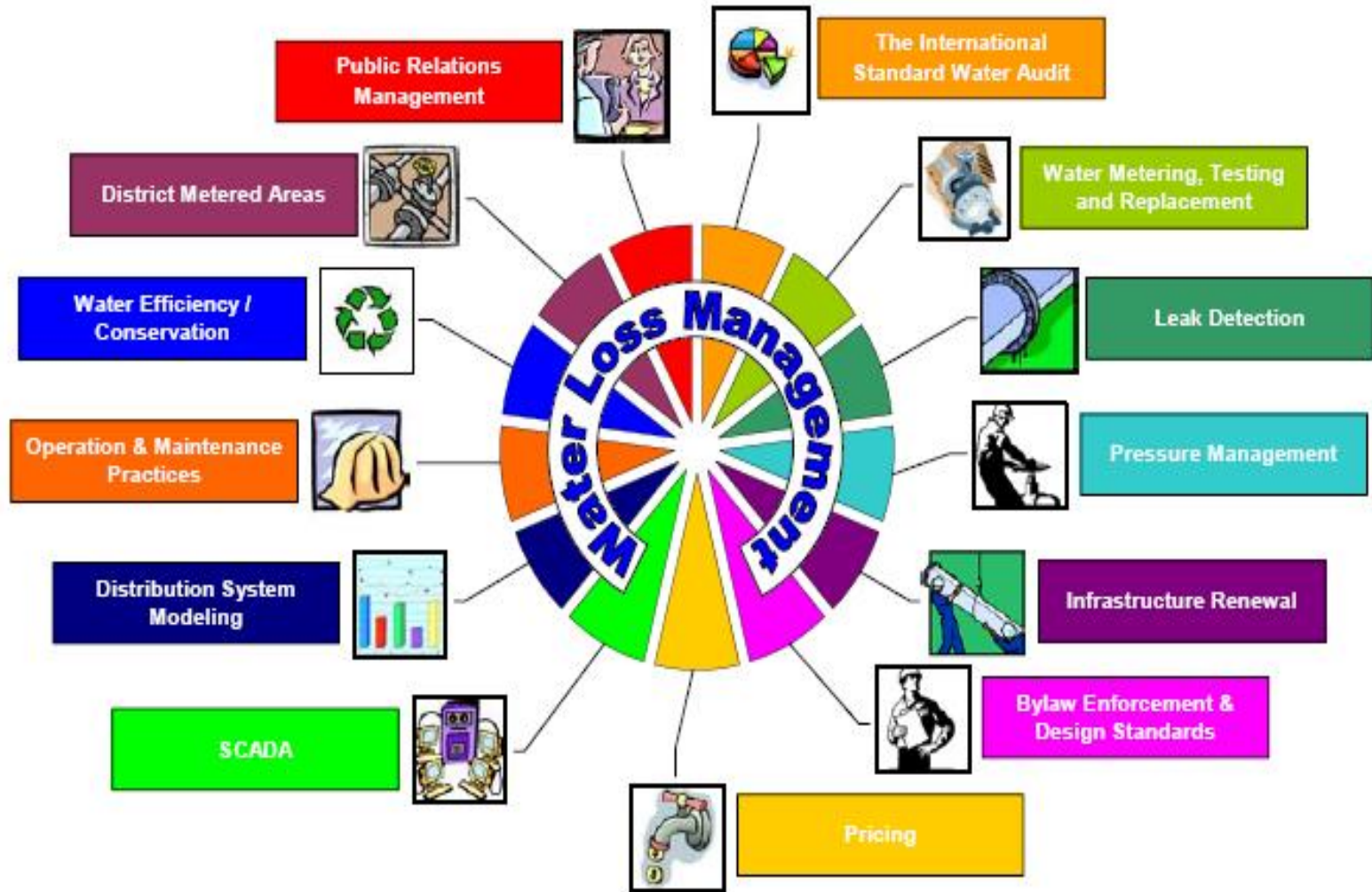
The Challenge:

How to turn the **vicious** cycle into **virtuous** cycle

Moving away from “Business as Usual”

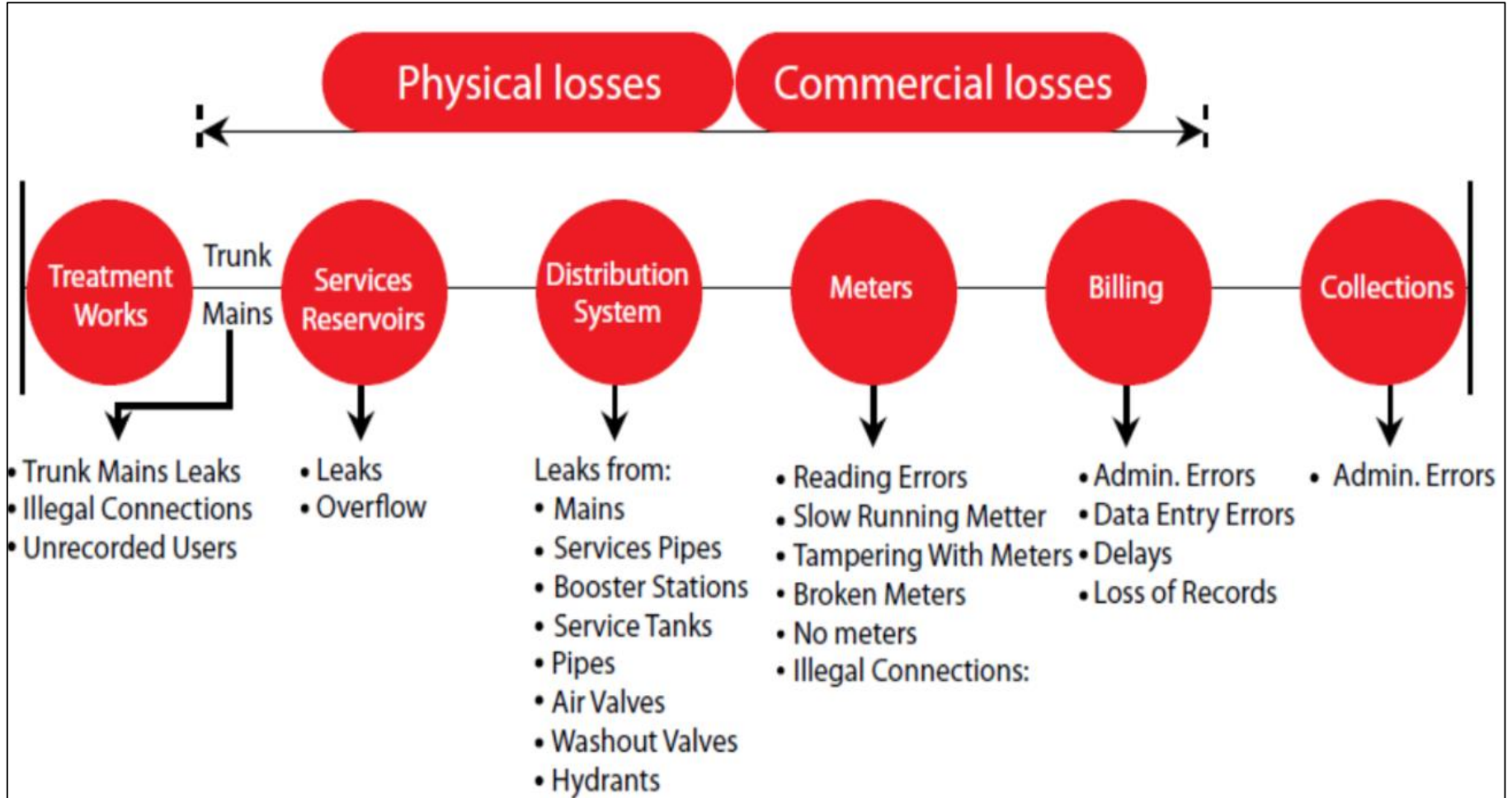


The Centrality of Water Loss Management



Source: McCormack, 2005

Water Losses in a Supply System



NRW Constituent Components

System Input Volume	Authorized Consumption	Billed Authorized Consumption	Revenue Water
		Unbilled Authorized Consumption	Non Revenue Water
	Water Losses	Commercial Losses	
		Physical Losses	

Non Revenue Water – Key Message

REDUCTION IN:

- **Unbilled Authorized Consumption** will generate more revenues
- **Commercial Losses** will generate more revenues
- **Physical Losses** will:
 - result in more water being available for consumption or reduction in operating costs
 - delay the need for investments in source development

Steps towards NRW Sustainability

- Recognize the importance and centrality of NRW including its relation with operation efficiency and asset management
- Commitment at all levels in NRW reduction program
- Establish and operationalize cross-departmental NRW unit
- Strategic and business planning, with realistic phasing and target setting – Improvement in the operational efficiency of the utility based on a long term NRW strategy
- Measurable efforts in NRW reduction – Validated base lining, water audits and target setting linked to priority investments of network
- Structure long term performance-based PPP contracts to reduce NRW to accelerate NRW reduction and capacity building process

Why Performance Based Contracting ?

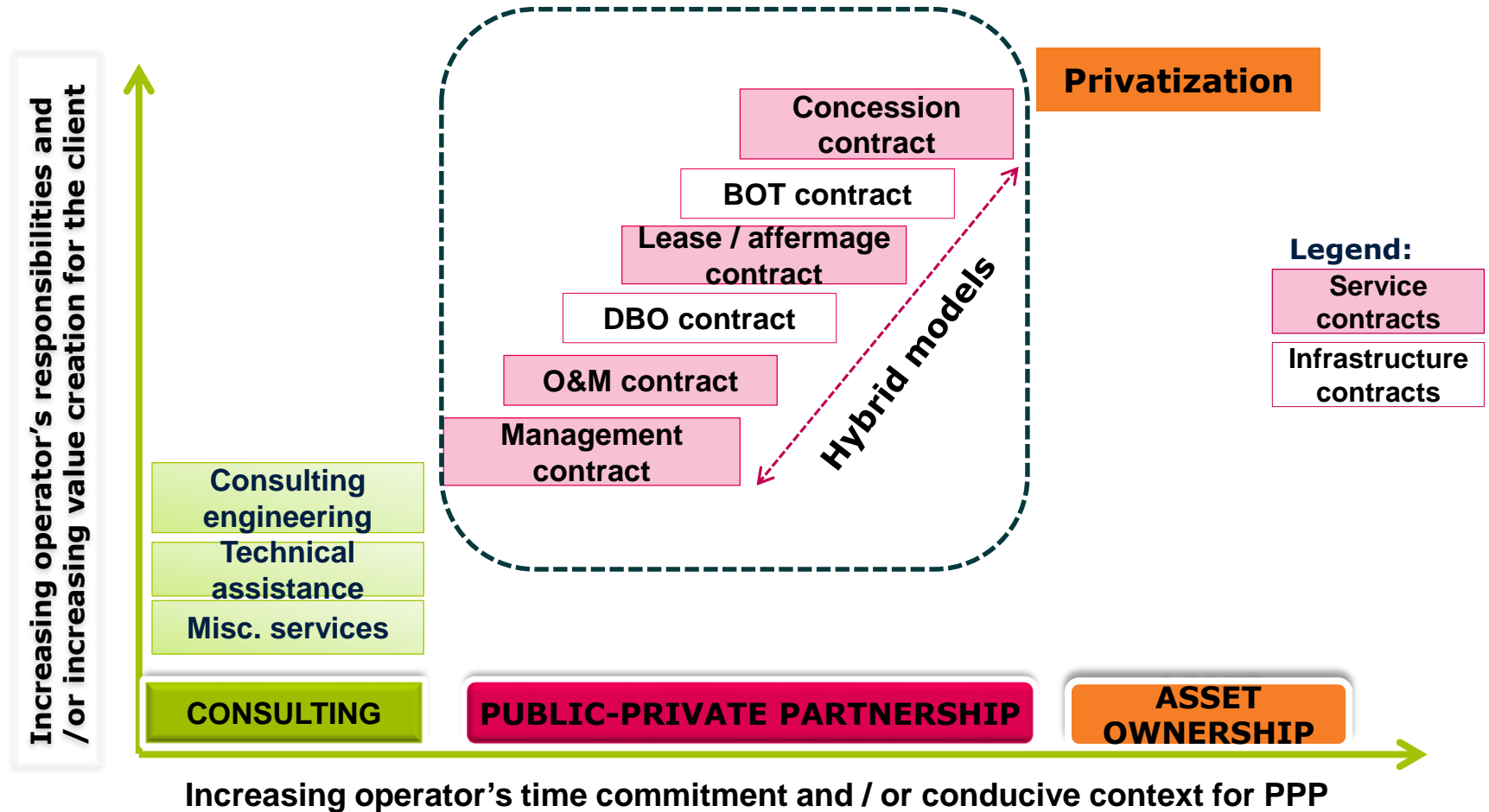
- Despite huge investments by utility companies, IFIs and donors, most of the presently applied NRW reduction measures are often not effective in the medium to long term
- Technical assistance projects anchored within the utilities rigid, bureaucratic institutional framework, have low impact on efficiency and sustainable improvement of service delivery
- A paradigm change is needed, concentrating on delivering sustainable results based on performance and being output oriented

What are the Key Features of a PBC?

- Defines desired outputs and outcomes within a given time frame
- Links the achievement of set targets to relevant remuneration
- Focuses on results and thus provides the contractor with some flexibility on deciding how it will achieve its targets, it is not prescriptive
- Applies to a wide variety of services and contracts

PBCs:-

Applicable in a wide variety of services and contracts



Source: Suez Environmental

Key Features that differentiate PBCs

(from more Traditional Service Contracts)

- **Increased value for money** – Performance risk lies with the contractor and full remuneration is contingent upon verifiable performance improvements
- **Greater flexibility for the contractor** – Decides on measures to undertake to achieve targets, applying innovation and creative solutions
- **Increased emphasis on accountability** – The contractor's remuneration is tied to verifiable progress vis-à-vis its targets
- **Support to long-term improvements** – Efficiency gains through a PBC can help support long-term improvements

PBCs have the potential to be more efficient contracts (than the traditional, input-based contracts)

- While the contractor is required to take more risks, it has also more incentives to deliver tangible results
- For the water utility, a well-designed PBC is less risky since it will pay the full price of the contract only if targeted performance improvements are achieved
- Contractor comes for limited time to carry out additional tasks not done by the utility – does not have an effect on utility staffing (No staff layoffs)
- A well-designed PBC is a Win-Win solution for both the utility and the contractor

NRW Reduction using PBC

Performance Based Contracts between water utilities and private contractors can be focused on reducing:

- **physical losses,**
- **commercial losses,**
- **or both**

Typical reduction activities relating to the Water Losses are the following:

- **Treatment works, trunk mains and reservoirs:** SCADA installation, leak detection and repair, pipe / valve replacement, pressure management
- **Distribution System:** Establishment of District Metered Areas, pressure management, measurement and monitoring system, data recording and transfer, leak detection and repair, pipe and service connection replacement, removal of illegal connections
- **Meters:** Customer surveys, removal of illegal connections, meter installation, calibration, rehabilitation, replacement
- **Billing:** Meter reader training, improved customer accounting, internal auditing
- **Collections:** Controlled procedures and accountability

NRW Reduction using PBC – Commercial Losses

Principally involves **improving the metering accuracy** and **water sales accounting** and typically includes the following components:

- **Surveys** to identify missing or unmetered connections
- **Installation**, replacing, repairing or recalibrating **water meters**
- **Improvement of water meter** reading and data transfer to customer accounting systems, using handheld meter reading devices or Automatic Metering Reading (AMR) methods, meter reader training, changing meter locations to reduce the frequency of unread meters and estimated sales
- **Improving customer** data base and accounting systems
- **Institutional support** for a period of time and training of utility staff

NRW Reduction using PBC – Physical Losses

Contracts focused on **reducing physical water losses**, typically include the following components:

- **Establishing District Metered Areas (DMAs)**, which isolates water supply to a small sub-set of the utility's customers, improving water inflow and pressure measurement and facilitating leakage detection
- **Leak detection** and repair
- **Pressure management**
- Replacing **service connections**
- **Replacing leaking pipes**, valves, hydrants, etc.
- **Maintenance** of water savings achieved for a period of time
- **Training** of utility staff

Designing the contract and incentives framework: “....the devil is in the detail....”

Achieving efficient incentives is dependent on factors including:

- **Ring Fencing** – interface between the contractor and utility’s operations needs to be carefully considered
- **Remuneration/Risk** – striking a proper balance between fixed and variable payment, fair sharing of risk
- **NRW indicators are used** – a good baseline is critical
- **Contractual targets / performance** – need to strike a balance between being ‘achievable’ (i.e. realistic) and sufficiently ambitious
- **Level of flexibility left to the contractor** – allow the contractor some flexibility in achieving the overall goal
- **Sustainability** – ensuring that the gains achieved can be made sustainable, substantial operating period after the NRW reduction to sustain the gains of efficiency

There is **no blueprint**: well designed PBCs are heavily **customized** contractual PPP instruments

Ring Fencing

The interface between the contractor and utility's operations needs to be carefully analyzed and appropriate steps taken to separate them:

- **Network sectorization:** how many? Which size?
- **Divide the city network** between the utility and the private partner
- How the **utility staff will operate in areas where the private partner** is carrying out NRW activities?
- Even with good ring-fencing, the **outcome will still usually depend upon the collaboration** of the utility's staff
- **Capacity building is needed** so that they fully understand the contractual approach:
 - Include training and knowledge transfer into the PBC contract
- The management and **staff must understand the benefits** for them and be willing to cooperate with private partner
 - Mutual commitment is essential for success

A Good Baseline is Critical

- Any agreement to pay based on performance requires a good baseline **to measure improvement against.**
- The baseline must be **acceptable to both parties** to the contract. It should ideally be stated in units that tie directly to the performance objective.
- Thus, if the objective is to **reduce water leakage** then the baseline should be defined in units of water, e.g., **cubic meters per day** and should cover only the network under the control of the contractor.

Targets Are Important

- Setting targets are important to **achieving minimum performance**.
- Most contracts include **minimum annual targets** indicating their perceived usefulness.
- When projects are intended to reduce both **physical and commercial losses**, it makes sense to have **targets for both**, plus an **overall target**; but to allow the contractor some **flexibility in achieving the overall goal**.

Setting targets

- For incentives to work, **performance targets need to strike a balance between being ‘achievable’ (i.e. realistic) and sufficiently ambitious.**
- They may also need some **degree of flexibility**, to adjust to unpredictable conditions
- A good understanding of the NRW situation is critical:
 - **Physical vs. Commercial losses (IWA water balance)**
- Choosing the right NRW indicator:
 - **e.g. m3 reduction per day instead of % losses**

Sustainability

The challenge for a successful PBC : ensuring that the gains achieved can be made sustainable:

- Include a substantial operating period after the NRW reduction to sustain the gains of efficiency (normally 3-5 years)
- Knowledge transfer activities during the contract should be included

Maintaining NRW level and even improving it after the contractor leaves is the foundation of sustainable management

Successful PBCs for NRW reduction have high financial return

- Typical cost for reducing physical losses is 500 – 700 Euros per m³ saved per day. Much lower for commercial losses
- Project return depends *inter alia* on levels of O&M cost and tariff, relative proportion of physical vs commercial losses, and the efficiency of NRW reduction program
- Some indicative payback periods:

O&M cost, tariff Euro/m ³	1 Euro/m ³	0.5 Euro/m ³	0.35 Euro/m ³	0.2 Euro/m ³
Payback period	3-5 years	4-8 years	6-12 years	9-15 years

Thank You For your Attention!!



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