2026-24-09 – India Water Week -TF-13: Public Private Partnerships for Water Finance

Cost Recovery and Tariff design as foundation for bankable water PPPs: Lessons from Denmark and Learnings of Rajasthan – Aarhus Cooperation

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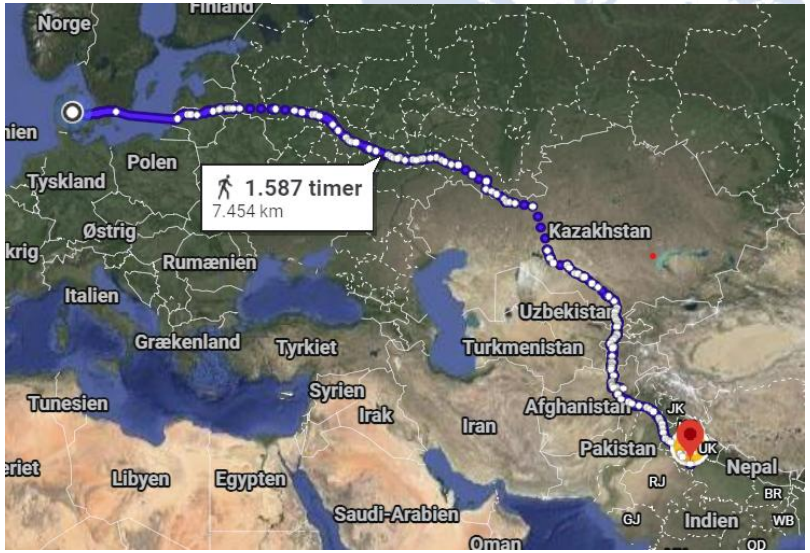
Aarhus Vand – Danish Water Utility in the city of Aarhus



India-Denmark
75 Years of Friendship



Green Strategic Partnership
India-Denmark



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Udaipur - Aarhus : Started in December 2016





Outcomes

A: Enhanced livability through sustainable development
- Ayad River and lake restoration

B: Improved water quality
- Sewage treatment solutions, including energy production on STPs

C: Improved drinking water services, water quality and water use efficiency
- 24/7 water supply and reducing non-revenue water

D: Urban development and sustainable management of water resources
- Strategic urban governance, E-governance and digitalization, government & legislation







Non-Revenue Water and 24/7 Water Supply

Output A.1: Non-Revenue Water down to at least 20%
Output A.1 indicator: Development of state specific guidelines for NRW reduction Establish and implement activities in selected areas Identify key elements in all aspects of NRW Establish a strategy for upscaling improved NRW

Output A.2: Water supply 24/7
Output A.2 indicator: Development of state specific guidelines for shifting from intermittent water supply to 24/7 water supply Establish and implement activities in selected areas Identify key elements in all aspects of 24/7



2.4.1 IWA water balance

Total supply 2.461.735 2.591.300 3.705.559	Authorised consumption 2.055.981 2.347.980 2.639.979	Billed Authorised consumption 2.055.981 2.347.980 2.639.979	A. Billed metered consumption 1.401.231 1.474.980 1.548.729	Revenue water 2.055.981 2.347.980 2.639.979
			B. Billed unmetered consumption 654.750 873.000 1.091.250	
		Unbilled Authorised consumption 0 0 0	C. Unbilled metered consumption 0 0 0	Non Revenue water -178.244 243.320 1.649.578
			D. Unbilled, unmetered consumption 0 0 0	
	Unauthorised flow -178.244 243.320 1.649.578	Apparent losses 12.500 25.000 50.000	E. Unauthorised consumption 12.500 25.000 50.000	
		Real loss -190.744 218.320 1.599.578	H. Real loss mains -150.073 171.769 1.258.509	
			I.Real loss service conn. -40.671 46.551 341.069	

Figure 2-3 IWA water balance in m3/year (Kl /year) for Nawalgarh 2022

Non-Revenue Water and 24/7 Water Supply ↔ REVENUE FROM TARIFFS ??

Assumed reasons for NRW

1. Leakages in consumer water service connection. 50%
2. Leakage in distribution Pipeline. 35%?
3. Illegal water connection by consumers. 5%
4. Non functional water meter. 10 %



Assumed reasons for high consumption:

1. Behavioral pattern of consumers 80%
2. Overflow from consumer underground / overhead water tank due to faulty float valve / tap. 15 %
3. Seepage in consumer underground water tank 5%

What Can Cause Water Utilities to Struggle?

Many utilities face the same pattern:

- Ageing infrastructure
- Insufficient maintenance
- Lack of technical capacity
- Weak monitoring and data
- Sludge management challenges
- Non-compliance with discharge permits
- Limited funding for reinvestments
- Pressure to keep tariffs stable and affordable



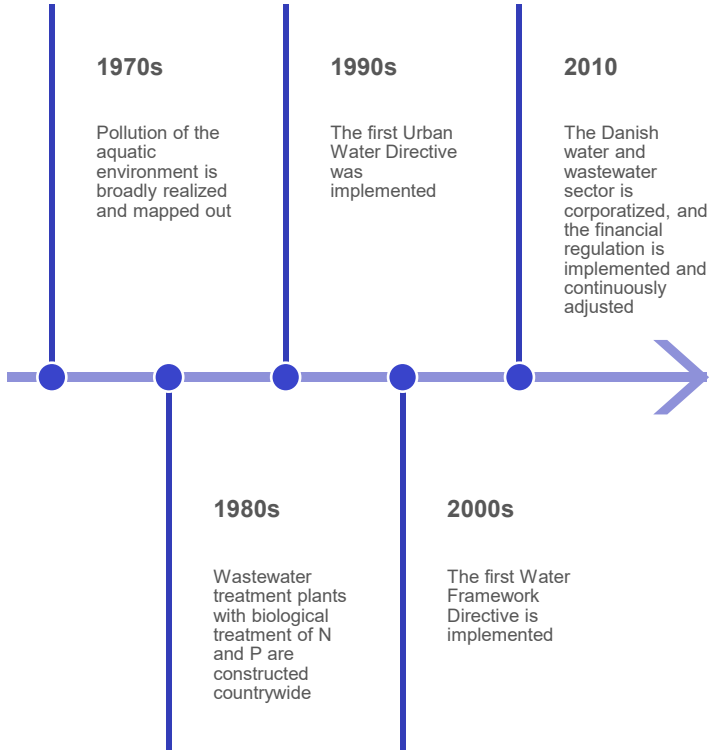
Key takeaway

Poor performance is often not caused by one failed process. It is usually the result of combined weaknesses in funding, governance, maintenance, assets, data and skills.

The Danish Water Sector Journey

How Denmark got here, a simplified story:

- Local systems and fragmented responsibilities
- Increasing environmental awareness
- Major wastewater investments
- Stricter environmental requirements
- Professionalization of utilities
- Corporatized utility structures
- Economic regulation and benchmarking
- Current focus on climate, resource recovery and long-term asset renewal



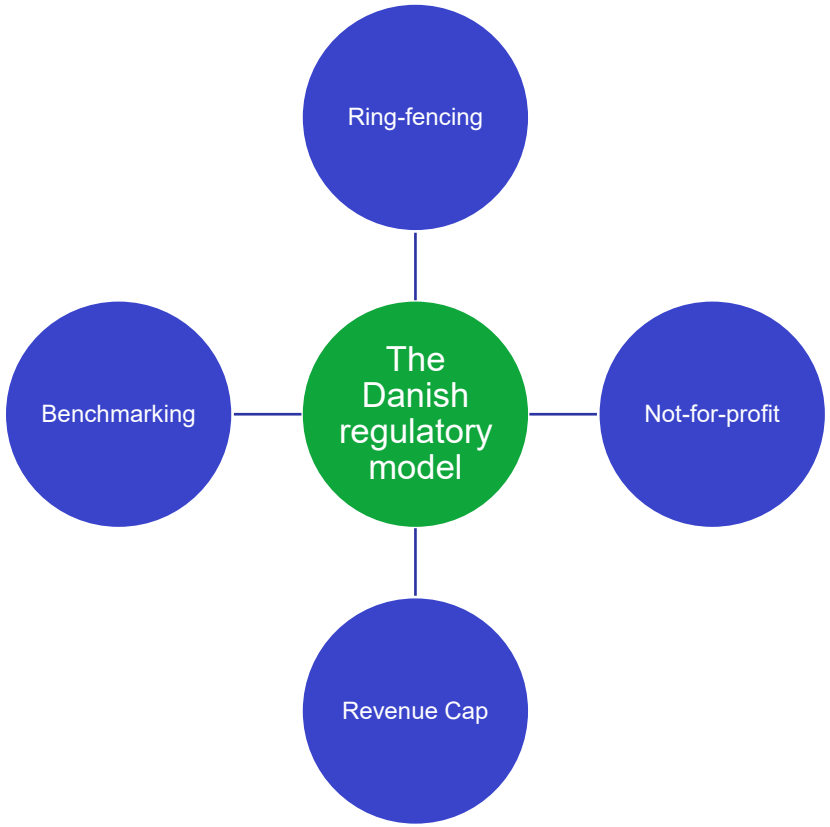
Key takeaway

Denmark's water sector did not become structured overnight. It developed through environmental pressure, political decisions, investment needs and gradual professionalization.

The Danish Model in One Slide

A simplified view of Danish water regulation:

- Utilities are separated from municipal finances
- Water and wastewater activities are ring-fenced
- Utilities operate under a not-for-profit logic
- Tariffs must finance necessary water-sector activities
- Revenue is limited by economic regulation
- Benchmarking creates efficiency pressure
- Authorities set environmental and service requirements



Key takeaway

The Danish model tries to combine customer protection, environmental ambition, efficiency pressure and full cost recovery.

What Does the Customer Actually Pay For?

The wastewater bill is more than today's treatment

A customer tariff pays for:

- Collecting wastewater
- Pumping wastewater
- Treating wastewater
- Handling sludge
- Monitoring effluent quality
- Maintaining assets
- Replacing ageing infrastructure
- Meeting future requirements
- Managing risk and resilience

Key takeaway

The tariff is not only payment for "one cubic meter treated today". It is payment for the whole system that keeps wastewater services functioning over time.

Business Performance Management

A utility cannot be managed only through regulation

Inside the utility, performance depends on:

- Budgeting
- Procurement
- Contract management
- Maintenance planning
- Financial controlling
- Forecasting
- KPI follow-up
- Data quality
- Operational decision-making



Key takeaway

Good regulation creates a framework. Good management turns that framework into reliable service, compliance and continuous improvement.

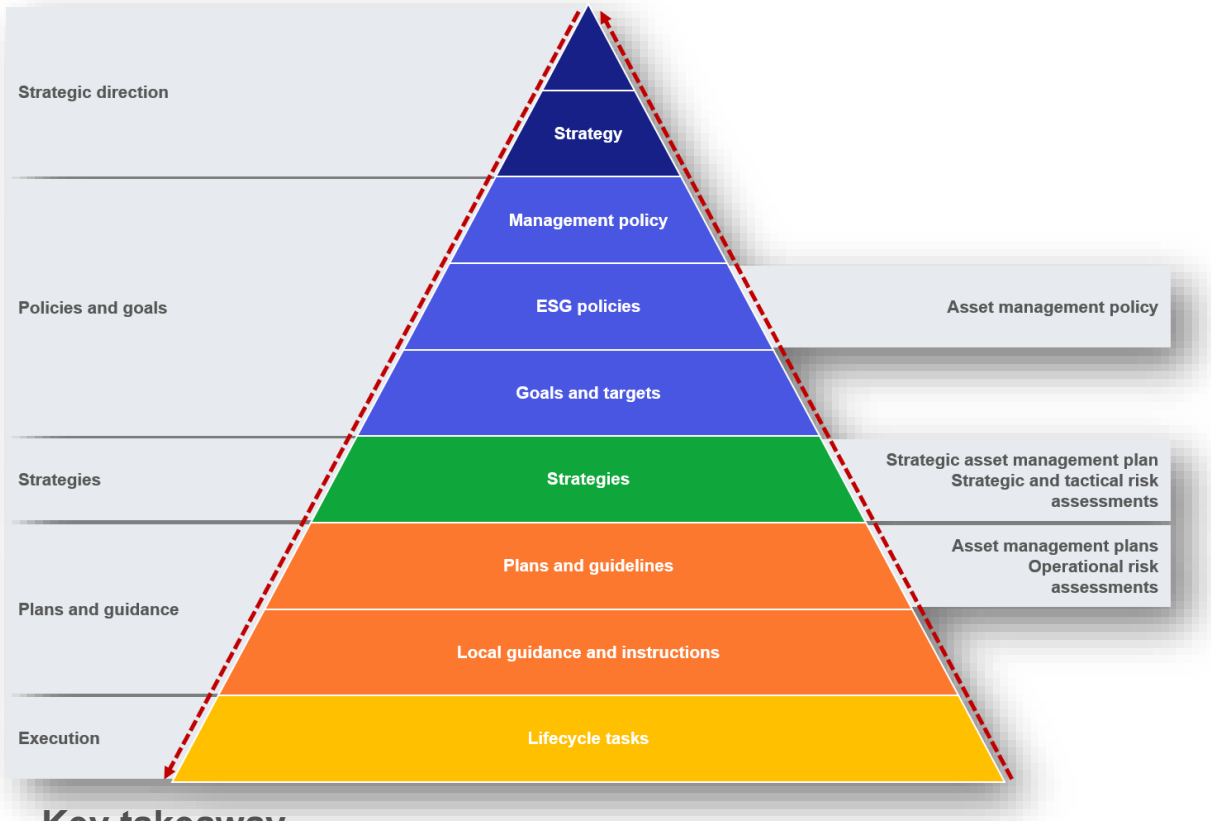
Asset Management: Where Finance Meets Engineering

Assets deliver the service

ater services depend on assets:

- Sewer and water distribution networks
- Pumping stations
- Treatment plants
- Tanks and basins
- Mechanical equipment
- Electrical systems
- SCADA and sensors
- Laboratories
- Sludge treatment facilities

Asset management connects performance + risk + cost.



Key takeaway

Asset management is the bridge between tariffs, regulation, operational reliability and environmental compliance.

Final Summary

Sustainable water services need a full system

Technology matters — but technology alone is not enough. Sustainable water services require:

- Clear policy objectives
- Effective regulation
- Transparent tariffs
- Full cost recovery
- Good budgeting and procurement
- Reliable assets
- Skilled people
- Operational data and KPIs
- Long-term investment planning
- Public trust

If the money, assets, people and incentives are not aligned, the treatment process will eventually show the problem.



Key takeaway

Water Utility performance is the result of a system. Regulation, tariffs, management and asset planning are part of that system — not separate from it.


Thank you for your attention
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