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***A public financier's perspective on the
efficiency of water systems***

Water Scarcity and Droughts Policy Review

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A typology for Water Efficiency

- ❖ Efficiency of water use by the **consumer**
- ❖ Efficiency in **allocation** across different users
- ❖ Efficiency of **service providers** in managing systems
- ❖ Efficiency of physical **systems** themselves. (the main topic of the presentation)




Why do public water systems get inefficient in the first place? – the nature of the business

- ❖ Water systems are like a black box and expensive to create and maintain, underground and out of mind
- ❖ Water systems crumble, but keep functioning
- ❖ Energy cost affects designs
- ❖ Accurate water balance requires fairly high degree of sophistication and composition of losses is not always obvious
- ❖ Broad statistics can belie a wide range of physical conditions (a few big or 1000s of small leaks) and operational issues (pressures)
- ❖ Difficulty in financial forecasting of needs to maintain condition and performance of existing infrastructure
- ❖ Lumpiness of investments



Why do public water systems get inefficient in the first place? - the political and economic context

- ❖ Lack of sector financeability policy to ensure ability to fulfil statutory role
- ❖ False expectations of creditworthiness of local government and utilities
- ❖ Inability to save up or borrow against cash flow
- ❖ Political capture of decision making
- ❖ Moral hazard, since cessation of operations is not an option
- ❖ Basic cash starvation through insufficient revenues and subsidies
- ❖ Orphaning under the pretext of decentralisation
- ❖ Stripping out or privatisation of anything profitable
- ❖ Competition for funds with service expansion and new regulatory requirements
- ❖ Maintenance expenditure is easily deferred (but can increase the final cost)



Why do public water systems get inefficient in the first place? - demand and supply interventions each have their own distinct risks and peculiarities

- ❖ Uncertainty (climate, economy, effectiveness) and resilience is a cost driver and a decision factor!
- ❖ Greater uncertainty associated with the quantification of the outcome of many demand side measures, which therefore weigh less in terms of lowering uncertainty
- ❖ Supply side schemes offer more precise and predictable outcomes, but present their other difficulties and uncertainties, primarily regarding timing, given the lead times for such schemes to become operational due to lengthy planning procedures, and climate uncertainty.
- ❖ Often the water service providers themselves only have partial influence over issues such as metering and household consumption, including new building codes
- ❖ There is an upper limit to the pace of replacement of networks in terms of affordability and practicality
- ❖ Accumulated maintenance gap => more supply is often the most cost-effective/cheaper option in the short run to close a demand-supply gap



Cost recovery, water pricing, metering and efficiency - a few truths on prices and metering

- ❖ Does efficiency always mean lower tariffs? – No, local conditions / suppressed maintenance backlog / higher proportion of fixed cost / **lower demand => higher tariffs**
- ❖ **Who has to pay** for addressing inefficiency, even if isn't his or her fault? – the **user – who else?** Therefore **cost recovery and efficiency are strongly linked.**
- ❖ Is metering always good? – Depends on the pace and political will/affordability to change tariffs. **The operator can be left stranded with all the expensive inefficiencies, but with lower revenue, further delaying effective action at system level.**



Cost recovery, water pricing, metering and efficiency - a few truths on water efficiency and cost recovery

- ❖ Is water efficiency profitable/viable? – Not necessarily, especially when it comes to replacement of dilapidated networks, which is extremely costly – “Economic level of leakage” including varying degrees of externalities
- ❖ The notion of **cost recovery rests on the assumption that costs, i.e. the true needs for asset renewal, maintenance and operations, can be reliably estimated.** In practice, this is seldom the case or easy. **Few utilities have sufficiently detailed knowledge of their systems.** Depreciation is an accounting trick, not a planning tool.
- ❖ The only true method is the use of asset management systems that use **statistical methods and detailed assessments of the physical condition of the system to make estimates of failure rates and investment needs.** This can be achieved for large systems or aggregations of several systems, but breaks down for medium or small sized systems. Size matters!



Efficiency and projects, the public financier perspective – different means of intervention

Early intervention,
Solution (not project) mindset, options analysis
Supporting project preparation

Active approach:

Development and marketing of
tailored financial instruments

Passive approach:

Safeguard policies/mandates
requiring a credible effort on the
demand side and consideration of
climate and energy policies

As financiers we often proxy for regulators!



Efficiency and projects, the public financier perspective – appraising projects

Guiding questions

- Is it demonstrated that the demand – supply gap is not met?
- Are there pressing water scarcity, security and adaptation issues?
- Is the proposed supply option the least cost option?
- Have measures to promote water efficiency and demand side management been looked at and are they being implemented to a sufficient degree?

For development of new sources of water supply from energy intensive processes:

- Will the promoter source a substantial part of the project's energy requirements from renewable or other sustainable energy source?

In the real world, it is often not possible to choose only efficiency or only new supply, but a **twin-track approach** must be adopted that takes into account the **uncertainties, realities and practical constraints facing the promoter.**



Broad line approaches to raising water efficiency – attitudes and scarcity

Changing attitudes and propensity to act

- Moving beyond “What is in it for me?”, “How are we going to see the payback?”
- Quality, quantity and cost of service are increasingly inseparable the more scarce the water resource gets
- Upstream / downstream solidarity in terms of quantity and quality
- Cultural and technical challenges to closing the water cycle

Water scarce regions / regions outside the EU

- More integration of quality and quantity planning, enforcing pollution prevention more critical
- High economic value, higher cost of funding sometimes accepted and higher interest from private sector financiers
- MDG universal coverage of water and sanitation for the poor requires accelerated approach to increasing availability of water - combining WDM/leakage reduction with pro-poor service provision



Broad line approaches to raising water efficiency – financial and regulatory instruments

- ❖ Synergies with energy efficiency, but water efficiency needs its own tools because water systems are more expensive to deal with and less clear cut in terms of financial returns than energy systems
- ❖ Networks have a very high per capita cost and long asset lives, justify long cheap money, not always available
- ❖ Recognition of cost structure of water systems to develop more appropriate forecasting and truthful approach to cost recovery
- ❖ Development and promotion of regulatory conventions for options analysis and the evidence base and for efficiency measures
- ❖ Resource charge gives direct incentive to operators to conserve water and is outside local political negotiation
- ❖ Using grants to leverage efficiency - going beyond always going for narrow short-term impact – need to build up overall sustainability
- ❖ Grants (i) to replace run down assets can lower OPEX and leverage higher self-sufficiency if combined with reforms (ii) to overcome political barriers to consolidation can create cost-effective regional solutions and long-term efficiency gains.



Broad line approaches to raising water efficiency - Water Demand Management is both a management and an engineering issue

- Planning and prevention better than cure - avoid urgent deficits and the high cost of addressing them
- Continuous effort, not a one-off
- Simple principles, but sound options analysis and professional engineering, peppered with technology
- Successful WDM requires going beyond investing in infrastructure to investing significantly (yes, money) at all levels from management down to consumers



Broad line approaches to raising water efficiency - making cost recovery, water pricing, metering and efficiency work

At utility level, cost recovery pricing and metering will promote both system and end-use efficiency only if

- **Accounting practises, incentives and tariff setting are properly aligned with a sustainable level of infrastructure renewal.**
- **The pace and method of metering must be balanced with the ability of utilities to recover costs** through a suitable tariff evolution or transfers.
- Metering and tariff policies need to be scrutinised for **cost-effectiveness and the degree of targeting the right consumers**
- Commonsense and **pragmatic approaches are adopted for the weakest promoters** - e.g. catching up on deferred maintenance through investment in rehabilitation, even though user fees may lag behind, can be considered as moving in the right direction as long as user fees do not encourage excess water use (income dependent)



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