

Water Demand Management in the city of the future

WEDC Open Day Workshop, 5 July 2011

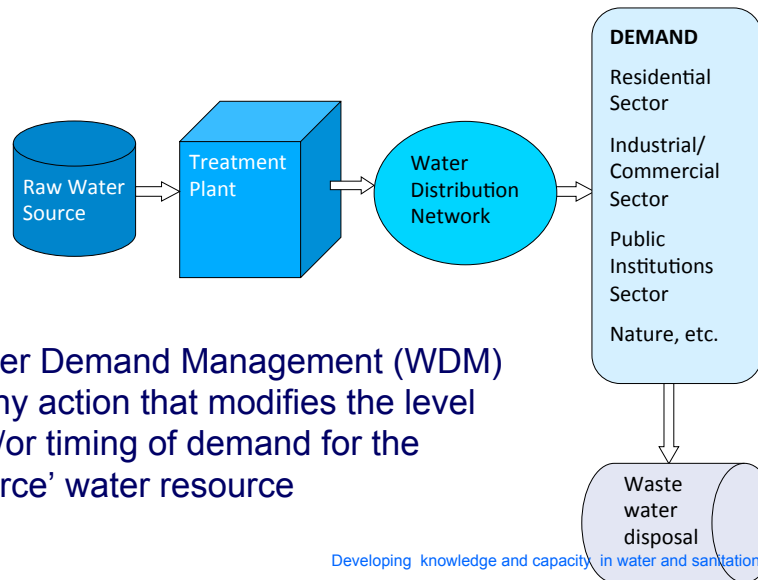
Facilitated by Sam Kayaga & Ian Smout



Scope of Workshop

- Welcome & personal introductions (10 min)
- Background to the problem, and introduction to the SWITCH programme; Visions and Scenarios for SWITCH Cities (15 min)
- Buzz Group Discussions – what are important issues for the city of the future in developing countries? (15 min)
- What is Water Demand Management (WDM) and how can it contribute? (20 min)
- Buzz Group Discussions: How can WDM be taken forward in cities of developing countries? (15 min)
- Wrap up (10 min)

The water supply 'value chain'

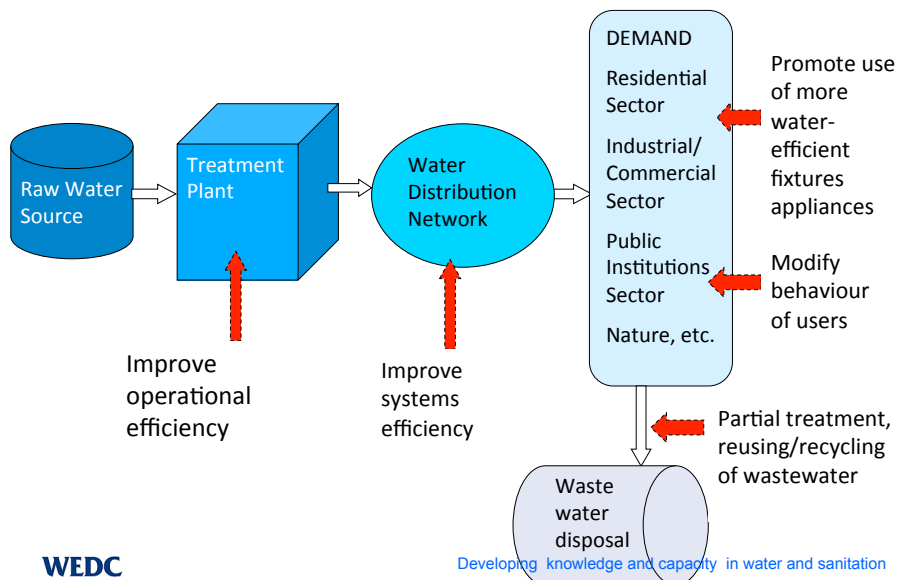


- Water Demand Management (WDM) is any action that modifies the level and/or timing of demand for the 'scarce' water resource



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Examples of WDM interventions



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WDM measures

Structural Measures

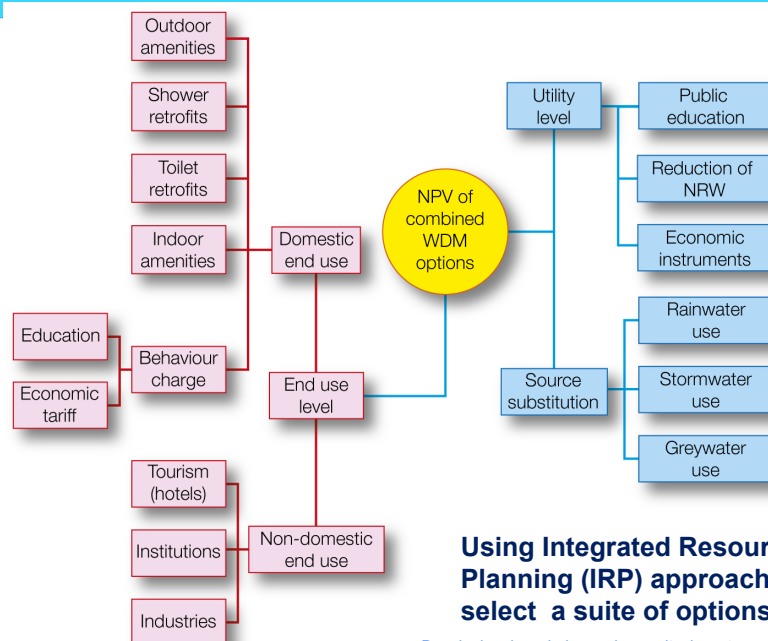
- Leak detection & repair
- Installing PR valves
- Use more efficient fittings & devices in customer premises
- Treatment processes applied to grey water to make fit for reuse

Non-structural measures

- More efficient O&M of distribution systems
- Economic instruments (EIs)
- Awareness raising & public education programmes
- Legal and institutional measures



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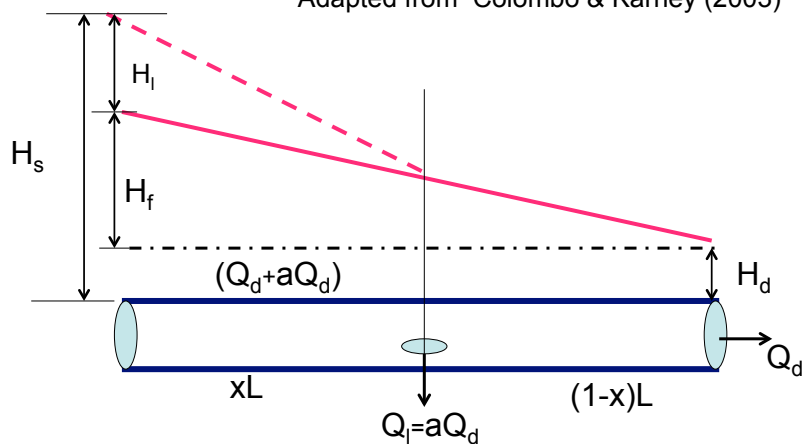


Using Integrated Resource Planning (IRP) approach to select a suite of options

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Reducing leakage also reduces energy use

Adapted from Colombo & Karney (2003)



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Leakage & Energy relationships

- Energy losses disproportionately greater than leakage losses
 - Ratio of $\sim 1.5:1$ for pipelines in generally good condition
 - Ratio increases as systems age and/or as demand increases, ratios of $2.5:1$ have been reported in the literature
- (Colombo & Karney, 2003; El-Diraby et al, 2009)

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NRW FOR SELECTED AFRICAN CITIES

Figures for 2006 (Source: WOP Africa, 2009)

CITY	%NRW	CITY	%NRW
Kano	63	Mwanza	42
Maputo	58	Mombasa	41
Dar Es Salaam	55	Lagos	40
Khartoum	51	Kampala	39
Lusaka	50	Addis Ababa	35
Nairobi	49	Chipata	35
Accra	49	E Thikweni	32
Eldoret	48	Jo'burg	31



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Water Loss Management Strategies

(Source: : Liemberger and Farley, 2004)

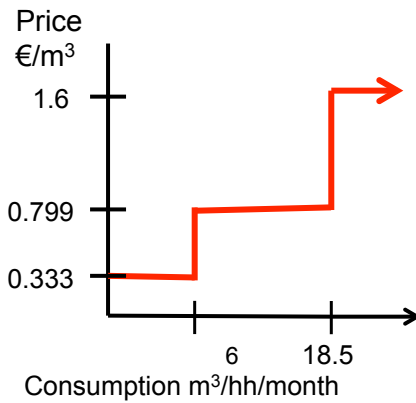


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Using Economic Instruments (EIs): Zaragoza, Spain

Rationalised Tariff



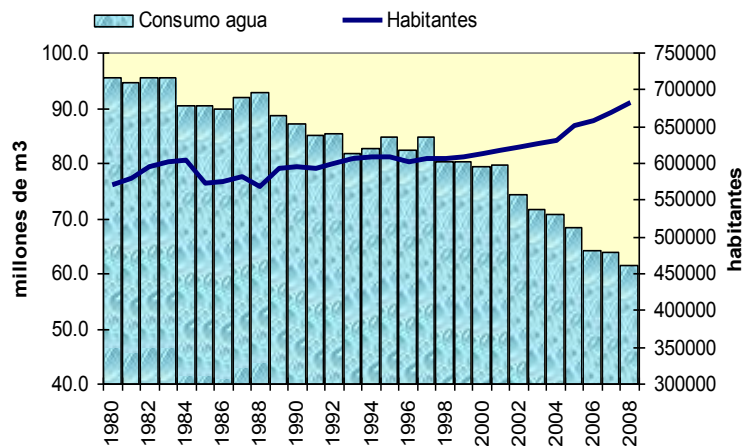
Economic Incentives

Reduction in HH consumption attracted a decrease in water bill

Year	Customers with marginal consumption reductions
2003	27,741
2004	24,331
2005	27,929
2006	33,274



EIs & other WDM measures applied during 1997-2008 caused water consumption reduction of 27%, despite a 12% increase in population



Source: Zaragoza City Council (2009)

Redesigning the NWSC (Uganda) 2007 water tariff to make it more conservation-oriented

Outputs of the Tariff Model

	Block 1 (Low)	Block 2 (Middle)	Block 3 (High)	Average
New Price (Ug-Shs/m ³)	1,190	1,372	1,914	1,314
Consumption (m ³ /HH-M)	0-11	11-20	>20	
% change in tariff	-2%	13%	58%	8%
% Δ in consumption p.c.d	0	+4%	-53%	-20%
Δ consumption (m ³ /year)	-15,812	1,246,152	-3,765,414	
Proportion of households	29%	49%	22%	
Water allocation	14%	48%	38%	



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SWITCH work

- More details may be obtained in the recent SWITCH publication entitled:

“Water Demand Management in the City
of the Future – Selected tools and
Instruments for Practitioners”

(Edited by Sam Kayaga & Ian Smout)



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Buzz Group Discussion

What Water Demand Management measures could be applied in typical cities of developing countries so as to promote sustainable water services in a socially equitable manner?



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Further information

- www.switchurbanwater.eu
- s.m.kayaga@Lboro.ac.uk and
- i.k.smout@Lboro.ac.uk

Thank you for your attention



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