



WATER PRICING IN PALESTINE, HOW TO OPERATIONALIZE WATER PRICING AND TO CREATE INCENTIVES FOR COST RECOVERY

Meine Pieter van Dijk dijkm@msm.nl
**Professor of Entrepreneurship at the Maastricht
School of Management (MSM) & em. Professor of
Water services management
UNESCO-IHE Institute for Water education**

**Keynote at PADUCO Conference The Hague: Belair
October 28, 2015**

Water Annex of the Geneva agreement speaks about:

1. Equitable sharing of the total amount of good quality water in Israel and Palestine
 - NOT HAPPENING
2. It stresses the need to protect, preserve and conserve the existing water sources
 - NOT HAPPENING
3. Projects must be implemented on a rational economic basis with adequate pricing
 - NOT HAPPENING

Progress with Annex?

The agreement requires implementing legislation, but has this been done in Israel and Palestine?

It suggests a just and rightful re-division of water, or:

1. The current division is not a just and rightful re-division
2. We can divide the water again
3. The principles of justice can be used in case of the re-division
4. This means a reduction of the share of Israel

However, JWC does not function in this way

NGOs report on the reality on the ground!

Drinking water situation

- Ramallah has a higher annual rainfall than London, but Israeli authorities control all major water sources
- Supply is controlled by enforcing quotas
- Not many new Palestinian wells have been approved by Israeli authorities since 1967
- In 2011 Israeli military demolished 89 water-related structures, including 21 wells and 34 rainwater cisterns, essential for agriculture and herding
- Result is that 70 liters p.d. is available per Palestinian while using aquifers & desalinated water Israeli consume 300 liters p.d., Jewish settlers use more

Israel has functioning desalination plants, but

- No collaboration to allow Gaza plant to function
- It produce fresh water at 1.5\$ per m³, but this price does not include external costs for the environment, nor cost of transportation!
- The technology is not being used in California
- Recommend to apply the polluters pays principle more systematically to limit negative external effects:
 1. A calculation of the direct & indirect cost of pollution
 2. Requires allocation decision who should pay &
 3. A system to collect the money

Water pricing

- JWC is responsible for setting of water prices
- Annex use legitimate cost price: water shall be supplied at real, including opportunity costs
- Water pricing should be based on an economic analysis of present water uses:
 1. Assessment of cost recovery and water services pricing
 2. Cost effectiveness of measures
 3. Completing knowledge gaps
 4. Identification of significant water issues

Cost estimates: improved water and sanitation services: Cost components in US\$ per m³ & as %

1 Opportunity cost of raw water supply	0.05	2%
2 Storage and transmission to treatment plant	0.15	6%
3 Treatment to drinking water standards	0.15	6%
4 Distribution of water to households (including house connections)	0.75	30%
5 Collection of wastewater from home and conveyance to wastewater treatment plant	1.00	40%
6 Wastewater treatment	0.35	14%
7 Damages associated with discharge of treated wastewater	0.05	2%
Total		2.50 US\$ 100%

Source: Whittington & Hanemann (2006): Economic costs & benefits of investments in municipal water & sanitation infrastructure: a global perspective

Reality

- This price is not in line with what Mekorot charges, or what Israeli and Palestinian consumers pay
- Discrepancy is due to a lack of transparency, the unknown cost of treatment, or the lack of treatment all together
- Politically difficult to increase the current rate, but it would certainly lead to more rational use of water and to better guided investments in water conservation, treatment, distribution and desalination efforts

Conclusions on water pricing

- A distinction should be made between water for drinking & irrigation purposes, because it would not get the same treatment
- International comparison is revealing, but results are context specific
- Much depends on which external effects have been internalized
- Certain countries suffer from religious prejudices with respect to the use of non-treated sewer water
- Create mutual win win situations!
- Take the basins into account

Cost Recovery

- Recovery of all costs associated with a water system, program or service to ensure l.t. sustainability, but
- At what scale must we organize services & how include capital & operating costs?
- Strategies have been tried to achieve cost recovery and would be relevant for Palestine as well:
 1. Improved Metering Practices (Bangalore, India)
 2. Technical & administrative unbundling of service del.
 3. Incentive based performance contracts for operator
 4. Bonuses for meeting for performance targets
- Unfortunately tariffs in Palestine are relatively low and many people do not pay for all kinds of reasons

Waste water situation in Palestine

- West Bank 35% has access to WW network
- Gaza 83.8% (PCBS, 2009)
- However, between 50 and 80 million litres of untreated or partially treated sewage is discharged into the environment daily (UN, 2011)
- 4 WW treatment plants have been established by the Palestinian Authorities (Van der Molen et al., 2011)

Issues according to Van der Molen et al., 2011

- Length of procedures for approving plant
- Israel's conditionality to link plants to settlements
- Standards above standards applied in Israel/WHO
- Discouragement of donors because of these issues
- Limited availability of land for WWtreatment

Situation according to House of Water & Environment 2012

- Poor sanitation system inside Palestine: collected wastewater from the urban communities in the West Bank is discharged into different Wadis without treatment
- Discharged wastewater is flowing towards Israel
- Israeli side treats the discharged wastewater on the Palestinians expense (by deducting a part from Palestinian tax money) and benefit from treated water
- Palestinian side always claims that the invoices which are sent by the Israelis have no reliable figures about wastewater discharge in both quantity and quality.

Recommendations for PWA by House of Water & Environment 2012:

- It is better for the Palestinians to treat the wastewater instead of discharging it into the wadis to be treated in Israel as it will also have the benefit from the wastewater reuse in the agriculture sector
- Treating and reusing of the wastewater from the targeted streams will increase the volume of agricultural water by 12%
- PWA should make detailed CBA and feasibility study for each Wadi to study more alternatives and inspect the best specific solution for each Wadi in terms of WWTP location, treatment technology, reuse area and irrigated crops

WWT solutions which can work, even in the current situation in Palestine

- My favourite example is described in my paper (a WWT plant for a new neighbourhood can be found in Ramalah)
- The technology used by the Al Teereh MBR facility is reverse osmosis and the investment of about 4 million US\$ has been completely financed by the private sector
- The capacity is between 800 and 1400 m³ per day and could go to 2000 m³ per day)
- For short: a combination of private sector initiative, modern technology and new sources of finance have contributed to solving one problem!



AWZI Harnaspolder jan 2007

An example of PPP in waste water treatment by the Delfland Water board

- Water boards in NL have a long history of water management, it started already in the Middle ages
- Organized on the basis of everybody living in a certain area should contribute in cash or in kind
- Delfland waterschap is one of the oldest boards
- Challenges of this period are: water management taking into account environmental claims and farmers needs, dealing with climate change & with waste water and keeping the cost down in an organization with a democratically chosen board

Wastewater treatment plant Harnaschpolder started November 03

- Unique project because technology & financing
- It serves The Hague region, the administrative capital
- Construction work executed by a consortium through Design, Construct, Finance & Operate DBFO contract
- Operational contract period 30 years & maintenance
- Total cost for the project amount to 250 million euro
- The project mechanical and electrical activities concern three processes: water treatment, sludge treatment and air treatment

Similar example in NL Delfluent consortium running the project included originally:

- Vivendi Water, DELTA Water Company, Water Company Eurpoort, Rabobank, Heijmans Groundworks and Civil Engineering and Strukton
- The decision to involve the private sector rested on the need to build a new treatment plant to meet European guidelines on urban wastewater discharge
- The Water Board Delfland believes the DBFO scheme will at least provide efficiency gains of 10%
- As of June 2007 the purification process is running at intermediate capacity & from January 2008 it runs at 100% capacity

Design & construction new waste water treatment plant Harnaschpolder

- DBFO-contract: design, build, finance, operate & m
- Duration 30 years (5-12-2003 t/m 5-12-2033)
- Delfluent BV is SPV & contractor in DBFO-contract

Share holders 1. Veolia Water 40%

2. Evides Industriewater 40%

3. Rabobank 10%

4. Strukton 5%

5. Heijmans 5%

- Public partner in PPP Waterboard Delft
- Savings minimal 17%

WWTP Harnaschpolder by a Build Operate & Transfer formula (BOT), through a consortium

- 1,3 million i.e. (population equivalent)
- Capacity plant: 35.800 m³ per hour
- Capacity effluent pumps: 50.000 m³/H
- Volume tanks: 410.000 m³
- Surface: 25 ha

Success factors:

1. Private sector supplied technology & know-how
2. Private sector provided finance
3. Public sector regulates
4. Now they receive innovation funds for improvements



Condition for successful PSI in the water sector	Example
<ol style="list-style-type: none">1. Legal conditions in place2. Regulatory framework available3. Cost recovery system in place4. Realistic tariffs, betterment tax or user fees5. Real competition (sufficient private operators), or quasi-competition (benchmarking)	<p>BOT law Gujarat (2002)</p> <p>OFWAT in the UK</p> <p>Prepaid cards for drinking water</p> <p>Water utilities in the Netherlands</p> <p>In France a plethora of private operators, in England & Wales (inset agreements), or the Netherlands (Harnaschpolder) & benchmarking (Vewin)</p>

Conditions for successful PSI in the water sector in Palestine?

- Legal conditions in place ?
- Regulatory framework available ?
- Cost recovery system in place ?
- Realistic tariffs, betterment tax or user fees ?
- Real competition (sufficient private operators), or quasi-competition (benchmarking) ?

Conclusions

- The issue is to implement the ideas of Annex 10, leading to economically feasible DW & WWT plant
- Strong arguments to implement annex 10 more
- Progress should be monitored more closely
- Certainly the Palestinians do not get a fair share of the water resources, limiting Palestine's agricultural
- On the positive side, there are now better studies available and the cost are known, the principles to be applied have been tried out & the structure is in place
- Plus: with the private sector we see original solutions