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ECONOMIC VALUE OF WATER USED FOR DOMESTIC IN WEST BANK PALESTINE

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SUMMARY – Water has an Economic Value and Used to be an economic good. This economic value increased with scarcity of water and the availability of good quality for drinking. This economic value is expressed the last financial value or price of water. The situation in Palestine (West Bank) is complicated. Each local community is responsible for supplying water in the community; only two main utilities are responsible for supplying water in the middle and south of W.B. and only one bulk utility is found. It is responsible for supplying the previous utilities and local councils with water as bulk. There are many different sources of water for the domestic use in W.B. Each Source has its own economic considerations, this affect the final cost of the cubic meter before reach the end user. The Palestinian Water Authority (PWA) was established as the Regulator of the water sector. It has put a balancing policy for the water tariff taking in its consideration all the economic and social aspects in order to protect the right of the consumer, the sources and suppliers. This policy will imply that each person will access to his need of water with good quality at the suitable price. The paper will discuss the main sources, the main elements of cost. The financial situation in main utilities and municipalities in West Bank, the tariff applied. It will also discuss the PWA Tariff Policy.

Keywords: Presidential degree n.90/95, water tariff, criteria

THE MAIN SOURCES OF WATER SUPPLY

There are different sources of water for supplying water to the people in West Bank. This difference in the sources for supply was of the limited sources. The Supply is far below demand, this due to limited control on available water resources, population increased and economical development. This increased the accumulated yearly deficiency, which increase the suffering of available water.

The Domestic supply for West Bank in 2003 was estimated for about 64 million cubic meter from all sources. More than 50% of this quantity purchased from the Israeli water company (mekorot) and the remain quantities are utilized from springs and wells; part of the agricultural water is used for domestic purpose.

The West Bank mountain aquifer is divided into three main aquifers. These aquifers are:
1. Eastern aquifer,
2. North-Eastern aquifer,
3. Western aquifer.

The Palestinians were not allowed to drill any well after 1967. After Oslo agreement it was allowed for the Palestinians to develop water mainly from the Eastern aquifer which is exploited aquifer and limited quantities from the north-eastern and they were denied the right of access to additional water from the western aquifer which is the richest one.

This caused a huge shortage in supplying enough water and some communities till now are without piped water. Around 300000 Palestinians have no access to piped water while 65 % of the supplied population is supplied with less than 50 L/C/D.

The diversity of water sources affects the price determination; the cost of water is different from source to another. The cost of purchased water is different from water produced from wells or springs.

The following table shows the supply quantities from different sources for all the districts in West Bank in 2003 according to PWA supply report 2003. It shows the population in 2003 in each district according to PCBS (Palestinian Central Bureau of Statistics).

Table 1. Water supply distribution in 2003

District	Population	Purchased water from Mekorot	Produced from municipality of utility wells	Produced from spring	Produced from PWA wells	Other sources agricultural wells	Total supply	Average supply per capita
Unit	1000 capita	Mcm	Mcm	Mcm	Mcm	Mcm	Mcm	L/c/d
Jenin	248,2	2.052	1.608	0.10	-	0.473	4.233	47
Tobas	45.4	0.12	0.416	0.18	-	-	0.716	43
Tulkarem	164	0.265	3.847	-	-	1.184	5.296	88
Nablus	319.5	2.244	4.821	2.337	-	0.037	9.439	81
Qalqilia	91.1	0.335	2.481	-	-	1.177	3.993	120
Salfeet	60.4	1.299	-	0.228	-	-	1.527	69
Jericho	41.1	1.042	-	1.27	-	0.038	2.35	157
Ramallah	270.9	8.668	2.192	-	-	-	10.86	110
Jerusalem	145.4	7.025	-	-	0.062	-	7.087	134
Beithlehem	170	5.162	1.014	-	1.585	-	7.761	125
Hebron	507.6	7.831	1.313	-	2.348	-	11.492	62
Total	2007.6	36.043	17.692	4.115	3.995	2.909	64.754	86 average

THE MAIN ELEMENTS OF COST

The cost of water in West Bank is different from Municipality or utility to another. The different of cost is reflected to the prices of water sale to the consumers, So water tariff is different from district to another and from Municipality or local council to another in the same district. There are many reasons for making cost different.

The main reasons and elements of the cost are presented below.

Water purchased from the Israeli Company (Mekorot)

As said above more than 50% of water supply in West Bank is purchased from Mekorot through the West-Bank water department (WBWD). The price of the purchased water from Mekorot is relatively high. It reached more than 0.55 cents for the cubic meter at the main supply points for (WBWD).

This price is calculated according to special equation that was stipulated in the Oslo agreement that was signed between the Palestinians and Israeli. This price is related to factors depending on life conditions in Israel, which are not the same in west-bank. This equation must be revised and corrected to be suitable to the Palestinians.

There is additional cost for the water before it reaches the supply points or main meters for the municipalities and utilities. This additional cost reaches more than 20 cents. This increment is for administration pumping distribution, and additional unaccounted for water (UFW) in the main lines.

Energy cost

Energy cost is the main element of cost especially for the production and distribution of water. The type of energy used affects the cost. Most of the wells used diesel motors for producing water. Some of the wells used electricity.

The source for diesel and the electricity is from Israel. The prices of the diesel are changing according to world prices. The prices of electricity also changed according to the Israeli prices. These prices are high. Most of municipalities still use diesel motors for producing water.

As the most of wells in West Bank are deep wells which need large amount of energy to abstract water and pump it. This increases the cost.

Unaccounted for water (UFW)

UFW formed high percentage of water supply in the municipalities and utilities.
UFW include the technical losses and commercial losses. UFW formed in some places in West Bank more than 40% of water supply. This UFW means high cost. To cover this cost the suppliers pass the cost of UFW to the consumers through their bills. This increases the price of water.

PWA started with cooperation of NGOs and funded by donor countries to solve UFW problems. It started changing the old main lines and develops water systems in the areas with high water loss such as Bethlehem and Hebron. The results appear after few years. The percentage decreased. PWA also worked to reduce the commercial losses by preventing theft from the main lines. These efforts were faced by obstacles by starting of Intifada. The Israeli army have damaged water systems and storage tanks and created obstacles in front of the responsible parties for repairs and maintenance. So the UFW increased in some areas and still high.

The UFW contributed for being differences in the prices because of different UFW cost from place to another.

Effort must be intensified to over this problem and reduce the UFW to acceptable percentages. Some steps are necessary to do such as:

- Using improved and modern equipment to detect broken or leaking pipes.
- Effective programs for inspecting water systems and water meters.
- Maintenance and repairing of broken pipes must be rapidly.
- Cutting the illegal connections and taking steps against violators.

These are the main reasons and elements to the high cost, but there are other reasons such as the absence of effective management of the municipalities and utilities. This affects the right decisions and then reflected on the cost and prices.

Also the absence of effective awareness among consumes about water conservation and water values contribute increasing cost.

WATER FINANCIAL SITUATION

The financial situation is difficult. Most of the municipalities and utilities that offer water service suffer from many problems. This situation can be described as follows:

1. The cost is high and the ways for reducing it are limited.
2. They apply different prices and tariff system.
3. The applied prices are not justly in distribution.
4. All the service accounts are mixed together and not separate that some provides other service than water. The accounts of these services are mixed and use for each other.
5. Arbitrary fee collection: Most of municipalities and utilities suffer from arbitrary fee collection. Consumers are not able to pay there bills. The efforts for encourage them to pay are not sufficient. The bad economic situation in general is the main reason for not paying the bills. According to statistics more than 50% are under the poverty line.
6. Some of the municipalities and utilities are not covering their operating (O&M) Costs.
7. Municipalities still used old accounting systems.
8. The financial data available is limited and sometimes inaccurate.

All these conditions affect the water value. These conditions must be changed to the active and better conditions in order to continue offering the service at good quality and suitable price with sufficient quantities.

The following table shows the main financial indicators, which measure the performing in the main municipalities and utilities in West Bank in 2002.

Table 2. Technical and financial indicators in 2002

Indicators	Unit	Jenin	Tulkarem	Qalqilia	Nablus	JWU	Jericho	WSSA
Persons per Connection	#	5.00	6.80	7.08	5.45	6.30	6.2	6.67
Staff Productivity Index (SPI)	#	4.88	8.20	3.54	9.13	5.54	10.2	6.67
Specific Water Supply	L/c/d	74.96	143.81	159.65	109.93	126.10	185	152.82
Specific Water Consumption	L/c/d	55.29	82.23	121.91	72.00	90.78	130	83.54
Unaccounted for Water (UFW)	%	26.24	42.82	23.64	34.50	28.01	29.76	45.33
Sale per Connection	m3/conn	100.83	204.09	315.17	143.15	208.75	294.19	203.29
Revenue Collection Efficiency	%	37.75	49.97	66.49	62.20	86.45	83.06	57.61
Water Purchased / Operating Cost	%	10.64	19.63	0.00	0.03	42.36	0.00	68.25
Fuel and Energy Cost / Operating Cost	%	40.47	26.59	49.74	66.20	11.17	27.67	17.91
Maintenance Cost / Operating Cost	%	7.69	20.24	24.30	0.92	2.35	1.41	4.10
Personnel Cost / Operating Cost	%	40.18	32.90	24.59	28.28	29.96	69.80	9.73
Purchased Unit Cost	NIS/m3	1.90	1.17	0.00	0.00	2.43	0.00	2.39
Unit Supply Cost	NIS/m3	3.31	0.70	0.67	2.71	4.78	0.37	2.48
Unit Operating and Maintenance (O&M) Cost	NIS/m3	4.49	1.23	0.88	4.04	6.09	0.53	4.53
UFW Unit Cost	NIS/m3	1.18	0.53	0.21	1.33	1.30	0.16	2.05
Unit Sale Price (Consumption)	NIS/m3	5.75	2.64	1.28	5.96	4.57	1.48	4.00
Unit Revenue (Consumption)	NIS/m3	6.41	2.71	1.32	6.56	5.07	1.59	4.28
Financial Working Ratio	NIS/m3	0.70	0.45	0.67	0.62	1.20	0.33	1.06
Unit Profit	NIS/m3	1.92	1.48	0.44	2.42	-1.57	1.07	-0.25

NIS = New Israeli Shakel
JWU:Jerusalem Water Undertaking
WSSA : Water Supply and Sanitation Beitlehem
1US $ = 4.5 New Israeli Shakel (NIS)

TARIFF APPLIED

There is not one tariff system existing in West Bank. There are many systems. Each municipality or utility has its own tariff system. Each one applies different structure than the other. These structures are not designed in the proper way, which depends on the scientific financial analysis. They used old account systems. The blocks they used are chosen in random way and prices are determined as the municipality council decides. Each one put minimum limit as it wants without taking the consideration of the consumer's conditions.

The result was unjust tariff systems. The poorest were not supported. The prices are not affordable for some blocks. Some tariff systems are not covering the cost.

The following table shows the tariff applied in main municipalities and water utilities in West Bank in 2003.

Table 3. Tariff applied in main municipalities and water utilities in West-Bank in 2003

Municipality	≤ 5 m^3	≤ 10 m^3	11-15	16-20	21-30	30-40	40-50	50-60	60-70	70-100	> 100 m^3		
Hebron	26	4	5										
Hahul	41		3.5				4.5						
Dura	4.5								10				
Beit-lehim	48		4										
El-Ezaria	23	3.5			3.7	4							
JWU	47		4.4		4.6		6				6.5		
Betunia	32	5.2											
Salfeet	36		3.5			4			4.5		5		
Nablus	24.8	3.72	5.58	7.44	7.75		9.92						
Tulkarem	16.25	1.95				2.6							
Tubas	15	2.5	3		4	6							
Qalqilia	20	0.5					0.8			1.55	2.55		
Municipality	≤ 4 m^3	≤ 5 m^3	≤6 m^3	≤ 7 m^3	≤ 8 m^3	11-15	16-20	20-25	25-40	40-50	50-150	150-250	> 250 m^3
Jericho	20						1					2	3
Jenin	22.8	4.2									6		
Qabatia	17	4.5					5.5						
Anabta	16.48		2.48				2.81		3.13		6.3		
Bir-Zeit	50				5								
Abu-Deis	31			3.5				4		4.5			
Azzon	15				2								

PWA TARIFF POLICY

The Palestinian water Authority (PWA) was established as the regulator of water sector. It is responsible for the economic, beneficial and sustainable use of water resources in Palestine, it is mandated to establish an appropriate unified tariff system and monitors its implementation for water supply and wastewater service providers.

To remedy the existing situation the PWA has prepared the tariff policy guidelines that are comprised of the following parts.

Tariff regulation

The tariff regulation is a legal document approved by the National Water Council and enforceable under the law. It enacts the intent and principle of the water law no.3/2002.

Implementation procedures

Implementation procedures comprise the second part of this Tariff Policy Guideline, it addresses the rules and standards given in part one and describes the functions and approaches to effective regulation. The steps and procedures to be followed in implementing the tariff Regulation, and the responsibilities of both the PWA and the utilities in the process, it provides a detailed description of the tasks and activities in tariff design, the tariff models to be used, quantified standards and criteria to be followed, technical and financial data required, and other supporting information.

TARIFF POLICY OBJECTIVES AND TARIFF DESIGN STRATEGY

The design of the tariff structure and the prices charged shall be prepared by the water utilities to fulfil the following policy objectives:

Cost recovery

the tariff structure and prices set shall ensure cost recovery for the individual utilities whereby revenues exceed costs. The water utilities shall increase revenue collection in the following stages until full cost recovery is achieved:

- Revenues cover operation and maintenance (O&M) costs.
- Revenues cover O&M costs, plus depreciation based a revalued assets.
- Revenues cover O&M costs, plus depreciation, plus interest charges on loans.

Enhancing cost recovery must be through the balance between increasing the revenues and controlling or reducing cost.

Controlling cost will be in reducing the UFW, using developed technology, increasing operation efficiency and by efficient and improved management.

Increasing revenue, will be by improved billing and collection efficiency, enlarge service and increase connections, reduce illegal connections, increase fiscal transfers from the centre, borrowing and applying suite tariff.

The results will be in positive balance on utility accounts and more stable financial operating environment.

Social equity

The tariff structure shall set an affordable price for the basic consumption needs of low-income households.

Economic efficiency

The tariff structure shall set an economic price for the higher consumption levels to encourage conservation and signal future prices to the consumers.

CONCLUSIONS AND RECOMMENDATIONS:

As seen before the existing situation is very bad in West Bank. The available water is not enough for our needs. The resources are not under control. The economic conditions are under the control of Israeli economy. This situation result in high cost of water. Different tariff systems. Un just and affordable prices. Bad financial performance.

The following recommendations are important:

- Fulfilling the Palestinian water rights and controls there resources.
- Conservation water for current and future generations.
- The unified tariff system which was prepared by PWA must be approved as soon as possible.
- The resources of energy must be available at suitable prices.
- More efforts for reducing the high UFW.
- Separate the water accounts in municipalities and local councils from other services accounts.
- Raising awareness for consumers showing the importance of economical water consumption.
- Acceleration in establishing the Bulk and Regional Utilities.