

## List of Indicators Used to Monitor the Utilities

Key Performance Indicators (KPI's)		Explanation	Formula	Unit
1	Microbiological water quality compliance	Percentage of the total number of microbiological tests of treated water performed that comply with the applicable standards.	$= (\text{Compliant microbiological tests} / \text{Microbiological water quality tests performed}) * 100$	%
2	Continuity of supply	Percentage of hours when the (intermittent supply) system is pressurized	$= \text{Number of hours per week that the system is pressurized} / (7 * 24) * 100$	% of time
3	New connection efficiency	Percentage of connections installed within the specified target time	$= \text{New water connections type 1 and type 2 within a target time} / \text{New water connections type 1 and type 2 requested} * 100$	% of requests
4	"No water" complaints per 1000 subscribers	Number of "no water" complaints per 1000 active subscribers during reporting period	$= \text{Complaints of "No Water Supply"} / (\text{Active subscribers} * 1000)$	No. of complaints/1000 active subscribers
5	Water consumption per capita (residential subscribers)	Average daily water consumption per capita	quarterly = Residential billed volume*1000/90/Estimated number of residents supplied with water annually = Residential billed volume*1000/365/Estimated number of residents supplied with water	L/cap/d
6	Non-Revenue Water	Percentage of system input volume not being billed	$= (\text{Water distributed} - \text{Billed authorized consumption}) / (\text{Water distributed}) * 100$	% of system input
7	Collection Efficiency (Customers)	Percentage of revenues collected from residential and non-residential customers during period	$= (\text{Collected from residential \& non-residential customers}) / (\text{Amount billed in period} - \text{Billing for exported water} - \text{Other Billing}) * 100$	%
8	Operating cost coverage ratio (revenues)	Total revenues compared to total operation and maintenance costs	$= \text{Total revenues} / \text{Total operation and maintenance costs water and wastewater services} * 100$	%
9	Employees per 1000 subscribers	Number of full time equivalent employees per 1000 water subscribers and wastewater subscribers	$= \text{Total number of employees} / ((\text{Total water subscribers} + \text{Total sewer subscribers}) / 1000)$	No/ 1000 subscribers
10	Training per employee	Number of training hours per employee during reporting period	$= \text{Total number of training hours in reporting period} / \text{Total number of employees}$	h/ employee

<u>Lower Level Performance Indicators (PI's)</u>		Explanation	Formula	Unit
1	Subscribers receiving continuous supply	Percentage of subscribers receiving 24 hours supply 7 days per week except for interruptions due to major maintenance or repair interventions	$= \text{Subscribers receiving continuous supply} / \text{Total water subscribers} * 100$	%
2	Billing complaints	Average number of billing complaints and queries per 1.000 water subscribers during reporting period	$= \text{Billing complaints} / \text{Total water subscribers}$	No./1.000 subscribers
3	Percentage of inactive subscribers	Percentage of subscribers inactive at the time of reporting	$= (\text{Total water subscribers} - \text{Active subscribers}) / \text{Total water subscribers} * 100$	%
4	Water quality tests performed	Percentage of treated water tests required by applicable standards that are carried out.	$= \text{Water quality tests performed} / \text{Water quality tests required} * 100$	% of required tests
5	Physical-chemical water quality compliance	Percentage of the total number of physical-chemical tests of treated water performed that comply with the applicable standards.	$= \text{Compliant physical-chemical tests} / \text{Physical-chemical water quality tests performed} * 100$	%
6	Inefficiency of use of water resources	Real losses during the assessment period / System input volume during the assessment period *100	$= (\text{Water produced} + \text{Imported treated water} - \text{Exported treated water} - \text{Billed consumption}) / ((\text{Water produced} + \text{Imported treated water} - \text{Exported treated water}) * 100) * (\text{Real water losses}/100)$	%
7	Water resources use per capita/day	Average daily volume of water supplied per capita	$= (\text{Water produced} + \text{Imported treated water} - \text{Exported treated water}) / (\text{Resident population}) * 1000 / 365$	L/ cap/d
8	Treated water storage capacity	Total capacity of treated water reservoirs (private storage tanks excluded) / system input volume during assessment period	$= \text{Water storage volume} / ((\text{Water produced} + \text{Imported treated water} - \text{Exported treated water}) / 365)$	days
9	Mains rehabilitation	Percentage of mains length rehabilitated per year	$= \text{Mains rehabilitated} / \text{Length of water network} * 100$	%/ year (quarter)
10	Service connection rehabilitation	Percentage of service connections replaced or renovated per year	$= \text{Service connections rehabilitated} / \text{Water service connections} * 100$	Nr/ 1000 connections
11	Speed of repair of failures	Percentage of network and water service connection failures repaired within target time	$= (\text{Network failures repaired in target time}) + (\text{Service connection failures repaired in target time}) / (\text{Network failures} + \text{Water service connection failures}) * 100$	% of bursts
12	Leakage control per year	Percentage of mains length subject to active leakage control	$= \text{Network surveyed for leakages} / \text{Length of water network} * 100$	%
13	Metering ratio	Percentage of subscriber connections that are metered	$= \text{Subscriber meters} / \text{Total water subscribers} * 100$	%
14	Subscriber meter replacement ratio	Percentage of subscriber meters replaced during reporting period	$= \text{Subscriber meters replaced during reporting period} / \text{Subscriber meters} * 100$	%
15	Water loss per subscriber	Total (apparent and real) losses, expressed in terms of volume of <u>supplied</u> water lost per subscriber	$= (\text{Water supplied} - (\text{Authorized consumption} - \text{Exported water})) / \text{Total water subscribers} / 365$	m <sup>3</sup> /subscriber/ day
16	Water loss per connection	Total (apparent and real) losses, expressed in terms of volume of supplied water lost per connection	$= (\text{Water supplied} - (\text{Authorized consumption} - \text{Exported water})) / \text{Water service connections} / 365$	m <sup>3</sup> /connection/ day
17	Water losses per mains length	Total (apparent and real) losses, expressed in terms of volume of <u>distributed</u> water lost per mains length.	$= (\text{Water distributed} - \text{Authorized consumption}) / \text{Length of water network} / 365$	m <sup>3</sup> /km/d

18	Estimated water service coverage	Estimated percentage of the population supplied with water	= Estimated number of residents supplied with water / Resident population * 100	%
19	Percentage of water treated in wastewater treatment plants	Volume of treated wastewater vs. volume of authorized consumption (excluding exported water)	= ((Wastewater treated at own plants + Waste water exported for treatment) / (Authorized consumption - Exported water) * 100	%
20	Meter reading ratio	Percentage of active customers whose meter has been read during reporting period	= Customer meters read / Active subscribers *100	%
21	Electricity costs as percentage of total O&M costs	Electricity costs as percentage of total Operation and Maintenance	= Total electricity costs / Total operation and maintenance costs water and wastewater services * 100	%
22	Average unit energy consumption	Electricity consumption per m <sup>3</sup> supplied	= Electricity consumption / (Water produced + Imported treated water - Exported treated water)	kWh/m <sup>3</sup>
23	Average water and wastewater revenue for billed consumption	Water and wastewater sales revenue from residential and non-residential subscribers (exported water excluded) per m <sup>3</sup> of authorized consumption	= (Residential water sales (amount) + Non-residential water sales (amount) + Billing for illegal usage + Reductions in billing +Billing for tanker sales + Billing for residential wastewater + Billing for non-residential wastewater) / (Residential billed volume + Non-residential billed volume + Volume billed for illegal usage + Volume provided through tankers)	JOD/m <sup>3</sup>
24	Unit operating cost water and wastewater services	Operating costs of water and wastewater services per m <sup>3</sup> authorized consumption	Total operation, maintenance and administration costs water and wastewater services / Authorized consumption	JOD/m <sup>3</sup>
25	Unit total cost water and wastewater services	Total costs of water and wastewater services per m <sup>3</sup> authorized consumption	= Total costs water and wastewater services / Authorized consumption	JOD/m <sup>3</sup>
26	Total cost coverage ratio	Total collection vs. total costs of service provision	= Total collection water and wastewater services / Total costs of water and wastewater services	-
27	Delay in accounts receivable	Accounts receivable at reporting date compared billing during reporting period	= Total accounts receivable from billing / ((Amount billed in period - Billing for exported water - Other billing) / 12)	months
28	Days absenteeism per staff per year	Number of days of absenteeism per employee per reporting period	= Staff absenteeism / Total number of employees	days/ employee
29	Percentage of staff trained	Percentage of staff trained during reporting period	= Total number of staff that participated in internal or external training / Total number of employees (full-time equivalent) * 100	%
30	Operating cost coverage ratio (collection)	Total collection compared to total operation and maintenance costs	= Total collection / Total operation and maintenance costs water and wastewater services * 100	%
31	Operating cost coverage ratio (billing)	Total billing compared to total operation and maintenance costs	= Amount billed in period / Total operation and maintenance costs water and wastewater services * 100	%
32	Collection ratio	Percentage of revenues collected from billed amounts during reporting period including exported water and other billing	= Total collection / Amount billed in period * 100	%
33	Wells with dynamic level measured	Percentage of owned wells with dynamic water level measured during reporting period	= Total number of owned wells with water level monitored/ Total number of owned wells	%
34	Employees per 1000 water subscribers	Number of full time equivalent employees per 1000 water subscribers	= Total number of employees/(Total water subscribers/1000)	No/1000 water subscribers

Indicators derived from national strategies (NSPI)		Explanation	Formula	Unit
1	Subscribers surveyed	Percentage of subscribers surveyed	$= (\text{Subscribers surveyed} / \text{Total water subscribers}) * 100$	%
2	Renewable energy utilization	Percentage of renewable energy used	$= ((\text{Photovoltaic energy produced} + \text{Hydro power produced} + \text{Wind energy produced} + \text{Biogas energy produced}) / \text{Electricity consumption}) * 100$	%
3	Preventive maintenance of pumps	Percentage of pumps covered by preventive maintenance	$= \text{Production and distribution pumps preventive maintenance} / \text{Production and distribution pumps} * 100$	%
4	Corrective maintenance of pumps	Percentage of pumps fixed by corrective maintenance	$= \text{Production and distribution pumps corrective maintenance} / \text{Production and distribution pumps} * 100$	%
5	Sizing of pumps	Percentage of pumps running at the right sizing	$= \text{Production and distribution pumps sizing} / \text{Production and distribution pumps} * 100$	%
6	Power consumption monitoring	Percentage of pumps monitored for power consumption	$= \text{Production and distribution pumps monitored} / \text{Production and distribution pumps} * 100$	%
7	Operational well and reservoir meters	Percentage of wells and reservoirs with operational meters	$= \text{Number of operational reservoir meters} / \text{Number of metered reservoirs}$	%
8	Calibration of well and reservoir meters	Percentage of calibrated well and reservoir meters	$= \text{Number of reservoir meters calibrated} / \text{Number of reservoir meters that require calibration}$	%
9	Metering of import and export points	Percentage of metered import and export points	$= (\text{Number of metered import points} + \text{Number of metered export points}) / (\text{Number of import points} + \text{Number of export points}) * 100$	%
10	Wastewater coverage	Percentage of wastewater service coverage	$= \text{Resident population connected to the sewerage system} / \text{Resident population} * 100$	%
11	Effluent quality compliance	Percentage compliance of effluent quality test results with standards	$= \text{Compliant effluent quality tests} / \text{Wastewater effluent tests conducted} * 100$	%