WSRC

مجلس تنظيم قطاع المياه

WATER SECTOR REGULATORY COUNCIL

Performance Monitoring Report 2021

of Water &Wastewater Service Providers

August 2022

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President of the State of Palestine

President Mahmoud Abbas

State of the Prime Minister

Dr. Mohammad Shtayyeh

Chairman's Preface

Since the founding of the Water Sector Regulatory Council (WSRC), its vision has been to assist in achieving the goals of the Water Sector Reform Program through monitoring water and wastewater services, which is the main part of the council's work. The council monitors services through performance and operational as well as quality indicators aiming at achieving annual goals set out in the water sector strategy.

Creating partnerships with stakeholders including the Palestinian Water Authority (PWA), the Ministry of Local Government (MoLG), and the Ministry of Health (MoH) has been one of the policies of the council's work that facilitated its tasks.

These partnerships have been created on the basis of respecting the legal mandate as set by decree No.14 for the year of 2014 relating to the water law and its amendments, in addition to memorandum of understanding between the relevant parties.

The council is still committed to continue providing all the institutions with the annual audited data, in addition to providing quarterly or semi-annual data as the work of the PWA or other demands and requests.

With introducing a unified tariff bylaw and the establishment of regional utilities bylaw, amendments would be made to the work of the WSRC by providing trained staff to perform a tariff review at the national level as quickly as possible. The WSRC has already set targets and prioritization for this issue. With the issuance of this report for the seventh consecutive year, the WSRC appreciated and thank the Government of the Netherlands for its continued support to the work of the council. In addition, we thank the Palestinian government represented by the Prime Minister for its unlimited support for the WSRC.

Mohamed Awni Abu Ramadan

Water Sector Regulatory Council Chairman

CEO's Preface

As the previous reports, this one did not cover all service providers in Palestine, whose number exceeds three-hundred in the West Bank and Gaza Strip. This report dealt with only 90 service providers because of the difficulty in presenting all data in only one publication. However, access to the rest data about the other service providers is available on the WSRC's webpage and on its database.

The WSRC has managed to reach 276 service providers representing 95% of water consumers, while eight service providers did not present their data for this year. However, their names were mentioned in the report. Concerning Gaza Strip, the coverage was 100%.

It is observable from the report that some service providers tend at an accelerating pace to categorize connections. This is a marked improvement, especially with the campaigns carried out to show the positive impact of this procedure on citizens and service providers. However, we witness a decline in the amount of water available to citizens, particularly in some areas of southern Palestine. Only 10 areas in the West Bank receive 100 liters per capita per day, while many still receive less than 50 liters per capita per day. This is accompanied by lack of improvement in the percentage of non-revenue water, which reached 34% in 2021 in the West Bank and 45% in Gaza Strip.

Water price variation will not be subject to inquiry or questioning after the issuance of the tariff bylaw and the conduct of price review. The basis of calculation is unified all over the country. However, there will still be differences in the operating costs, which is a matter of great concern for the PWA and the WSRC. The important factor in service providers' potential to reduce the percentage of non-revenue water and the operating costs is their ability to collect water price, which has reached very low rates comparing to some citizens, and to reduce the number of attacks on water networks and meters that are still at a standstill.

Energy costs still represent the largest percentage of the cost of water and wastewater services delivery, which represent 40% for some people, in addition to personnel expenses which require review and restructuring, for the others.

The WSRC stresses on the importance of water quality. For this reason, the WSRC, in collaboration with the PWA and the MoH, monitors water quality on a regular basis. The test results are documented periodically.

Mohammad Said Al-Hmaidi
Water Sector Regulatory Council CEO

Introduction

Significance of the Performance Indicators Report

In view of the instrumentality of performance reports, article 20 of the Decree NO. 14 for the year 2014 relating to the water law, and in particular, article 24, provides that these reports are to be furnished to the Cabinet of Ministers. Same article has mandated the WSRC to establish a database containing all relevant statistical, technical, and financial information.

The primary beneficiary of performance monitoring reports is the service providers, followed by customers, government, donors, researchers, and human rights and consumer protection organisations. Added value of these reports to the different stakeholders is as follows:

Water Sector Regulatory Council (WSRC):

- Monitoring the performance of service providers is one of the most important tasks entrusted to the WSRC pursuant to Water Decree No.14 for the year 2014.
- This helps WSRC to re-develop data collection plans, including financial and technical planning including review, analysis and dissemination.
- The WSRC may contribute to achieving Water Sector Reform Programme goal through dissemination, as well as providing recommendations with financial, technical, and political recommendations.
- Based on the performance indicators results, the WSRC will set annual goals for each service provider within its license.

Service Providers:

- This report and through performance indicators presented within, provides a guiding compass for service providers to chart the next year by diagnosing their operations in relation to water and wastewater service, and thus help service providers to identify where they stand;
- The performance report compares the performance of service providers as a tool for encouragement and peer-learning;
- The performance report provides a token of compliance by the service providers with the governance principles by publishing their performance data during the reporting period;
- The performance report informs the decisions made by municipal councils based on the PIs to address weaknesses such as low collection rates, which warrant interventions to build the service provider's collection capacity.

Government of Palestine and the relevant ministries:

- The performance report supports the government discussions with the donors to the importance of continued support to water sector based on the Palestinian priorities based on reality of service provision;
- The performance report informs sectoral planning, compliance with the role and responsibilities stated by law and institutional structures, and decisions related to the water sector reforms.

Members of public

- The performance report ensures public access to the performance of service providers performance who were elected by the public to assume this role;
- The performance report ensures that the public is aware of critical information that impacts the citizens, such as operating costs, average selling price, and compliance with governance principles, justice, and the quality of the provided water;
- The performance report ensures enhancing the role of citizens in taking responsibility and participating in decision-taking process rather than being only a service recipient.

Donors:

- The performance report informs projects by accurate figures and results;
- The performance report informs donors' review of the aids granted to the Palestinian people and their results by monitoring and measuring the improvement in water and wastewater services.

Researchers and other stakeholders interested in the water sector:

- This group of beneficiaries can make use of the figures the report provides for analytical and research purposes.

Data Collection Challenges

The WSRC faces some challenges that hinder or delay the data collection process from service providers, this delays the issuance of this report r, noting that this process began in January 2022. Some of these challenges are as follows:

- The number of service providers that are monitored reached around 300 in the West Bank and Gaza Strip, noting that the WSRC has limited capabilities to deal with such significant number;
- The time spent to validate collected data was time consuming;
- The person in charge of filling out the data for the service provider changes annually;
- Some service providers refused to cooperate in providing data to the WSRC. Some of them has been mentioned in the report;
- Late provision of data from some service providers (e.g. some service providers prepare financial statements after April);
- Some service providers are unable to generate reports on the quantities of water sold to citizens, especially in some prepaid water systems.

Report methodology

The WSRC publishes annually the performance indicators (PIs) report for service providers in accordance with an integrated methodology in preparing the report, which goes through the following stages:

- The WSRC discusses the required indicators and variables to be collected to reaching an agreement with the PWA on how to calculate the PIs;
- The WSRC prepares a questionnaire based on the Water Sector Regulatory Information System's database, which includes all the variables required to be collected from service providers;
- The WSRC holds three workshops in different areas for service providers in the West Bank and the Gaza Strip to explain the database and how to enter data;
- The WSRC contracts field data collectors to help the service providers with data generation, validation and uploading to the data base or in filling the quastionnair.
- WSRC collects, reviews the data, and calculates the PIs;
- IPs results are presented to service providers for farther clarity and validation;
- Reports are desined and printed or uploaded to the council site.
- It is worth to mention that we started in the first process of preparing this report which is "data collection" in January 2022 and took more than 4 months.
- in Gaza, we follow the same methodology in data collection, analysis and indicator calculation for the 25 WSPs.

Water Sector Regulatory Information System

(WSRC's Database)

Water Sector Regulatory Information System (WRIS) is an electronic system that enables service providers to upload data directly, extract reports and compare efficiency with others. It allows the council to follow data collection and validation, and generate reports.

The First Chapter

Water and Wastewater Service Providers in the State of Palestine

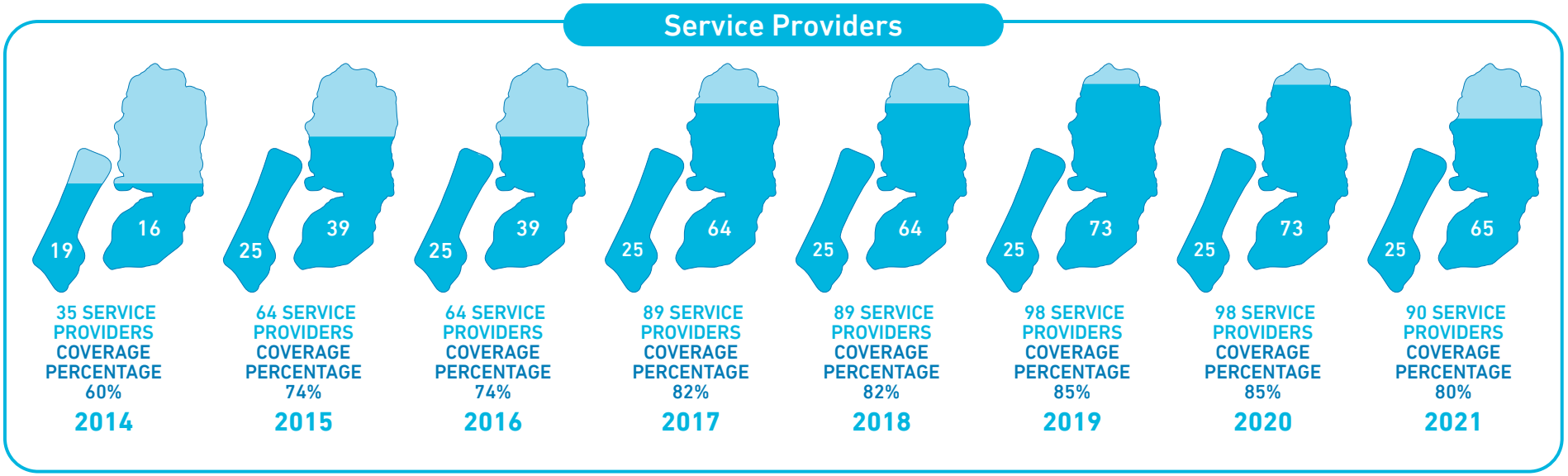
The Water law defines the service provider as 'the National Water Company and regional water utilities, including local government units, joint service councils, and associations that provide water and/or wastewater service(s). The WSRC endeavours to cover all water and wastewater service providers across the State of Palestine, during the year. It collected general data from 276 water and wastewater service providers in the West Bank that provide water and wastewater service to about 95% of the total population in the West Bank. Meanwhile, it collected data from 25 service providers in the Gaza Strip that provide water and wastewater services to 100% of the population.

Moreover, detailed data have been collected from 90 service providers to prepare Annual Performance Indicators Report for the year of 2021; sixty-five of them provide water and wastewater services to 70% of the West Bank population, while 25 provide these services to all Gaza residents.

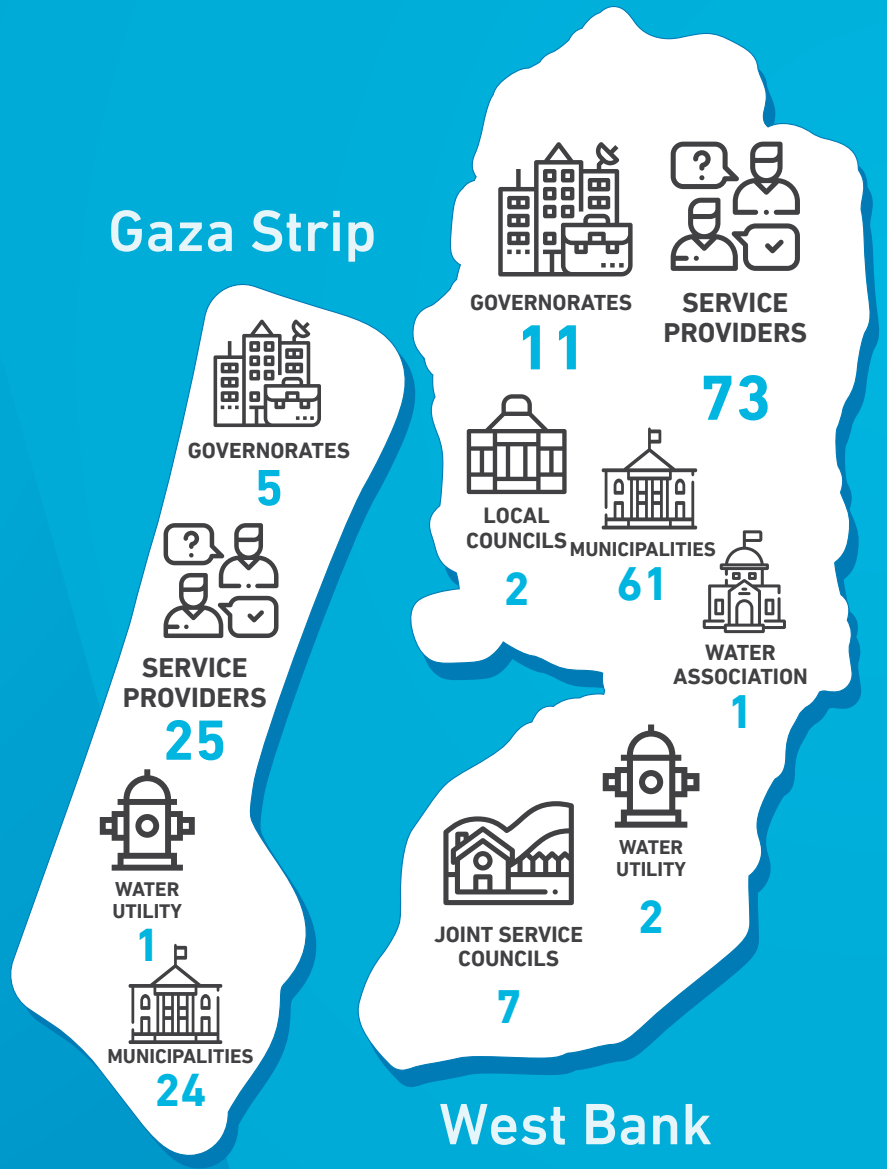
However, eight service providers in the West Bank did not provide any useful information for the calculation of the PIs, these are:

Al-Auja Municipality	Dura Joint Service Council	Idna Municipality	Nuba Municipality
Ya'bad Municipality	Halhul Municipality	Samu Municipality	Azmut village council

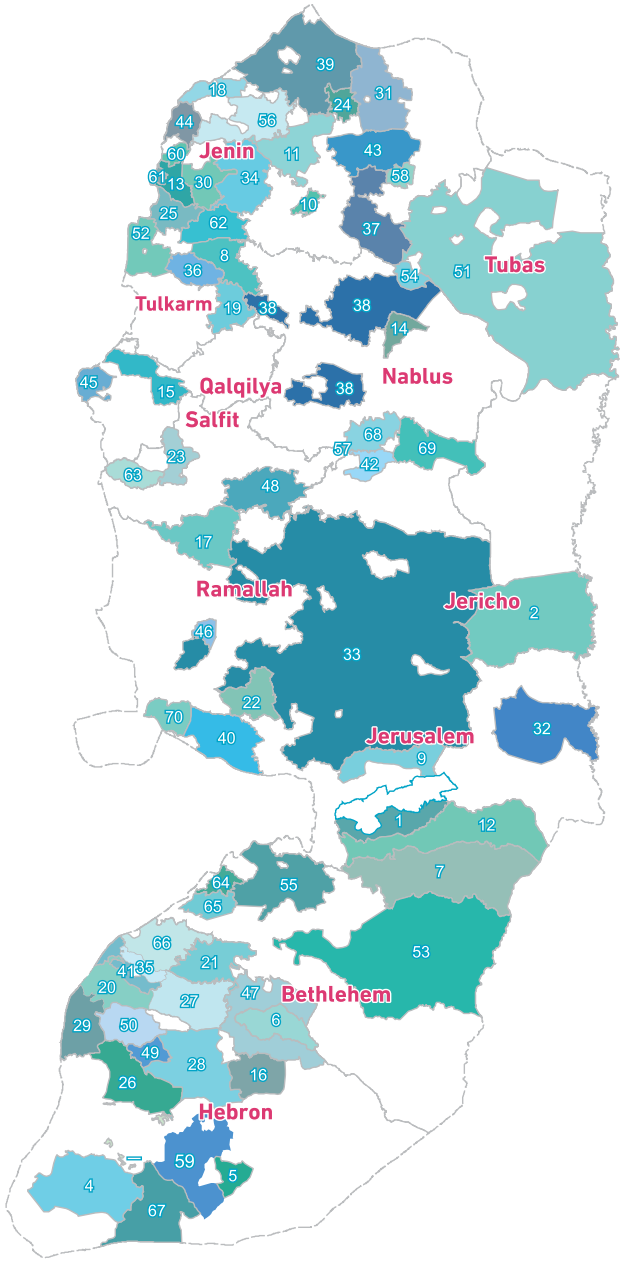
Service providers map, by years:



Coverage of Service Providers based on the organizational structure



Water Service Providers Service Area - West Bank



1. Abu Dis
2. Al 'Auja
3. Al 'Eizariya
4. Al Dhahiriya
5. Al Karmel
6. Al Shyoukh
7. Al Ubeidiya
8. Anabta
9. Anata
10. Annzeh VC
11. Arrabeh
12. As Sawahira Ash Sharqiya
13. Attil
14. Azmut - VC
15. Azzun
16. Bani Na'im
17. Bani Zaid Al Gharbia
18. Barta'a Al Sharqiya
19. Beit Lid
20. Beit Ula
21. Beit Ummar
22. Beituniya
23. Biddya
24. Burqeen
25. Deir al Ghosoon
26. Dura
27. Halhul
28. Hebron
29. Idna
30. Illar
31. Jenin
32. Jericho
33. JWU
34. Kafr Ra'I
35. Kharas
36. Kufr al-labad
37. Mythaloun - JSC
38. Nablus
39. Northwest Jenin - JSC
40. Northwest Jerusalem - JSC
41. Nuba
42. Qabalan
43. Qabatiya
44. Qaffen
45. Qalqiliya
46. Ras karkar - VC
47. Sa'ir
48. Salfit
49. Taffouh
50. Tarqumiya
51. Tubas JSC
52. Tulkarm
53. Tuqu'
54. Wadi Al Far'a VC
55. WSSA
56. Ya'bad
57. Za'tara
58. Zababdeh
59. Yatta
60. Baqa Al Sharqiya
61. Zeita
62. Bala'
63. Al Zaweih
64. Housan
65. Nahalin
66. Soureef
67. Samu'
68 Beita
69 Aqraba
70 Beit Liqya
Governerate
JSC - Rural Dura H-4

Table No.1: Service provider's operational information on water and wastewater services - West Bank

Service provider	No. of Staff	No. of water connections	No. of wastewater connections	Population served by the water network	Population served by the wastewater network	Water network length including mains (km)
Abu Dis Cooperative Society for Water	14	3,982		27,500		35
Al 'Eizariya Municipality	13	4,922		34,000		55
Al Zaeem Municipality	8	1,745	1,200	12,000	8,000	10.5
Anabta Municipality	9	2,260	1,350	9,560	6,675	65
Anata Municipality	7	2,199	-	35,000	35,000	20
Aqraba Municipality	3	2,582		10,000		65
Arraba Municipality	2	2,808		13,500		33
As Sawahira Ash Sharqiya Municipality	2	1,050		9,000		12
Asira Alshamaliya Municipality	5	2,183		11,500		61
Attil Municipality	4	2,300		11,500		60
Azzun Municipality	3	2,077		10,800		56
Bala'a Municipality	6	1,753	279	8,500	2,550	18
Bani Naim Municipality	10	4,067		30,000		130
Bani Zaid Al Gharbia Municipality	5	2,410	84	10,000	400	50
Baqa Al Sharqiya Municipality	5	1,280	1,152	5,000	3,800	20
Barta'a Al sharqia Water Association	4	2,100		6,000		23
Beit Foureek Municipality	6	2,550		14,500		30

Table No.1: Service provider's operational information on water and wastewater services - West Bank

Service provider	No. of Staff	No. of water connections	No. of wastewater connections	Population served by the water network	Population served by the wastewater network	Water network length including mains (km)
Beit Lid Municipality	5	1,307	268	7,000	1,020	6.7
Beit Liqiya , Khirbitha Elmisbah JSC	10	3,278		16,925		61.6
Beit Ula Municipality	5	1,900		16,395		45
Beit Ummar Municipality	7	3,085		19,200		105
Beita Municipality	4	2,650		13,200		83
Beituniya Municipality	21	6,701		27,566		65.8
Biddya Municipality	11	3,500	134	13,000	670	50
Burqeen Municipality	3	1,350		7,100		33
Deir al Ghosoon Municipality	8	2,654		11,000		65
Dhahiriya Municipality	18	2,530		40,000		152
Dura Municipality	16	4,585		45,000		170
Hebron Municipality	52	22,794	19,604	232,500	186,000	600
Illar Municipality	12	1,922		8,050		62
Jabaa Municipality	3	2,050		12,800		45
Jenin Municipality	78	9,668	10,231	59,413	38,618	170
Jericho Municipality	44	6,684	1,225	34,000	15,000	204
Jerusalem Water Undertaking	280	75,760		390,000		1800

Table No.1: Service provider's operational information on water and wastewater services - West Bank

Service provider	No. of Staff	No. of water connections	No. of wastewater connections	Population served by the water network	Population served by the wastewater network	Water network length including mains (km)
Kafr Ra'I Municipality	4	1,580		9,870		58.5
Kharas Municipality	9	1,850	450	9,980	5,000	35
Kufr al labad Municipality	3	1,104	233	5,700	1,300	20
Mythaloon JSC	11	4,954	394	25,854	2,532	148
Nablus Municipality	361	49,994	49,963	208,585	202,330	549.7
Nahalin Municipality	3	1,860	-	10,100	-	28
Northwest Jerusalem Joint Service Council	19	5,400		40,000		149
Qabalan Municipality	3	1,935		9,000		45
Qabatiya Municipality	17	4,287		28,000		93
Qaffen Municipality	4	2,533		11,580		32
Qalqilia Municipality	48	12,066	14,508	59,298	56,500	162
Ras karkar village council	1	395		2,200		5
Saiir Municipality	9	2,417		28,000		70
Salfit Municipality	8	3,474	1,182	15,000	8,200	78
Shyoukh Municipality	5	1,918		13,300		67.3
Soureef Municipality	4	3,782		18,700		95

Table No.1: Service provider's operational information on water and wastewater services - West Bank

Service provider	No. of Staff	No. of water connections	No. of wastewater connections	Population served by the water network	Population served by the wastewater network	Water network length including mains (km)
South East Nablus JSC	29	6,959		30,000		42
Taffouh Municipality	5	1,769		15,000		45
Tarqumia Municipality	5	3,214		20,000		100
Tubas Joint Service Council	38	10,175	1,250	51,000	8,750	383
Tulkarm Municipality	50	17,055	8,000	90,000	65,000	236
Tuqu' Municipality	4	1,634		14,500		95
Ubeidiya Municipality	7	1,944		17,000		50
Water Supply & Sewerage Authority "WSSA" Bethlehem	53	14,126	12,245	113,052	97,998	446.5
West Jenin Joint Service Council	37	11,390		60,000		1073
Ya'bad Municipality	6	3,798		18,000		50
Yatta Municipality	17	4,895		84,000		200
Zaatara Municipality	7	1,620		8,492		96
Zababdeh Municipality	2	1,133		5,000		22
Zaweh Municipality	3	1,700		6,450		22
Zeita Municipality	3	1,115	800	3,500	3,000	5

Table No.2: Service provider's operational information on water and wastewater services - Gaza Strip

Service provider	No. of Staff	No. of water connections	No. of wastewater connections	Population served by the water network	Population served by the wastewater network	Water network length including mains (km)
Um Al Nasser	6	675	498	5,245	4,014	10
Bait Hanoun	24	5,780	4,928	56,071	50,169	180
Bait Lahia	55	7,511	7,711	96,432	84,251	185
Jabalia	111	17,072	19,132	200,819	238,473	430
Gaza	209	47,329	67,482	676,309	586,594	848
Al Zahra	5	1,240	1,200	4,669	4,377	29
Al Moghraqa	7	1,632	1,404	11,901	8,769	50
Wadi Gaza	8	1097	893	4,412	3,761	24
Al Nusairat	32	8,423	8,063	91,094	89,176	170
Al Buraij	21	4,093	3,912	45,774	43,365	70
Al Maghazi	12	3,011	2,560	29,271	25,266	69
Al Zawayda	6	2,939	1,970	25,606	19,799	91
Deir Elbalah	42	7,928	6,790	86,380	78,196	253

Table No.2: Service provider's operational information on water and wastewater services - Gaza Strip

Service provider	No. of Staff	No. of water connections	No. of wastewater connections	Population served by the water network	Population served by the wastewater network	Water network length including mains (km)
Wadi Al-Salqa	4	700	0	7,063	-	28
Al Musaddar	3	430	229	2,292	1,146	20
Al Qarara	20	2,525	120	29,138	2,590	130
Khanyounis	150	22,396	20,166	219,954	173,213	556
Bani Suheila	26	5,614	2,130	43,944	18,503	120
Abasan Al Kabira	26	4,226	0	28,385	-	110
Abasan Al Jadidah	5	1,338	0	9,333	-	39
Khoza'a	6	1,958	0	12,712	-	57
Al Foukhari	9	1,239	0	6,473	-	58
Rafah-CMWU	72	20,956	18,128	220,244	194,742	486
Al Nasser	6	1,742	0	6,495	-	58
Al Shoka	20	1855	1000	14,632	6,402	80

Table No. (3): Quantities of water available to water service providers in the West Bank in 2021				
Service provider	Local water resources - wells	Local water resources - springs	Purchased water (3m)	Total of available water
Abu Dis Cooperative Society for Water	-	-	731,702	731,702
Al 'Eizariya Municipality	-	-	1,273,274	1,273,274
Al Zaeem Municipality	-	-	300,000	300,000
Anabta Municipality	892,364	-	-	892,364
Anata Municipality	-	-	1,115,039	1,115,039
Aqraba Municipality	-	-	304,585	304,585
Arraba Municipality	-	-	341,923	341,923
As Sawahira Ash Sharqiya Municipality	-	-	477,068	477,068
Asira Alshamaliya Municipality	-	-	305,157	305,157
Attil Municipality	617,567	-	-	617,567
Azzun Municipality	411,736	-	238,780	650,516
Bala'a Municipality	480,121	-	-	480,121
Bani Naim Municipality	-	-	695,000	695,000
Bani Zaid Al Gharbia Municipality	-	-	390,158	390,158
Baqa Al Sharqiya Municipality	301,560	-	-	301,560
Barta'a Al sharqia Water Association	-	65,230	280,353	345,583
Beit Foureek Municipality	-	-	471,750	471,750
Beit Lid Municipality	-	-	198,000	198,000
Beit Liqiya , Khirbitha Elmisbah JSC	-	-	928,098	928,098
Beit Ula Municipality	-	-	547,817	547,817

Table No. (3): Quantities of water available to water service providers in the West Bank in 2021				
Service provider	Local water resources - wells	Local water resources - springs	Purchased water (3m)	Total of available water
Beit Ummar Municipality	-	-	1,059,681	1,059,681
Beita Municipality	-	-	555,977	555,977
Beituniya Municipality	-	-	1,223,687	1,223,687
Biddya Municipality	315,110	-	343,204	658,314
Burqeen Municipality	139,722	-	152,683	292,405
Deir al Ghosoon Municipality	500,000	-	-	500,000
Dhahiriya Municipality	-	-	748,123	748,123
Dura Municipality	-	-	1,010,671	1,010,671
Hebron Municipality	-	-	10,126,297	10,126,297
Illar Municipality	-	-	966,090	966,090
Jabaa Municipality	-	-	277,253	277,253
Jenin Municipality	1,014,813	-	2,663,593	3,678,406
Jericho Municipality	-	3,348,629	-	3,348,629
Jerusalem Water Undertaking	-	2,713,019	17,258,824	19,971,843
Kafr Ra'I Municipality	-	-	456,571	456,571
Kharas Municipality	-	-	593,269	593,269
Kufr al labad Municipality	-	-	288,300	288,300
Mythaloon JSC	-	-	956,984	956,984
Nablus Municipality	8,018,976	2,197,838	1,839,349	12,056,163
Nahalin Municipality	-	-	430,508	430,508

Table No. (3): Quantities of water available to water service providers in the West Bank in 2021				
Service provider	Local water resources - wells	Local water resources - springs	Purchased water (3m)	Total of available water
Northwest Jerusalem Joint Service Council	-	-	1,248,002	1,248,002
Qabalan Municipality	-	-	248,431	248,431
Qabatiya Municipality	-	-	1,296,383	1,296,383
Qaffen Municipality	725,740	-	75,740	801,480
Qalqilia Municipality	5,105,688	-	4,290	5,109,978
Ras karkar village council	-	-	76,550	76,550
Saiir Municipality	-	-	1,029,299	1,029,299
Salfit Municipality	152,878	154,948	510,360	818,186
Shyoukh Municipality	-	-	513,537	513,537
Soureef Municipality	-	-	794,096	794,096
South East Nablus JSC	-	-	1,412,802	1,412,802
Taffouh Municipality	-	-	418,194	418,194
Tarqumia Municipality	-	-	601,524	601,524

Table No. (3): Quantities of water available to water service providers in the West Bank in 2021				
Service provider	Local water resources - wells	Local water resources - springs	Purchased water (3m)	Total of available water
Tubas Joint Service Council	-	-	2,441,827	2,441,827
Tulkarm Municipality	8,605,623	-	10,000	8,615,623
Tuqu' Municipality	-	-	542,706	542,706
Ubeidiya Municipality	-	-	612,072	612,072
Water Supply & Sewerage Authority "WSSA" Bethlehem	1,109,463	-	5,742,662	6,852,125
West Jenin Joint Service Council	2,043,396	-	486,884	2,530,280
Ya'bad Municipality	760,414	-	2,010	762,424
Yatta Municipality	-	-	1,557,563	1,557,563
Zaatara Municipality	-	-	456,355	456,355
Zababdeh Municipality	-	-	184,820	184,820
Zaweh Municipality	-	-	288,350	288,350
Zeita Municipality	1,014,000	-	-	1,014,000

Table No. (4): Quantities of water available to water service providers in Gaza Strip in 2021						
Service provider	Local water resources - wells	Quantity of water produced from the desalination plants of the service provider	Quantity of purchased water from Israel	Quantity of purchased water from local desalination plants	Quantity of purchased water from local water-wells	Total of available water
Um Al Nasser	302,000	-	-	-	-	302,000
Bait Hanoun	4,539,511	-	-	-	-	4,539,511
Bait Lahia	7,000,000	-	-	-	-	7,000,000
Jabalia	13,524,972	-	-	-	-	13,524,972
Gaza	27,533,655	-	8,312,000	2,074,529	-	37,920,184
Al Zahra	899,150	-	-	-	-	899,150
Al Moghraqa	787,140	-	-	-	-	787,140
Wadi Gaza	201,214	-	-	-	-	201,214
Al Nusairat	3,649,297	128,834	1,146,220	-	382,230	5,306,581
Al Buraij	1,800,707	3,650	519,084	-	19,300	2,342,741
Al Maghazi	1,201,192	-	392,127	-	-	1,593,319
Al Zawayda	1,150,600	-	-	-	-	1,150,600
Deir Elbalah	5,374,333	-	-	308,860	-	5,683,193

Table No. (4): Quantities of water available to water service providers in Gaza Strip in 2021						
Service provider	Local water resources - wells	Quantity of water produced from the desalination plants of the service provider	Quantity of purchased water from Israel	Quantity of purchased water from local desalination plants	Quantity of purchased water from local water-wells	Total of available water
Wadi Al-Salqa	290,180	-	-	-	-	290,180
Al Musaddar	237,290	-	-	-	-	237,290
Al Qarara	1,409,391	-	-	-	-	1,409,391
Khanyounis	9,728,582	-	-	354,170	-	10,082,752
Bani Suheila	484,729	93,075	1,625,438	-	-	2,203,242
Abasan Al Kabira	55,380	-	1,404,903	-	232,950	1,693,233
Abasan Al Jadidah	56,290	-	400,231	-	65,626	522,147
Khoza'a	13,889	-	553,006	-	115,967	682,862
Al Foukhari	323,766	-	-	-	-	323,766
Rafah-CMWU	10,095,649	200,507	-	428,582	-	10,724,738
Al Nasser	519,266	-	-	-	-	519,266
Al Shoka	710,710	-	-	-	-	710,710

The Second Chapter

Detailed Review of WSP's performance based on indicators

Technical indicators

1. Average daily water consumption per person for domestic usage

The importance of this indicator stems from the fact that international organizations use it to measure individuals access to their water rights. Hence, it is, in turn, it reflects monitoring of service providers' performance.

For accurate reflection of water availability per person per day, service providers should separate domestic water consumption from other types of consumption (e.g. commercial, tourism-related, industrial, etc) to obtain real results of this indicator. Some service providers still measure the overall consumption without separating domestic consumption from other types of consumption. This affected daily consumption rate per capita, and therefore, the services providers became excluded from the results of this indicator.

The results of this indicator shows that more than 40 service providers in the West Bank and 15 service providers in Gaza Strip out of the total number of service providers included in this report, do not classify connections by consumption types. It should be noted that separation by type of use or connection can easily be done by meter readers at no cost.

The least average water domestic consumption per capita (litre/Person/day).

The West Bank

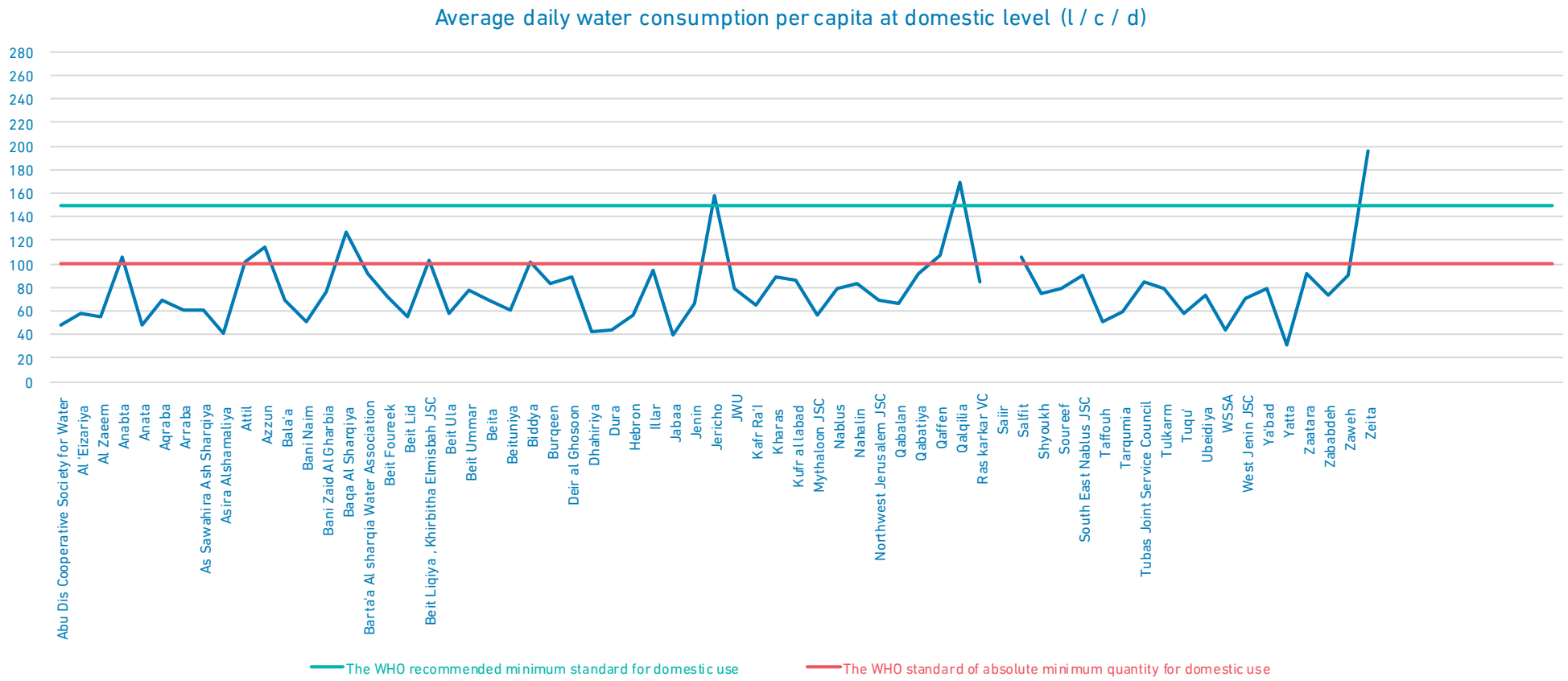
Dhahiriya Municipality	Jabaa Municipality	Yatta Municipality
41	34	32

Gaza Strip

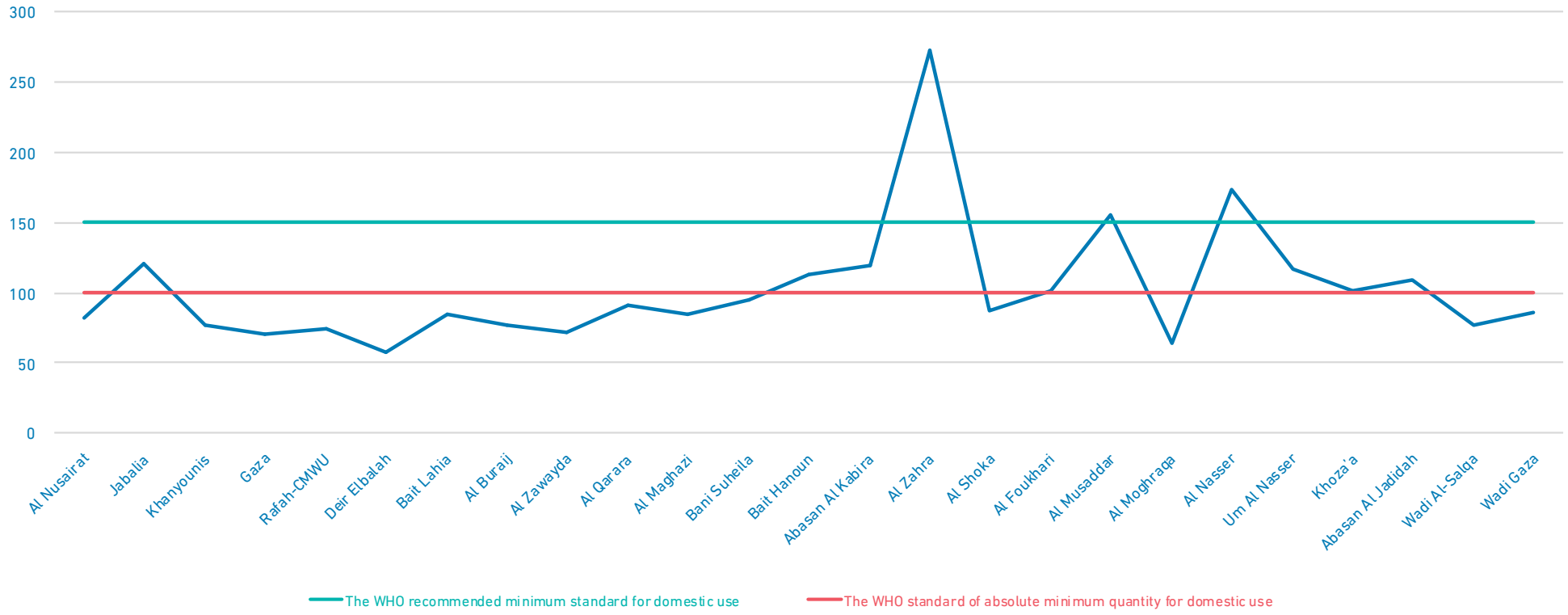
Gaza and Al Zawayda	Al Moghraqa	Deir Elbalah
71	64	58

The WHO preferred minimum benchmark for domestic use is 150 litres per capita/day, although the global minimum is 100 litres/capita/day.

West Bank


Average daily water consumption per capita at domestic level (l / c / d)
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
Abu Dis Cooperative Society for Water
Al 'Eizariya
Al Zaeem
Anabta
Anata
Aqraba
Arraba
As Sawahira Ash Sharqiya
Asira Alshamaliya
Attil
Azzun
Bala'a
Bani Naim
Bani Zaid Al Gharbia
Baqa Al Sharqiya
Barta'a Al sharqia Water Association
Beit Foureek
Beit Lid
Beit Liqiya , Khirbitha Elmisbah JSC
Beit Ula
Beit Ummar
Beita
Beituniya
Biddya
Burqeen
Deir al Ghosoon
Dhahiriya
Dura
Hebron
Illar
Jabaa
Jenin
Jericho
JWU
Kafr Ra'i
Kharas
Kufr allabad
Mythaloon JSC
Nablus
Nahalin
Northwest Jerusalem JSC
Qabalan
Qabatiya
Qaffen
Qalqilia
Ras karkar VC
Saiir
Salfit
Shyoukh
Soureef
South East Nablus JSC
Taffouh
Tarqumia
Tubas Joint Service Council
Tulkarm
Tuqu'
Ubeidiya
WSSA
West Jenin JSC
Ya'bad
Yatta
Zaatara
Zababdeh
Zaweh
Zeita
The WHO recommended minimum standard for domestic use
The WHO standard of absolute minimum quantity for domestic use

Average daily water consumption per capita at domestic level (l / c / d)



Only eleven service providers in the West Bank meet the WHO minimum benchmark (100 litres/capita/day), namely in Annabta, Atil, Azoun, Baqa Ash-Sharqiyya, Beit Liqya, Bedia, Jericho, Qafin, Qalqiliya, Salfit, and Zeta.

In other areas, the supplied amounts are far less the minimum to meet the basic needs, as in the case in Dura and Yatta.

The case in Gaza Strip seems better than the West Bank. For example, the minimum domestic consumption does not fall below 50 litres/capita/day. Nonetheless, the quality of water constitutes a major obstacle for service providers in Gaza Strip.

According to PWA and UN reports, more than 96% of the water provided to the population by different service providers is not potable. Moreover, the supplied amounts to some localities do not meet the minimum requirement to manage through the Covid-19 pandemic such as hygiene requirements.

2. Average daily sold water for all types of consumption:

This indicator measures total water consumption according to the number of individuals for all uses, including domestic, commercial, industrial, and tourist-related and bulk users. The indicator is calculated to compare service providers consumptions when they do not separate the different water consumption types.

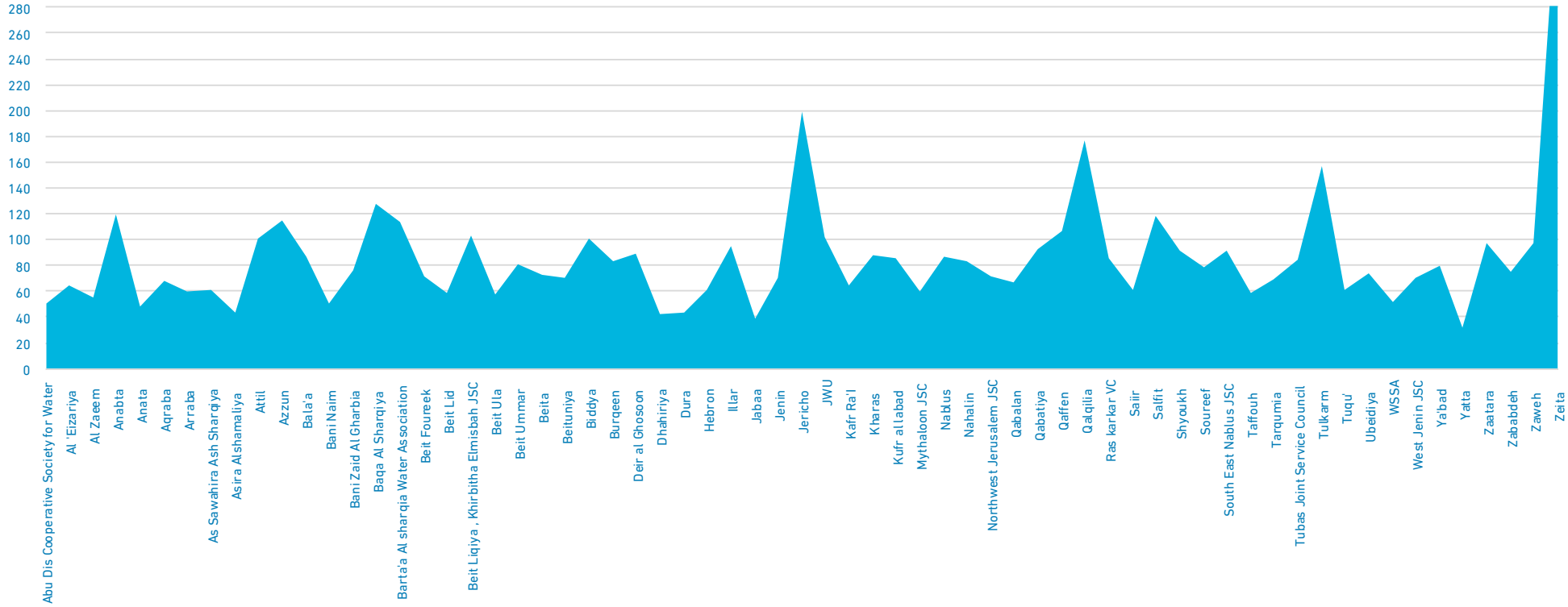
The lack of a sound classification of connections due to the unified tariff applied to all connections regardless of the consumption type, noting that this reason will lose its importance when applying the single tariff system which was recently approved by the Cabinet of Ministers.

The WSRC, therefore, recommends that the service providers exert further effort to classify different types of consumption– given the vitality of the average per capita domestic consumption indicator. This indicator cannot be accurately measured without separating domestic usage from other purposes. For instance, the amount available in Illar is enormous, yet around 40% of it is bulk sales to neighbouring areas, and a considerable portion of this water is used for domestic agricultural purposes. This also applies to Jericho and Hebron, where a large part of sold water is used for commercial, industrial, and farming activities. The municipality of Gaza provides water for dozens of ready-mix concrete factories and commercial and tourist facilities.

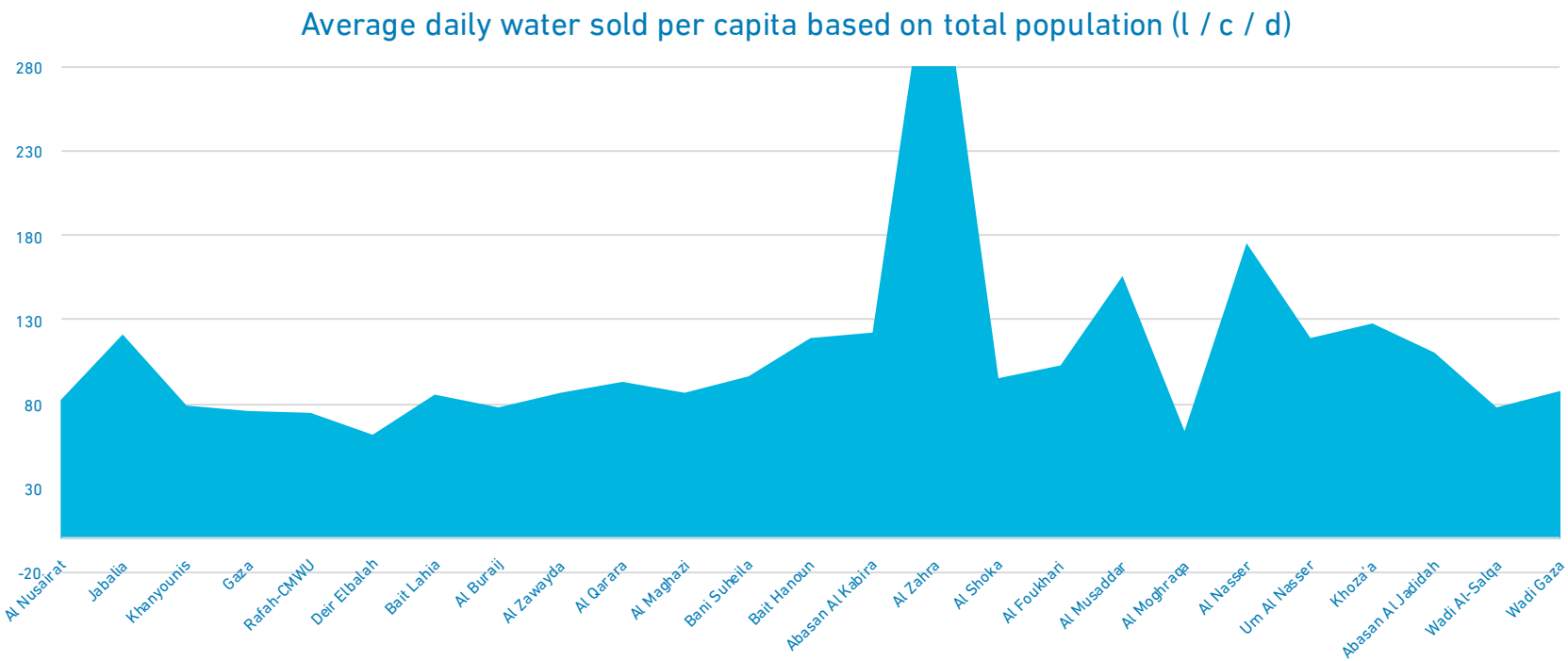
Although Al-Zahra is a small city, its municipality shows the highest average of capita value per day due to the presence of several university campuses and courts, and the existence of a large percentage of homes with swimming pools and gardens.

Calculating all these categories as one would unavoidably lead to misleading results on the consumption per capita and cannot be compared with the WHO water consumption standards.

Average daily water sold per capita based on total population (l / c / d)



Gaza Strip



Although several water service providers cannot increase the supplied water due to various reasons, first and foremost, the Israeli control over the Palestinian water resources, Nevertheless, they should optimal use of the available resources by minimising losses.

Average daily water sold per capita based on total population (l/c/d)

West Bank

Anata 48
Asira Alshamaliya 43
Dhahiriya 42
Dura 28
Jabaa 39
Yatta 32

Gaza Strip

NA

West Bank

Abu Dis Cooperative Society for Water 51	Al 'Eizariya 65	alZa'im 55	Qabalan 67	West Jenin Joint Service Council 70
Aqraba 69	Arraba 60	As Sawahira Ash Sharqiya 60	Qabatiya 92	Ya'bad 79
Bala'a 87	Bani Naim 51	Bani Zaid Al Gharbia 77	Ras karkar village council 85	Taffouh 59
Beit Foureek 71	Beit Lid 59	Beit Ula 58	Soureef 79	Tarqumia 70
Beit Ummar 81	Beita 73	Beituniya 70	Shyoukh 91	Tuqu' 61
Burqeen 84	Deir al Ghosoon 89	Hebron 61	Saiir 61	Ubeidiya 73
Illar 95	Jenin 71	Kafr Ra'I 65	South East Nablus JSC 92	Nablus 87
Kharas 88	Kufr al labad 86	Mythaloon JSC 60	Tubas Joint Service Council 84	Nahalin 83
Northwest Jerusalem Joint Service Council 72			Water Supply & Sewerage Authority "WSSA" Bethlehem 51	

Gaza Strip

Al Nusairat 82	Khanyounis 80	Gaza 76	Rafah-CMWU 75	Deir Elbalah 62
Deir Elbalah 85	Al Buraij 78	Al Zawayda 87	Al Qarara 93	Wadi Gaza 87
Al Maghazi 87	Bani Suheila 96	Al Shoka 95	Al Moghraqa 64	Wadi Al-Salqa 78

West Bank

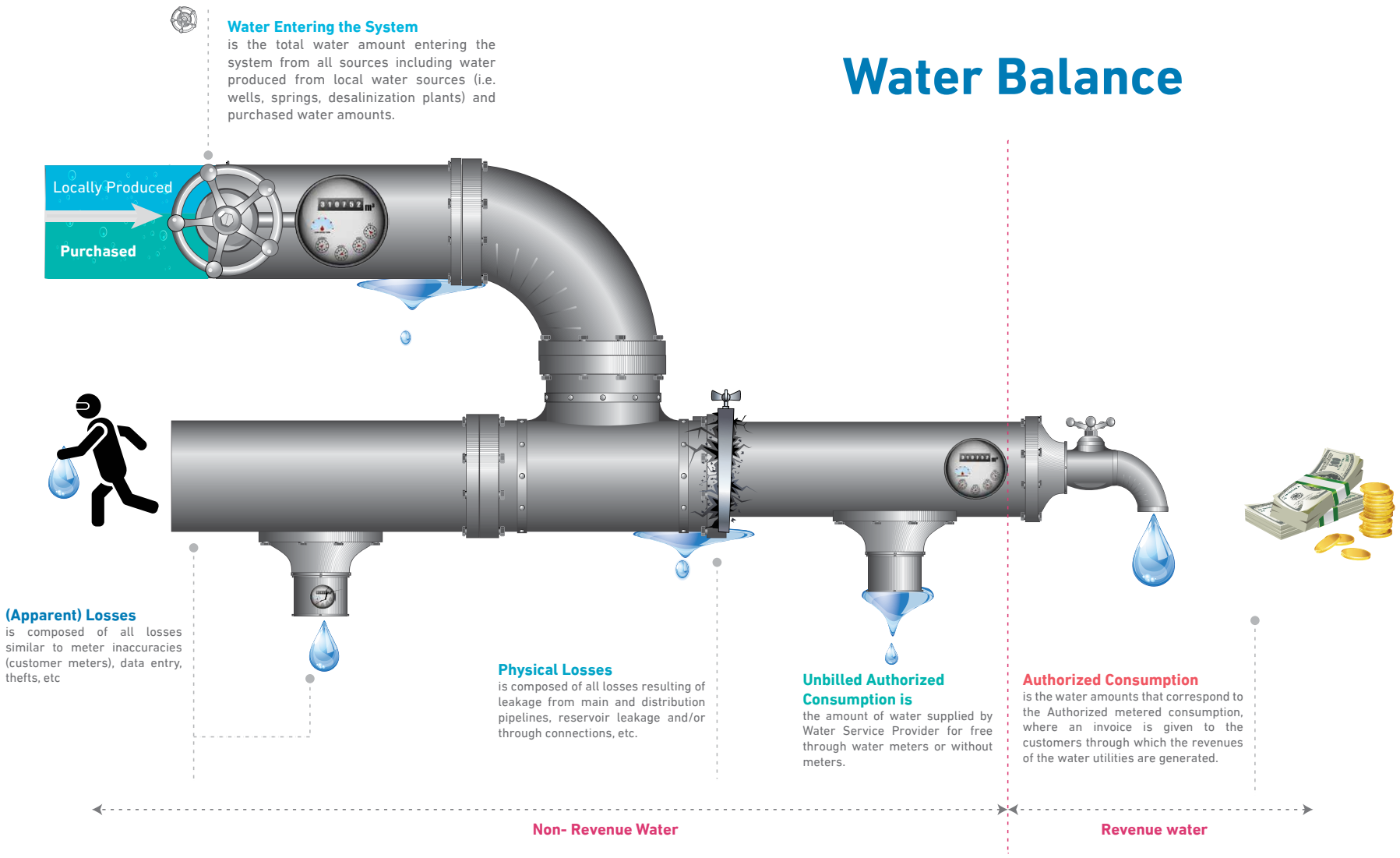
Anabta 119	Attil 101
Azzun 115	Baqa Al Sharqiya 127
Barta'a Al sharqia Water Association 114	Beit Liqiya JSC 103
Biddya 101	Jericho 199
Jerusalem Water Undertaking 102	Qaffen 106
Qalqilia 177	Salfit 119
Tulkarm 157	Zeita 372

Gaza Strip

Jabalia 122	Bait Hanoun 119
Abasan Al Kabira 123	Al Foukhari 102
Al Musaddar 156	Al Nasser 176
Um Al Nasser 119	Khoza'a 128
Abasan Al Jadidah 111	Al Zahra 373

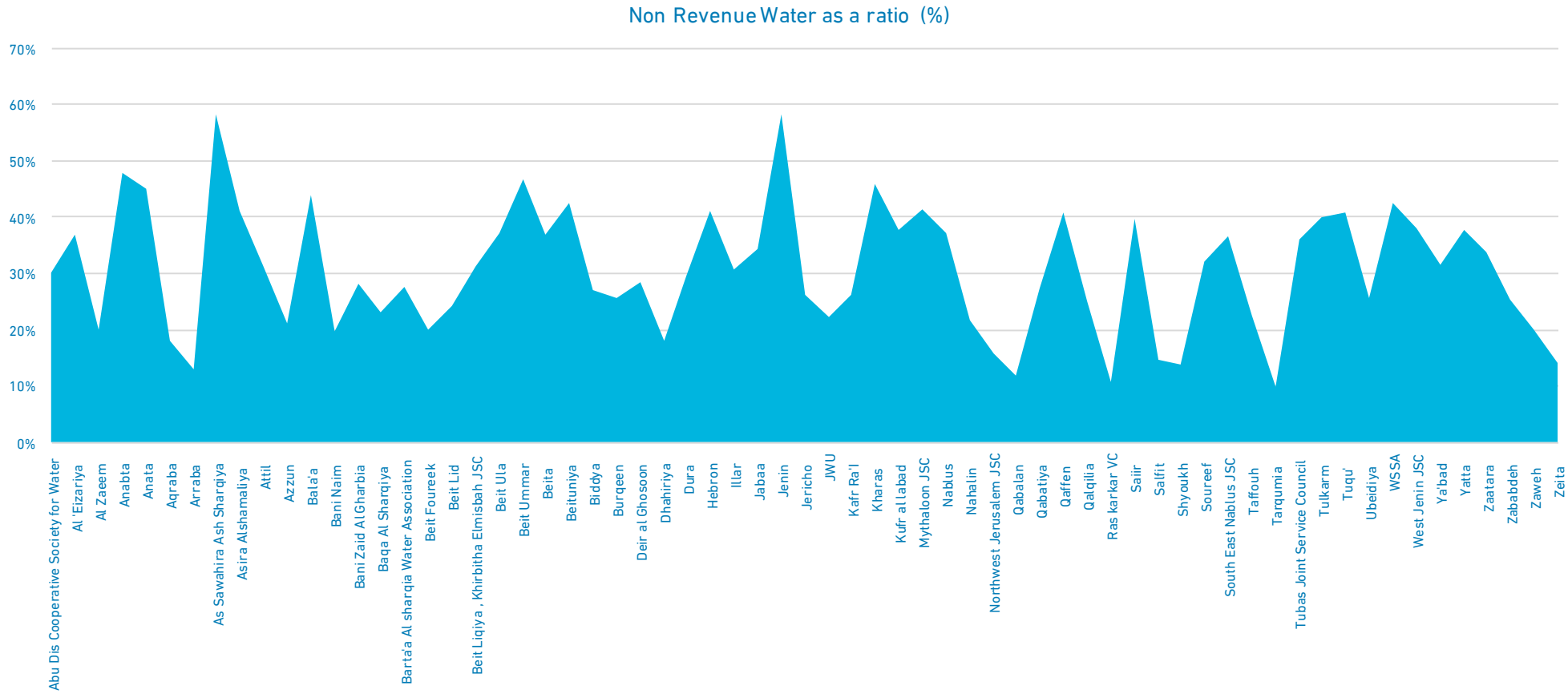
3. Percentage of non-revenue water (NRW)

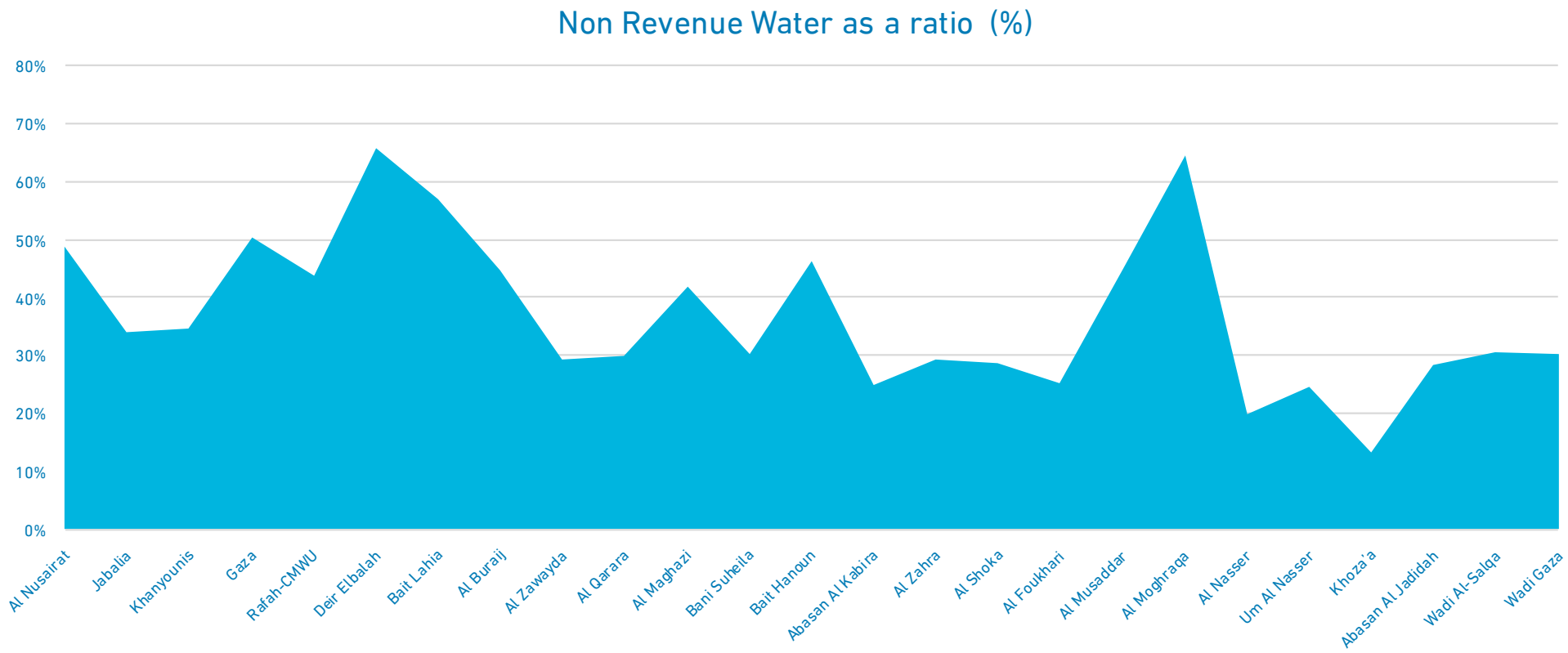
The percentage of NRW reflects the difference between water supplied through the water distribution network and water for which invoices have been issued for customers. This percentage reflects real or material losses such as water leakage, and other losses, including illegal connections, inaccurate water meters, etc.



In the West Bank, Jenin and East Swahra recorded the highest percentage of NRW at 58%, followed with Dora at 54%. There are different reasons for difference between service providers as for example, network losses and leakages are the causes of the high percentage in Jenin.

In Gaza Strip, Deir Al-Balah, Al-Mughraqa, and Beit Lahia recorded the highest percentage of NRW (66%, 64%, and 57% respectively). The increase is likely due to the inaccurate water meters and other loses, including illegal connections. Most of Gaza Strip's municipal networks are modern and are maintained periodically.



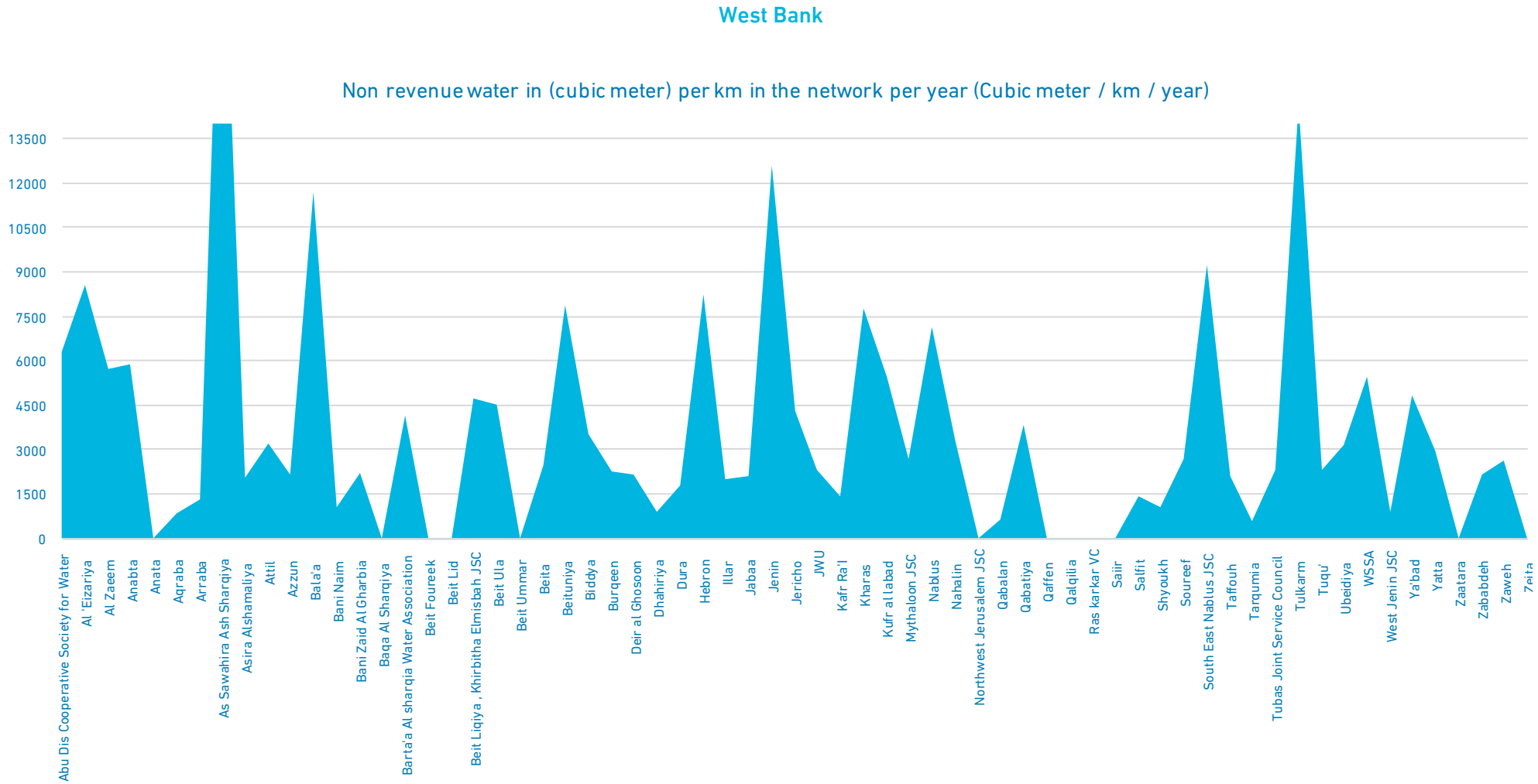


However, some service providers recorded a low percentage of NRW. Some rates were less than 15%. This decrease is likely due to the service providers' strict measures to minimise losses and new connections or the existence of new water networks. To that end, some service providers made an inventory of all connections and networks and issued bills for any damages or leakage to be charged from the responsible person or the municipality. Otherwise, there might be an inaccurate estimate of the produced and sold water by the service provider.

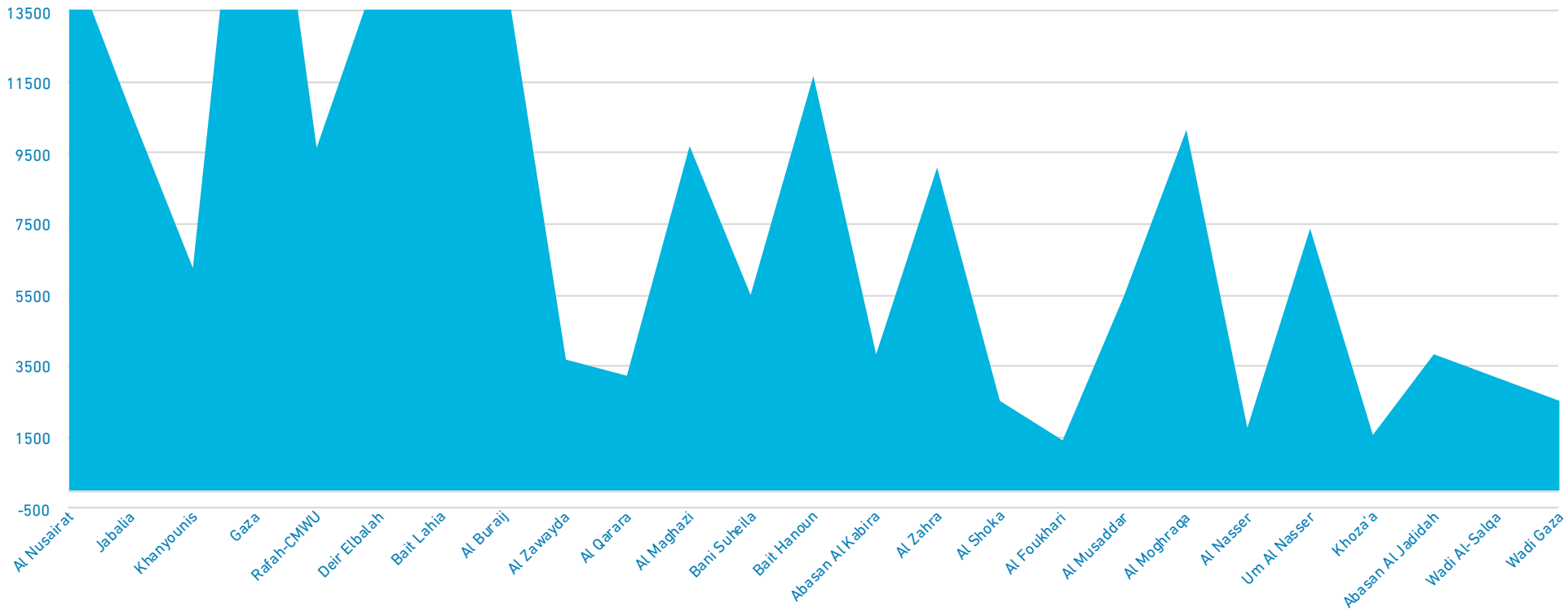
4. NRW per kilometre of the network per year

For a more precise analysis of the status of the service provider, NRW indicators should be calculated as a whole. This indicator calculates the amount of NRW per kilometer of the network, which is caused by water leakage and illegal connections.

This indicator allows us to compare service providers of different sizes. The length of the network is measured, and the amount of NRW is compared for every km in length. This indicator measures the efficiency of the network and supply lines, and its results will assist the water service provider in improving plans for future investments and repair or replacing the network.



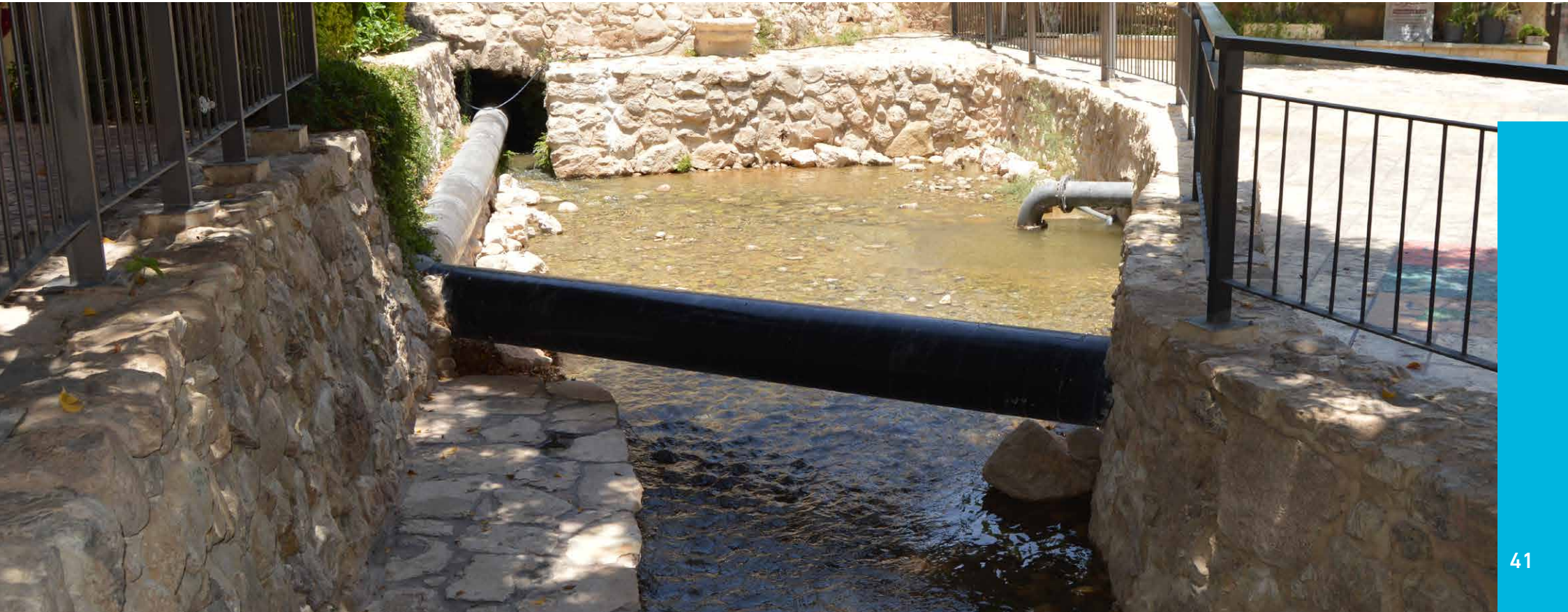
Non revenue water in (cubic meter) per km in the network per year (Cubic meter / km / year)



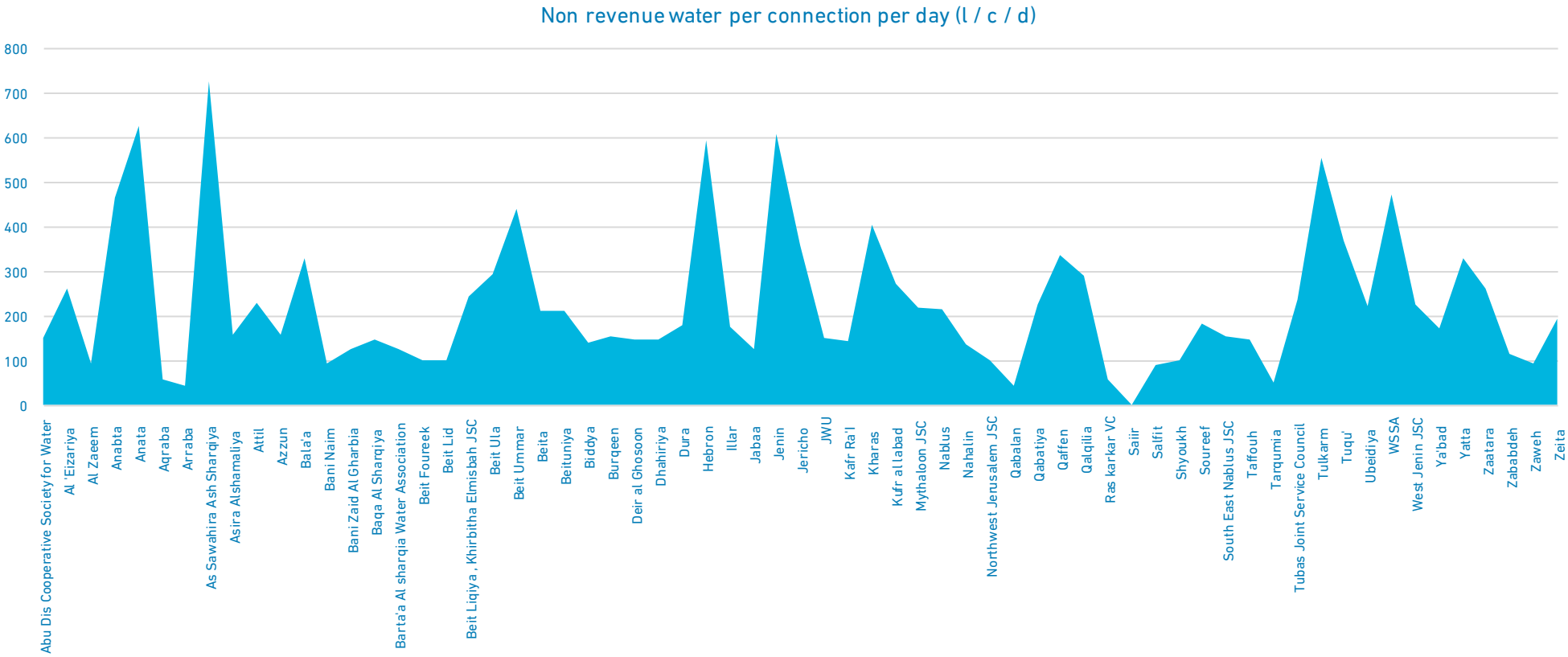
5. Daily NRW per connection

This indicator details the quantity of NRW per active connection, thus it:

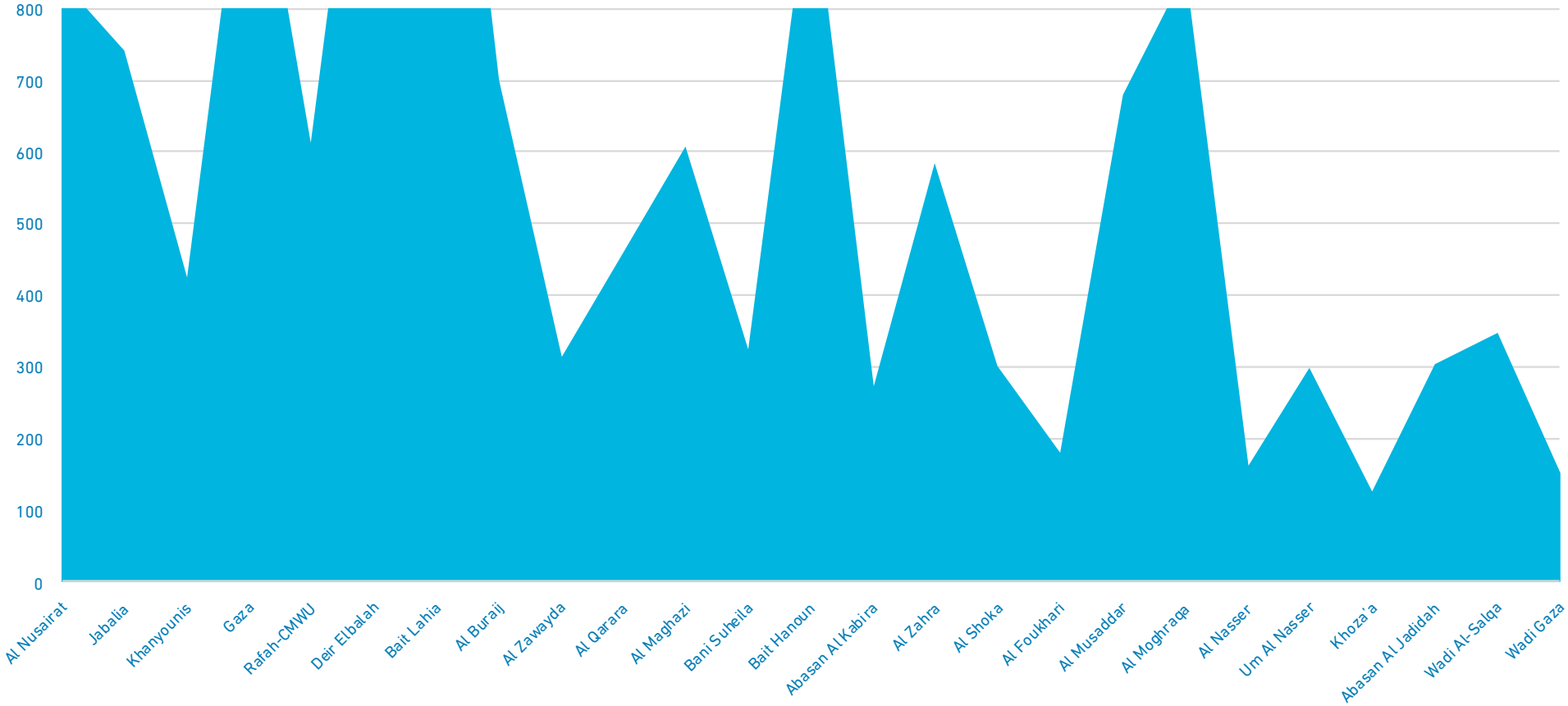
- measures additional costs borne by each legal connection, in addition to the cost of actual consumption recorded by the metres;
- measures additional quantities of water that can be made available by reducing water losses;
- helps decision-makers at different authorities determine the real need for new water sources in comparison to the available ones; and
- assists the WSRC in monitoring the levels of services provided and set improvement targets for the service providers in line with the national and international standards and directives.
- Service providers and other stakeholders can also employ the outputs of this indicator to spearhead public awareness campaigns to reduce NRW.



West Bank


Non revenue water per connection per day (l / c / d)
800
700
600
500
400
300
200
100
0
Abu Dis Cooperative Society for Water
Al 'Eizariya
Al Zaeem
Anabta
Anata
Aqraba
Arraba
As Sawahira Ash Sharqiya
Asira Alshamaliya
Attil
Azzun
Bala'a
Bani Naim
Bani Zaid Al Gharbia
Baqa Al Sharqiya
Barta'a Al sharqia Water Association
Beit Foureek
Beit Lid
Beit Liqiya , Khirbitha Elmisbah JSC
Beit Ula
Beit Ummar
Beita
Beituniya
Biddya
Burqeen
Deir al Ghosoon
Dhahiriya
Dura
Hebron
Illar
Jabaa
Jenin
Jericho
JWU
Kafr Ra'I
Kharas
Kufr allabad
Mythaloon JSC
Nablus
Nahalin
Northwest Jerusalem JSC
Qabalan
Qabatiya
Qaffen
Qalqilia
Ras karkar VC
Saiir
Salfit
Shyoukh
Soureef
South East Nablus JSC
Taffouh
Tarqumia
Tubas Joint Service Council
Tulkarm
Tuqu'
Ubeidiya
WSSA
West Jenin JSC
Ya'bad
Yatta
Zaatara
Zababdeh
Zaweh
Zeita

Non revenue water per connection per day (l / c / d)



Secondly: Financial Indicators

1. The average selling price per cubic meter of water and the operating cost per cubic meter of sold water

The indicators of average selling price per cubic meter of water and the operating cost per cubic meter of sold water have a special importance. The first is the main source of income for some service providers, while the second shows the service provider's level of knowledge of the water service real costs, and shows the extent of service providers' compliance with the governance principles.

The indicators of the average selling price per cubic meter of water and the operating costs per cubic meter of sold water should be construed as a whole, as the gap between the average selling price of a cubic meter of water and the operating costs (production, distribution and management excluding depreciation) per cubic meter of sold water becomes obvious.

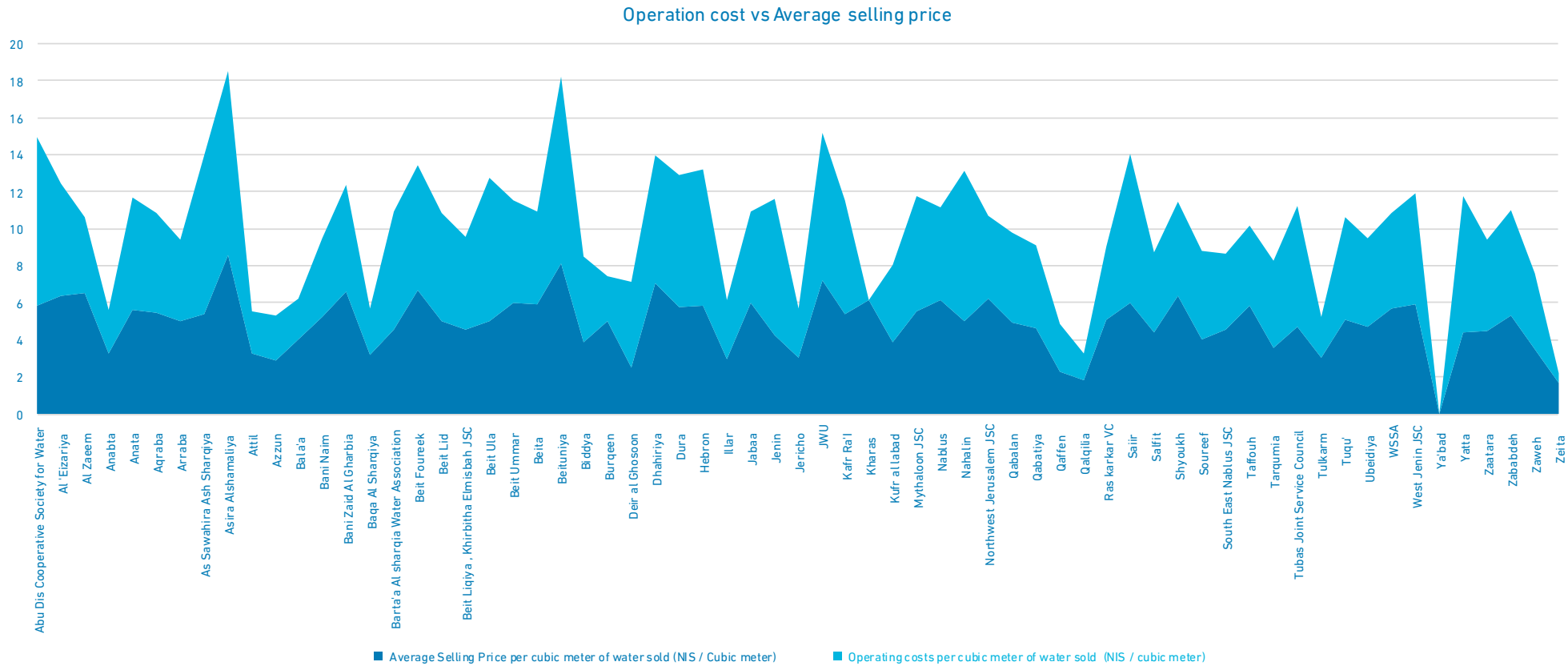
The average selling price per cubic meter varies from water service provider to another due to the disparity in operating costs. Nonetheless, the principles of water service tariff calculation according to the Tariff bylaw NO. 1 of 2013.

As noted in previous reports, the average selling price per cubic metre does not mean the service provider's tariff. In fact, it is a general indicator for the average selling price per cubic metre of water– to be compared with the operating cost, borne by the service provider. This indicator is calculated based on the billed water in ILS in relation to the total of domestic, commercial, tourism-related, and industrial and bulk sales of water per cubic metre.

In March 2021, the Water and Wastewater unified Tariff bylaw No. 4 of 2021 was issued together with its implementation guidelines . It aims at recovering the real cost, achieving service provider's financial sustainability, and standardizing the criteria for calculating water and wastewater prices, as well as connections' fees and cost of other service.

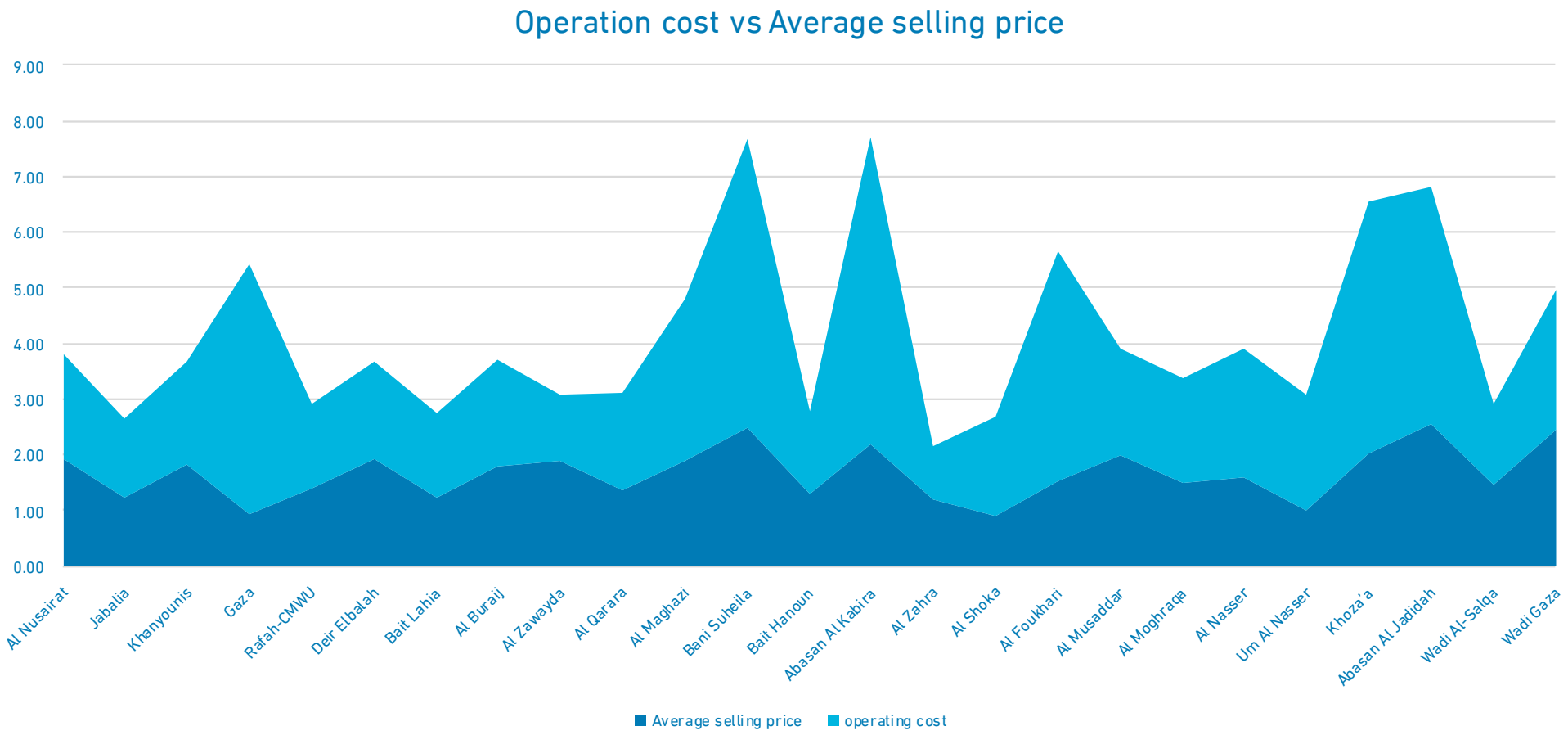
The bylaw considers achieving financial sustainability and social justice for all categories of consumption. It also considers encouraging reasonable consumption to preserve water resources; water prices increase as consumption increases.

As noted in previous reports, the average selling price per cubic metre does not mean the service provider's tariff. In fact, it is a general indicator for the average selling price per cubic metre of water– to be compared with the operating cost, borne by the service provider. This indicator is calculated based on the billed water in ILS in relation to the total of domestic, commercial, tourism-related, and industrial and bulk sales of water per cubic metre



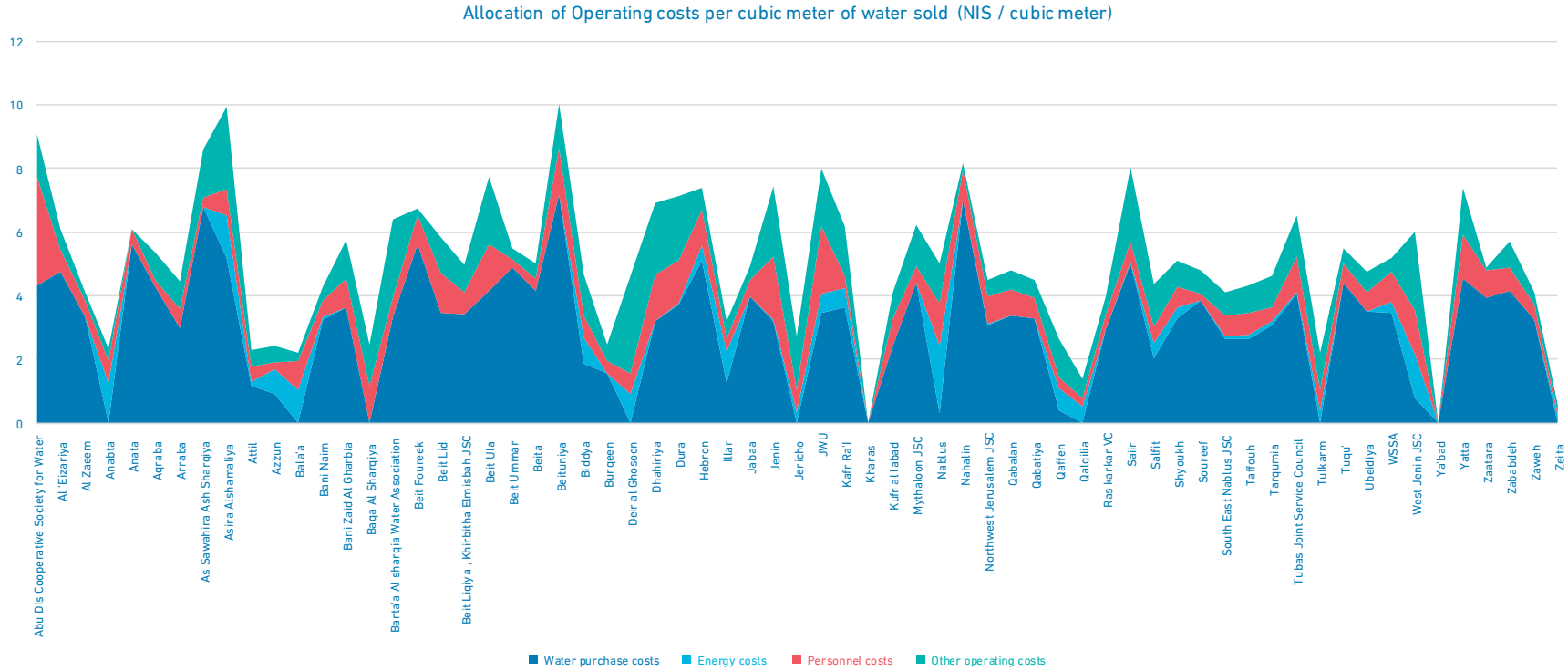
The gap between the average selling price per cubic metre of water and the operating cost per cubic metre of sold water –as showcased under the working ratio indicator (efficiency)– demonstrates that the service provider cannot cover the operating costs. In such a case, the service provider must review the operating costs to:

- ensure that operating costs are clear of any additional unjustified costs; and
- review the applied tariff in harmony with the operating costs, and thus avoid loss or failure to cover the operating costs in the initial stage and meet all the ensuing costs for sustainable and improved service provision.



The graph below details operating costs per service provider as follows:

- personnel costs per cubic metre of sold water.
- energy costs per cubic metre of sold water.
- purchased water costs per cubic metre of sold water.
- other operating costs per cubic metre of sold water.



Energy costs vary depending on the service providers' operations. Nablus recorded the highest energy costs at 40% of the operating costs. This is attributable to the number of wells operated by the municipality and the pumping stations, which pump water at different heights to adapt to the typography of the area. On the other hand, service providers who exclusively depend on purchased water for potable water reflect a relatively low energy cost or barely calculate it.

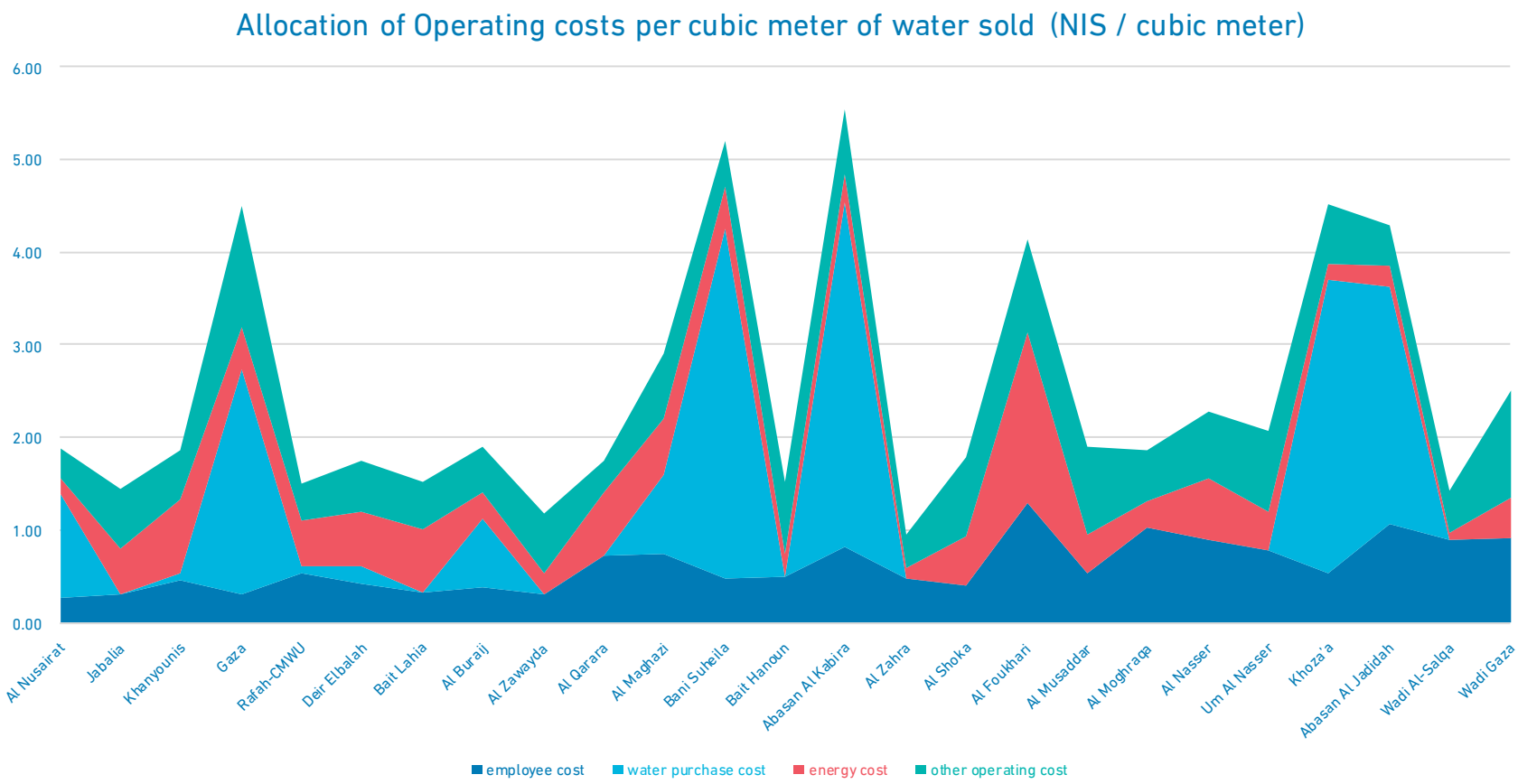
Energy losses might cause high energy expenses. Therefore, such failures need to be tracked, and the efficiency of pumps should be verified.

Compared to the service providers in the West Bank, energy expenses in Gaza Strip, stand for a considerable portion of the operating costs due to the high cost of energy in Gaza Strip. Energy expenses are even higher if the service provider uses diesel generators as in Khanyunis, Al-Foukhari, Al-Qarara, and Beit Lahia–where energy expenses stand for over 40% of the overall cost per cubic metre of water.

Purchased water does not only refer to the water procured from the West Bank Water Department (WBWD), but also to the water bought from private wells. Thus, the cost of purchased water is not tantamount to the selling price set by the WBWD (i.e. ILS 2.6 per cubic metre).

This indicator affects other factors such as NRW volumes. For example, if the water loss were high, the cost of purchased water would increase as well, although the selling price from the WBWD is the same. Still, the service provider would bear operating and administrative costs higher than the sold water.

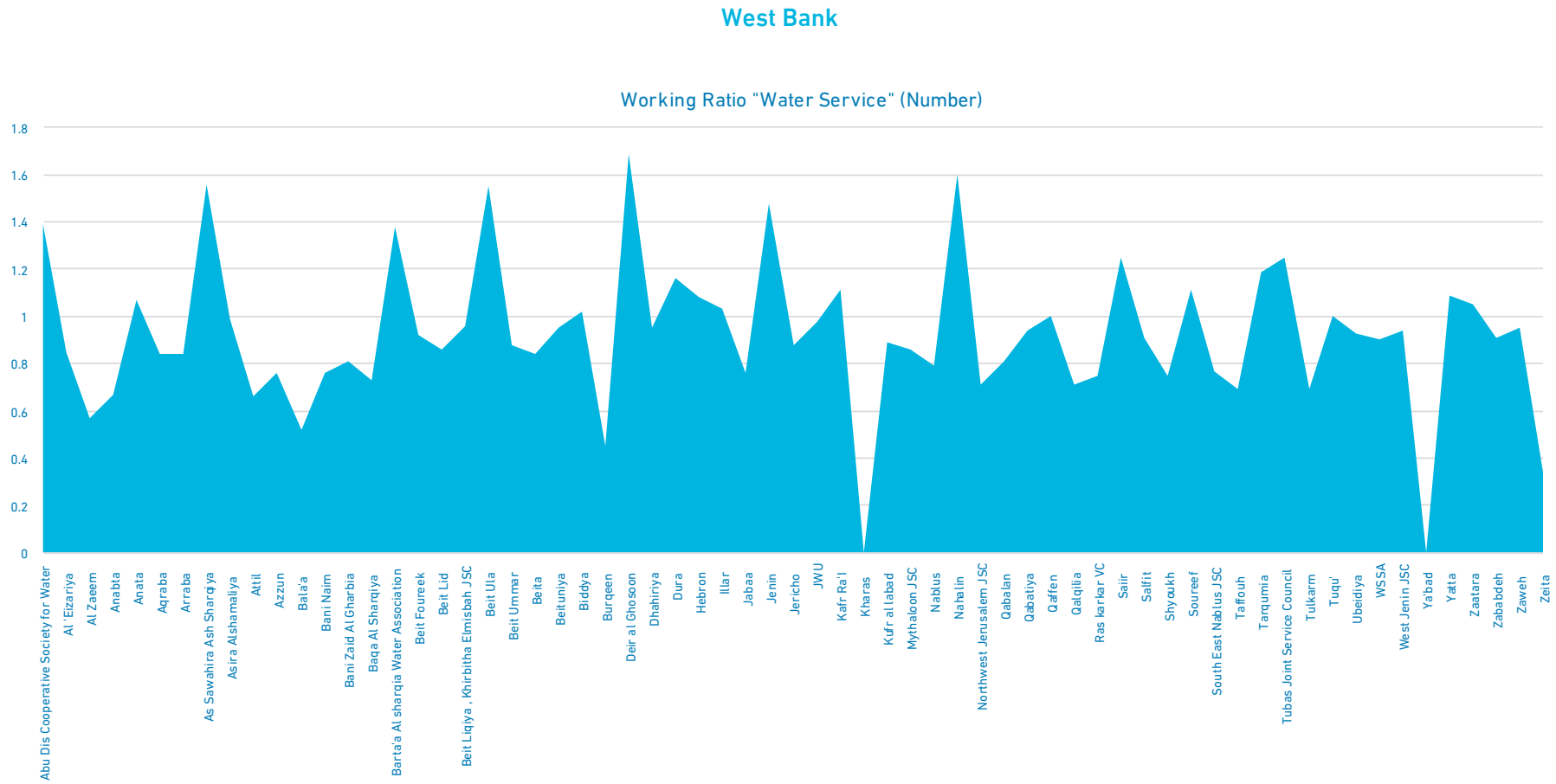
The Palestinian Authority (PA) subsidises the water price and bear portion of bulk purchasing costs–a fact many consumers do not know. Although the WBWD purchases water from Mekorot by ILS 3.2 per cubic metre, it resells it to the service providers at ILS 2.6 per cubic metre. Moreover, Mekorot adds more expenses to the WBWD's bill, such as fines and maintenance fees.



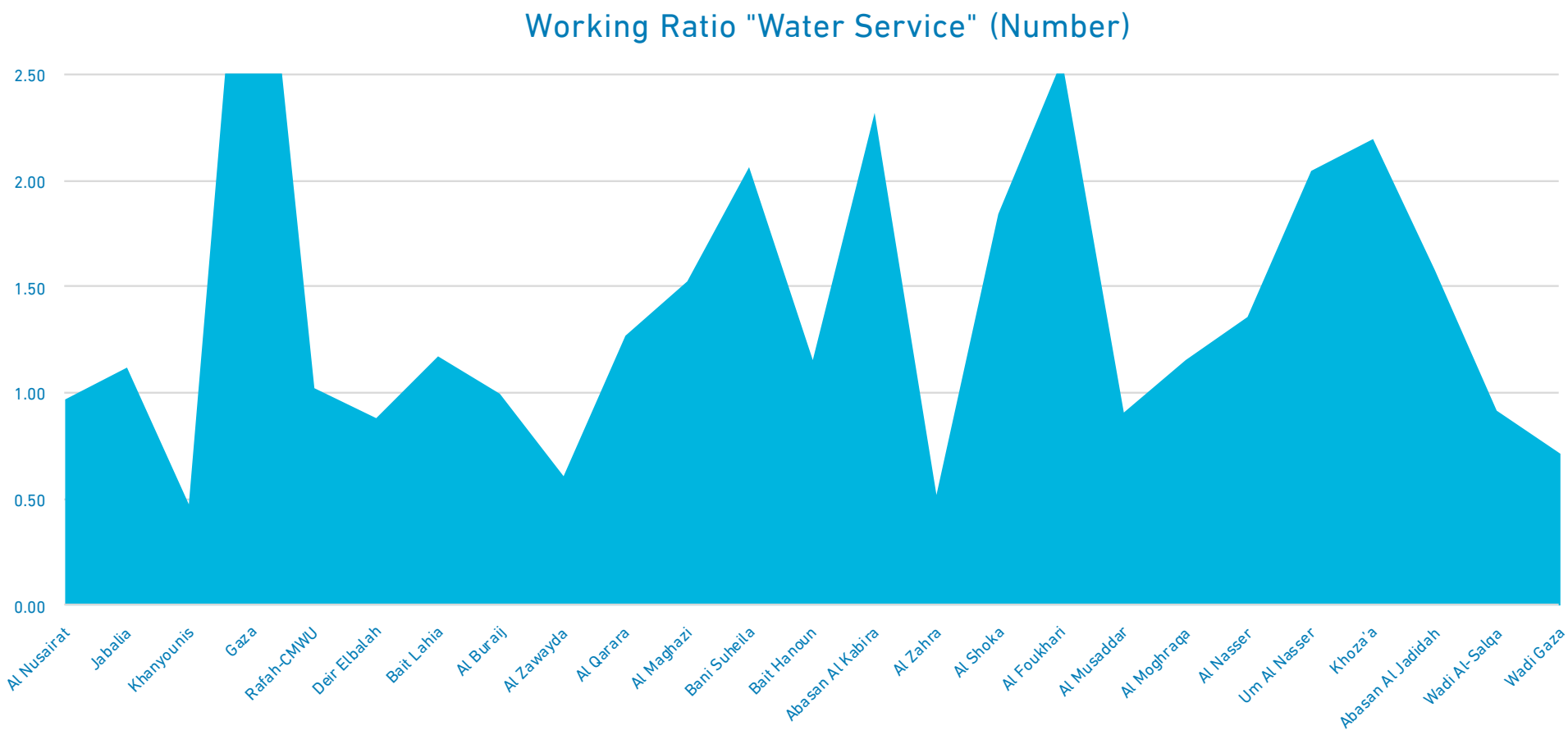
2. The working ratio (efficiency) for water services

The working ratio is calculated by taking total operating, maintenance, and administrative expenses, excluding depreciation, and dividing it by the gross billed revenues. If the percentage were more than 1 per cent, the total operating and administrative costs would exceed the billed operating revenue. Thus a deficit would be detected in the operational cycle. Should it be less than 1 per cent, the gross operating revenue would exceed the operating and administrative costs. In the latter case, the service provider would generate a surplus and cover part or all the depreciation and capital expenses. Further, if the bill data were accurate and reliable, the working ratio would provide evidence on whether the tariff is adequate to cover the operating and maintenance expenses.

Deir Al Ghosun, Nahalin, Sawhara, and Jenin recorded the highest working ratio given the large volume of NRW as indicated by the NRW indictor. Such quantities are, but material losses incurred by the service provider. In Gaza Strip, most service providers incur operating losses, and Gaza, Al Fukhari, and Abasan al-Kabira were the most affected.



Gaza Strip



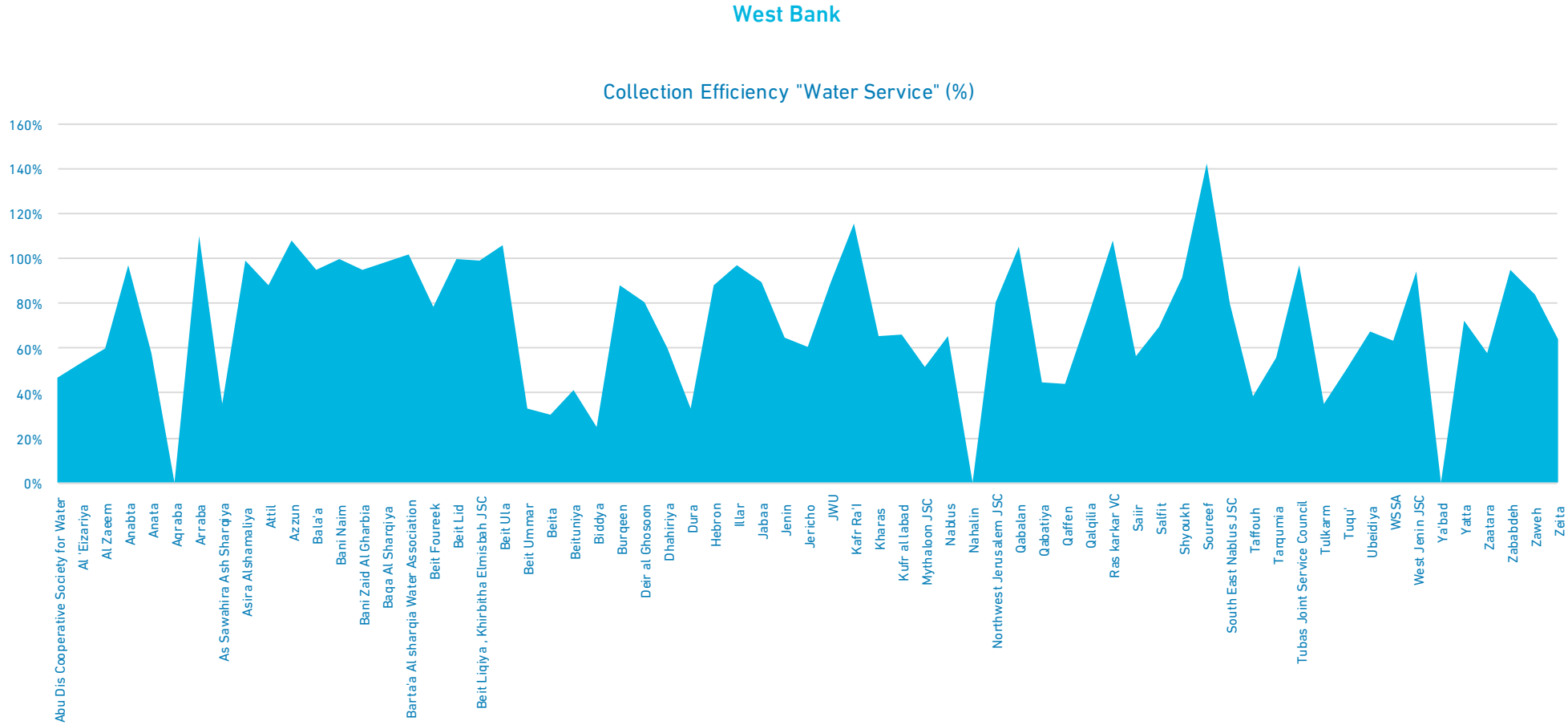
Some providers might fail to estimate joint costs from other municipal departments, and thus come up with inaccurate results, for municipal water units receive services and share costs with other departments, including but not limited to salaries and wages of the mayor and the engineering department if the water unit is part of it.

3. Collection efficiency for water services

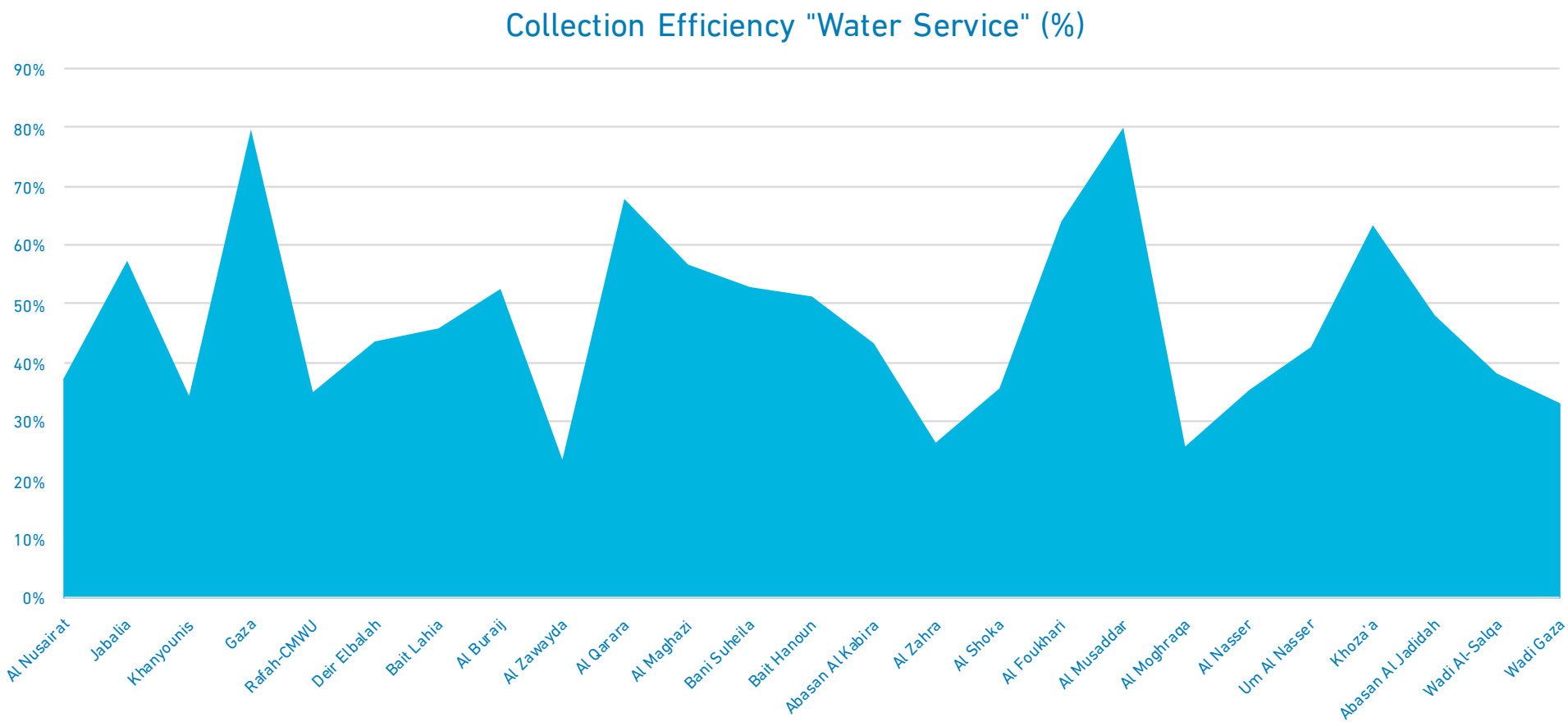
In general, collection rates are still low, particularly in Gaza Strip. This indicator measures the efficiency of the service provider's staff in performing their role and responsibilities in parallel with the consumers' willingness to pay. In the West Bank, the collection rates were drastically low. Bidya (25%), Beita (30%), and Beit Ummar (33%).

Some municipalities in the West Bank have started installing prepaid meters instead of the old ones, which has resulted in a noticeable improvement in their collection rates.

In Gaza Strip, Al-Zawaida, and Al-Zahraa and Al-Mughraqa recorded the lowest rates at 24%, 26%, respectively.



Gaza Strip



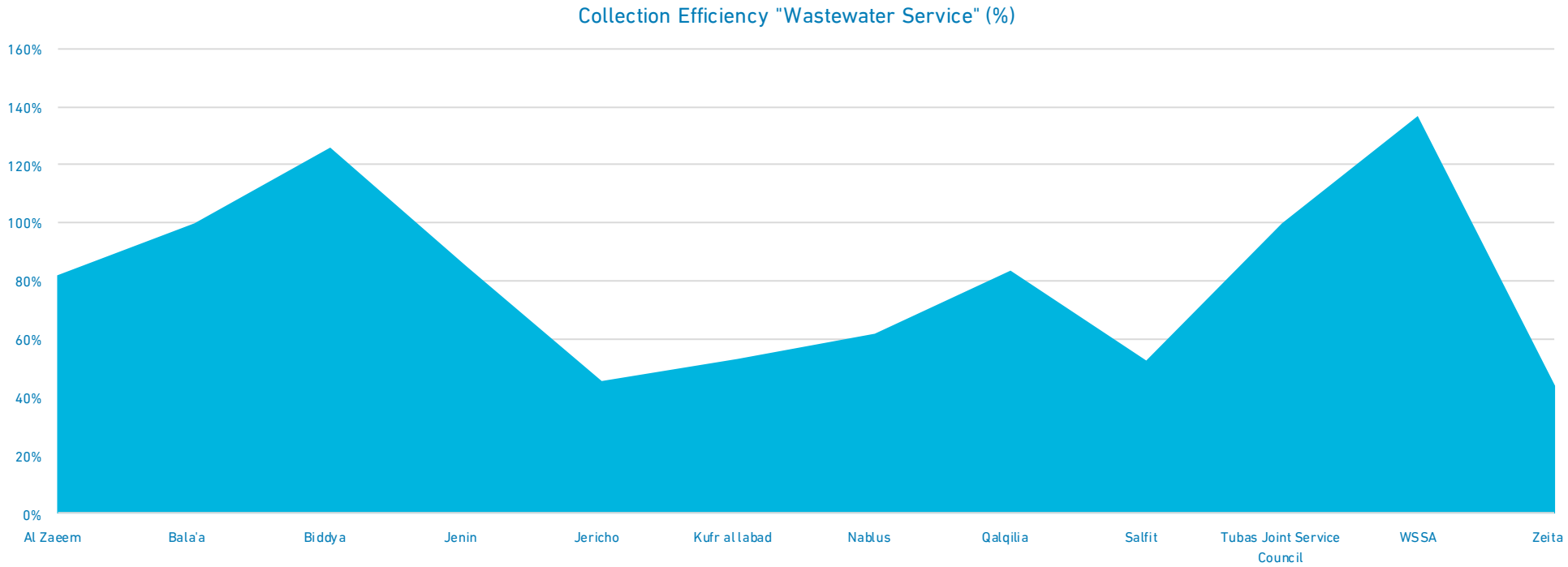
This indicator measures the percentage of collected bills issued in this year and overdue bills from past years. Ideally, collection rates should be 100% if all the bills issued in the year be collected with zero outstanding bills from previous years.

The results of some service providers show collection rates higher than 100%. Notwithstanding, such figures are attributable to the collection of overdue fees from previous years in addition to the current year's due bill. Of note, service providers stand in need of a mechanism to separate the revenue of the current year from previous years, as they use an accumulative method to record the collected revenue.

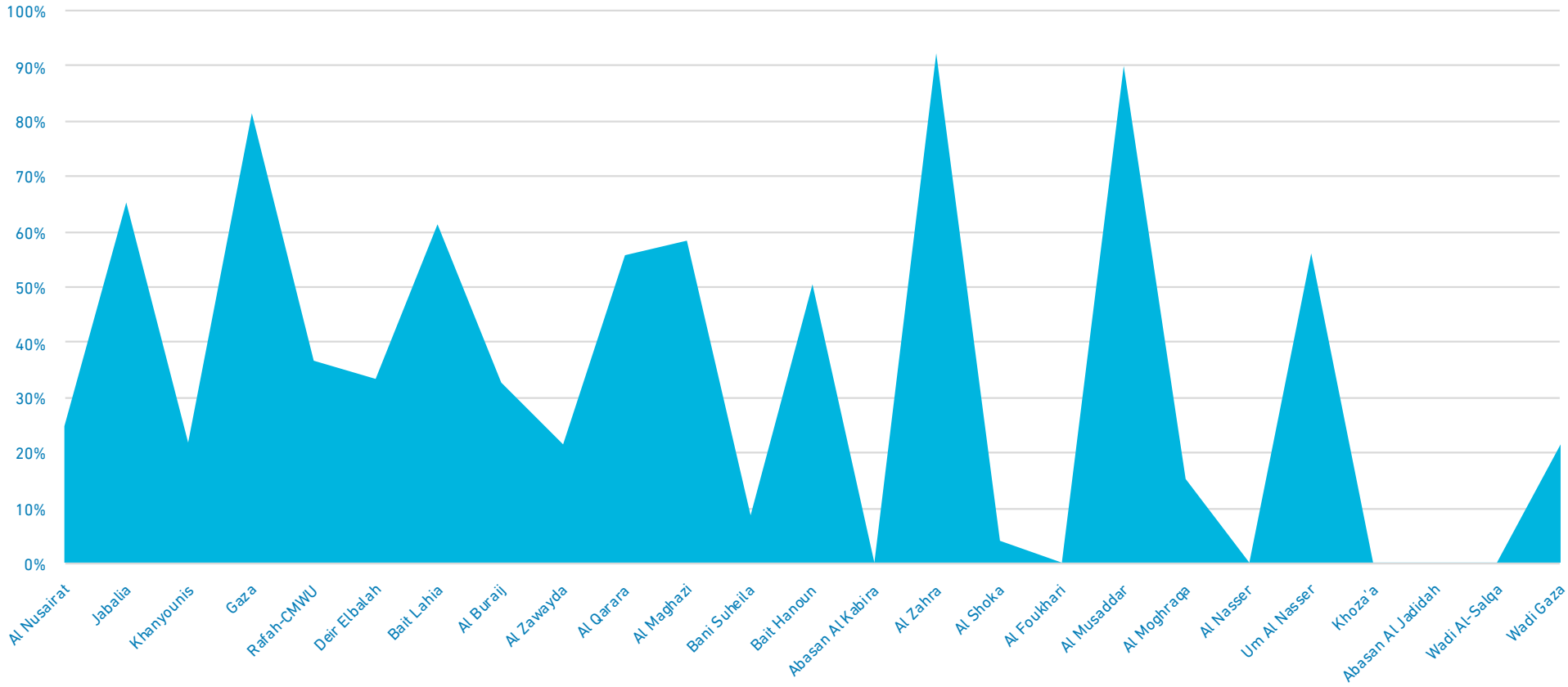
4. Collection efficiency for wastewater services

The majority of wastewater service providers in the West Bank and Gaza Strip do not separate bills for wastewater services. They issue a single bill that covers the fees of water and wastewater service consumption. Eventually, they collect the overall bill amount, which might include other items in addition to the water and wastewater services

West Bank



Collection Efficiency "Wastewater Service" (%)



Third: Water Quality Indicators

The WSRC monitors drinking water quality according to the standards set to monitor and analyse the results of water tests provided by the MOH and water Service Providers in the West Bank and Gaza Strip. These tests are Microbial tests, Free Chlorine Residual, and Nitrate. Accordingly, the data submitted for the year of 2021 was reviewed and analysed to inform the service providers - and thus the citizens - of the interpretation of the results, and to consider the recommendations assigned to them to be considered in the coming years.

On its part, the MOH regularly takes samples from the water resources, networks, pipelines, and household and institutional connections as per a well-defined sampling programme. However, water and wastewater service providers are not a party to this effort, yet the results of the tests are shared with service providers if there is an immediate need for follow-up and intervention as in the cases of containment. The service providers otherwise are not involved in the sampling either in terms of locations or size of samples. This also applies to the tests unless the service provider lodges a request to be allowed access to such data.

The list below sums up the indicators of the water quality monitored by the WSRC:

- Percentage of passed Water samples (taken from the Network including the main Water pipelines) that contain Free Chlorine Residual in the Network and main pipelines.
- Percentage of passed Water samples (taken from source) to test Total Coliform.
- Percentage of passed Water samples (taken from source) to test Fecal Coliform.
- Percentage of passed Water samples (taken from the Network including the main water pipelines) to test Total coliform.
- Percentage of passed Water samples (taken from the Network including the main water pipelines) to test Fecal coliform.
- Percentage of passed Water samples (taken from source) to test Nitrate.

Notably, most groundwater sources, especially wells, meet the high-quality specifications, while this is not the case with water transmission networks; as they meet the standard specifications. Hence, continued efforts should be made to improve access to high quality specifications.

According to the data review, the WSRC presented the results of water quality indicators in the following three points:

- First: Results of water quality tests conducted by service providers (West Bank).
- Second: Results of water quality tests conducted by the Palestinian Ministry of Health in the areas of service providers (West Bank).
- Third: Results of water quality tests provided by service providers (Gaza Strip).

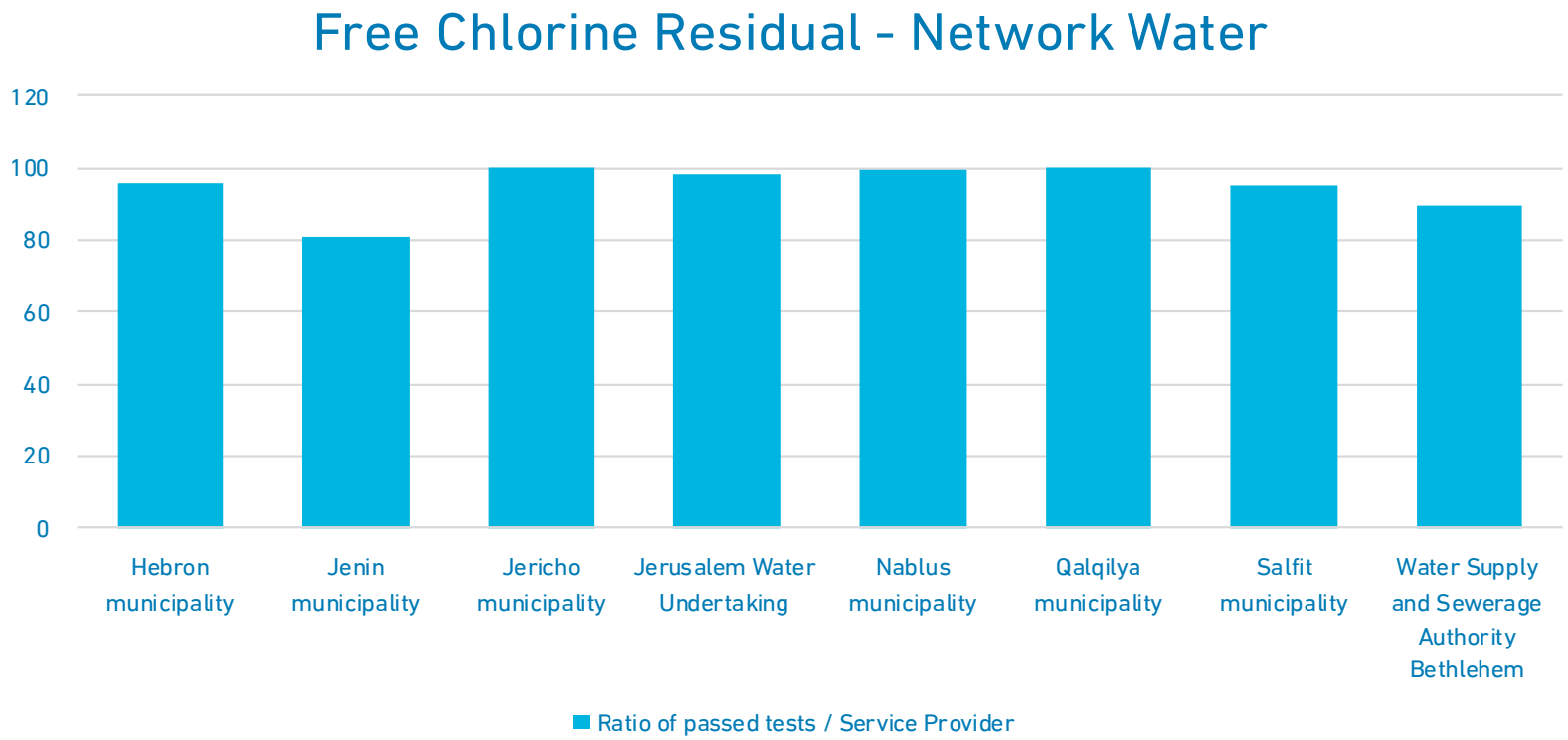
Therefore, the report extensively reviews the results of these points as follows:

First: Results of water quality tests conducted by service providers (West Bank).

According to the data review, only eight service providers have their own water quality testing laboratories, namely Hebron Municipality, Jenin Municipality, Jericho Municipality, Jerusalem Water Undertaking, Qalqilya Municipality, Salfit Municipality, Tulkarem Municipality, and Water Supply and Sewage Authority WSSA (Bethlehem - Beit Jala - Beit Sahour), while Nablus Municipality has a contract with An-Najah National University laboratories to conduct tests. At the same time, most of the other service providers depend on the MOH to monitor water quality, because they do not have laboratories or any such means, as the device for testing the Free Chlorine Residual in the water, for the necessary periodic examination and follow-up.

More clearly, the PIS regarding the percentage of passed Water samples of the above mentioned service providers are as follows:

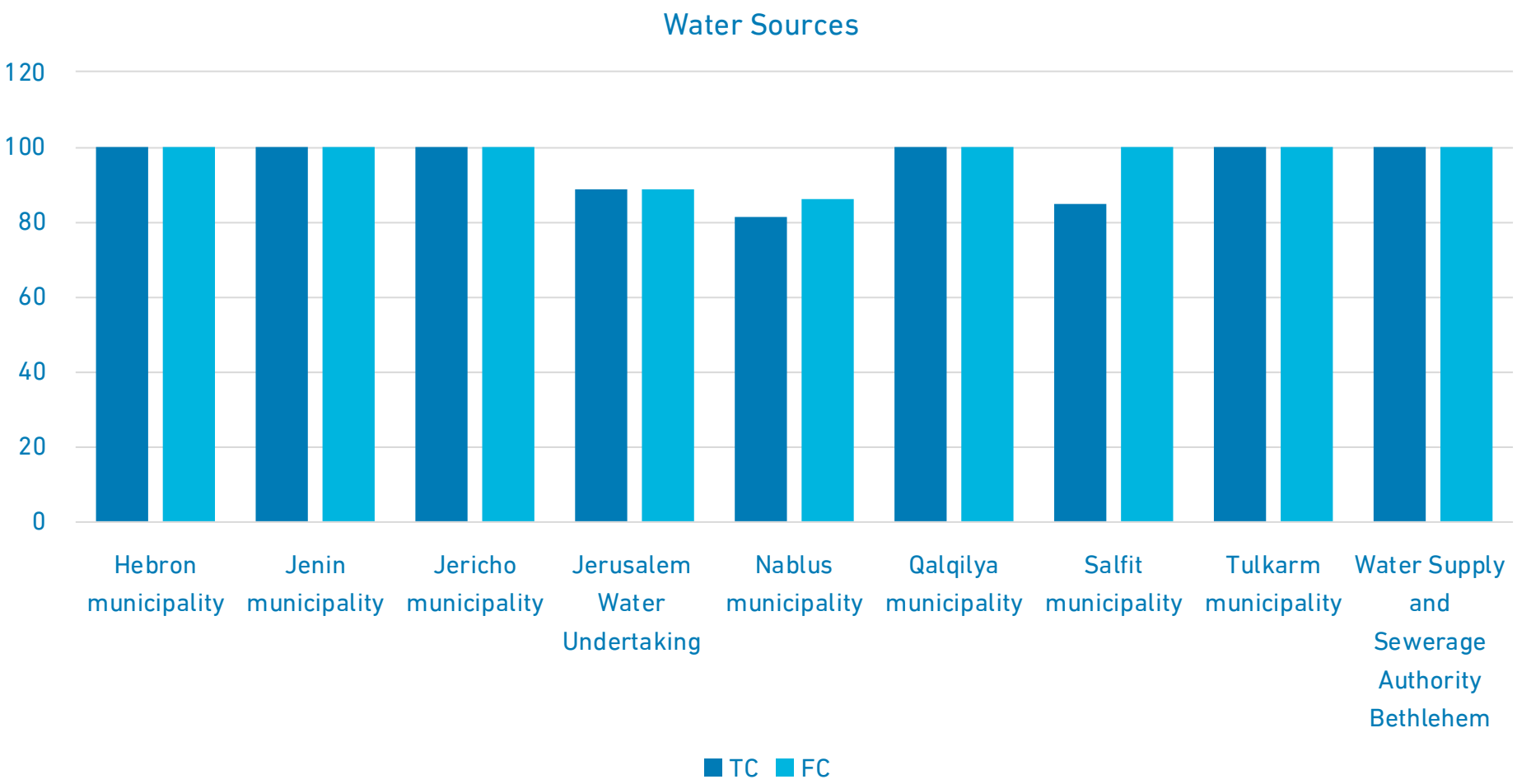
1. **Percentage of passed Water samples (taken from the Network including the main Water pipelines) that contain Free Chlorine Residual in the Network and main pipelines.**



Regarding the number of tests carried out to test Free Chlorine Residual in the network water in accordance with the instructions of the WHO and the PWA, the number of samples required per day must be calculated by the service provider. Of note, the number is two samples per 5,000 citizens who are provided with water service daily. If there is a water distribution tank, the service provider must perform the examination at least once a day to ensure that the pumped water contains the required disinfection/ratio as well as to detect any problem in the distribution network if there is a small percentage of disinfection. Therefore, the service provider must know the number of citizens who are served to determine, in advance, the number of samples that must be tested daily according to the required standards.

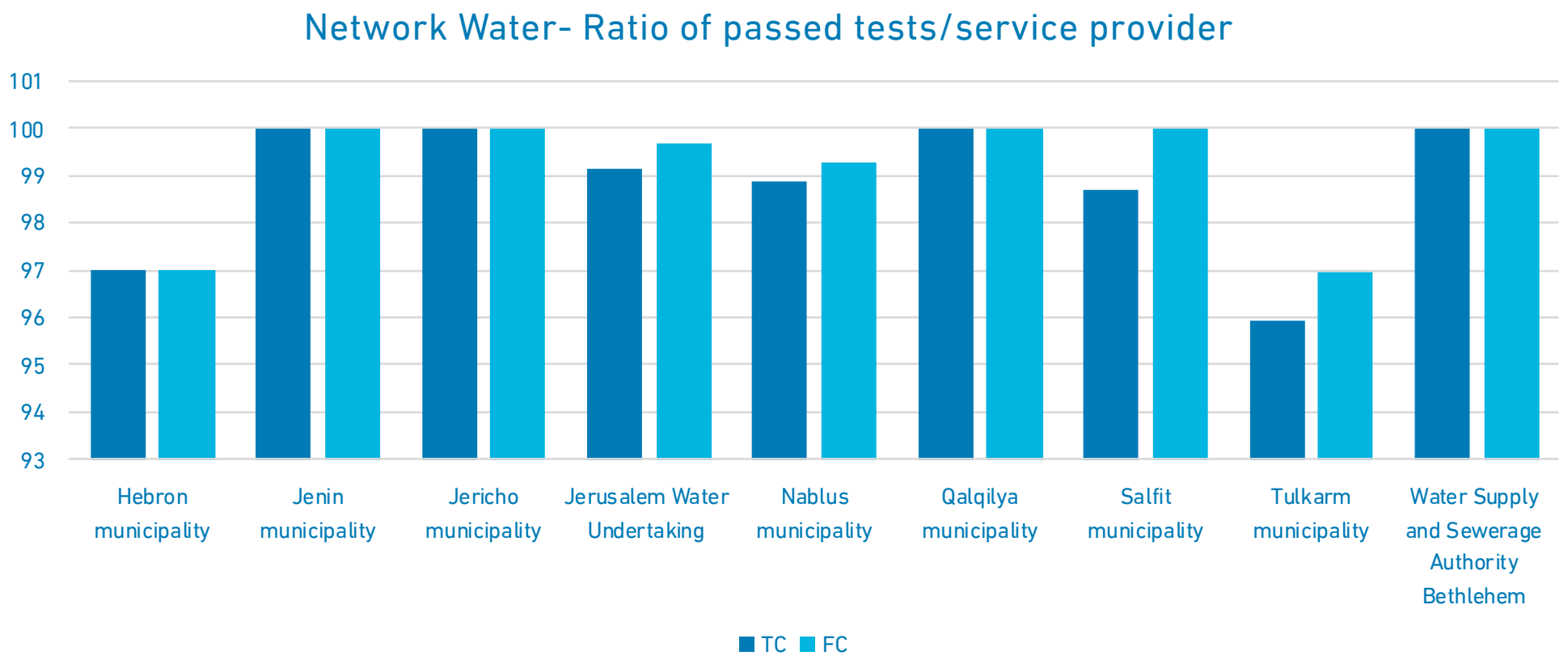
Based on the results of testing the Free Chlorine Residual in the network, the municipalities of Nablus, Qalqiliya and Jericho achieved the best indicator at 100%. The largest number of tests were carried out by the Nablus Municipality, Jerusalem Water Undertaking, and the Hebron Municipality. This is considered reasonable due to the high number of population in these governorates. Other service providers who serve a smaller number of the population also carried out a good number of tests such as the municipalities of Jenin, Jericho and Qalqiliya.

2. **Percentage of passed Water samples (taken from source) to test Total Coliform and Fecal Coliform .**



Ratio of passed tests / Service Provider

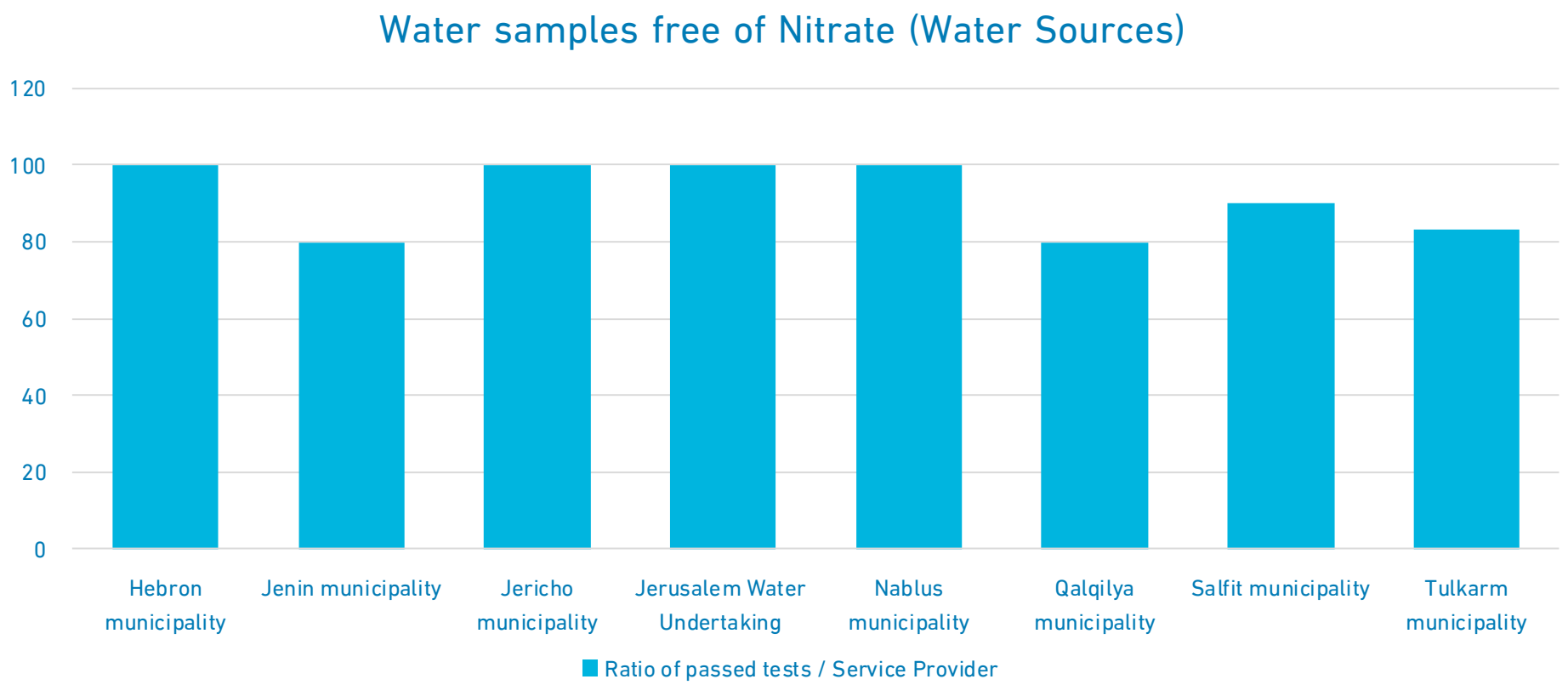
3. **Percentage of passed Water samples (taken from the Network including the main water pipelines) to test Total coliform and Fecal coliform.**



Ratio of passed tests / Service Provider

The microbial results show that the percentage of samples in different governorates of the West Bank reached more than 80%. The WSSA in Bethlehem, Tulkarm Municipality, Qalqiliya Municipality, Jericho Municipality, Jenin Municipality, Hebron Municipality have the highest success rate of testing water sources, reaching 100% in both total coliform and fecal coliform. Salfit Municipality also has a 100% success rate in total coliform test. The results of valid samples taken from the network showed that the WSSA in Bethlehem and the municipalities of Jericho and Jenin achieved the best indicator at 100% for both tests. Other municipalities have achieved varying results in both tests with reasonable degrees.

4. Percentage of passed Water samples (taken from source) to test Nitrate.



The indicator of Nitrate (for water taken from sources) is very good, as most service providers achieved percentages of no less than 80%. Jerusalem Water Undertaking, Jericho Municipality, Nablus Municipality, and Hebron Municipality achieved the best performance, hoping indicator for the rest of the providers will be better in the coming years.

Nevertheless, the WHO is the prime authority to determine the number of monthly samples to be taken from the network regarding the test of faecal coliform. The table below indicates the number of tests carried out by each service provider in 2021 compared to the number required according to the WHO standards.

The number of tests carried out to test faecal coliform bacteria by each service provider for the year 2021 is compared to the number of tests required according to the standards of the World Health Organization.

#	Service provider	Population served with water service (inhabitants)	Number of tests carried out -2021	Number of required tests per year according to WHO recommendations (based on the population -2021)
1	Salfit Municipality	15000	152	36
2	Tulkarm Municipality	90000	197	216
3	Jenin Municipality	59413	603	143
4	Qalqilia Municipality	59298	175	142
5	Jericho Municipality	34000	430	82
6	Hebron Municipality	232500	201	399
7	Nablus Municipality	208585	700	370
8	Jerusalem Water Undertaking	390000	582	588
9	Water Supply & Sewerage Authority "WSSA") Bethlehem, Beit Jala, and Beit Sahour)	113052	108	256

The number of faecal coliform tests carried out in 2021 by service providers varies from one governorate to another depending on the material and human capabilities available to every municipality. However, all the municipalities of Salfit, Jenin, Qalqilya, Jericho, and Nablus have carried out tests more than required as recommended by the WHO, which is considered a good indicator of the performance of service providers.

Second: The results of water quality tests conducted by the Palestinian Ministry of Health in the communities of service providers (West Bank).

The WSRC obtained data on the results of microbial and Free Chlorine Residual tests of drinking water for the year of 2021 from eleven Palestinian governorates in the West Bank, representing more than 440 communities.

In general, the percentage of samples in compliance with the Palestinian standards, and thus are free from faecal coliform in network water, reached 96%, while the percentage reached 87% for samples free of total coliform. The results are supposed to have better success rates when compared with the data of the past year 2020. The percentage of samples free from faecal coliform is still the same, while the percentage of samples free from total coliform was slightly better, reaching 89%. Hence, there is no significant improvement in the specifications of the water provided.

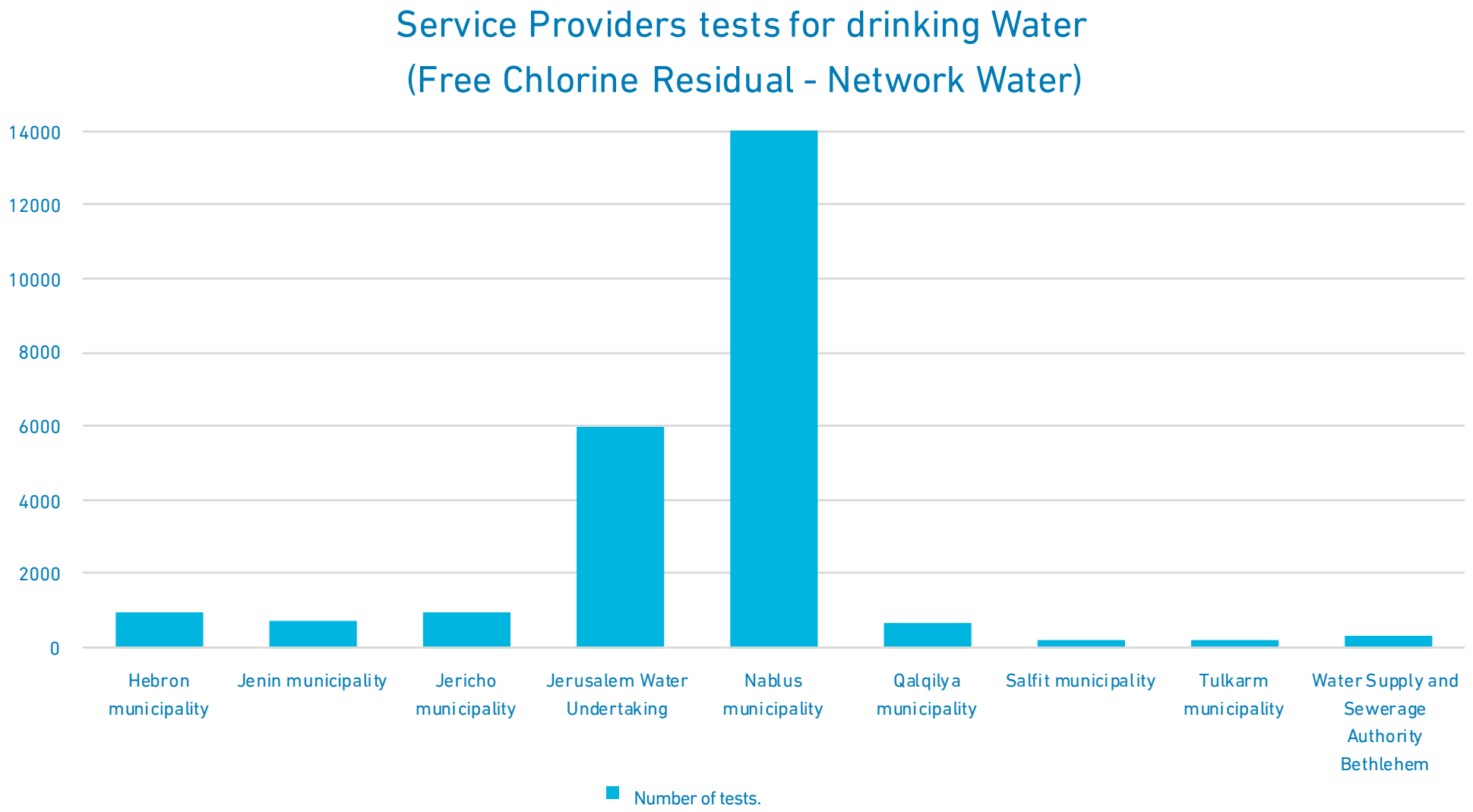
The percentage of samples that met the Palestinian standard specifications of the level of free residual chlorine in water was not taken into account, because it did not represent all the samples tested. After reviewing the data of the MOH, it was found that the size of the samples that were actually tested maybe greater than what was entered in the system, which affected the calculation of the indicator value.

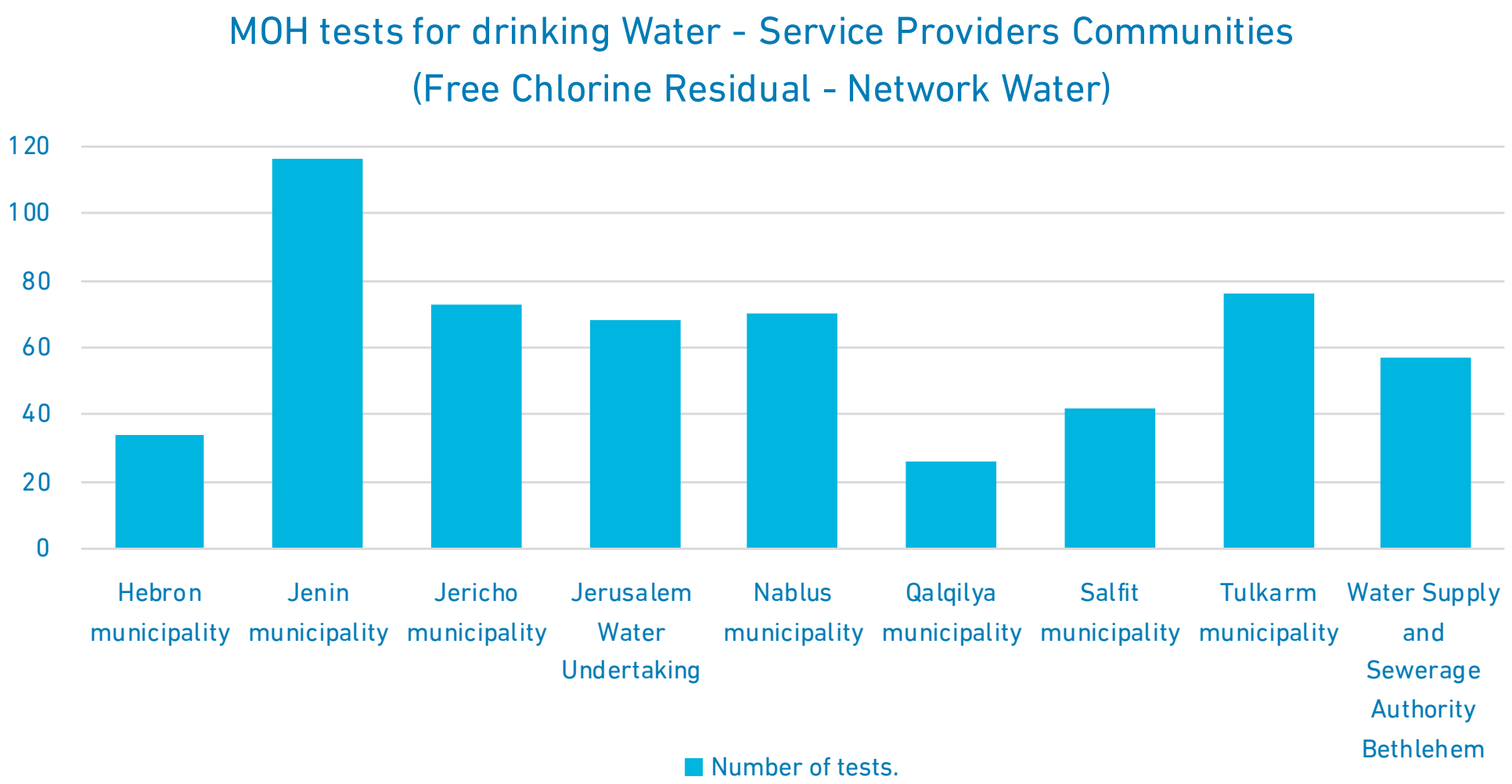
In another context, the data of the MoH was reviewed to inform the service providers of the communities they serve to monitor the quality of drinking water. The tests were carried out for the communities of 70 service providers included in the WSRC's database. However, after reviewing the details of these providers, the MoH could not carry out tests in certain communities due to their large size and the ministry's lack of human resources, provided that the tests should be carried out in subsequent periods. In addition, there are many communities whose names are not mentioned in the data. It is worth noting that the total size of the communities covered by environmental health inspectors in each governorate is large. The service providers' resources and capabilities to cover these communities are less than those of the MoH. Therefore, the coordination between the two parties is needed.

The PIs of the quality of drinking water, according to the strategy of the PWA, must reach 100% in the microbial tests and the test of the free residual chlorine in water. Although it is possible to reach this percentage, it remains difficult to reach it at the present time in some communities. This is because of various reasons, including the limited capacity of most service providers to exercise self-monitoring on drinking water due to the lack of specialized laboratories, besides the fact that some of them do not have chlorination units for disinfection.

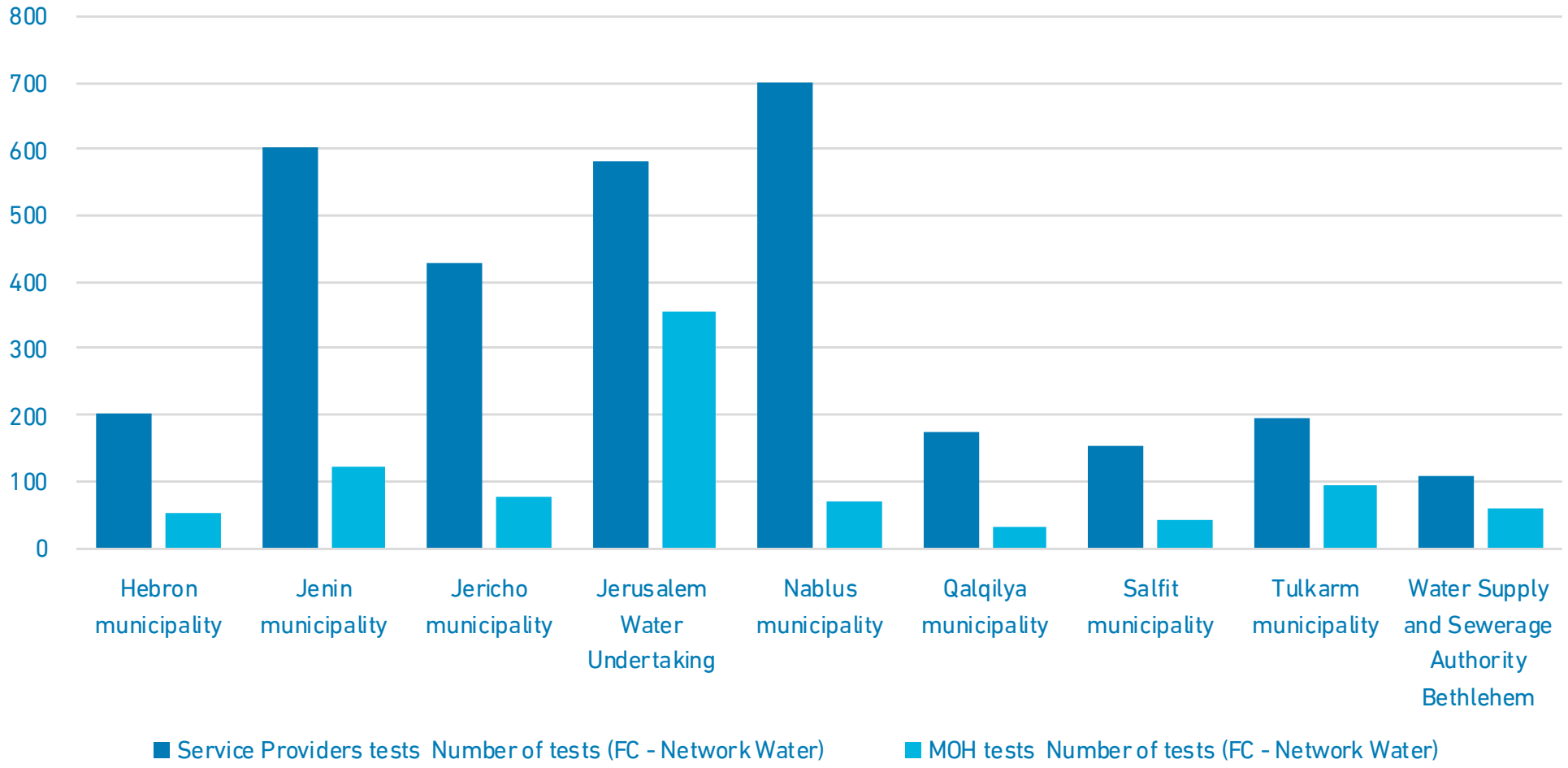
Most of the communities achieved a very good success rate of more than 85% for samples that are free of faecal coliform (network water), while the indicator was weak for some other communities, as is the case in Sa'ir, Al-Shuyoukh, Al-Arqa, Qabatiya , Abouin, Aroura, Ain Qinya, Abu Falah, Qaryut, and Talfit. In contrast, the success rate of samples that met the national standards for free residual chlorine in water was low in most communities.

Meanwhile, the number of tests of service providers compared to the tests carried out by the Ministry of Health in the communities of these providers is as shown below:




MOH tests for drinking Water - Service Providers Communities
(Free Chlorine Residual - Network Water)
120
100
80
60
40
20
0
Hebron municipality
Jenin municipality
Jericho municipality
Jerusalem Water Undertaking
Nablus municipality
Qalqilya municipality
Salfit municipality
Tulkarm municipality
Water Supply and Sewerage Authority Bethlehem
Number of tests.

Drinking Water - Ratio of passed tests/service provider



Third: Results of water quality tests provided by service providers (Gaza Strip).

The case is different in Gaza Strip. The WSRC collected the results of water quality tests from several sources because of the lack of human and material resources in the laboratories of the MoH, as well as the lack of municipalities that have specialized laboratories for water quality testing. Hence, intensive efforts and continued coordination with the competent authorities, including the MOH, PWA, and Coastal Municipal Water Utilities (CMWU) are required to collect the results of the tests conducted to test water sources and distribution networks.

The limited human and material resources available at the laboratories in Gaza Strip caused poor follow up of conducting tests, which led to obtaining incomplete data of some municipalities. In addition, it is noticeable that the municipalities did not use any tangible measures to follow up on their water Quality Monitoring Program. The WSRC noticed a lack of data on the test results, conducting dates, and the weakness of communication channels with the specialized laboratories.

Regarding conducting tests, the MOH is responsible for conducting microbial and nitrate tests of water sources and networks, while the CMWU are responsible for conducting periodic tests of Free Chlorine Residual in the main networks according to the Technical Assistance Program provided by the ministry.

- For the Total coliform test of water sources, the results of valid samples obtained by the WSRC varied largely in the Gaza Strip. The municipalities of Wadi Al-Salqa, Umm Al-Nasser, Al-Mughraqa, Al-Shoka, Al-Maghazi, Al-Qarara, and Al-Zawaida obtained the highest success rate at 100%, while there are no results provided, in this regard, from the municipalities of Wadi Gaza, Abasan Al-Jadida, Khuza'a, Al-Nasser, Al-Zahraa, and Deir Al-Balah. The rest of the municipalities obtained fluctuating rates between 75-95%.
- For Fecal Coliform test of water sources, the municipalities of Wadi Al-Salqa, Umm Al-Nasser, Al-Mughraqa, Al-Shoka, Al-Maghazi, Al-Qarara, Al-Bureij, Bani Suhaila, and Beit Hanoun obtained the highest success rate at 100%, while the municipalities of Wadi Gaza, Abasan Al-Jadida, Khuza'a, Al-Nasser, Al-Zahraa, and Deir Al-Balah did not provide any results of this test. The municipality of Khanyunis obtained the lowest unacceptable success rate at 15%, while the rest of the municipalities achieved success rates with a minimum of 75%.
- For the microbial tests (test of total and fecal coliform) of the main water distribution networks, the analysis of the results shows that the municipalities of Wadi al-Salqa, Umm al-Nasser, al-Mughraqa, al-Sharuka, Abasan al-Kabira, Bani Suhaila, al-Qarara, Al-Bureij, and Deir Al-Balah achieved the highest success rate at 100% in both tests. It also shows that the municipality of Wadi Gaza and Al-Zahraa achieved the highest success rate at 100% in testing fecal coliform. However, no data were obtained of both tests in the networks of the municipalities of Abasan Al-Jadida, Khuza'a, Al-Nasser, and Beit Hanoun.
- For the results the Free Chlorine Residual test in the network, most of the municipalities achieved the best indicator at 100%, while the CMWU in Rafah and the municipalities of Gaza, Deir al-Balah, Beit Lahia, Bureij, Zawaida, Abasan al-Kabirah, and Abasan al-Jadida achieved close indicators at a minimum of 86%.
- For the Nitrate test of water taken from the source, the results shows that the municipalities of Al-Zawaida, Al-Qarara, Bani Suhaila, Abasan Al-Kabira, Al-Zahraa, Al-Shoka, Al-Masdar, Al-Mughraqa, and Umm Al-Nasser achieved the highest success rate at 100%, while no results were obtained for the municipalities of Abasan Al-Jadida, Khuza'a, Al-Nasser, and Al-Bureij. The results fluctuate considerably for the rest of the municipalities, while the major municipalities of Gaza, Khanyunis, Jabalia, Al-Nazla, and Nuseirat, the CMWU in Rafah achieved the lowest results at unacceptable levels.

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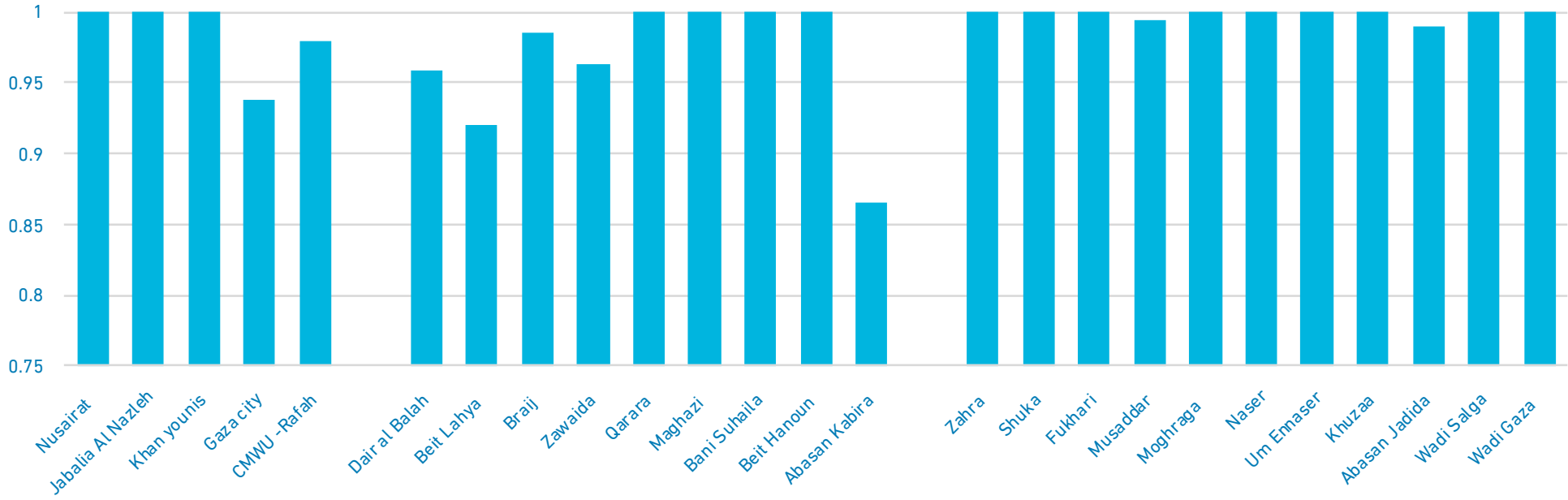
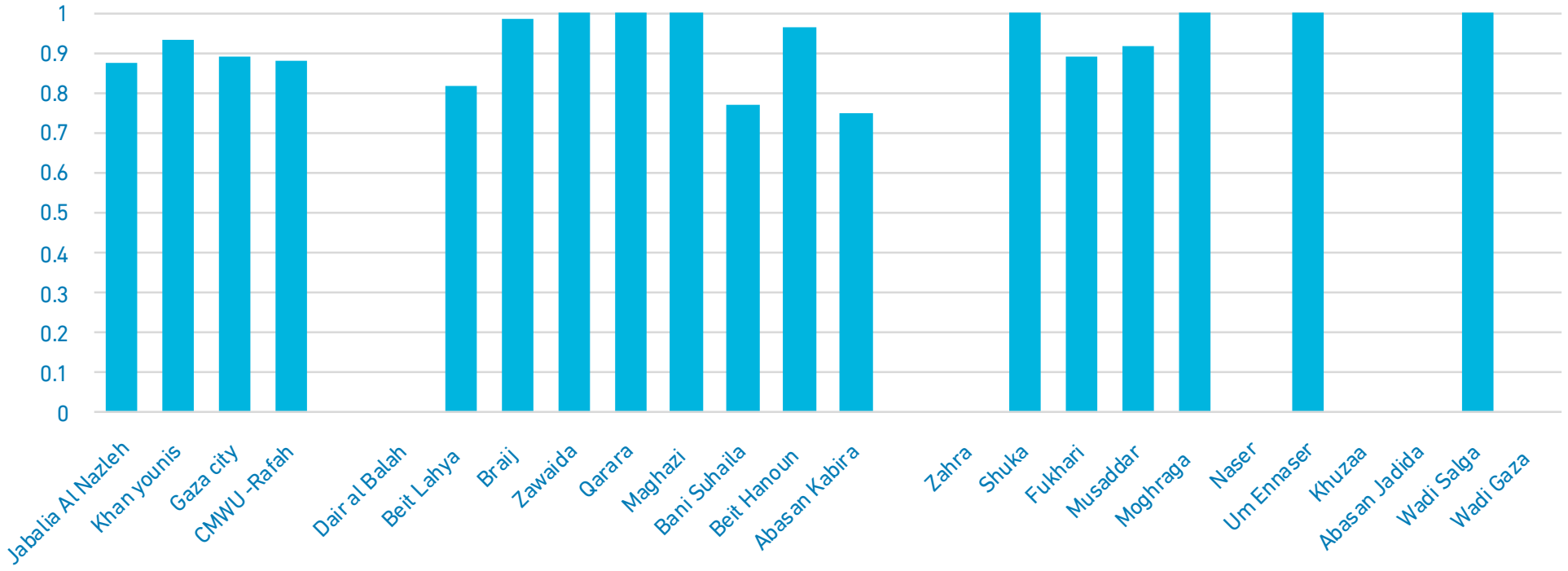
Based on the foregoing, the PIs the success rate of tests conducted by the service providers in Gaza Strip are as shown below:

1. Percentage of passed Water samples (taken from the Network including the main Water pipelines) that contain Free Chlorine Residual in the network and main pipelines.

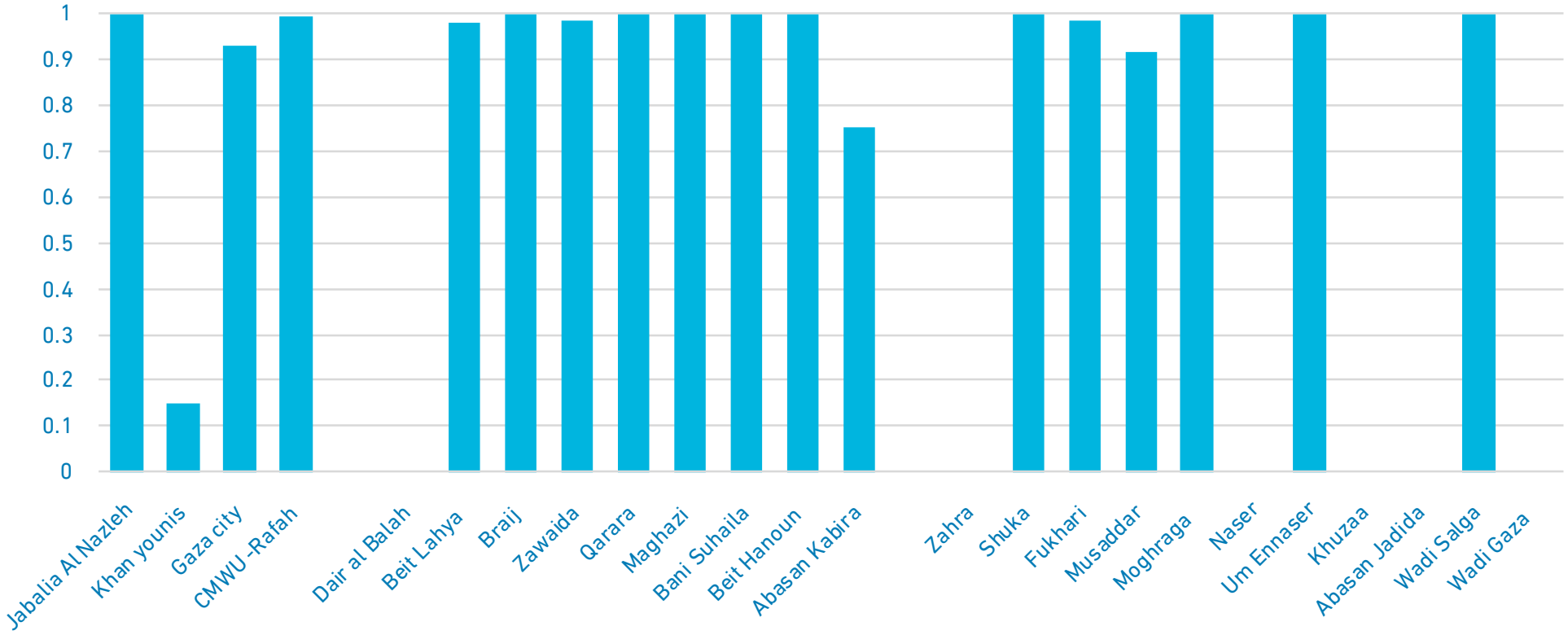


2. Percentage of passed Water samples (taken from source) to test Total Coliform.



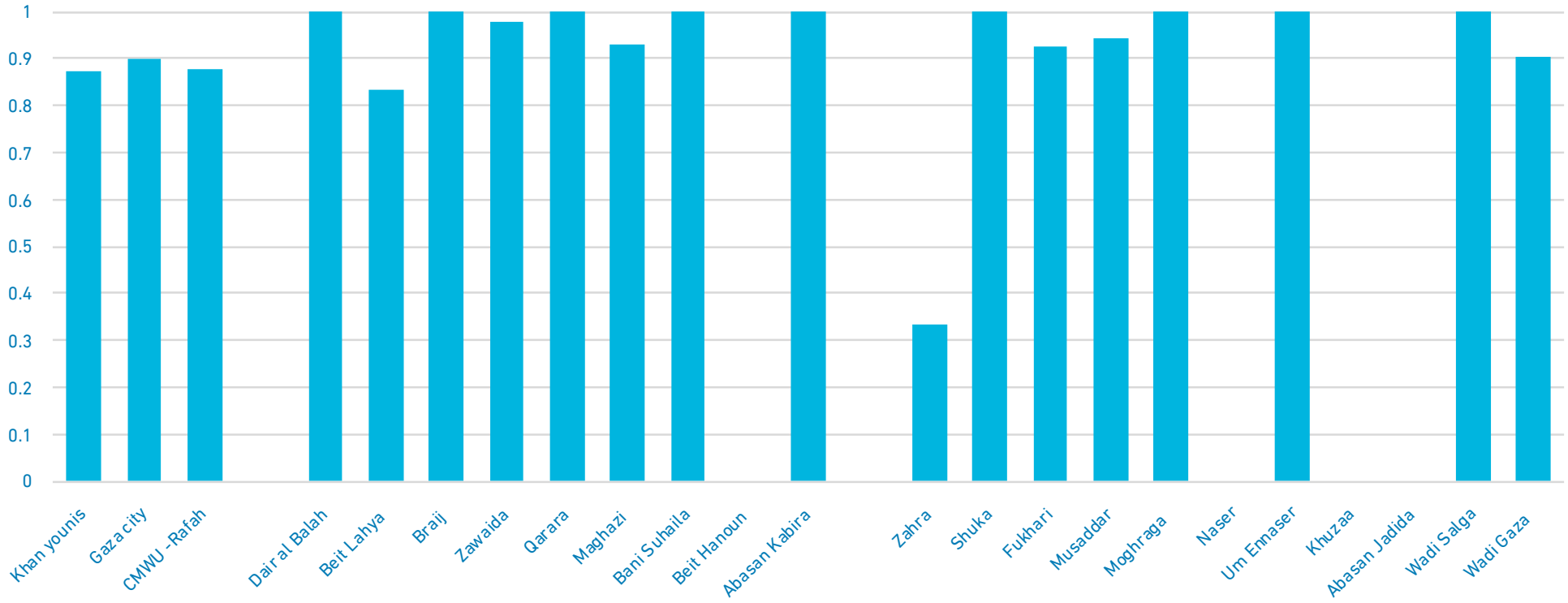
Note: As shown in the charts, some Service Providers did not share their tests results.

3. Percentage of passed Water samples (taken from source) to test Fecal Coliform.



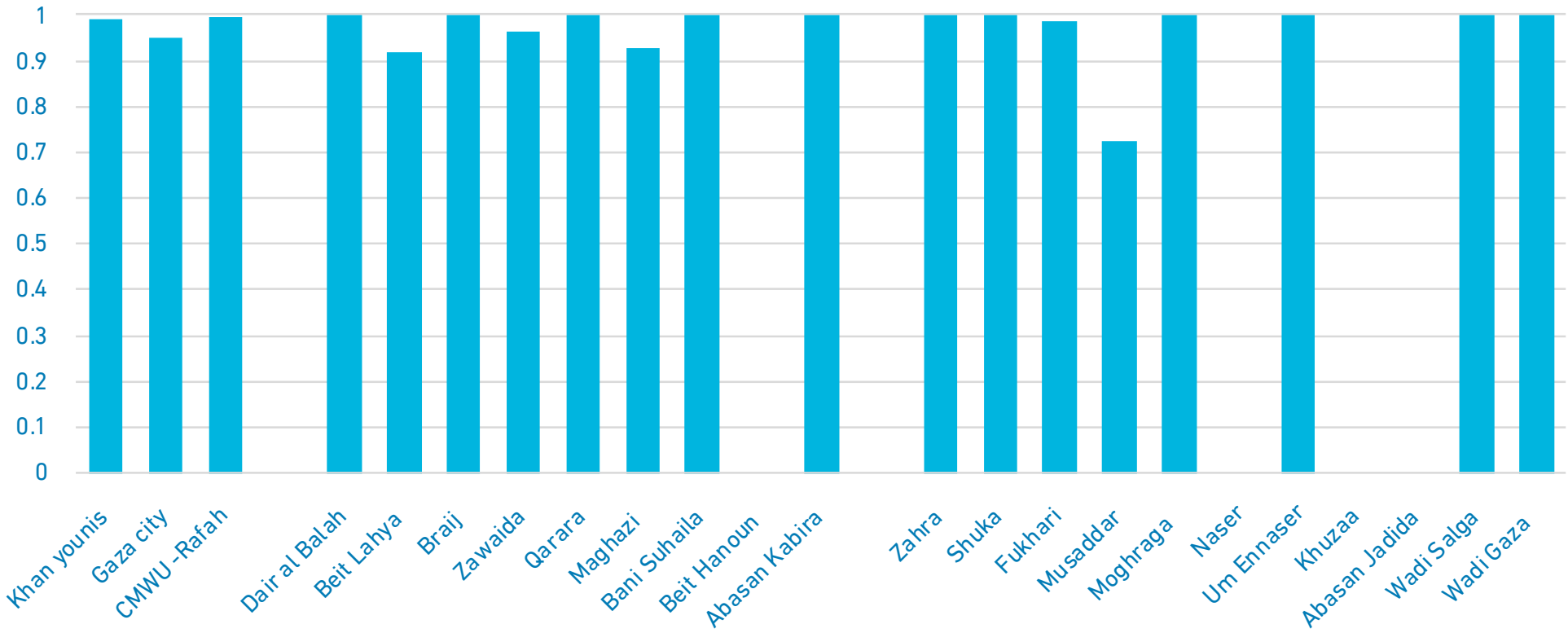
Note: As shown in the charts, some Service Providers did not share their tests results.

4. Percentage of passed Water samples (taken from the Network including the main water pipelines) to test Total coliform.



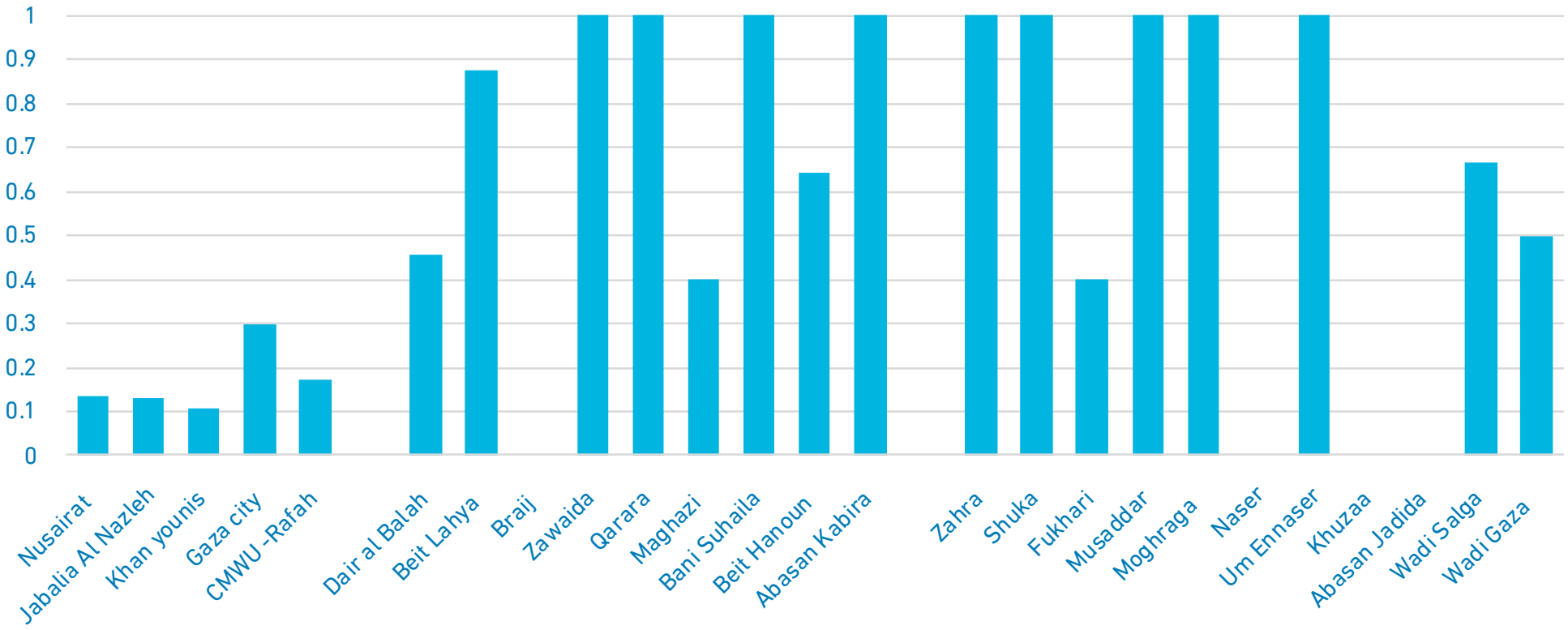
Note: As shown in the charts, some Service Providers did not share their tests results.

5. Percentage of passed Water samples (taken from the Network including the main water pipelines) to test Fecal coliform.



Note: As shown in the charts, some Service Providers did not share their tests results.

6. Percentage of passed water samples (taken from source) to test Nitrate.



Note: As shown in the charts, some Service Providers did not share their tests results.

Water quality indicators Recommendations:

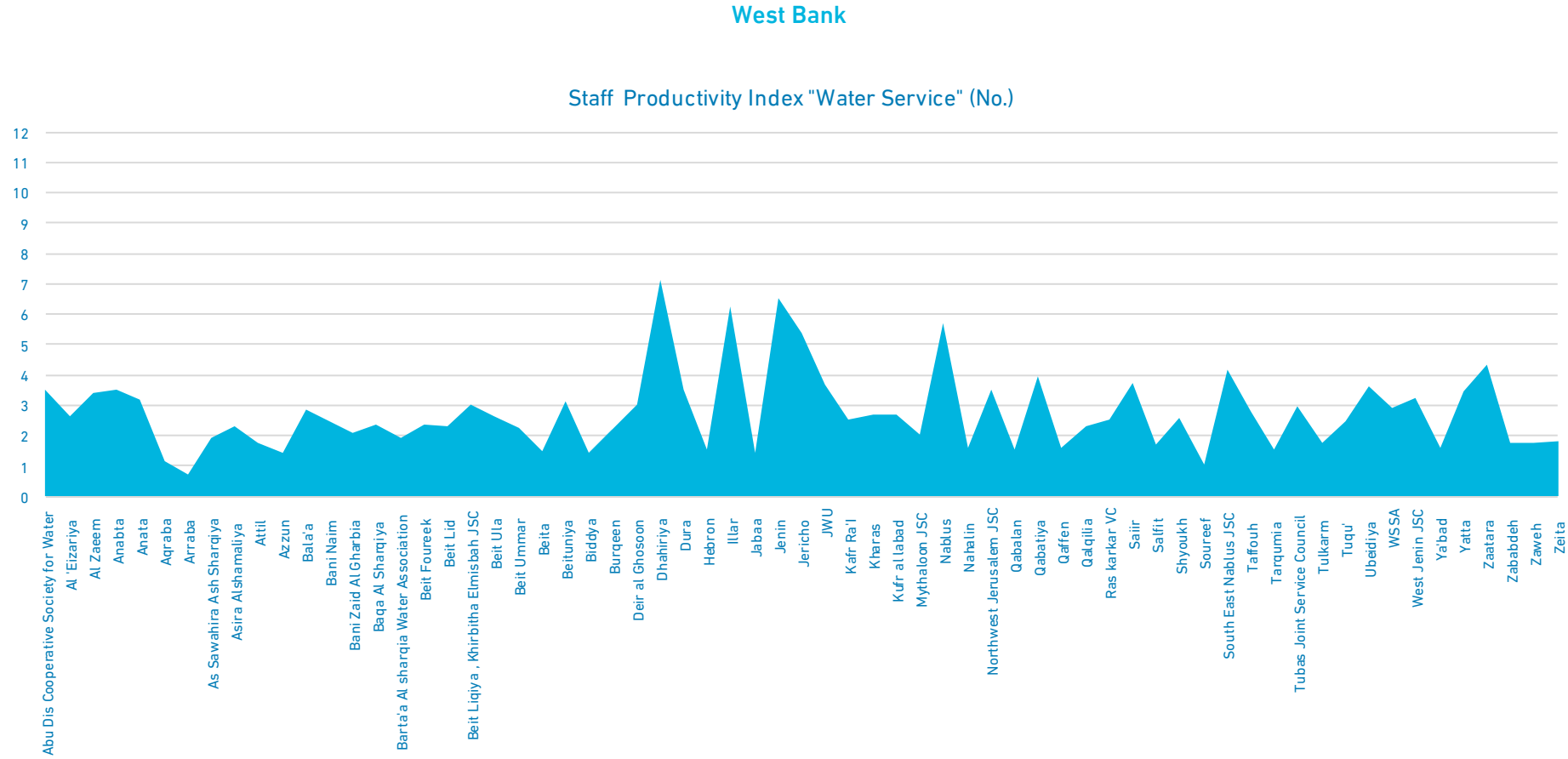
1. It is important to enhance cooperation among the MOH and service providers in the different governorates. The WSRC is coordinating with the MOH to obtain comprehensive water quality data. The service providers need to keep a copy of the tests' results conducted by the MOH and to be a party in the water quality program
2. All service provider should be included in the Water Quality Testing Plan of the MoH.
3. Service providers should increase the number of microbial tests, particularly the tests of faecal coliform, based on the WHO's recommendations.
4. Service providers should increase the number of Free Chlorine Residual samples in water according to the number of pumping sources and the number of people who receive water on a daily basis.
5. Service providers should at least have water quality kits for free residual chlorine in water. This helps in increasing the number of tests and in monitoring water quality.
6. Proper and comprehensive water quality surveillance requires additional field teams.
7. improved efficiencies and preparedness of SPs quality monitoring is still recommended.
8. All service providers should adhere to drinking water specifications approved by Palestine Standards Institution No.(M F 41-2005). It should be taken into account that the concentration of Free Chlorine Residual in water Should be limited between (0.2mg/L) and (0.8mg/L). Much lower concentrations of free chlorine should not be acceptable.
9. The WSRC calls on service providers to ensure the cleanliness of public water reservoirs, as well as to raise awareness among citizens and public institutions of the need to monitor the cleanliness of their water reservoirs.

Fourthly: Other Indicators

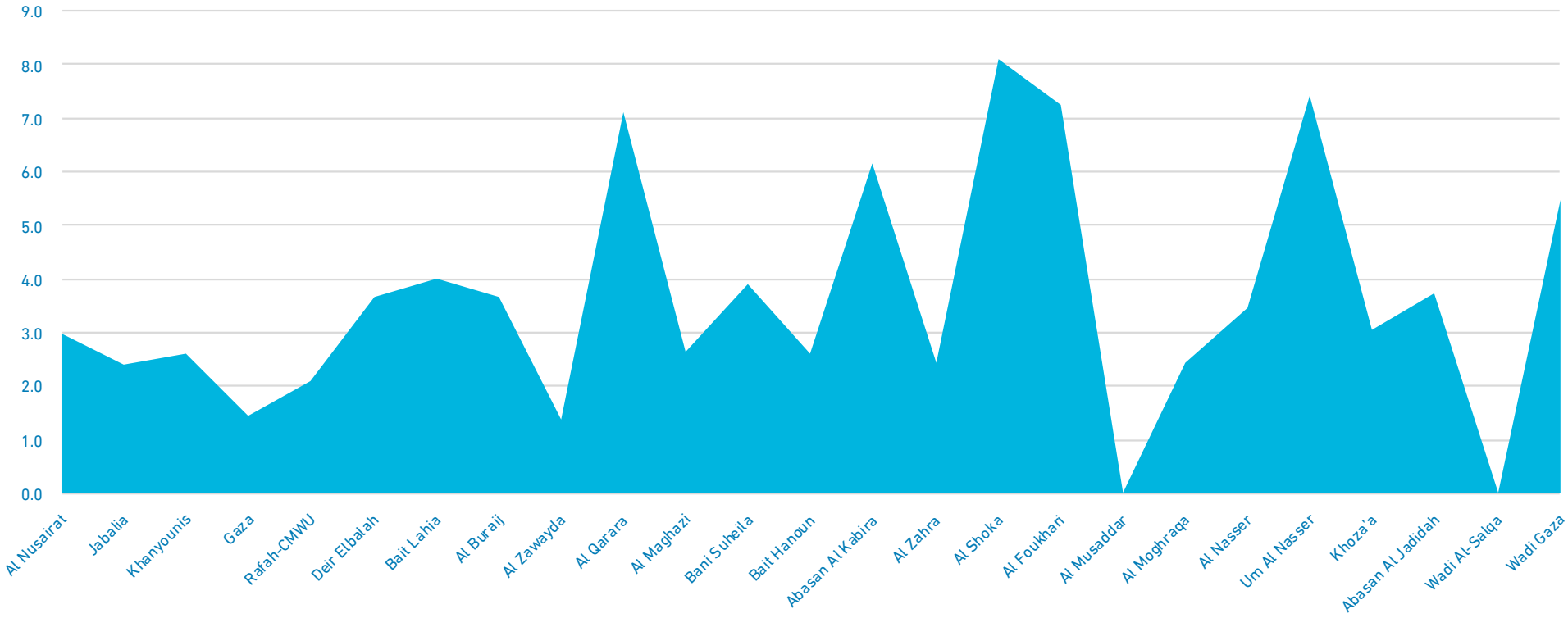
1. Staff productivity index for water service

This indicator is often used to measure the efficiency of human resources management and the effectiveness of performance. This indicator is calculated by dividing the full-time staff number by the number of connections multiplied by 1,000. Nonetheless, this measurement does not apply to the service providers serving less than 1,000 connections, as it is based on the staff number per 1,000 connections.

As other indicators, this index does not allow absolute comparison of service providers, for the staff needs vary based on the service provider's operations. For example, a service provider that operates its wells and pumping plants would not have the same staff size as a service provider that only purchase and distribute water.



Staff Productivity Index "Water Service" (No.)

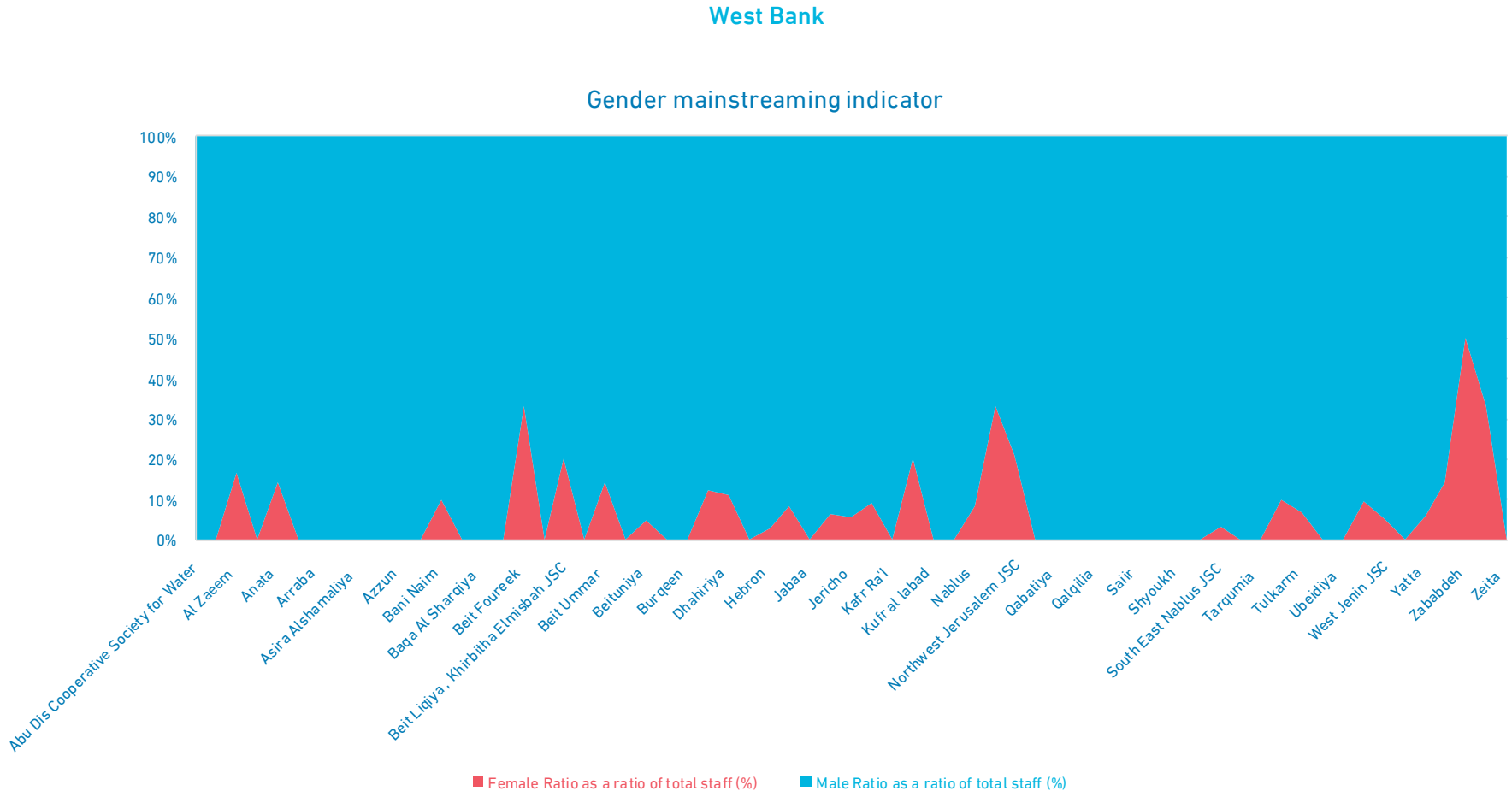


2. Water service employment by gender

“Percentage of female employees of the water service workforce”

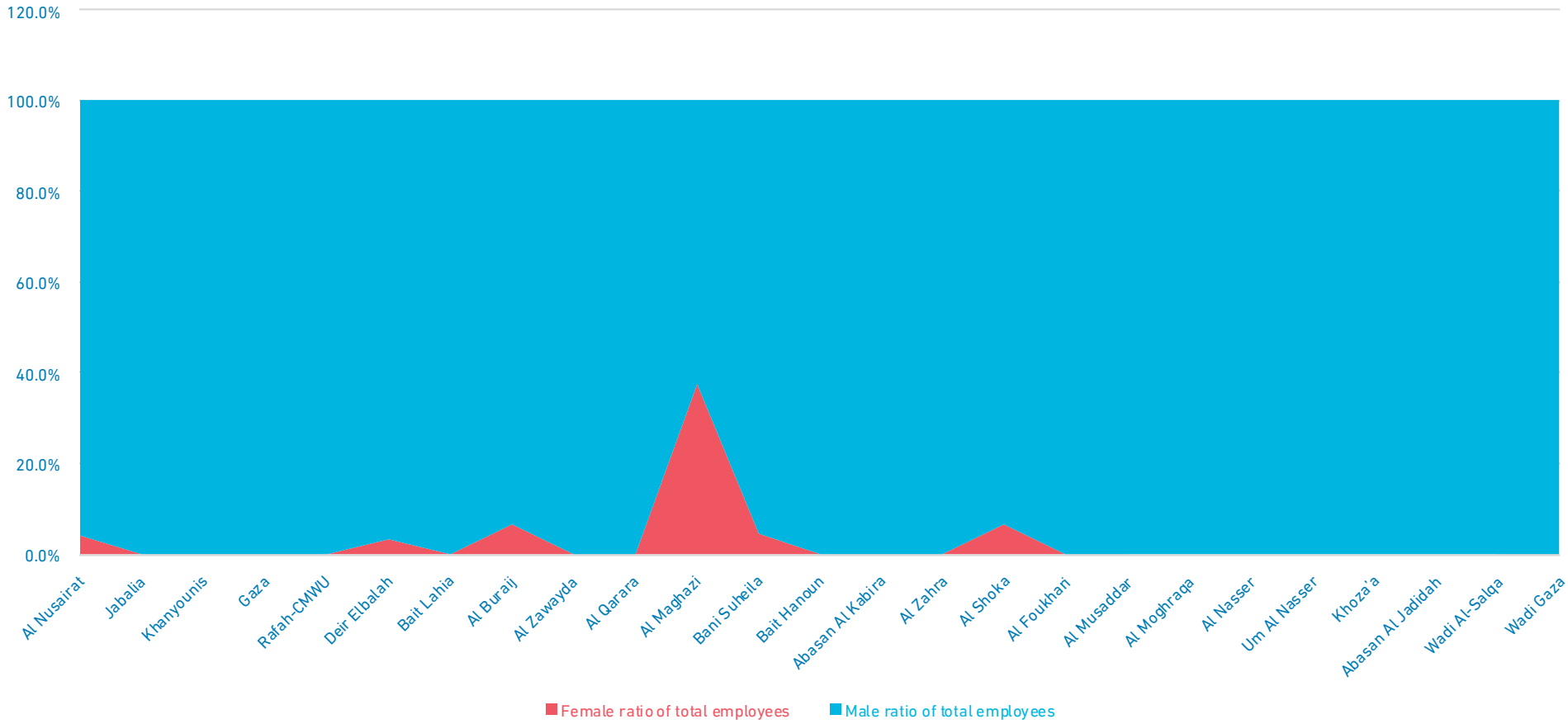
Although a number of water departments or joint service councils are headed by women, still, women’s participation in the water and wastewater service is still meagre in the West Bank and Gaza Strip.

The low percentage of female employees in the water service is attributable to the fact that most of the recruits to the water or wastewater service are collectors, maintenance workers, guards and well operators, which are often occupied by males. Females in municipalities often occupy reception and secretarial positions or in financial departments, but they are not considered in this indicator because it looks at the employees fully recruited to the water and wastewater service.



Gaza Strip

Gender mainstreaming indicator



General Recommendations

Given the number of challenges facing the provision and sustainability of water service in the State of Palestine, a number of these challenges can be marked to enable SPs build a mitigation plan aiming at farther improvement of these services.

Based on the inputs of this report, the WSRC arrives at the following:

1. Service providers' margin to increase the per capita water consumption is very slim due to Israeli control over water resources. The service providers still have legroom to minimise water losses, and thus slightly increase the individual share.

2. This modest increase could be realised if the service providers monitored their networks to keep them clear from illegal connections and damages and ensured accurate reading of well-operated metres.

3. Water price variation is a challenge that cannot be addressed currently due to a set of objective reasons related to sources and typography. However, the report highlighted two controllable factors of the operating costs per cubic metre of water: energy and personnel expenses. The service providers are invited to review such costs and take the proper actions.

4. The MoH should engage the service providers in the sampling and testing. The service provider must take part in determining the sites to be sampled and the number of samples. In a similar vein, the MoH should share a copy of the results of the tests regardless of their content.

5. Some of the service providers do not comply with the service governance principles, including billing, information and data disclosure, and promotional discounts, which needs immediate consideration and solution.

6. Some service providers' technical and financial capacity might impede their sustainability and development if the water bill is their only source of income. Such service providers must act to segregate accounts, define the expenses to be covert by the water revenue, and allocate them exclusively for water and wastewater services. Having that accomplished, the service provider can take steps to establish joint water and wastewater service councils.

7. A number of service providers and due to high staff turnover lack technical sustainability Therefore, an integrated knowledge transfer should be put in place to sustain knowledge transfer among water and wastewater service personnel.

8. Monitoring of wastewater systems shows that most of the small-scale wastewater treatment plants across the State of Palestine were no longer functional, or the efficiency of treatment is considerably low. Solving this issue further realises the recommendation to establish joint water and wastewater service councils or regional utilities because such an effort might lead to the establishment of sustainable wastewater treatment plants.

9. Most of the service providers fail to duly document complaints. Eventually, this report lacks a section on complaints. Service providers, should document all the complaints and redressal procedures.

10. Some service providers are far from categorising their connections, which impedes the determination of the percentage of each type of consumption per sector, and thus does do not inform the planning effort.

11. The sources of pollution in many sites are increasing steadily, whether from agricultural use, solid or liquid waste, or industrial pollutants. The impacts and consequences of containment are evident in many wells and necessitate measures to be taken to protect such resources.

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