

Summary report of Israel

under the Protocol on Water and Health

5th Reporting cycle

Executive summary

Please provide an overall evaluation of the progress achieved in implementing the Protocol in your country during the reporting period. Please provide a short description of the main steps taken and highlight important achievements, key challenges, success factors and concrete good practice examples.

Target setting summary

| Field | Target | Target Date |
|-----------------------|--|----------------|
| Drinking Water | 1. Monitoring water quality in the distribution system by a computerized system. <u>Intermediate Targets:</u> <ol style="list-style-type: none"> a. Monitoring water stabilization values and effect on pipes. b. Monitoring essential minerals (such as Calcium and Magnesium), accompanied by epidemiologic and ecologic studies. c. Reduction of Disinfectant residual and surveillance of THMFP (THM formation potential). | 2025 |
| | 2. Empowerment of water suppliers and transferring responsibility for water quality supplied (training, reporting, sanitary surveys). | ongoing |
| | 3. Mapping municipal planning schemes approved in water protection zones. | ongoing |

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|--|---|------------------------|
| Drinking Water | <p>4. Revision of the "Sanitary quality of Drinking water and drinking water facilities" 2013 regulations.</p> <p>a. Revision of several chemical parameters according to revision proposals made in the EU Drinking water directive and WHO Europe recommendations.</p> <p>b. Addition of Magnesium to drinking water (due to high content of desalinated water in the distribution system).</p> <p>5. Revision of the "Sanitary conditions of Drinking Water Wells".</p> <p>a. Computation of an individual Protection Zone for each well, taking into consideration specific hydrogeological conditions.</p> <p>b. Revision of allowed activity in Protection zones and barriers for controlling contamination.</p> <p>6. Revision of "Backflow Prevention" regulations.</p> | 2023-2025 |
| | <p>7. Lowering Lead content in Products in contact with drinking water - up to 0.25% lead content.</p> | Target met 2020 |
| | <p>8. Establishing Water Safety plans for Water suppliers, sewage and treated wastewater suppliers, and recreational waters.</p> | 2022-2023 |
| | <p>9. Water Safety plan training for managers of water distribution systems</p> | 2030 |
| Discharges of untreated wastewater | Wastewater treatment according to "Public Health Regulations (Effluent Quality Standards and Rules for Sewage Treatment), 2010", and termination of untreated wastewater discharge to rivers. | 2030 |
| Quality of discharges of wastewater from wastewater treatment installations | To decrease pollutant loads of discharged wastewater from wastewater treatment plants to the environment by upgrading facilities and by sustainable maintenance of wastewater treatment plants. | 2030 |
| Updating regulations of sewage sludge. | For <u>safe</u> agricultural use, soil conditioning or for energy production and prohibiting the use of sewage sludge in Food Crops consumed raw. | Target met 2020 |

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| Quality of wastewater used | <p>1. 85% of treated wastewater will comply with "Effluent quality standards and wastewater treatment rules" 2010.</p> | 2030 |
|-----------------------------------|--|-------------|

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| for irrigation purposes | 2. Operational solutions for effluent or wastewater that do not comply with the quality needed by the regulations during technical failures (such as emergency reservoirs). | 2030 for upto 50% of the WWTPs |
| | 3. Reporting effluent quality tests by a computerized system. | Ongoing |
| | 4. GIS (Geographic Information System) for effluent irrigated land. | Target met |
| | 5. Enacting "Effluent supply, use and permit" regulations. | 2022-2024 |
| Quality of waters which are used as sources for drinking water | Reviewing the Israeli methodology of determining groundwater protection zones. | Target met |
| Quality of waters used for bathing | Revision of the Bathing Water regulations. | 2023 |

Part one

General aspects

1. Were targets and target dates established in your country in accordance with article 6 of the Protocol?

Please provide detailed information on the target areas in part two.

YES NO IN PROGRESS

If targets have been revised, please indicate the date of adoption and list the revised target areas. Please provide detailed information in part two.

2. Were targets and target dates published and, if so, how?

Targets were reported in the 4th reporting cycle and published on the UNECE internet site.

Please explain whether the targets and target dates were published, made available to the public (e.g., online, official publication, media) and communicated to the secretariat.

3. Has your country established national or local arrangements for coordination between competent authorities for setting targets? If so please describe, including information on which public authority(ies) took the leadership and coordinating role, which public authorities were involved and how coordination was ensured.

Three authorities took part in target setting:

- **The Ministry of Health – quality of drinking water, sewage and treated wastewater reuse. The ministry of health took leadership and coordinating role.**
- **The Ministry of Environmental Protection – wastewater and sludge.**
- **The Water Authority – Management of water resources.**

4. Was a programme of measures or action plan developed to support implementation of the targets? If so, please briefly describe that programme or plan, including how financial implications were taken into account.

5. What has been done in your country to ensure public participation in the process of target setting in accordance with article 6, paragraph 2, and how was the outcome of public participation taken into account in the final targets set?

6. Please provide information on the process by which this report has been prepared, including information on which public authorities had the main responsibilities and what other stakeholders were involved.

See Paragraph 3.

7. Please report any particular circumstances that are relevant for understanding the report, including whether there is a federal and/or decentralized decision-making structure.

Part two

Targets and target dates set and assessment of progress

For countries that have set or revised targets and target dates, please provide information specifically related to the progress towards achieving them. If you have not set targets in a certain area, please explain why.

For countries in the process of setting targets, please provide information on baseline conditions and/or targets considered under the relevant target areas.

Suggested length: one page (330 words) per target area.

I. Quality of the drinking water supplied (art. 6, para. 2 (a))

For each target set in this area:

1. Please describe the current target and target date. Please provide information on the background (including the baseline/starting point and reference to existing national and international legislation) and justification for the adoption of the target.
2. Please describe the actions taken (e.g., legal/regulatory, financial/economic, informational/educational and management measures) to reach the target (see also article 6, paragraph 5, of the Protocol).
3. Please assess the progress achieved from the baseline towards meeting the target as well as any challenges encountered.
4. Please describe how the target set under this area contributes to fulfilling global and regional commitments, in particular the 2030 Sustainable Development Agenda.
5. If you have not set a target in this area, please explain why.

National target 1: Monitoring water quality in the distribution system by a computerized system

Target date: 2025

In the past 15 years, Israel is experiencing a change in its water sources variety. Five large-scale seawater desalination facilities and some smaller brackish water desalination facilities currently provide over 60% of the current domestic water requirements. The 6th Desalination plant will begin operation in 2nd half of 2022, and the 7th Desalination plant is planned for 2024. Desalinated water is blended in the distribution system, in changing quantities, with different water sources. High water quality is maintained. A computerized system will enable efficient monitoring of water quality parameters in the distribution system, based on tests taken in water sources.

Progress made: The target was developed with "Mekorot" – the Israeli National Water company, in order to prepare a model which can predict the water source for each town and neighbourhood. Thus, enabling a computation of water stabilization parameters, content of minerals and THM Formation Potential.

A pilot program is now implemented in a few regions in Israel and subject to further funding will be further implemented.

Intermediate Targets:

1. Monitoring water stabilization values and effect on pipes:

Desalinated water may comprise a very low mineral content due to boron and chloride removal. Thus, turning the water corrosive and having an effect on pipes and water quality. There are 5 Desalination plants, several of which were erected before the 2013 regulations, which require provision for the stabilization of the water. The target is to monitor these stabilization values.

Progress made:

Israel is experiencing a change in its water sources variety and progressively new regions receive desalinated water for the first time.

The changes in the mixture of water supplied, which comes into contact with aging metallic pipes, creates a phenomenon known as “Red Water” – which is caused by the release of production materials from the pipes, predominantly iron (pipe rust). Normally, after repeated rinses the phenomenon decreases in its appearance until it disappears and in some cases it continues for a while. The “Red Water” phenomenon is known in the world when water sources are changed, and occurred in various places in Israel over the past year.

The problem is mainly an aesthetic one, and in order to preserve the quality of drinking water, the Ministry of Health’s instructions are to rinse the water supply system until clear water is obtained, and to accompany the event with monitoring of the quality of the water. It should be made clear that the water suppliers have carried out sampling for testing the quality of the clear water after the rinses, in the pipelines, and all the results met the requirements of the Ministry of Health’s regulations.

The ministry of Health is testing stabilization parameters from the desalination plants outlet and their possible effect on the phenomena.

2. Monitoring essential minerals (such as Calcium and Magnesium), accompanied by epidemiologic and ecologic studies:

In the past 15 years, Water consumers began drinking low mineral content water. A surveillance of mineral content in the distribution system, accompanied by epidemiologic and ecologic studies is required in order to monitor possible cardiovascular morbidity due to lack of minerals.

3. Reduction of Disinfectant residual and surveillance of THMFP (THM formation potential): flexibility of water distribution system and the blending of different water sources leads to Insufficient control over water detention time (water age) in the system, type of disinfectant and its residual. Better surveillance over these parameters is needed.

As water ages, there is a greater potential for DBP formation such as THM. This phenomenon, due to high detention time, is apparent in some parts of the water distribution system, in the past 5 years, due to different flow patterns of water coming from different sources.

Progress made:

Due to longer retention times of water in pipes in Northern Israel, there was a significant rise in THM concentration. Structural and treatment changes were carried out in order to shorten retention time, so that THM concentrations were lowered to below the MCL (maximum contaminant level). The following measures were taken:

- a. In the past three years, Israel has established local THM stripping facilities that help reduce the concentration of THM for end pipe users.
- b. An additional means to reduce THM is Reinforcement of monitoring in the summer months (due to the fact that the temperature has an effect on the formation of THM.) Water suppliers can shorten hydraulic retention time in distribution system and thus lowering THM.
- c. Combined use of Chlorine Dioxide with Free chlorine.
- d. Controlled dilution with desalinated water

- National target 2: Empowerment of water suppliers and transferring responsibility for water quality supplied (training, reporting, sanitary surveys)

Target Date: Ongoing

Until recently, the MOH handled areas of responsibility belonging to the water supplier: managing water crisis, water quality reports to the public, monitoring programs etc.

The target is to transfer responsibility from the MOH to the supplier, by several intermediate targets:

Intermediate targets:

1. Knowledge transfer in the field of water quality (Courses, seminars etc.)

Progress made:

Since the publishing of the 2013 regulations "Sanitary Quality of Drinking water", courses and training programs for water suppliers were carried out by the ministry of Health. In these programs, basic subjects of water sanitation and quality assurance were taught, in addition to regulations and ordinances Tool-boxes were developed and learnt.

2. The MOH will establish a computerized data base so that water suppliers may develop monitoring programs and review their implementation.

Progress made:

The MOH is gradually promoting a process in which the water suppliers will develop their own routine monitoring programs. 29 out of 55 water current suppliers, developed their own monitoring program during 2021/2022.

3. Carrying out Sanitary surveys by water suppliers (Familiarity with their water system, weakness points and failure repair.

Progress made:

Each water supplier in Israel carries out a comprehensive sanitary survey on its water system. Surveys are submitted to the MOH with recommendations for corrective actions and an implementation schedule.

- National target 3: Mapping municipal planning schemes approved in water protection zones

Target date: ongoing

According to the Public health regulation (1995) "Sanitary conditions for drinking water wells", protection zones were set around groundwater sources, and restrictions regarding construction and activity in these zones were set forth.

Information regarding planning schemes approved but not yet realized, is lacking and thus the occurrence of schemes situated in the restricted area is possible.

A joint venture of the Ministry of Health, Water authority and the Israel Land Authority lead to a governmental decision as to the need of mapping approved municipal planning schemes in water protection zones.

Progress made:

To this date, mapping the approved municipal planning schemes in water protection zones succeeded in limited areas. However, the MOH developed two set of tools in order to cope with the problem:

- A Tool box which defines the approval conditions of old groundwater wells (built prior to 1995) that do not comply with the regulations. The tool is chosen according to severity and type of contamination, physical condition of the well and its management, management of the contaminant source and Hydrological conditions.
- Permitting of new drilling in the vicinity of a non-complying drinking water well, thus creating a well which complies with the regulations.

- New targets:

The MOH is planning a revision of several water safety regulations as follows:

Target Dates for targets 1-3 : 2023-2025

1. Revision of the "Sanitary quality of Drinking water and drinking water facilities" 2013 regulations.
 - a. Revision of several chemical parameters according to revision proposals made in the new EC Drinking water directive
 - b. Addition of Magnesium to drinking water (due to high content of desalinated water in the distribution system).
2. Revision of the "Sanitary conditions of Drinking Water Wells".
 - a. Computation of an individual Protection Zone for each well, taking into consideration specific hydrogeological conditions.
 - b. Revision of allowed activity in Protection zones and barriers for controlling contamination.
3. Revision of "Backflow Prevention" regulations.

Transferring responsibility to water suppliers while providing them with the following tools: framework for Backflow prevention management program, a guide for choosing the appropriate backflow preventer according to Health risk.
4. Lowering Lead content in Products in contact with drinking water - up to 0.25% lead content (Israeli Standard 5452).

Target date: Target met - Israeli standard 5452 was revised in March 2020.

5. Establishing Water Safety plans for Water suppliers, sewage and treated wastewater suppliers, and recreational waters.

Target date: 2022-2023

6. Water Safety plan training for managers of water distribution systems

Target date: 2030

II. Reduction of the scale of outbreaks and incidents of water-related disease (art. 6, para. 2 (b))

For each target set in this area:

1. Please describe the current target and target date. Please provide information on the background (including the baseline/starting point and reference to existing national and international legislation) and justification for the adoption of the target.
2. Please describe the actions taken (e.g., legal/regulatory, financial/economic, informational/educational and management measures) to reach the target (see also article 6, paragraph 5, of the Protocol).
3. Please assess the progress achieved from the baseline towards meeting the target as well as any challenges encountered.
4. Please describe how the target set under this area contributes to fulfilling global and regional commitments, in particular the 2030 Sustainable Development Agenda.
5. If you have not set a target in this area, please explain why.

National Target: By maintaining these surveillance and control methods, our aim is to further reduce the number of outbreaks by 20% each year.

In Israel, since drinking water is treated (to a standard of 0 coliform / 100 ml) and inspected frequently, waterborne infections are rare, and pathogens are mostly spread by oral-fecal route through contamination of food rather than contamination of water. It is noteworthy that Gastro-Intestinal infections are affected by seasonal changes.

Nevertheless, there are some programs addressing certain pathogens that might be waterborne. We will discuss these programs related to the following pathogens, which all are mandatory reportable by law.

A. Polio: Israel's aim is to be considered Polio Free. In addition, poliovirus prevention is reached through vaccination program since 1955, with high rate of response to vaccine in the population.

In 2021, 15 WWTPs were sampled once a month. At the end of October 2021, we found a variant of polio vaccine (strain 3) with a 1.6% change (VDPV3) in the effluent of the Jerusalem WWTP (Soreq).

The "Soreq" drainage basins are West Jerusalem and the Palestinian Authority. In December, this variant was found in a sample of the Kidron River, whose drainage basin is mainly the center of Jerusalem. These findings led to the conclusion that the variant source is in Jerusalem. We conducted an upstream sampling in the Kidron River area.

In February 2022, a case of acute flaccid paralysis was discovered in a girl from Jerusalem, who is a carrier of this variant. Today, Israel is defined by the World Health Organization as a country with polio. Environmental monitoring has been expanded and intensified for the purpose of identifying the spread of the variants and we are in the midst of a nationwide vaccination supplement operation.

B. Hepatitis A is controlled through vaccination program since 1999, given to children at age 18 and 14 months. Vaccination coverage is relatively high and reaches 84.9%-88.7% nationwide. Hence, Hepatitis cases are very rare. Israel's aim is to maintain these low levels of morbidity.

In 2016, wastewater monitoring of Hepatitis A virus (HAV) began in major cities. This program began because an outbreak of Hepatitis A was reported in Europe, in mid-2016, among MSM (men who have sex with men). In Israel, only at the beginning of 2017, laboratory reports of HAV cases among MSM were received. Following these reports, clinical research began at the National Center for Hepatitis Viruses and in coordination, environmental monitoring

began, the planning of which was based on the 2012 HAV outbreak. In 2018 the outbreak of hepatitis A in Europe subsided but environmental monitoring in Israel continued. In 2018, 120 wastewater samples from 9 WWTPs across the country were tested for HAV on the basis of sewage monitoring for the polio virus. Molecular tests found that 28 samples of these samples were positive for Hepatitis A which is endemic to Israel.

- C. Legionella control in Israel is achieved through water supply regulation that mandates purification and inspection of drinking water, and also defines the means to apply in every public facility (especially when a sensitive population, such as children, elders, or immunosuppressed, is concerned). Hence, reported outbreaks are very low in Israel, and annual prevalence (2021) is 1.3/100,000.
- D. Salmonella, Shigella and Campylobacter control is achieved by various methods of surveillance. Apart from the mandatory reporting (since 1951), all specimens of these pathogens from all labs in Israel are transported for further analysis to the central public health labs in Jerusalem. Thus, a complete national picture of morbidity is achieved in real time. In addition, preliminary data from sentinel labs is processed at the Israeli Center of Disease Control, which results in prompt information regarding trends and outbreaks. Specifically, cluster analysis is done regarding shigellosis, which directs public health intervention towards specific areas in which they occur.
- E. Corona virus monitoring in Sewage:

Since 2020, regular national monitoring of the polio virus is performed once a month, sampling 14 WWTPs located in different parts of the country. The secretion of SARS-CoV-2 virus (SC2) in the feces begins several days after the secretion of the virus into the respiratory system (before symptom onset) and continues for 5-10 days after the fading of secretion from the upper respiratory tract (after symptom onset). In addition, it is known that asymptomatic patients also excrete the virus in the feces. As part of the national response to the SC2 epidemic, arose a need to develop methods for conducting extensive population inspection and rapid identification of infection epicenters. Sewage monitoring shows promising potential as a complementary tool to swab-testing whether in identifying asymptomatic carriers and identifying patients who have not yet been clinically identified or in an extensive population survey that will allow subsequent decision making. In this way hundreds of thousands of people can be monitored using a small amount of laboratory tests. We tried a number of different methods for concentrating the virus from the effluent. The goal was to find an efficient and rapid method with which we can concentrate the virus with a minimum of inhibitors. The method chosen uses an electric attraction between the virus proteins and an electrically charged filter. In this method pass 20 ml of wastewater is centrifuged to remove heavy organic matter. The supernatant is mixed with magnesium chloride which helps negatively charged substances (such as SC2) to wrap in a positive charge. The sample is then filtered in a negative charged filter having 0.45 diameter pores. In addition, many inhibitors that do not have an electric charge or have an electric charge opposite that of the filter, pass through the filter and thus there is less delay in the process of nucleic acid extraction and molecular diagnosis.

Towards the end of the second wave (end of September 2020) The "12 Cities project" was launched. Main conclusions of the project:

- 1) The Negatively charged filter method is convenient, allows for recurrence and is suitable for detecting the virus in various laboratories.

2) The amount of positive patients at the end of the second wave made it possible to estimate the methods' detection threshold in Wastewater. It is estimated that the method makes it possible to detect the virus in 84% of the times we sample the wastewater, when there are about 30-80 active patients in a population of one hundred thousand people. Asymptomatic cases cannot be quantified.

As The "Sewage Traffic Light" project began, using population normalization of viral loads, it was possible to see the behavior of the virus over time in different cities. At the end of 2021 a national project of corona monitoring in sewage was approved which covers about 110 different sites. The molecular analysis is performed by accredited laboratories.

III. Access to drinking water (art. 6, para. 2 (c))

For each target set in this area:

1. Please describe the current target and target date. Please provide information on the background (including the baseline/starting point and reference to existing national and international legislation) and justification for the adoption of the target.
2. Please describe the actions taken (e.g., legal/regulatory, financial/economic, informational/educational and management measures) to reach the target (see also article 6, paragraph 5, of the Protocol).
3. Please assess the progress achieved from the baseline towards meeting the target as well as any challenges encountered.
4. Please describe how the target set under this area contributes to fulfilling global and regional commitments, in particular the 2030 Sustainable Development Agenda.
5. If you have not set a target in this area, please explain why.

100% of the population in Israel has access to high quality drinking water.

IV. Access to sanitation (art. 6, para. 2 (d))

For each target set in this area:

1. Please describe the current target and target date. Please provide information on the background (including the baseline/starting point and reference to existing national and international legislation) and justification for the adoption of the target.
2. Please describe the actions taken (e.g., legal/regulatory, financial/economic, informational/educational and management measures) to reach the target (see also article 6, paragraph 5 of the Protocol).
3. Please assess the progress achieved from the baseline towards meeting the target as well as any challenges encountered.
4. Please describe how the target set under this area contributes to fulfilling global and regional commitments, in particular the 2030 Sustainable Development Agenda.
5. If you have not set a target in this area, please explain why.

- **National target: To provide access to sanitation for the entire population in order to ensure hygienic separation of human excreta from human contact and to protect human health and the environment.**

Target Date: By 2030, 100% of the population will have access to sanitation.

Progress made:

As of 2021, 99.9% of the population have access to sanitation.

The Israeli regulation requires municipalities and water and sewage corporations to collect and treat all their wastewater.

Israel will achieve this target by enforcement of the regulations on water and wastewater corporations. In serious cases of violation and damage to the environment, fines and lawsuits are used.

In addition, Israel financially supports municipalities and water and wastewater corporations, in order to build sewage collection systems and wastewater treatment plants.

V. Levels of performance of collective systems and other systems for water supply (art. 6, para. 2 (e))

For each target set in this area:

1. Please describe the current target and target date. Please provide information on the background (including the baseline/starting point and reference to existing national and international legislation) and justification for the adoption of the target.
2. Please describe the actions taken (e.g., legal/regulatory, financial/economic, informational/educational and management measures) to reach the target (see also article 6, paragraph 5 of the Protocol).
3. Please assess the progress achieved from the baseline towards meeting the target as well as any challenges encountered.
4. Please describe how the target set under this area contributes to fulfilling global and regional commitments, in particular the 2030 Sustainable Development Agenda.
5. If you have not set a target in this area, please explain why.

As mentioned in paragraph III above, 100% of the population in Israel has access to high quality drinking water. The Water Law of 1959 regulates water as public property managed by the Governmental Authority for Water and Sewerage. This goal was achieved in the State of Israel many years ago. The standards of supply are directed in the bylaws set by the Water Authority Council - Service standards and Engineering standards

VI. Levels of performance of collective systems and other systems for sanitation (art. 6, para. 2 (e))

For each target set in this area:

1. Please describe the current target and target date. Please provide information on the background (including the baseline/starting point and reference to existing national and international legislation) and justification for the adoption of the target.
2. Please describe the actions taken (e.g., legal/regulatory, financial/economic, informational/educational and management measures) to reach the target (see also article 6, paragraph 5, of the Protocol).
3. Please assess the progress achieved from the baseline towards meeting the target as well as any challenges encountered.
4. Please describe how the target set under this area contributes to fulfilling global and regional commitments, in particular the 2030 Sustainable Development Agenda.
5. If you have not set a target in this area, please explain why.

As mentioned in paragraph IV above, the goal is 100% households to be connected to the collective system. Today only in a few cases in troubled areas the sanitation solution is septic tanks (less than 1%). There are no cases of no sanitation solution at all. Furthermore, Israel is a world leader in treating the wastewater to a level that enables unrestricted irrigation and reuse for agriculture. More than 85% of effluents are reused being a major water source for the agricultural consumers. The bylaws set for the water and wastewater corporations require to implement works in order to reduce and cancel septic tanks and to connect to the sewage system. Significant budgets are allocated for supporting the wastewater treatment plants and the water reuse.

VII. Application of recognized good practices to the management of water supply (art. 6, para. 2 (f))

For each target set in this area:

1. Please describe the current target and target date. Please provide information on the background (including the baseline/starting point and reference to existing national and international legislation) and justification for the adoption of the target.
2. Please describe the actions taken (e.g., legal/regulatory, financial/economic, informational/educational and management measures) to reach the target (see also article 6, paragraph 5, of the Protocol).
3. Please assess the progress achieved from the baseline towards meeting the target as well as any challenges encountered.
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5. If you have not set a target in this area, please explain why.

Israel Water Authority is the governmental body authorized by law to rule all aspects relating to the water and sewage sector in Israel, including its management, planning, development, operation and regulation. The main goal of the Israel Water Authority is to enable regular and reliable supply of water to all water consumers in the required quality and quantity, at reasonable prices, while preserving the water sources for future generations.

In more than a decade, major reforms took place in almost all of the aspects of water sector management – starting with water resources development, operation, planning (including Water Sector Master Plan for 2050), economic and administrative regulations, including environmental, engineering, technical, economic and standards of service policies. The Water Law was amended in 2017 and several Governmental decisions on the Water sector were received.

The organ that has the full power and authorities to set bylaws and regulations in the water sector is the Water Council in the IWA, chaired by the Director General of the IWA and has 7 other members: 5 high rank representatives of the following ministries: Energy, Agriculture, Finance, Interior and Environment Protect, and 2 Public Representatives. All the decisions of the Council are published and all subject to the Public Hearing (in writing) procedures.

These reforms enabled Israel to fully solve its water challenges. The Sea Water desalination is today the major source in the water balance, enabling Israel to preserve its natural resources. As mentioned – all the wastewater is treated and a major portion is reused for agriculture. The economic regulation enabled all costs to be covered by the water tariffs and the suppliers are closely monitored for service and engineering standards of supply.

VIII. Application of recognized good practice to the management of sanitation (art. 6, para. 2 (f))

For each target set in this area:

1. Please describe the current target and target date. Please provide information on the background (including the baseline/starting point and reference to existing national and international legislation) and justification for the adoption of the target.
2. Please describe the actions taken (e.g., legal/regulatory, financial/economic, informational/educational and management measures) to reach the target (see also article 6, paragraph 5, of the Protocol).
3. Please assess the progress achieved from the baseline towards meeting the target as well as any challenges encountered.
4. Please describe how the target set under this area contributes to fulfilling global and regional commitments, in particular the 2030 Sustainable Development Agenda.
5. If you have not set a target in this area, please explain why.

Israeli regulation requires the local municipalities and water and wastewater corporations to maintain the sewage distribution system so that leakage will be prevented. For example, "Prevention of Water Pollution - Wastewater Conveyance System" Regulation, 2011 - This law, under the authority of the Water Law, the 1961 Abatement of Nuisances Law, and the 1940 Public Health Ordinance, is aimed at preventing leaks from wastewater distribution systems in order to protect water sources, ecosystems, biodiversity, and other natural resources, as well as to prevent environmental hazards, inter alia, by imposing charges and issuing directives in accordance with the provisions of these Regulations.

Other sets of rules describe various criteria of good maintenance practice that water corporations need to follow.

IX. Occurrence of discharges of untreated wastewater (art. 6, para. 2 (g) (i))

For each target set in this area:

1. Please describe the current target and target date. Please provide information on the background (including the baseline/starting point and reference to existing national and international legislation) and justification for the adoption of the target.
2. Please describe the actions taken (e.g., legal/regulatory, financial/economic, informational/educational and management measures) to reach the target (see also article 6, paragraph 5, of the Protocol).
3. Please assess the progress achieved from the baseline towards meeting the target as well as any challenges encountered.
4. Please describe how the target set under this area contributes to fulfilling global and regional commitments, in particular the 2030 Sustainable Development Agenda.
5. If you have not set a target in this area, please explain why.

- **National target: Wastewater treatment according to "Public Health Regulations (Effluent Quality Standards and Rules for Sewage Treatment), 2010", and termination of untreated wastewater discharge to rivers.**
- **Target date: full implementation by 31.12.2030**

See Detailed JMP 2021 reports.

X. Occurrence of discharges of untreated storm water overflows from wastewater collection systems (art. 6, para. 2 (g) (ii))

For each target set in this area:

1. Please describe the current target and target date. Please provide information on the background (including the baseline/starting point and reference to existing national and international legislation) and justification for the adoption of the target.
2. Please describe the actions taken (e.g., legal/regulatory, financial/economic, informational/educational and management measures) to reach the target (see also article 6, paragraph 5, of the Protocol).
3. Please assess the progress achieved from the baseline towards meeting the target as well as any challenges encountered.
4. Please describe how the target set under this area contributes to fulfilling global and regional commitments, in particular the 2030 Sustainable Development Agenda.
5. If you have not set a target in this area, please explain why.

In Israel, sewage and stormwater collection systems are separated. However, in the winter, stormwater penetrates into the sewer. This results in overflows of wastewater distribution systems. "Prevention of Water Pollution - Wastewater Conveyance System, Regulation", 2011, requires the effective separation of the two systems and by enforcement of this regulation we hope to reduce this problem.

Regarding spills and leakage of sewage to the environment because of failure of the wastewater distribution systems: It is difficult to provide an accurate estimation of the reduction in the number of spills, however, the regulation as described before is meant to reduce the number of sewage leaks to the environment.

The Water Law enables issuing permits to discharge effluents to the rivers under strict conditions in certain qualities and circumstances. This instrument is used sparingly and by optimizing the controlled management of the water source and minimizing the damage to the quality of water in the source.

XI. Quality of discharges of wastewater from wastewater treatment installations (art. 6, para. 2 (h))

For each target set in this area:

1. Please describe the current target and target date. Please provide information on the background (including the baseline/starting point and reference to existing national and international legislation) and justification for the adoption of the target.
2. Please describe the actions taken (e.g., legal/regulatory, financial/economic, informational/educational and management measures) to reach the target (see also article 6, paragraph 5, of the Protocol).
3. Please assess the progress achieved from the baseline towards meeting the target as well as any challenges encountered.
4. Please describe how the target set under this area contributes to fulfilling global and regional commitments, in particular the 2030 Sustainable Development Agenda.
5. If you have not set a target in this area, please explain why.

- **National target: To decrease pollutant loads of discharged wastewater from wastewater treatment plants to the environment by upgrading facilities and by sustainable maintenance of wastewater treatment plants. Wastewater treatment according to "Public Health Regulations (Effluent Quality Standards and Rules for Sewage Treatment), 2010", and termination of untreated wastewater discharge to rivers.**

Target Date: By 2030 we expect to achieve full implementation.

**Pollution loads to 17 main rivers in 2020 were: TOC - 1,613 t/y,
TN - 3,137 t/y, TP - 382 t/y.**

**Progress made: Between 2006 to 2020 pollution loads to 17 main rivers
decreased: TOC - by 73%, TN - by 44% and TP - by 64%.**

XII. Disposal or reuse of sewage sludge from collective systems of sanitation or other sanitation installations (art. 6, para. 2 (i))

For each target set in this area:

1. Please describe the current target and target date. Please provide information on the background (including the baseline/starting point and reference to existing national and international legislation) and justification for the adoption of the target.
2. Please describe the actions taken (e.g., legal/regulatory, financial/economic, informational/educational and management measures) to reach the target (see also article 6, paragraph 5, of the Protocol).
3. Please assess the progress achieved from the baseline towards meeting the target as well as any challenges encountered.
4. Please describe how the target set under this area contributes to fulfilling global and regional commitments, in particular the 2030 Sustainable Development Agenda.
5. If you have not set a target in this area, please explain why.

- **National target: Effective treatment of sewage sludge from waste water treatment plants for safe agricultural use, soil conditioning or for energy production.**

Target date: 08.2020

Progress made: Target met. Sludge regulations were updated in August 2020 and allow the use of sludge for energy recovery, prohibiting the use of sludge in Food Crops consumed raw.

The aim of these Regulations is to protect public health, to prevent pollution of water sources from sewage sludge, to protect the environment, including ecological systems and biological diversity, soil and agricultural crops.

According to these Regulations, sludge designated for agricultural use or soil conditioning must be sludge class A, treated by stabilization and pasteurization processes. The Regulations establish standards for heavy metals and pathogens for treated sludge. The updated regulation also prohibit the use of sludge in Food Crops consumed raw.

They also set recording and laboratory testing requirements, set limitations on areas of sludge use, and establish a safe sludge load to protect soil and agricultural crops, and to prevent nitrogen leaching to groundwater.

565,217 tons of sludge (wet material weight), 116,218 tons of dry material (dm), were removed from 75 municipal sewage treatment plants in Israel in the year 2020.

- **Most of the sludge that was created (99%, 559,152 tons of wet sludge, 114,917 tons dm) was recycled for agricultural use, after undergoing additional sanitary processing and turned into fertilizer / soil conditioner for unlimited use ("Class A" in accordance with the regulations).**

1.1% of the total sludge that was created was disposed of in landfills (1,301 tons dm).

- **Sludge wasn't desposed to the sea al all.**

XIII. Quality of wastewater used for irrigation purposes (art. 6, para. 2 (i))

For each target set in this area:

1. Please describe the current target and target date. Please provide information on the background (including the baseline/starting point and reference to existing national and international legislation) and justification for the adoption of the target.
2. Please describe the actions taken (e.g., legal/regulatory, financial/economic, informational/educational and management measures) to reach the target (see also article 6, paragraph 5, of the Protocol).
3. Please assess the progress achieved from the baseline towards meeting the target as well as any challenges encountered.
4. Please describe how the target set under this area contributes to fulfilling global and regional commitments, in particular the 2030 Sustainable Development Agenda.
5. If you have not set a target in this area, please explain why.

- **National Target 1: 85% of effluent will comply with "Effluent quality standards and wastewater treatment rules" 2010.**

Current target date: 2030

The promotion of wastewater treatment and effluents safe reuse for agricultural purposes, is a national mission. Treated wastewater in Israel is regarded as a financial resource and is mostly utilized for agricultural irrigation. Until 2010, most effluent was used for restricted applications. In 2010, the government decided to enact "Effluent quality standards and wastewater treatment rules" and set regulations for treating wastewater to an "Unrestricted agricultural irrigation quality" or to "Quality required for discharge into the environment".

In 2021, about 66% of all effluent is produced from tertiary treatment plants and about 34% of effluent is produced from secondary treatment plants. This percentage takes into account effluent produced from tertiary treatment plants in addition to effluent which was treated in an equivalent tertiary treatment according to former regulations (such as long retention time in reservoirs).

According to regulations, wastewater treatment plants of up-to 1000 cubic meters/day are not obliged to have tertiary treatment.

Upgrading of wastewater treatment plants to tertiary treatment, is slow and does not meet regulations (due to financial reasons, lack of space etc.). According to regulations, an Exceptions Committee was established, whose members are the Environmental Supervisor, the Health Supervisor and the Director of the Water Authority.

Pursuant to a reasoned request in writing of a wastewater producer, an operator or an effluent user, the Exceptions Committee may permit, for a period of no more than five years, to discharge effluents at less stringent values than those detailed in the regulations, provided it will not result in the contamination of water sources.

- **National Target 2: Operational solutions for effluent or wastewater that do not comply with the quality needed by the regulations during technical failures (such as emergency reservoirs).**

Current target date: 2030 for upto 50% of the WWTPs

"Effluent quality standards and wastewater treatment rules" permit unrestricted irrigation using treated effluent, with the appropriate quality (see charts above). As a result, keeping care that WWTP continue supplying high quality effluent at all times becomes of great importance in avoiding harm to public health. Solutions for effluent which do not comply with unrestricted agricultural quality produced during technical

failures, are required. One of the solutions is building reservoirs for each WWTP for containing the low quality effluent until it can be pumped back in to the WWTP. Israel is densely built and suffers from shortage of available land so that construction of effluent reservoirs is a complex task.

- **National Target 3** : Reporting effluent quality tests by a computerized system

Target met

Analyzing effluent quality is carried out in laboratories recognized by the MOH. The computerized system enables efficient monitoring of effluent quality parameters by transferring the test results directly to one single governmental system that will be open to several ministries: Health, Environment protection, Water Authority, Agriculture.

Progress made: Training for the new computerized system is ongoing.

- **National Target 4:** Enacting "Effluent supply, use and permit" regulations.

Target date: 2022-2024

Legal review of Draft regulations (2018): "Effluent supply, use and permit" is currently taking place.

The new regulation aims mainly to Increase the monitoring over the effluent supply system and change duties of effluent suppliers and effluent users in order to pass the responsibility over conserving the effluent quality to the supplier.

XIV. Quality of waters which are used as sources for drinking water (art. 6, para. 2 (j))

For each target set in this area:

1. Please describe the current target and target date. Please provide information on the background (including the baseline/starting point and reference to existing national and international legislation) and justification for the adoption of the target.
2. Please describe the actions taken (e.g., legal/regulatory, financial/economic, informational/educational and management measures) to reach the target (see also article 6, paragraph 5, of the Protocol).
3. Please assess the progress achieved from the baseline towards meeting the target as well as any challenges encountered.
4. Please describe how the target set under this area contributes to fulfilling global and regional commitments, in particular the 2030 Sustainable Development Agenda.
5. If you have not set a target in this area, please explain why.

In Israel there are 3 major water sources: groundwater (over a thousand groundwater wells across the mountain and coastal aquifers), surface water (Lake Kinneret, springs and rivers) and desalinated water (Mediterranean sea and Red sea).

Previous targets set in last update were met.

XV. Quality of waters used for bathing (art. 6, para. 2 (j))

For each target set in this area:

1. Please describe the current target and target date. Please provide information on the background (including the baseline/starting point and reference to existing national and international legislation) and justification for the adoption of the target.

- **National Target:** Revision of the Bathing Water regulations.

Target Date: 2023

In Israel, there are 147 recognised beaches (by the ministry of Interior) in the Mediterranean sea, the Red sea, the Dead sea and the sea of Galilee.

The Israeli bathing water standard

- **Fecal coliform (Fresh water) :**
GM < 200 cfu/200ml.
Single Sample < 400 cfu/200ml in 80% of samples.
- **Enterococcus (marine water): Single Sample < 105 cfu/ml**

Frequency of sampling: once a week in beaches which are open to the public in summer and winter.

Once a month in beaches which are closed to the public in winter.

2021 national summary:

| Beaches | No. of samples | No. of Non Compliant samples | Percentage of non compliant samples |
|------------------------|-----------------------|-------------------------------------|--|
| Mediterranean | 6654 | 259 | 3.9% |
| Red Sea | 647 | 10 | 1.5% |
| Sea of Galillee | 731 | 69 | 9.4% |
| Total | 8032 | 345 | 4.3% |

2. Please describe the actions taken (e.g., legal/regulatory, financial/economic, informational/educational and management measures) to reach the target (see also article 6, paragraph 5, of the Protocol).
3. Please assess the progress achieved from the baseline towards meeting the target as well as any challenges encountered.
4. Please describe how the target set under this area contributes to fulfilling global and regional commitments, in particular the 2030 Sustainable Development Agenda.
5. If you have not set a target in this area, please explain why.

XVI. Quality of waters used for aquaculture or for the production or harvesting of shellfish (art. 6, para. 2 (j))

For each target set in this area:

1. Please describe the current target and target date. Please provide information on the background (including the baseline/starting point and reference to existing national and international legislation) and justification for the adoption of the target.
2. Please describe the actions taken (e.g., legal/regulatory, financial/economic, informational/educational and management measures) to reach the target (see also article 6, paragraph 5, of the Protocol).
3. Please assess the progress achieved from the baseline towards meeting the target as well as any challenges encountered.
4. Please describe how the target set under this area contributes to fulfilling global and regional commitments, in particular the 2030 Sustainable Development Agenda.
5. If you have not set a target in this area, please explain why.

XVII. Application of recognized good practice in the management of enclosed waters generally available for bathing (art. 6, para. 2 (k))

For each target set in this area:

1. Please describe the current target and target date. Please provide information on the background (including the baseline/starting point and reference to existing national and international legislation) and justification for the adoption of the target.
2. Please describe the actions taken (e.g., legal/regulatory, financial/economic, informational/educational and management measures) to reach the target (see also article 6, paragraph 5, of the Protocol).
3. Please assess the progress achieved from the baseline towards meeting the target as well as any challenges encountered.
4. Please describe how the target set under this area contributes to fulfilling global and regional commitments, in particular the 2030 Sustainable Development Agenda.
5. If you have not set a target in this area, please explain why.

XVIII. Identification and remediation of particularly contaminated sites (art. 6, para. 2 (l))

For each target set in this area:

1. Please describe the current target and target date. Please provide information on the background (including the baseline/starting point and reference to existing national and international legislation) and justification for the adoption of the target.
2. Please describe the actions taken (e.g., legal/regulatory, financial/economic, informational/educational and management measures) to reach the target (see also article 6, paragraph 5, of the Protocol).
3. Please assess the progress achieved from the baseline towards meeting the target as well as any challenges encountered.
4. Please describe how the target set under this area contributes to fulfilling global and regional commitments, in particular the 2030 Sustainable Development Agenda.
5. If you have not set a target in this area, please explain why.

XIX. Effectiveness of systems for the management, development, protection and use of water resources (art. 6, para. 2 (m))

For each target set in this area:

1. Please describe the current target and target date. Please provide information on the background (including the baseline/starting point and reference to existing national and international legislation) and justification for the adoption of the target.
2. Please describe the actions taken (e.g., legal/regulatory, financial/economic, informational/educational and management measures) to reach the target (see also article 6, paragraph 5, of the Protocol).
3. Please assess the progress achieved from the baseline towards meeting the target as well as any challenges encountered.
4. Please describe how the target set under this area contributes to fulfilling global and regional commitments, in particular the 2030 Sustainable Development Agenda.
5. If you have not set a target in this area, please explain why.

The main legislation of the Israel Water sector comprises the national management and operation of the whole water balance in the country.

Citation From The Israeli Water Law 1959:

**“The country's water resources are public property, controlled by the state and are designated for the needs of its residents and the development of the country”.
“Water resources”: springs, streams, rivers, lakes, reservoirs, either surface or ground water, natural or artificial, standing or flowing, including drainage water and sewage”.**

Main principles and legislation of water management:

- Water Drilling Supervision Law, 1956
- Water Measurement Law, 1956 and the Water Rules (terms in the license), 2014

"A person shall not install a well except under a license from the Director of the Government Authority and in accordance with the terms of the license".

Specified in the license, conditions regarding the pipe of the well, its depth, equipment, the amount of water that may be extracted from it and the or the purpose for which the water produced will be used.

"A person will not provide water except in measurement."

The measurement systems are under the constant supervision and control of the Water Authority, in order to ensure that the production quantities do not exceed the permitted quantities and do not harm the natural resources availability.

About 4 years ago, a project of installing communication systems that enable the transmission of water readings data to the Water Authority has begun. As part of the project, about 1,900 water meters were replaced

WATER AVAILABILITY: monitoring of water levels and water quality parameters, Managing water balance of water resources to prevent over-pumping and water quality degradation.

Establishment of wide range of different water resources enable the Israel Water Authority to activate the Integrated Water Resources Management model that takes into consideration the state of the art condition of the natural water resources, economic and environmental aspects, while preserving the natural resources for the benefit of future generations.

The government is massively assisting in the establishment of facilities for reclamation of effluents in order to prevent contamination of water sources and, in particular, to exploit the environmental hazards as a resource in short supply for reuse in the water sector. In light of this, Israel is already implementing the SDG6.

Over the past two decades, Israel has built a vast array of seawater desalination facilities that now fully satisfy demand in the urban and domestic sectors. In this way, it achieved a revolution in addressing the natural sources of water in shortage. The Basis of water supply is desalinated water which is completed with natural water sources, while attempting to conserve the natural water sources as strategic reservoirs and for the benefit of future generations

A series of government decisions and legislative reforms were carried out in light of the Integrated Water Resources Management approach.

The natural water resources are scarce and precipitation is distributed throughout the year in an unstable manner. Thus, the way to increase **RELIABILITY** is to have **VARIABILITY** in tailor made operational plans and in the variety of water resources. One of the tools is using aquifers as strategic reservoirs during low-demand months, using comprehensive monitoring and control of aquifers' levels and abstraction.

One of the missions is to guarantee the sustainable exploitation of natural resources and to monitor and react to pollution. To achieve this the Israeli Hydrological Service monitors the water levels and the water quality in all the natural reservoirs.

QUALITY of water resources: Preventive measures against contamination, such as monitoring and remediation of polluted water bodies are carried out on a regular basis. One of the examples is the Industrial Wastewater Standards that regulate a long list of contaminants that are prohibited at a certain level. Low wastewater quality entails a very high tariff, making it not profitable to pollute.

The water balance is managed by the Water Authority's Operations Department which is responsible for the management of Israel's natural water resources, combined with desalinated water sources (seawater, brackish water) and reclaimed water, in order to create optimal conditions for reliable, quantitative and qualitative water supply to all consumers, while maintaining conservation of natural water sources. The Division is responsible for planning the operational policy of the water sector and implementing it by guiding the various water suppliers, such as "Mekorot" and the various desalination companies, and supervising the various departments in the Water Authority. The policy proposal and operational details are presented and approved from time to time (at least once every six

months) within the framework of an Operating Committee headed by the Director General of the Water Authority.

Operational Line definitions - The operating lines are determined according to the best up-to-date knowledge available to us. The lines are updated from time to time by performing hydrological / ecological works to close and update knowledge gaps.

- **The red line:** is defined as a lower threshold level below it can cause irreversible hydrological damage. The damage to groundwater basins is a deterioration in the quality of the water as a result of the intrusion of saline / saline water bodies into the fresh water bodies. In the Kinneret, the water quality deteriorates as a result of changes in the ecosystem.
- **The purple line:** expresses the maximum level of the operational storage in the basin beyond which significant volumes of water are lost or environmental damage is caused.
- **The Green Line:** Expresses the recommended operational hydrological level for sustainable management. Determined by hydrological-operational-environmental considerations, according to the uniqueness of each basin.

XX. Additional national or local specific targets

In cases where additional targets have been set, for each target:

1. Please describe the current target and target date. Please provide information on the background (including the baseline/starting point and reference to existing national and international legislation) and justification for the adoption of the target.
2. Please describe the actions taken (e.g., legal/regulatory, financial/economic, informational/educational and management measures) to reach the target (see also article 6, paragraph 5, of the Protocol).
3. Please assess the progress achieved from the baseline towards meeting the target as well as any challenges encountered.
4. Please describe how the target set under this area contributes to fulfilling global and regional commitments, in particular the 2030 Sustainable Development Agenda.
5. If you have not set a target in this area, please explain why.

Part three

Common indicators¹

I. Quality of the drinking water supplied

1. Context of the data

1. What is the population coverage (in millions or per cent of total national population) of the water supplies reported under sections 2 and 3 below? *The rationale of this question is to understand the population coverage of the water quality data reported under sections 2 and 3 below.*

Please describe the type of water supplies for which data is included in the following tables, and the population share covered by these supplies.

Please also clarify the source of the water quality data provided (e.g., data from regulatory authorities).

100% of all drinking water in Israel is quality controlled.

All water sources are routinely inspected and monitored drinking water is distributed to each and every household and water consumer. The Israeli Ministry of Health – MOH, (by the department of Environmental Health) routinely supervises over water suppliers, assuring that the drinking water complies with the sanitation quality required in the regulations. Data provided in this report is derived from the ministry's computerized system containing quality test results. Laboratories and water suppliers are obliged to transfer drinking water test results to the MOH.

2. Please specify from where the water quality samples reported in sections 2 and 3 below are primarily taken (e.g., treatment plant outlet, distribution system or point of consumption).

The rationale of this question is to understand where the samples were primarily taken from for the water quality data reported in sections 2 and 3 below.

In Israel there are 3 major water sources: groundwater (over a thousand groundwater wells across the mountain and coastal aquifers), surface water (Lake Kinneret, springs and rivers) and desalinated water (Mediterranean sea and Red sea).

The Water delivered to the public is tested by the water suppliers and when necessary undergo thorough and comprehensive treatment to remove undesirable components which may be harmful to the health of humans. Water sampling is performed according to regulations and relate to:

- **Groups of substances from natural sources such as: micro-organisms and algae that are naturally found in the environment or chemical substances found in rock layers and which are naturally dissolved in the water.**
- **Substances penetrating the water from non-natural sources such as: micro-organisms stemming from human and animal contamination, chemical substances used by man for industry and agriculture and which might contaminate surface water sources and penetrate underground water, byproducts of water disinfection and various substances used in the treatment process.**

The samplings are performed along the entire water supply system: water sources, water treatment plants and public water supply.

Chemical, Microbiological and Physicochemical tests of 150 parameters are being analyzed and published to the public in the MOH internet site.

¹ In order to allow an analysis of trends for all Parties under the Protocol, please use wherever possible 2005 — the year of entry into force of the Protocol — as the baseline year.

3. In sections 2 and 3 below, the standards for compliance assessment signify the national standards. If national standards for reported parameters deviate from the World Health Organization (WHO) guideline values, please provide information on the standard values.

The rationale of this question is to understand any possible differences between the national standards for microbiological and chemical water quality parameters and the respective WHO guideline values.²

The process for setting Drinking water regulations includes a review of all parameters found in international standards (US, EU, Au/Nz, WHO).

Public Health Regulations (2013): the sanitary quality of drinking water and drinking water facilities set a high standard for the sanitary quality of drinking water. Deviations from the WHO guideline value include:

- Nitrate (NO₃) maximum concentration – 70 mg/l
- **Trihalomethanes (revision made in 2021):**
 - maximum quarterly weighted average : 0.1 mg/l
 - Maximum concentration for no more than two consecutive weeks: 0.135 mg/L
 - Maximum concentration : 0.1 per 90% of the time

In the coastal aquifer, located in Israel's densely populated region, saline and nitrate concentrations have increased considerably since 2000. Nitrate concentrations have increased from 30 to more than 60 mg/liter in the last 60 years, mostly due to agricultural activity and the slow upgrading into tertiary wastewater treatment.

Additional parameters, beyond those set by the WHO:

1. Over 50% of the Drinking water are desalinated, and a special chapter is dedicated in the regulations for monitoring and quality instructions for desalinated water. These instructions include reference to stabilization values such as: soluble Calcium, Alkalinity, CCPP, Langelier index.

2. Bacteriological quality

4. Please indicate the percentage of samples that fail to meet the national standard for *Escherichia coli* (*E. coli*). Parties may also report on up to three other priority microbial indicators and/or pathogens that are subject to routine water quality monitoring.

If possible, please provide segregated data for urban and rural areas in the table below. If this is not possible, please consider reporting by alternative categories available in your country, for example by “non-centralized versus centralized” water supplies or by population number-based categories. If you do so, please indicate the reported categories by renaming the rows in the column “area/category” in the table below accordingly.

If data can be reported neither for urban and rural areas nor for alternative categories, please report total (national) values only.

Please comment on the trends or provide any other important information supporting interpretation of the data.

| Parameter | Area/category | Baseline value | Value reported in the previous reporting cycle (2018) | Current value (2021) |
|-----------|---------------|----------------|---|----------------------|
| Coliform | Total | | 0.5% | 0.4% |

² The latest edition of the WHO *Guidelines for Drinking-water Quality* is available at: http://www.who.int/water_sanitation_health/publications/dwq-guidelines-4/en/.

Microbial Standards In the distribution system: No coliform bacteria in 100 ml. If one or more coliform bacteria has been found in 100 ml of water, E. coli will be analyzed.

Compliance with the annual sampling plan is 98.9%.

3. Chemical quality

5. Please report on the percentage of samples that fail to meet the national standard for chemical water quality with regard to the following parameters:

- (a) Arsenic;
- (b) Fluoride;
- (c) Lead
- (d) Nitrate.

6. Please also identify up to three additional chemical parameters that are of priority in the national or local context.

| <i>Parameter</i> | <i>Area/category</i> | <i>notes</i> | 2018 | <i>Current value (2021)</i> |
|------------------------|----------------------|--|--|---|
| Arsenic | Total | Not tested in distribution system | Not tested in distribution system | Not tested in distribution system |
| Fluoride | Total | | No fluoridation since Aug 2014 | 0 No fluoridation since Aug 2014 |
| Lead | Total | | 0.32% | 0.53% |
| Nitrate | Total | Not tested in distribution system | Not tested in distribution system | Not tested in distribution system |
| iron | Total | | 0.21% | 0.39% |
| THM | Total | | 0 | 0 |
| Copper | Total | | 0 | 0 |
| Turbidity | Total | | 0.42% | 0.09% |
| Residual Free Chlorine | Total | | 1.07% | 0.67% |

*** Nitrate and Arsenic are not tested in the distribution system. These parameters are tested in the water sources.**

*** Chloramines are not used as a primary disinfectant, thus Nitrite is not tested.**

***Fluoridation in Israel was discontinued on August 2014. Fluoride is tested in distribution system**

***Lead and Iron: MOH procedure requires a repeat sampling. In most cases there was no violation of standard.**

II. Outbreaks and incidence of infectious diseases related to water

In filling out the below table, please consider the following points:

(a) For reporting outbreaks, please report confirmed water-related outbreaks only (i.e., for which there is epidemiological or microbiological evidence for water to have facilitated infection);

(b) For reporting incidents, please report the numbers related to all exposure routes. In your response:

(i) Please report cases per 100,000 population;

(ii) Please differentiate between zero incidents (0) and no data available (-).

Please extend the list of water-related diseases, to the extent possible, to cover other relevant pathogens (e.g., enteric viruses, *Giardia intestinalis*, *Vibrio cholerae*).

Please indicate how the information is collected (e.g., event-based or incidence-based surveillance).

Please comment on the trends or provide any other important information supporting interpretation of the data.

| Disease | Incidence rate per 100,000 population (all exposure routes) | | | Number of outbreaks (confirmed water-borne outbreaks) | | |
|--|--|--|-------------------------|--|---|-------------------------|
| | Baseline (2019- 2020) | Value reported in the previous reporting cycle (2020) | Current value (2021) | Baseline (2019- 2020) | Value reported in the previous reporting cycle (2020) | Current value (2021) |
| Shigellosis | 52.0 | 12.1 | 2.4 | - | - | - |
| Enterohaemorrhagic <i>E. coli</i> infection | 0.04 | 0.0 | 0.0 | - | - | - |
| Typhoid fever | 0.1 | 0.0 | 0.0 | - | - | - |
| Viral hepatitis A | 0.7 | 0.2 | 0.4 | 0 | 0 | - |
| Legionellosis | | | | 0.82 | 1.4 | 1.3 |
| Cryptosporiosis | 0.7 | 2.2 | *7.8 | 0 | 0 | 0 |
| Additional disease 1: Giardiasis | 16.2 | 14.7 | 15.7 | 0 | 0 | 0 |
| Additional disease 2: Cholera | 0.01 | 0.0 | 0.0 | 0 | 0 | 0 |

- The rise in incidence rate stems from a change in the laboratory test method during 2021 – to the PCR method.

III. Access to drinking water

If possible, please provide segregated data for urban and rural areas in the table below. If this is not possible, please consider reporting by alternative categories available in your country, for example by “non-centralized versus centralized” water supply systems or by population number-based categories. If you do so, please indicate the reported categories by renaming the rows in the table below accordingly.

If data can be reported neither for urban and rural areas nor for alternative categories, please report total (national) values only.

Please comment on the trends or provide any other important information supporting interpretation of the data with regard to access to drinking water.

| Percentage of population with access to drinking water | Baseline value (specify year) | Value reported in the previous reporting cycle (2016) | Current value (2018) |
|--|-------------------------------|---|----------------------|
| Total | | 100% | 100% |

Estimates provided by the WHO/United Nations Children’s Fund (UNICEF) Joint Monitoring Programme (JMP) for Water Supply and Sanitation. *JMP definitions are available at <http://www.wssinfo.org/definitions-methods/watsan-categories>.*

National estimates. Please specify how “access” is defined and what types of drinking-water supplies are considered in the estimates in your country.

In particular, please specify if the above percentage on “access to drinking water” refers to access to (tick all applicable):

Improved drinking water sources (as per JMP definition)

Supplies located on premises

Supplies available when needed

Supplies that provide drinking water free from faecal contamination

IV. Access to sanitation

If possible, please provide segregated data for urban and rural areas in the table below. If this is not possible, please consider reporting by alternative categories available in your country, for example by “non-centralized versus centralized” sanitation systems or by population number-based categories. If you do so, please indicate the reported categories by renaming the rows in the table below accordingly.

If data can be reported neither for urban and rural areas nor for alternative categories, please report total (national) values only.

Please comment on the trends or provide any other important information supporting interpretation of the data with regard to access to sanitation.

| Percentage of population with access to sanitation | Baseline value (specify year) 1990 | Value reported in the previous reporting cycle (specify year) 2018 | Current value (specify year) 2021 |
|--|------------------------------------|--|-----------------------------------|
| Total | 99.0 | 99.9 | 99.9 |
| Urban | 100 | 100 | 100 |
| Rural | 90 | 98.95 | 98.95 |

Estimates provided by JMP. *JMP definitions are available at <http://www.wssinfo.org/definitions-methods/watsan-categories>.*

National estimates. Please specify how “access” is defined and what types of sanitation facilities are considered in the estimates in your country.

In particular, please specify if the above percentage on “access to sanitation” refers to access to (tick all applicable):

Improved sanitation facilities (as per JMP definition)

Facilities not shared with other households

Facilities from which excreta is safely disposed in situ or treated off site

Access to sanitation is calculated by estimating the population connected to public sewers, with or without connection to wastewater treatment plants, together with the population connected to small scale wastewater treatment systems or to septic tanks.

V. Effectiveness of management, protection and use of freshwater resources

1. Water quality

1. On the basis of national systems of water classification, please indicate the percentage of water bodies or the percentage of the volume (preferably) of water³ falling under each defined class (e.g., for European Union countries and other countries following the European Union Water Framework Directive⁴ classification, the percentage of surface waters of high, good, moderate, poor and bad ecological status, and the percentage of groundwaters/surface waters of good or poor chemical status; for other countries, in classes I, II, III, etc.).

(a) For European Union countries and other countries following the European Union Water Framework Directive classification

(i) Ecological status of surface water bodies

| <i>Percentage of surface water classified as:</i> | <i>Baseline value (specify year)</i> | <i>Value reported in the previous reporting cycle (specify year)</i> | <i>Current value (specify year)</i> |
|---|--|--|---|
| High status | | | |
| Good status | | | |
| Moderate status | | | |
| Poor status | | | |
| Bad status | | | |
| Total number/volume of water bodies classified | | | |
| Total number/volume of water bodies in the country | | | |

(ii) Chemical status of surface water bodies

| <i>Percentage of surface water bodies classified as</i> | <i>Baseline value (specify year)</i> | <i>Value reported in the previous reporting cycle (specify year)</i> | <i>Current value (specify year)</i> |
|---|--|--|---|
| Good status | | | |
| Poor status | | | |
| Total number/volume of water bodies classified | | | |
| Total number/volume of water bodies in the country | | | |

(iii) Status of groundwaters

| <i>Percentage of groundwaters classified as</i> | <i>Baseline value (specify year)</i> | <i>Value reported in the previous reporting cycle (specify year)</i> | <i>Current value (specify year)</i> |
|---|--|--|---|
| Good quantitative status | | | |
| Good chemical status | | | |
| Poor quantitative status | | | |
| Poor chemical status | | | |
| Total number/volume of groundwater bodies classified | | | |
| Total number/volume of groundwater bodies in the country | | | |

³ Please specify.

⁴ Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy.

(b)For other countries

Surface and Groundwater bodies were Hydrogeologically classified in 2000 (baseline value) and in 2021. In this report streams and rivers are not included.

(i) *Status of surface waters– Hydrogeological status of lake Kinneret (sea of Galilee) as a source of drinking water*

| <i>Percentage of surface water falling under class^a</i> | <i>Baseline value (2000)</i> | <i>Value reported in the previous reporting cycle (2018)</i> | <i>Current value (2021)</i> |
|--|------------------------------|--|-----------------------------|
| Bad quantitative status | 100% | 100% | -- |
| Good quantitative status | -- | -- | 100% |
| <u>Chemical status:</u> | 100% | | 100% |
| Cl 250 mg/L- 400 mg/L or NO₃ 45 mg/L - 70 mg/L | | | |
| Total number/volume of water bodies classified | 1 | | 1 |
| Total number/volume of water bodies in the country | 1 | | 1 |

^a Rename and modify the number of rows to reflect the national classification system.

(ii) *Status of groundwaters*

| <i>Percentage of groundwaters falling under class^a (In percent of total water volume in 3 major groundwater basins)</i> | <i>Baseline value (2000)</i> | <i>Value reported in the previous reporting cycle (2018)</i> | <i>Current value (2021)</i> |
|--|------------------------------|--|-----------------------------|
| Good quantitative status | 0 | -- | 85% |
| Moderate quantitative status | 70% | 30% | 14% |
| Bad quantitative status | 30% | 70% | 1% |
| Cl <250 mg/L and NO₃<45 mg/L | 18% | 21% | 48% |
| Cl 250 mg/L- 400 mg/L or NO₃ 45 mg/L - 70 mg/L | 49% | 36% | 27% |
| Cl > 400 mg/L or or NO₃ > 70 mg/L | 33% | 43% | 26% |
| Total number/volume of groundwater bodies classified | 3 | | 3 |
| Total number/volume of groundwater bodies in the country | 7 | | 7 |

^a Rename and modify the number of rows to reflect the national classification system.

2. Please provide any other information that will help put into context and aid understanding of the information provided above (e.g., coverage of information provided if not related to all water resources, how the quality of waters affects human health).

Surface and Groundwater bodies were Hydrologically lassified in 2000 (baseline value) and in 2021. In this report streams and rivers are not included.

Surface water body – Lake of Kinneret as a drinking water source. Today the recharge from the Kinneret is minimal for operational and maintenance purposes only. The Water Authority decided to connect the Desalinated water system directly to Lake Kinneret, so that the Sea of Galilee will remain a strategic water source in the water economy.

Groundwater bodies: There are 7 groundwater basins in Israel of which only 3 major groundwater basins are connected to the national water system: Coastal, Western Mountain, and Western Galilee.

Quantitative status:

- Good - Above the green line (green line- recommended water level).
- Moderate - between red and green lines (red line- minimal allowed water level).
- Bad- below the red line.

Chemical status:

In Israel, groundwater classification differs from the European classification system. Classification is based on 2 main Indicators:

Chloride[Cl] – an indicator for salinity from natural and antropogenic sources

Nitrate[NO₃] – an indicator for antropogenic contamination

Israel's groundwater and surface water Hydrological classification (the figures in the chart are given In percent of total water volume in 3 major groundwater basins)

- Good - Cl <250 mg/l and NO₃<45 mg/l
- Moderate- Cl in between 250 mg/l and 400 mg/l or NO₃ in between 45 and 70 mg/l
- Bad Cl > 400 mg/l or or NO₃ > 70 mg/l

2. Water use

3. Please provide information on the water exploitation index at the national and river basin levels for each sector (agriculture, industry, domestic), i.e., the mean annual abstraction of freshwater by sector divided by the mean annual total renewable freshwater resource at the country level, expressed in percentage terms.

^a Please specify whether the figure includes both water abstraction for manufacturing industry and for energy cooling.

^b Please specify whether the figure only refers to public water supply systems or also to individual supply systems (e.g., wells).

| <i>Water exploitation index</i> | <i>Baseline value (specify year)</i> | <i>Value reported in the previous reporting cycle</i> | <i>Current value predicted for 2022 – potable water only [MCM]</i> |
|---|--|---|--|
| Agriculture | | | 509 |
| Domestic use + Industry | | | 944 MCM |
| Supply in accordance with diplomatic agreements | | | 207 MCM |
| Nature | | | 37 MCM |

^a Please specify whether the figure includes both water abstraction for manufacturing industry and for Energy cooling.

^b Please specify whether the figure only refers to public water supply systems or also to individual supply systems (e.g., wells)

Part four

Water-related disease surveillance and response systems

1. In accordance with the provisions of article 8 of the Protocol:

Has your country established comprehensive water-related disease surveillance and early warning systems according to paragraph 1 (a)?

YES NO IN PROGRESS

Has your country prepared comprehensive national or local contingency plans for responses to outbreaks and incidents of water-related disease according to paragraph 1 (b)?

YES NO IN PROGRESS

Do relevant public authorities have the necessary capacity to respond to such outbreaks, incidents or risks in accordance with the relevant contingency plan according to paragraph 1 (c)?

YES NO IN PROGRESS

3. If yes or in progress, please provide summary information about key elements of the water-related disease surveillance and outbreak response systems (e.g., identification of water-related disease outbreaks and incidents, notification, communication to the public, data management and reporting). Please also provide reference to existing national legislation and/or regulations addressing water-related disease surveillance and outbreak response.

At an epidemiological level, water related diseases are treated as all notifiable diseases, according to a generic, all-hazards approach. Cases of notifiable disease are identified by clinicians or laboratories who are required by law to report to the Ministry of Health. Notification is via a generic computerized reporting system, however exceptional cases or incidents are reported in parallel by phone. Data management and reporting are also according to standardized Division of Epidemiology procedures. Communication to the public is via the Division of Publicity and International Relations according to standard infectious disease protocols. The authority to respond decisively against infectious disease threats is grounded in the Public Health Dictate of 1940.

4. Please describe what actions have been taken in your country in the past three years to improve and/or sustain water-related disease surveillance, early warning systems and contingency plans, as well as to strengthen the capacity of public authorities to respond to water-related disease outbreaks and incidents, in accordance with the provisions of article 8 of the Protocol.

We consider our system robust in dealing with water related as well as other notifiable diseases. We are not aware of changes to our system within the last three years. Due to the Corona pandemic it is not possible to estimate changes at this stage.

Part five

Progress achieved in implementing other articles of the Protocol

Please provide a short description of the status of implementation of articles 9 to 14 of the Protocol, as relevant.

Suggested length: up to two pages

Part six

Thematic part linked to priority areas of work under the Protocol

1. Water, sanitation and hygiene in institutional settings

1. In the table below, please provide information on the proportion of schools (primary and secondary) and health-care facilities that provide basic water, sanitation and hygiene (WASH) services.

Basic services refer to the following:

(a) *Basic sanitation service: Improved facilities (according to JMP definition), which are sex-separated and usable at the school or health-care facility;*

(b) *Basic drinking water service: Water from an improved source (according to JMP definition) is available at the school or health-care facility;*

(c) *Basic hygiene service: Handwashing facility with water and soap available to students (schools) or patients and health-care providers (health-care facilities).*

If the above definitions/categories do not apply in your country, please report for alternative categories for which data are available. In this case, please indicate the reported categories by renaming the rows in the table below accordingly.

Please indicate the source of data. If data is not available, please put (-).

| <i>Institutional setting</i> | <i>Current value (2021)</i> |
|-------------------------------|-----------------------------|
| <i>Schools</i> | |
| Basic sanitation service | 100% |
| Basic drinking-water service | 100% |
| Basic hygiene service | 100% |
| <i>Health-care facilities</i> | |
| Basic sanitation service | 100% |
| Basic drinking-water service | 100% |
| Basic hygiene service | 100% |

2. Has the situation of WASH in schools been assessed in your country?

YES NO IN PROGRESS

3. Has the situation of WASH in health-care facilities been assessed in your country?

YES NO IN PROGRESS

4. Do approved policies or programmes include actions (please tick all that apply):

- To improve WASH in schools
- To improve WASH in health-care facilities

5. If yes, please provide reference to main relevant national policy(ies) or programme(s).

In Israel, 100% of all drinking water is quality controlled. Water systems in Schools and Health care establishments are routinely inspected and monitored.

2. Safe management of drinking-water supply

6. Is there a national policy or regulation in your country, which requires implementation of risk-based management, such as WHO water safety plans (WSPs), in drinking water supply?

YES NO IN PROGRESS

7. If yes, please provide reference to relevant national policy(ies) or regulatory documentation.

In Israel, regulations require water suppliers to carry out sanitary surveys in water supply systems and in drinking water wells, as well as preparing a compliance program.

The following regulations and guidelines deal with the safe management of drinking water supply:

1. **Public Health Regulations (2013): the sanitary quality of drinking water and drinking water.**
2. **Public Health Regulations (1992): Installation of Backflow preventers.**
3. **Public Health Regulations (1995): Drinking water wells.**
4. **Guidelines for submitting a plan, operation and monitoring of a drinking water treatment plant (2017)**
5. **Guidelines for recovery of an impaired water system (2016).**
6. **Guidelines for preventing legionella in water systems (2022)**
7. **Guidelines for submitting a plan, operation and monitoring of a drinking water UV Disinfection facility (2013).**
8. **Guidelines for cleaning drinking water distribution systems (2013).**
9. **Guidelines for installing potable and non potable distribution systems (2021).**
10. **Guidelines for supervising over medical institutions - water chapter (2012).**
11. **Guidelines for sanitary surveys for drinking water systems.(2021)**

8. In the table below, please provide information on the percentage of the population serviced with drinking-water under a WSP.

Since 2008, water suppliers began performing sanitary surveys. Guidelines for performing sanitary surveys were revised during 2021. The guidelines refer to: source of water, treatment facilities and distribution systems. Thousands of surveys, were carried out for all of the water sources, treatment facilities and large distribution systems (over 10,000 people). As of 2022, MOH is working on a comprehensive WSP document, in order to instruct water suppliers with the basics of risk assessment for the systems under their responsibility.

Please indicate the source of data. If data is not available, please put (-).

| <i>Percentage of population</i> | <i>Current value (specify year)</i> |
|---------------------------------|-------------------------------------|
| Total | |

3. Equitable access to water and sanitation

9. Has the equity of access to safe drinking-water and sanitation been assessed?

YES NO IN PROGRESS

10. Do national policies or programmes include actions to improve equitable access to water and sanitation (please tick all that apply): **100% of population has access to safe drinking water.**

- To reduce geographical disparities
- To ensure access for vulnerable and marginalized groups
- To keep water and sanitation affordable for all

11. If yes, please provide reference to main relevant national policy(ies) and programme(s).

Part seven

Information on the person submitting the report

The following report is submitted on behalf of The Israel Ministry of Health, Ministry of Environmental Protection and the Water Authority.

[name of the Party, Signatory or other State] in accordance with article 7 of the Protocol on Water and Health.

Name of officer responsible for submitting the national report: **Dganit Eichen**

E-mail: **Dganit.eichen@moh.gov.il**

Telephone number: **+972-50-6242417**

Name and address of national authority: **Environmental Health Dept., Public Health Services, Ministry of Health, P.O.B. 1176 Jerusalem, 9101002, Israel**

Dganit Eichen

Date: **17.4.2022**

Submission

1. Parties are required to submit their summary reports to the joint secretariat, using the present template and in accordance with the adopted guidelines on reporting, 210 days before the next session of the Meeting of the Parties. Submission of the reports ahead of this deadline is encouraged, as this will facilitate the preparation of analyses and syntheses to be made available to the Meeting of the Parties.
2. Parties are requested to submit, to the two addresses below, an original signed copy by post and an electronic copy by e-mail. Electronic copies should be available in word-processing software.

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