

H2020/NAP indicator factsheet

Industrial Emissions

Israel

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European Environment Agency



Indicator Assessment

H2020 / NAPs Indicators	
Thematic area Industrial emissions	Date Author(s):
Policy theme 6.1 Release of nutrients from industrial sectors	
Indicators: 6.1.1) Total BOD load discharged. 6.1.2) Total Nitrogen load discharged. 6.1.3) Total Phosphorus load discharged.	

Key policy question:

Are the releases of nutrients from industrial sectors monitored and regulated in Israel ?

Key messages

- Israel adopted a law in 2012 for the Protection of the Environment including (Law, 5772-2012) reporting obligations on facilities that have a significant impact on the environment.
- Israel implemented the Pollutant Release and Transfer Register (PRTR) and it is made mandatory for industrial installations to report on emissions and transfers, establish a data management system, and publish the resulting data for public consumption.

Israel increased regulation and monitoring through MoEP permits for direct marine and streams discharge. The approved emission loads were drastically reduced for most pollutants, even though the number of industrial facilities reporting increased from 430 reporting facilities in 2012 to 568 in 2017.

References in key assessment text

- MoEP, 2020 (https://www.gov.il/en/departments/news/prtr2017_data_published#file_collapseltems)
- Emissions and Transfers, MoEP, http://www.sviva.gov.il/English/env_topics/IndustryAndBusinessLicensing/PRTR/PRTRReportingInIsrael/Documents/PRTR-2016-data-published-sept-2017.pdf, archived at <https://perma.cc/P7F6-ZF4U>. For 2016 PRTRR figures see MoEP, Pollutant Release and Transfer Register Summary and Analysis of 2016 Reports (Sept. 2017), http://www.sviva.gov.il/English/env_topics/IndustryAndBusinessLicensing/PRTR/PRTRReportingInIsrael/Documents/PRTR-2016-data-published-sept-2017.pdf, archived at <https://perma.cc/R8AM-6TFS>.
- Protection of the Environment (Releases and Transfers to the Environment Reporting and Registering Obligations) Law, 5772-2012, SH 5772 No. 2348 p. 238, as amended.
- Clean Air Law, 5768-2008, SH 5768 No. 2174 p. 752, as amended.



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Specific policy questions:

What is the progress in the control of the total BOD load discharge to the Mediterranean sea?

Specific figure(s)

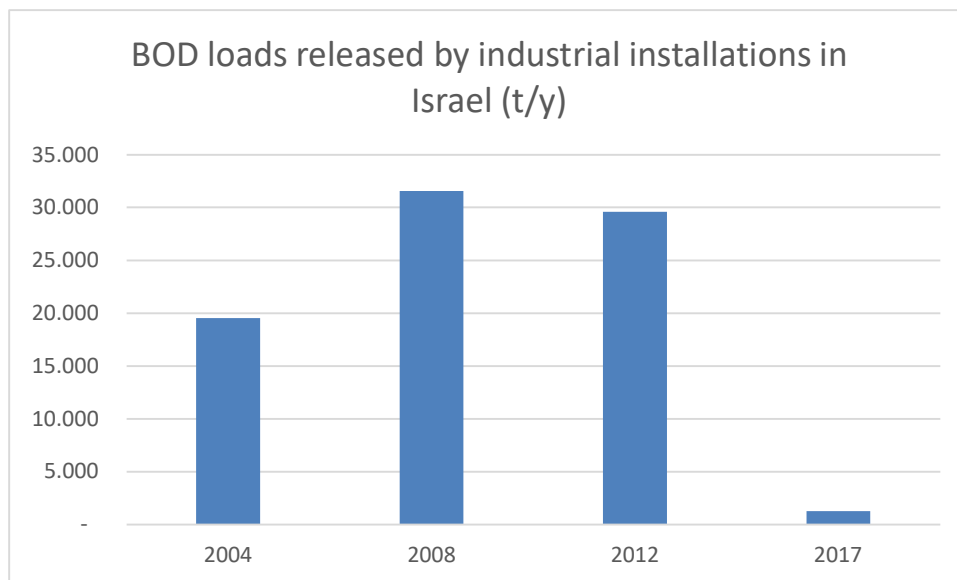


Figure 1: BOD loads released by industrial installations in Israel (t/y)

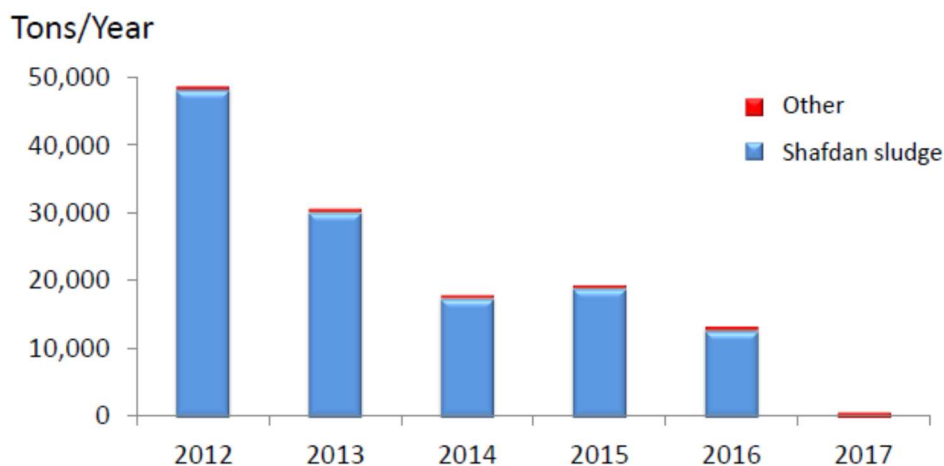


Figure 2: Total organic carbon discharge to the sea in Israel

Specific assessment text



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- BOD loads releases decreased drastically since year 2012 following the implementation of the law adopted in 2012.
- Pollutant discharges to the Mediterranean Sea decreased by 96% in 2017, after the main source of those discharges, the Dan Region Wastewater Treatment Plant (Shafdan) sludge, was transferred in February 2017 to the new anaerobic digestion facility and the EnViro facility, for distribution as agricultural fertilizer.
- The Shafdan WWTP plant is the largest wastewater treatment plant in Israel, serving for the domestic wastewater treatment of the population of 2.5 million citizens in the Gush-Dan metropolitan (30% of the Israeli population) and for the industrial wastewater treatment of 7,000 industrial facilities with 370,000 cubic meters of discharged flow per day. Over the years, the surplus biological sludge from the plant was pumped and transported to the sea. This was the reason it was the main source of land-based pollution to the Mediterranean Sea in Israel since the 1970's, and was declared a "hot spot" in the Israeli NAP.

References in specific assessment text

- Ministry of Environmental Protection, 2019
- NBB, 2018

Specific policy questions:

What is the progress in the control of the total Nitrogen load discharge to the Mediterranean sea?

Specific figure(s)

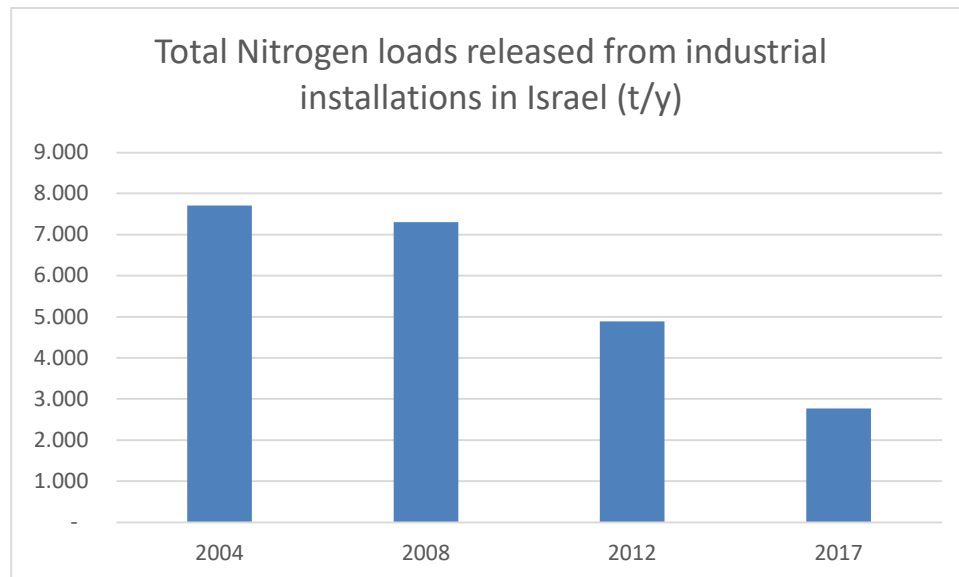


Figure 3: Total Nitrogen loads released from industrial installations in Israel (t/y)



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Specific assessment text

- Nitrogen loads releases to the sea are decreasing regularly from one year to another since 2004 due to the establishment of several WWTPs in 2009 and onwards.
- The decrease is due to the increase of the number of WWTP and the implementation of the law in 2012 including concentration limits and standards of all pollutant emission.

References in specific assessment text

- NBB, 2018

Specific policy questions:

What is the progress in the control of the total Phosphorus load discharge to the Mediterranean sea?

Specific figure(s)

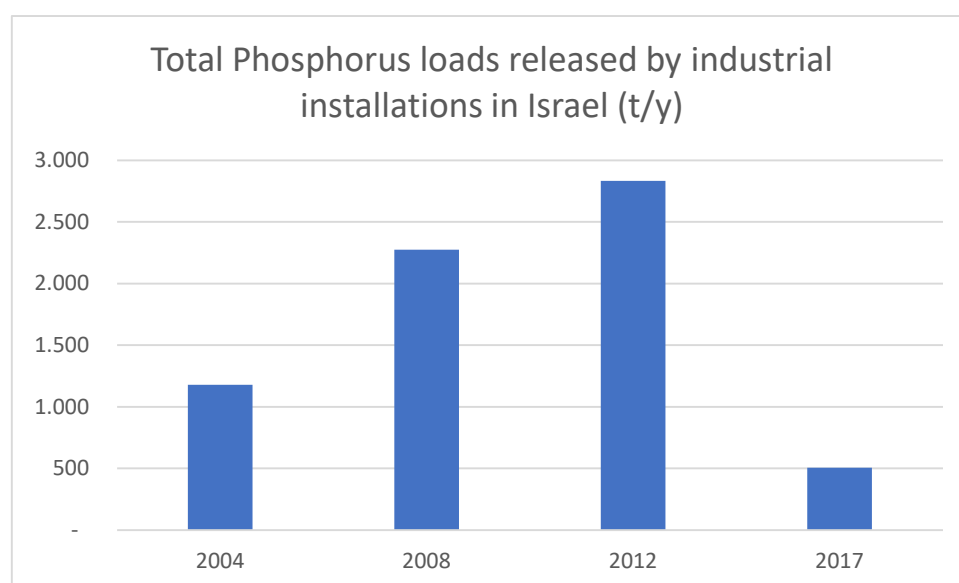


Figure 4: Total Phosphorus loads released by industrial installations in Israel (t/y)

Specific assessment text

Since 2012, total phosphorus loads released are decreasing since 2012. The decrease is mainly due to the methodology of calculation of emissions and the number of industrial plants reporting to the PRTR.

References in specific assessment text

Israel H2020 report, 2019

NBB, 2018



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Methodology for indicator calculation

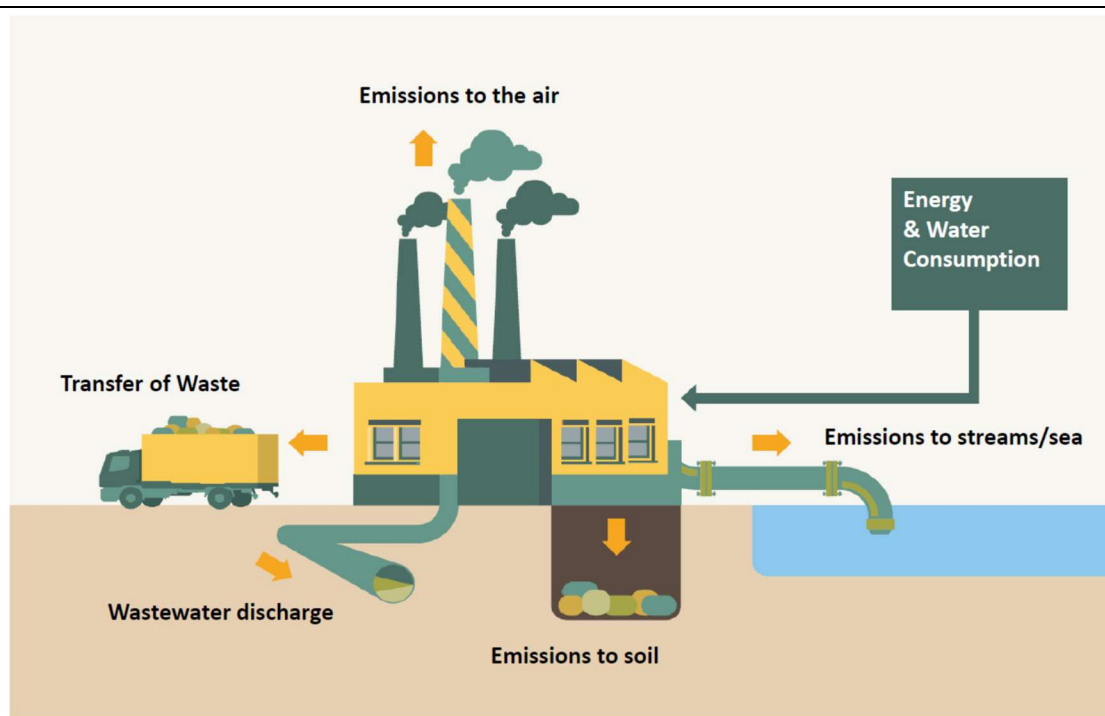


Figure 5: Sources of pollutant released estimated by Israel

- Israel is considering all types of pollutant sources to estimate loads released to the sea including emissions to air from industrial installations, wastewater discharged, emission to the sea and the streams and emission to soil (figure 5).
- The Methodology applied to estimate pollutant loads released is based on the H2020 methodology using experimental data measured from different sources which is line with the guidelines of the MoEP.
- Calculation of the pollutant loads entering the Mediterranean Sea are based on many data sources as follows:
 1. Steams monitoring data: Carbon (TOC) and nutrients (N, P). The sampling was performed by Israeli Nature and Parks Authority rangers for the Division of Water and Streams in the Ministry of Environmental Protection.
 2. Streams flow rate data : Monthly flow rates are measured in hydrometric stations operated by the Israeli Hydrological Service.
 3. Data from Discharge Permits : Annual reports submitted by industries with a marine/stream discharge permit to the Division of Marine and Coastal Environment.
 4. PRTR data : Pollutants release database in MoEP's PRTR system.
- The liquid organic Carbon, Nitrogen and Phosphorus loads discharged into the streams were calculated using sampling from MoEP's monitoring program.



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- TOC, N, and P loads reported in the PRTR system by point sources discharging wastewater into streams was not taken into account to avoid duplication since these amounts are already expressed in the streams sampling data.

- The pollutant load entering the Mediterranean was calculated for all pollutants entering the sea through the air, streams, and direct marine emissions. The sources of emissions are divided into several administrative zones.

Data issues

Thanks to the implementation of the PRTR system in 2012 (under the legislated Israeli PRTR Law), better data are available of liquid and atmospheric emission for all major industrial sectors. Data quality and quantity are improving gradually which facilitate a more comprehensive and accurate assessment than in previous years.

The number of reported emission data records increased from 82 records in the 2008 NBB report to 499 and 718 records used in 2012 and 2017 reports respectively.



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Indicator Assessment

H2020 / NAPs Indicators	
Thematic area Industrial emissions	Date Author(s):
Policy theme 6.2. Release of toxic substances from industrial sectors	
Indicators: 6.2.1) Total heavy metals load discharged 6.2.2) Furans and dioxins load discharged 6.2.3) Polycyclic aromatic hydrocarbons (PAH) load discharged 6.2.4) Volatile organic compounds (VOC) load discharged	
Key policy question: <i>How are toxic substances releases from industrial installations evolving and what are the key drivers for their abatement in Israel ?</i>	
Key messages <ul style="list-style-type: none"> - The Israeli Clean Air Law implementation was increased to all industrial sectors in the years 2011-2016 and the framework concept of Best Available Techniques (BAT) was applied gradually to polluting facilities. - There is a significant abatement of pollution loads by industrial sectors achieved due to the new abatement technologies installed in industrial facilities and their energy switch to natural gas from coal and diesel fuel. - The implementation of the PRTR and the clean air act contributed a lot to force industrial plants to report and reduce their emissions to comply with the thresholds and the emission permits. - A National Air Pollution Reduction and Prevention Program until 2020 was adopted by government decision no. 707 in 2013 focusing on the prevention of air pollution from industry, energy among other sectors. - 	
References in key assessment text Ministry of Environmental Protection, Israel PRTR report, 2018	



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Specific figure(s)

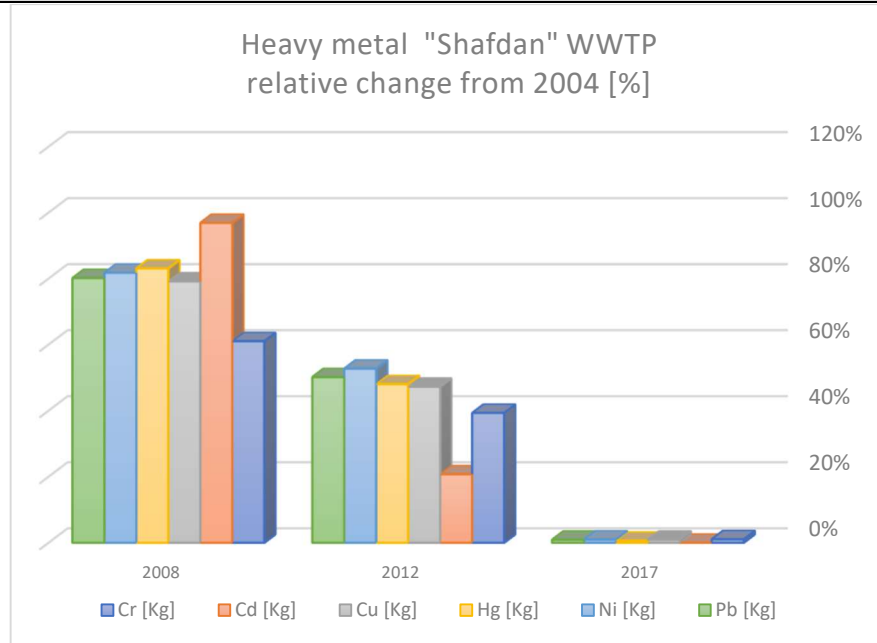


Figure 6 : “Shafdan” Heavy metals trends for NBB cycles (2004 defined as baseline)

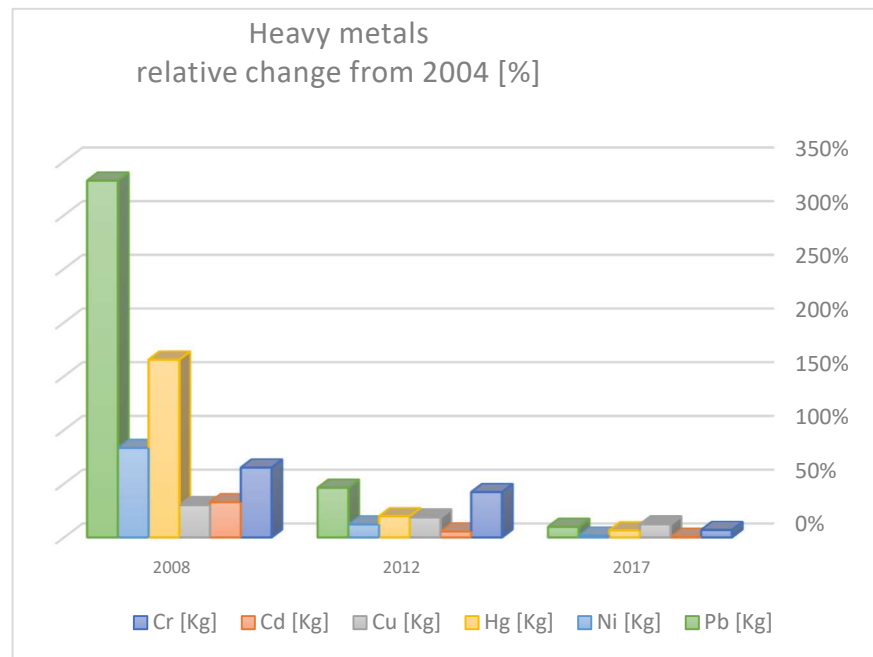


Figure 7: Heavy metals trends for NBB cycles (2004 defined as baseline)



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Specific policy questions: *What is the progress made to control the total heavy metals load discharged to the Mediterranean sea?*

Specific figure(s)

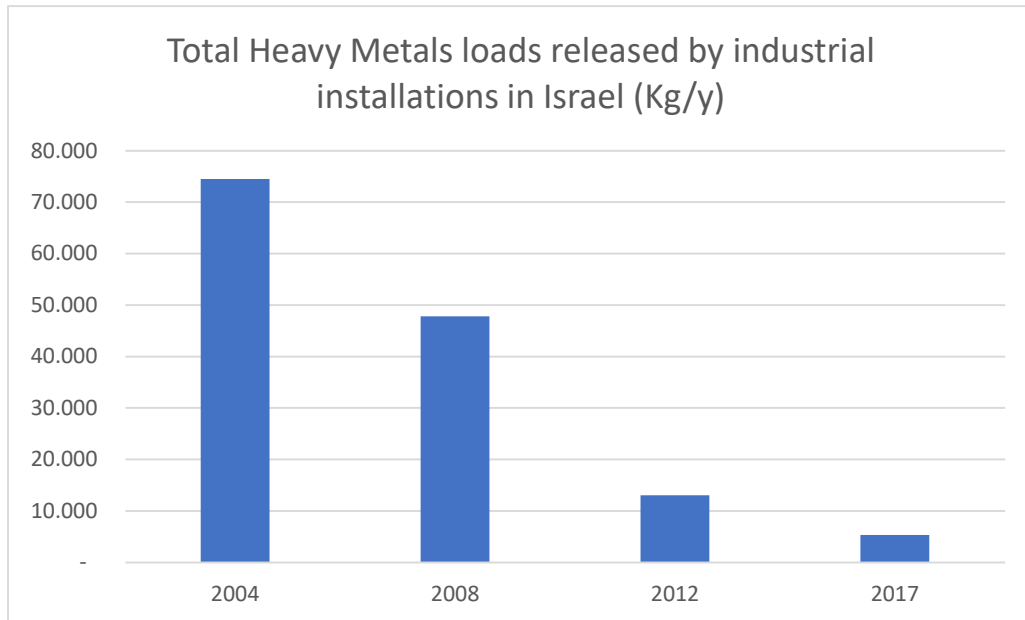


Figure 8: Total heavy metals loads released by industrial installations in Israel (Kg/y)

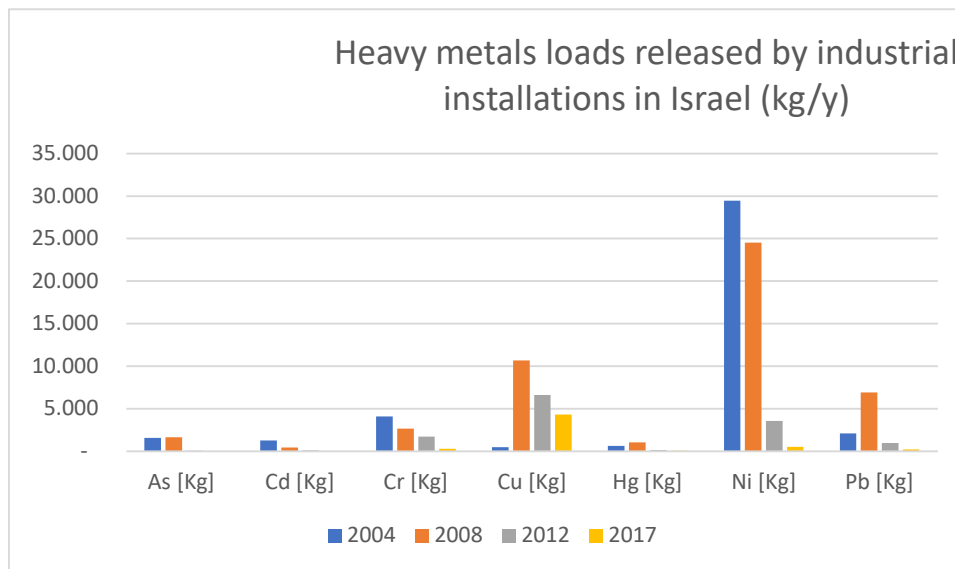


Figure 9: Heavy metals loads released by industrial installations in Israel (kg/y)



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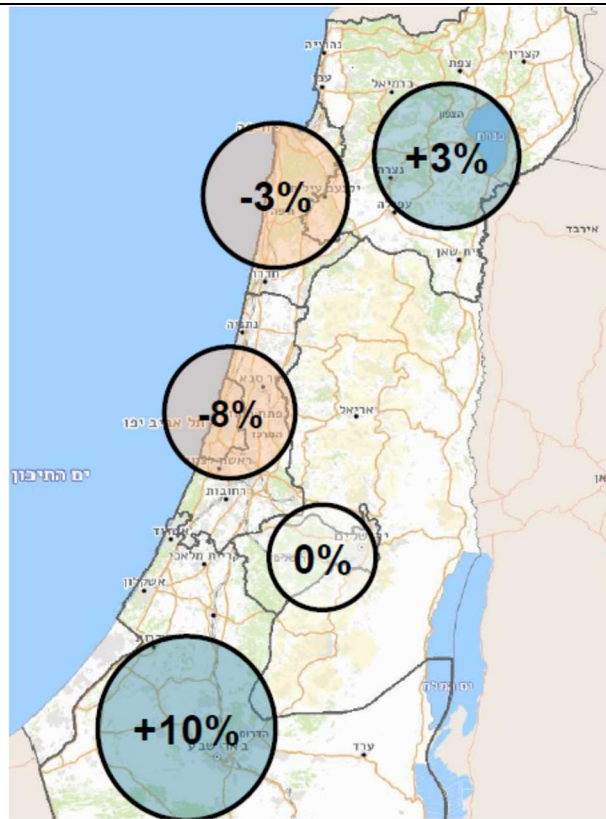


Figure 10: Evolution of industrial plants location in Israel

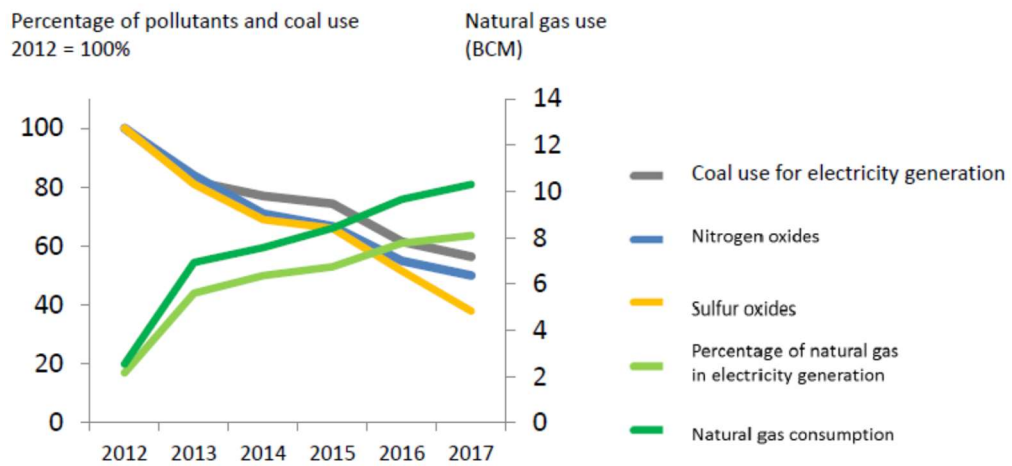


Figure 11: Trend of natural gas uses in Israel



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Specific assessment text

- There is a significant abatement of heavy metals loads to the Mediterranean Sea (Figure 6 and 7) compared to the previous years where the Shafdan share for heavy metals discharge was 82% of the total emissions. The current data reflects the critical improvement made and it is likely to see more decrease of pollutant loads in future.
- In 2008, Israel adopted a national plan for the reduction of industrial emissions in the Haifa Bay region which has been updated in September 2015. The main elements of the 2015 Haifa Bay Action Plan call for setting regional targets for the reduction of air pollutant emissions from industrial sources, relocating hazardous facilities such as fuel farms and fuel tanks to less populated sites which led to reduce pollutant loads releases to the sea in Haifa bay.
- Many industrial plants along the coastal area wer shutdown or moved elsewhere and many new industrial plants recently installed are better equipped with abatement technologies which contributed to the decresae of toxic relases in Israel during the recent years. The example of Haifa Chemicals plant closure led to a 46% decrease in discharges to streams and rivers as a result of the cessation of discharge of its effluents into the Kishon River.
- Since the start of the PRTR in 2012, there are 10% more industrial facilities in Israel's Southern district, and 3% more in Israel's Northern district. There has been no change in Jerusalem, an 8% decrease in the Tel Aviv and Central districts, and a 3% decrease in Haifa. The changes are due to the closures and opening of some facilities, the reduction of activity to below the requiring reporting threshold in others, and the transfer of other factories. The big increase in the south is due mainly to the construction of 5 private power stations, a desalination plant, and a chemical plant.
- The PRTR shows significant reductions, between 8% and 62%, in the emission of pollutants into the air between 2012 and 2017 which the result of Ministry requirements in facilities emission permits, as well as the increase in natural gas use and the reduction of coal use for the generation of electricity.

References in specific assessment text

NBB report, 2018

<https://www.gov.il/he/departments/topics/prtr>



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Specific policy questions: *What is the progress made to control the furans and dioxins load emitted to the Atmosphere ?*

Specific figure(s)

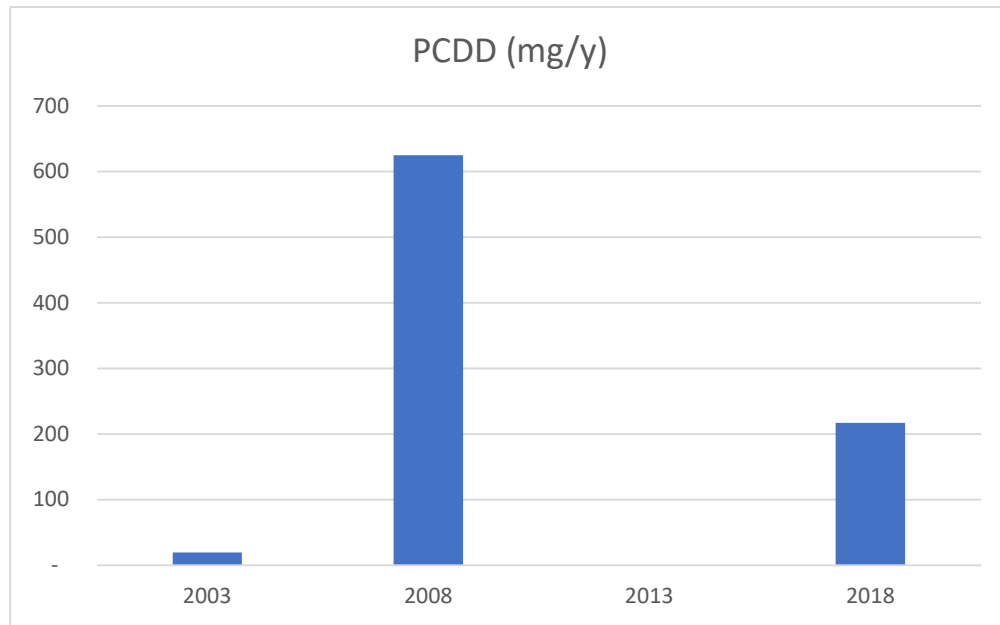


Figure 12: PCDD emissions from Coal Power Plant in Israel (mg/y)

Specific assessment text

Furans and dioxins loads emission decreased from industrial plants in year 2018 due to the shutdown of some polluting industries and the installation of abatement technologies and the energy switch to natural gas instead of coal.

References in specific assessment text

NBB report, 2018



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Specific policy questions: *What is the progress made to control the polycyclic aromatic hydrocarbons (PAH) load emitted to the atmosphere ?*

Specific figure(s)

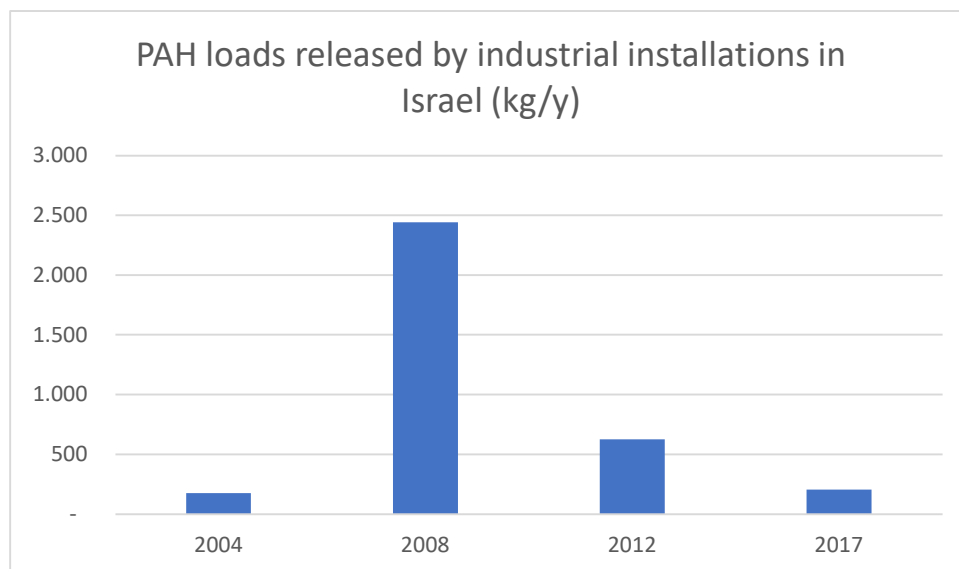


Figure 13: PAH loads released by coal power plants in Israel (kg/y)

Specific assessment text

The decrease trend of PAH emissions is mainly due to the implementation of the clean air Law, adopted in 2008 and entered into effect in January 2011. It provided a comprehensive framework for the reduction and prevention of air pollution, by imposing obligations on the government, local authorities and the industrial sector.

The update of the air quality standards promulgated in 2011 every three years with lower pollutant emission limits is contributing to reduce the pollutant emissions of all air pollutants to the air including PAH and VOCs.

The use of more natural gas in industrial processes and in power plants to generate energy is responsible for the decrease of PAH emission to the atmosphere.

References in specific assessment text

NBB, 2018



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Specific policy questions: *What is the progress made to control the volatile organic compounds (VOC) load emitted to the atmosphere ?*

Specific figure(s)

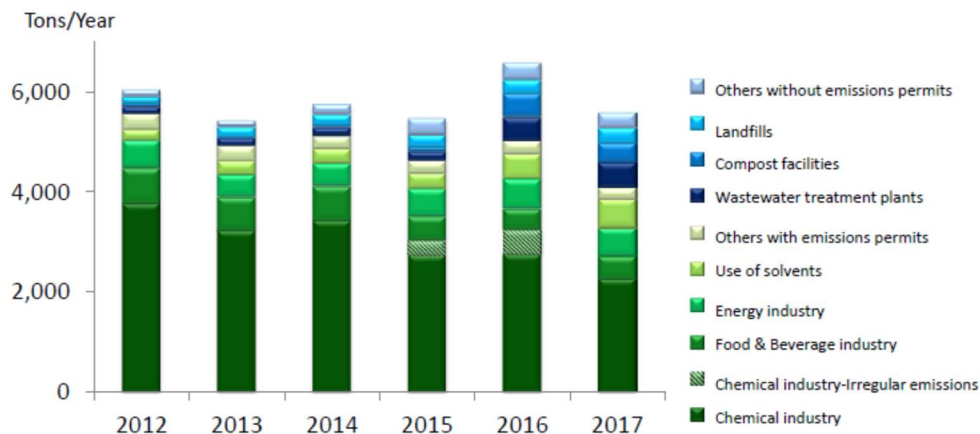


Figure 14: Trend of VOC emissions to the air from all sources in Israel (PRTR Israel)

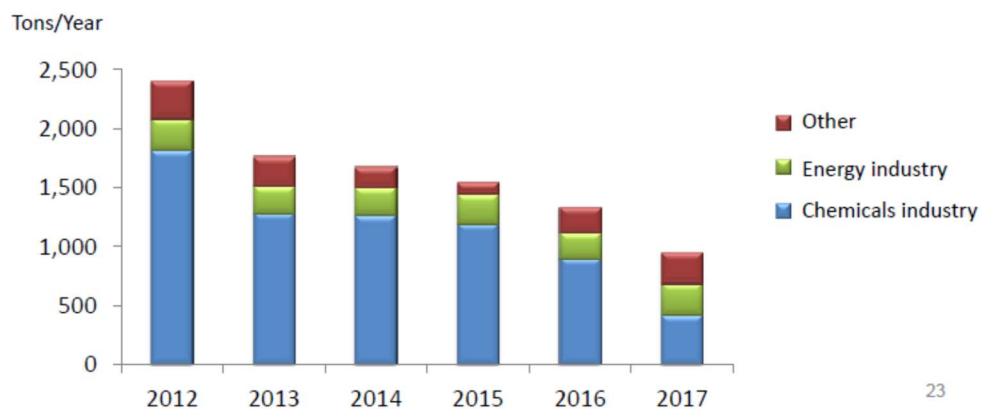


Figure 15: Trend of VOC emissions to the air in Haifa Bay, Israel

Specific assessment text

VOCs emissions to the atmosphere from chemical industries are decreasing while emissions from other sources such as wastewater treatment plants and energy industries are constant or increasing leading to a constant global shape of VOC emissions in Israel.

Emissions of non-methane organic volatile compounds (VOCs) has decreased by 15% in 2017, and by 8% since 2012.

A decrease of 110 tons of VOCs from the Carmel Olefins plant after it implemented MoEP requirements. A decrease of more than 500 tons due to the closures of Haifa Chemicals plants in Haifa Bay and Mishor Rotem.



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References in specific assessment text

NBB, 2018

Methodology for indicator calculation

Emissions are based on reporting to PRTR by the industrial plants. The methodology of estimation is based on either measurements or activity data and emission factor in line with H2020 methodology.

Pollutants emitted to the atmosphere by industrial activities, power plants, and transportation, are considered as main contributors to seawater pollution. The effect of air pollution on seawater stems from the dry and wet deposition processes occurring in the atmosphere.

The amount of pollutants deposited in the Mediterranean is mainly dependent on wind direction and on the location of the source. The evaluation is based on a sea\land factor which is multiplied by the pollutant load of all sources according to their location. The sea\land factor is derived from data received from 6 meteorological stations operated by the Israel Meteorological Service (IMS), and 2 monitoring stations operated by MoEP.

Data issues

The assessment of pollutant loads entering the Mediterranean Sea through streams is based on data obtained from a multi-year streams monitoring program by MoEP's Division of Water and Streams.

As the number of industrial plants reporting to PRTR is increasing, the total trend of pollutant loads discharged is biased and does not reflect the reduction made globally. However, the assessment within a given industrial sector shows better the trend of each of them.

Israel's coastal drainage system includes several seasonal streams that are dry most of the year or have low flow rates. These streams are either not included in MoEP's monitoring program or the data concerning their flow rates is missing.



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Indicator Assessment

H2020 / NAPs Indicators	
Thematic area Industrial emissions	Date Author(s): Dr. Daniel Madar, Dr. Moshe Yanai, Dr. Orna Matzner
Policy theme IND 6.3. Industrial hazardous waste disposed in environmentally sound manner	
Indicators: 6.3.1) Total quantity of generated hazardous waste 6.3.2) Quantity of industrial hazardous waste disposed	
Key policy question: <i>How are the hazardous waste managed and evolving in Israel ?</i>	
Key messages <ul style="list-style-type: none"> - The amounts of hazardous waste generated by the industrial sector in Israel is relatively constant versus time. - The main industries that contribute to the hazardous waste production are Chemicals and drugs, Metals and Electronics. - The Ministry of Environment Protection promotes activities to reduce the disposal of hazardous waste and to increase recovery operations. - Industrial hazardous waste is treated in an environmentally sound manner including recovery (recycling and incineration) and disposal (physico-chemical, biological, incineration without energy recovery, landfilling). 	
References in key assessment text MoEP, 2020	



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Key policy question: *What is the trend of the hazardous waste generation from industrial sectors and how is their management and disposal in environmentally sound manner improving?*

Specific policy questions:

6.3.1. What is the trend of the total quantity of generated hazardous waste by industrial sectors ?

Specific figure(s)

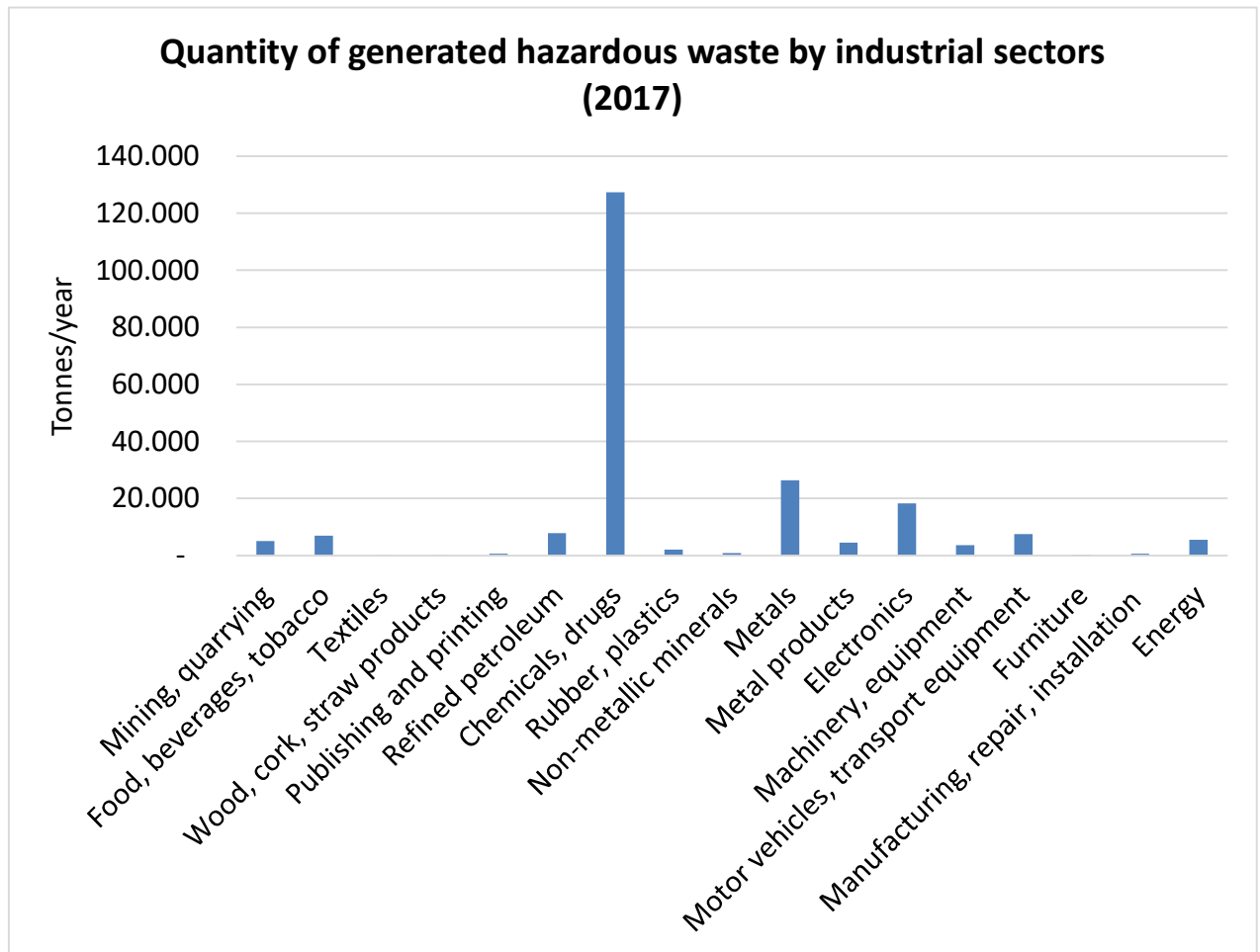


Figure 16: Quantity of generated hazardous waste by industrial sectors (2017)

Specific assessment text

Most of hazardous waste in Israel is produced by the industrial sector. The industry that produces by far the most hazardous waste is the chemicals and drugs sector- 58% of the total industrial hazardous waste (**Errore. L'origine riferimento non è stata trovata.**). Metals and electronics industries are also significant contributors. All of the industrial hazardous waste is treated in an environmentally sound manner.



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References in specific assessment text

Data were taken from ICBS 2017 survey on the manufacturing industry. Although data for previous years exist, only the 2017 data provide reliable breakdown by industry.

Specific policy questions:

6.3.2. *What is the trend of the quantity of industrial hazardous waste disposed in environmentally sound manner relative to total quantity of generated hazardous waste from industrial installations?*

Specific figure(s)



Figure 17: Generated industrial hazardous waste

Specific assessment text

The amount of hazardous waste reported to the PRTR over the past six years has been around 310,000 tons. An additional 80,000 tons are estimated to be produced by “small” producers – mostly of oils, solvents, and batteries – who do not report to the PRTR.

Therefore, the percentage of recycled hazardous waste reported to the PRTR in Israel is 40%. This doesn't include treatment of contaminated soil and industrial wastewaters, some of which are reported to the PRTR.



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Between 2003-2017, the amount of generated/treated industrial hazardous waste was 170,000-250,000 per year (**Errore. L'origine riferimento non è stata trovata.**). There are no significant changes nor trend over that period.

References in specific assessment text

Estimated based on ICBS and MoEP data.

Methodology for indicator calculation

Data are collected from the PRTR based on reporting from industrial plants.

Data issues (

Several facilities were required to revise previous reports, so the data from this year differ slightly from data published in previous years.



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Indicator Assessment

H2020 / NAPs Indicators	
Thematic area Industrial Emissions	Date Author(s):
Policy theme 6.4 Compliance measures aiming at the reduction and/or elimination of pollutants generated by industrial sectors	
Indicators: 6.4.1) Number of industrial installations reporting periodically loads of pollutants discharged to the marine and coastal environments relative to the total number of industrial installations. 6.4.2) Number of environmental inspections carried out by enforcement authorities in which industrial installations were found to be in breach of laws and regulations relative to the total number of executed inspections. 6.4.3) Number of eliminated hotspots identified in the updated NAPs relative to the 2001 and 2015 baselines	

Key policy question: *How is enforcement of current regulations and standards ensured for industrial sectors in Israel ? Is there any plan to update or improve them ?*

Key messages

- Israel improved the legal framework to ensure compliance with regulations by industries for the reduction and control of pollutant loads and toxics releases in the environment. Administrative financial sanctions were introduced into the Clean Air Law in order to make enforcement more time-efficient and monetary sanctions more proportionate to non-compliance.
- Enforcement measures range from administrative enforcement, including temporary or permanent shutdown of a business, cleanup and remediation orders and permit revocation, to criminal enforcement including fines and possible imprisonment.
- Since in 2000, the Ministry of Environmental Protection implements spot checks in stacks of industrial plants to monitor any violations of emission standards besides the mandatory yearly reporting by industries based on their self-monitoring once a year.



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Key assessment text

- The PRTR identifies trends in pollutant emissions and waste transfer in Israel, and enables increased transparency regarding that environmental information.
- the MoEP uses the PRTR as a means of facilitating enforcement activities, as well as decision-making and policymaking.
- The increase in the number of reports submitted over the years is not, for the most part, due to an increase in activities but is mainly due to the Ministry of Environmental Protection's inspection and enforcement against non-reporting enterprises. In 2017, the MoEP imposed 8 financial sanctions for non-reporting industrial installations.
- The law requires, among others: establishment of emission limit values, emission permits from major industrial polluters, air pollutant monitoring and sampling, enforcement and strict penalties.

References in key assessment text

PRTR report, 2018

MoEnvP, 2020



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Specific policy questions:

6.4.1) *How is the total number of industrial installations evolving in Israel ?*

Specific figure(s)

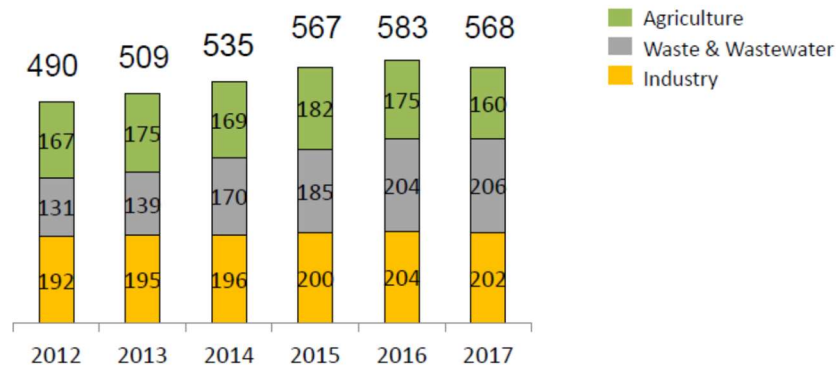


Figure 18: Number of facilities reporting to PRTR

Specific assessment text

- Reporting of emissions from industrial sectors is regulated in Israel and it is mandatory to report once a year to the RPTR
- The number of industries reporting periodically on their pollutant loads releases is increasing following the adoption of the clean act law in 2008 and which entered into force in 2011.
- The trend of the total number of reports received annually relative to the total number of industrial installations in Israel is globally stable even if the number is fluctuating per region considering some industries are shutdown, some are opening and others are reducing the production below the level limit for reporting.

References in specific assessment text

PRTR report, 20120

Specific policy questions:

6.4.2) *What is the trend of the total number of environmental inspections carried out by enforcement authorities annually in the industrial installations?*

What is the trend of the total number of breach of laws and regulations recorded annually in the industrial sectors in Israel? What is it in percentage relative to the total number of executed environmental inspections?

Specific figure(s)

No data available

Specific assessment text



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References in specific assessment text

Specific policy questions:

6.4.3) *What is the total number of eliminated hotspots (industrial polluting sites or installations) identified in the updated NAPs relative to the 2001 and 2015 baselines?*

Specific figure(s)

No data available

Specific assessment text

No data available

References in specific assessment text

Methodology for indicator calculation

The methodology of pollutant loads releases is plant specific and in line with the recommendations and guidelines of the ministry of environmental protection and their updates.

Data issues

Data on reporting from industrial installations are extracted from PRTR.



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