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Shared Environmental Information System
SEIS Support Mechanism (ENI-SEIS II South
Review of progress of SEIS implementation- Jordan-Country Factsheet

Jordan has been making some progress in establishing SEIS, through the implementation of the SEIS three pillars: Content, Infrastructure and Cooperation.

Jordan collaborates in the process for establishing a regular review and reporting mechanism in the Mediterranean region for more efficient policy-making. The national focal points and thematic experts participate actively in different meetings organized by European Environment Agency.

Jordan cooperates closely with the European Environment Agency and UNEP MAP who supports the Southern Neighborhood countries towards establishing SEIS and regular reporting system to measure countries efforts towards a healthy Mediterranean. The present document provides an overview of the state of implementation of SEIS in Jordan, offers recommendations on how to improve data gaps in particular in view of producing future integrated thematic assessments, and identifies areas of cooperation beyond 2020

YOU ONLY MANAGE WHAT YOU MEASURE
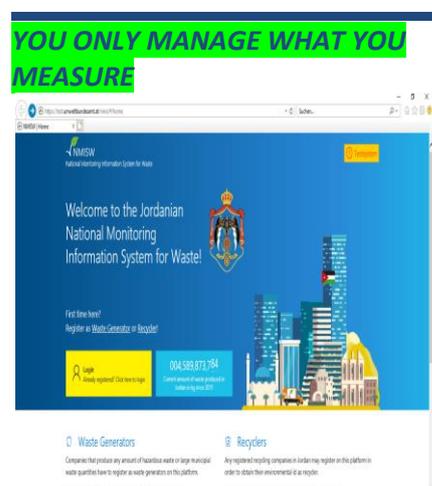
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Key messages

Content

Jordan has been making some efforts towards a regular production of H2020-SEIS indicators. Some of the indicators are included in the national list of indicators established by the ministry of Environment to be produced and updated yearly. The selected indicators will be publically available and accessible.

Infrastructure

The Ministry of Environment is building thematic national information systems (e.g. National Monitoring Information system for waste, database for wastewater) with the objective to extend and cover all environmental issues. In addition, the Ministry of water and irrigation has been developing a water information system.

Cooperation

Jordan shows an excellent level of cooperation between national stakeholders. The Ministry of Environment and DoS have made many efforts to better coordinate the information flows among the stakeholders and comply with the reporting obligations under H2020 initiative. Building a national team to work on a selected set of indicators was the first step towards SEIS implementation.

European Environment Agency

Management of Environmental Information
Thematic relevant to H2020

Organizations responsible for Monitoring collecting, producing, managing and sharing environmental data and information	**Ministry of Environment** hazardous and solid waste, , waste water and industrial emission
	Department of statistics waste and water resources
	Water Authority of Jordan (WAJ), and the Jordan Valley Authority (JVA).
	Ministry of water and irrigation hydrological data, level of aquifers and water quality
	Ministry of Health water (drinking water, water quality, quality of waste water and recycled waste water,
	Yearly reports and summaries on water quality monitoring project is published by the Ministry of Environment
Accessibility and availability of environmental information, data and indicators	**Where** : http://moenv.gov.jo/AR/List/%D8%AA%D9%82%D8%A7%D8%B1%D9%8A%D8%B1_%D9%86%D9%88%D8%B9%D9%8A%D8%A9_%D8%A7%D9%84%D9%85%D9%8A%D8%A7%D9%87
	Which formats reports and tables
	Language Arabic (summary in English when available)
Environmental indicators in use	In State of environment reports (Maps and graphs)
	http://moenv.gov.jo/ebv4.0/root_storage/ar/eb_list_page/%D8%AA%D9%82%D8%B1%D9%8A%D8%B1_%D8%AD%D8%A7%D9%84%D8%A9_%D8%A7%D9%84%D8%A8%D9%8A%D8%A6%D8%A9_2016.pdf

Content and infrastructure

The challenge is providing clear insight for assessing the state of the marine environment based on information, that is generated at local, and national level in all ENI countries. This requires the production and management of regular information and data flows and means that all data on the state of environment that is collected, processed and reported must be accessible and disseminated to inform the various user groups, including public authorities and the general public, but also accessible to fulfil reporting obligation. At present, some countries have made significant progress in development of environmental information systems (EIS).

In terms of content, and in order to assess, the degree of appropriation and implementation of the H2020 indicators and SEIS principles such as data accessibility and availability the countries websites were used. Almost all countries have produced a State of Environment report. The SoERs were analysed and the usability of H2020 indicators checked as follows:

A - Accessibility of data sets: online, in reports (SoER or indicators data trends reports). If not accessible red smiley

R - Indication of the responsible authority for the production of an indicator (source): the responsible organization are indicated; **green smiley** – only the responsible organisation is indicated; **orange** smiley – none is indicated red smiley .

T - Time of update: green smiley – if the date is updated and the datasets from 2017 if date indicated but data older than 2017 Orange smiley the time of the update is not indicated red smiley

V - Availability of graphs, diagrams, maps: green smiley – available, – not available red smiley

InfoMAP- indication if the data for the assessment were provided using InfoMAP: if yes green smiley, if partially **orange smiley**, if not red smiley

H2020 Indicator factsheet : if produced green smiley if not red smiley

H2020-SEIS INDICATORS	A SoER 2016	R	T	V	Reported to INFOMAp	Indicator factsheet	Comments/ data producer
1.1 Municipal solid waste generation	🔴☹	🔴☹	🔴☹	🔴☹	🟢☺	🟢☺	Data is produced by DoS Multiply the number of population with the waste generation per capita/day x 365 Waste per capita is based on estimation
1.a Municipal waste composition	🟢☺	🔴☹	🔴☹	🟢☺	🟢☺	🟢☺	Data on municipal waste is mentioned in the state of Environment report (the source and time of update are not mentioned)
1.b Plastic waste generation per capita	🔴☹	🔴☹	🔴☹	🔴☹	🟢☺	🟢☺	Plastic waste is mentioned in SoER as a number without graph, (source of information and time of update are not mentioned) In SoER there are some figures regarding amount of waste extracted from the sea in the Gulf of Aqaba (2014-2014)
1.C % of population living in Costal Areas	🟢☺	🟢☺	🟢☺	🟢☺	🟢☺	🟢☺	All Jordan considered as coastal. Population data and source are mentioned in the SoER 2016. The data is produced by DoS, using graph and time
1.D % of tourists in coastal Areas/ population in coastal areas	🟢☺	🟢☺	🟢☺	🟢☺	🟢☺	🟢☺	Tourist data is published in SoER 2016, data is produced by DoS
2 a.1 Waste Collection coverage	🟢☺	🔴☹	🔴☹	🔴☹	🟢☺	🟢☺	Data were partly estimated, but no explanation of the estimation method was provided For preparation of assessment the calculation of the percentage of waste

							captured was done with the following equation: % of waste captured by the system = weight of waste captured by the system / weight of total waste generated
d2.a 2 Waste covered by the formal sector	🙂	☹️	☹️	☹️	🙂	🙂	No information in the SoER 2016
D2b Environmental control	☹️	☹️	☹️	☹️	🙂	🙂	There is no information regarding the number of uncontrolled landfills in the SoER
D2c Resource Recovery	☹️	☹️	☹️	☹️	🙂	🙂	

Water

H2020-SEIS INDICATORS	A (SoER 2016)	R	T	V	Reported to INFOMAp	Indicator factsheet	Comments
3.1.1 Share of national population with access to an improved sanitation system (ISS)	☹	☹	☹	☹	☺	☺	This indicator is not published in the SoER 2016 Data provided on InfoMAP Data for the implementation of water indicators was produced and mostly exist and have been duly provided, some of the provided data is based on estimation.
3.1.2 Share of population in the catchment/hydrological basin at the coastal area with access to an improved sanitation system (ISS)	☹	☹	☹	☹	☺	☺	This indicator is not published in the SoER 2016 Data provided on InfoMAP Data for the implementation of water indicators was produced and mostly exist and have been duly provided, some of the provided data is based on estimation.
3.2.1 Proportion of national population using safely managed sanitation services (SMSS)	☹	☹	☹	☹	☺	☺	This indicator is not published in the SoER 2016 Data provided on InfoMAP Data for the implementation of water indicators was produced and mostly exist and have been

Indicator	1	2	3	4	5	6	Notes
							duly provided, some of the provided data is based on estimation.
3.2.2 Proportion of population in the catchement/hydrological basin at the coastal area using safely managed sanitation services (SMSS)	🔴	🔴	🔴	🔴	🟢	🟢	This indicator is not published in the SoER 2016
4.1.1 Municipal wastewater collected and wastewater treated at national level	🟢	🔴	🔴	🟢	🟢	🟢	This indicator is produced and published in the the state of enviornment report 2016 Quantities of treated wastewater 2000-2014 are published (SoER 2016)
4.1.2 Municipal waste water collected and wastewater treated per catchment/ hydrological basin at the coastal area	🟢	🔴	🔴	🔴	🟢	🟢	This indicator is produced and published in the the state of enviornment report 2017 Quantities of municipal wastewater and their levels of treatment, 1998-2015
4.2 Direct use of treated municipal wastewater at the national level	🙂	🔴	🔴	🔴	🟢	🟢	*Some data is produced and published in SoER 2016*
4.3 Release of nutrients from municipal effluents per catchment/hydrological basin at the coastal area	🔴	🔴	🔴	🔴	🔴	🔴	No factsheet produced for this indicator
5.1.1 Nutrient concentrations in transitional, coastal and marine waters (station)	🔴	🔴	🔴	🔴	🔴	🔴	No factsheet produced for this indicator
5.1.2 Nutrient concentrations in transitional, coastal and marine waters (parameters)	🔴	🔴	🔴	🔴	🔴	🔴	No factsheet produced for this indicator
5.2 Bathing Water quality	🙂	🔴	🔴	🔴	🔴	🔴	Some information on bathing water is mentioned in SoER 2016

Industrial emissions

H2020-SEIS NDICATORS	A (SoER-2016)	R	T	V	Reported to INFOMAp	Indicator factsheet	Comments
6.1.1 Total BOD load discharged from industrial installations to Mediterranean marine environment	🙁	🙁	🙁	🙁	🙂	🙂	This indicator is not produced and not published on SoER 2016.
6.1.2 Total Nitrogen load discharged from industrial installations to the mediterranean marine environment	🙁	🙁	🙁	🙁	🙂	🙂	This indicator is not produced and not published on SoER 2016.
6.1.3 Total phosphorus load discharged from industrial installations to the mediterranean marine environment	🙁	🙁	🙁	🙁	🙂	🙂	This indicator is not produced and not published on SoER 2016.
6.2.1 Total heavy metals load released from industrial installations to the Mediterranean marine environment	🙁	🙁	🙁	🙁	🙂	🙂	This indicator is not produced and not published on SoER 2016.
6.2.2 Furans and dioxins load released from industrial installations to the Mediterranean marine environment	🙁	🙁	🙁	🙁	🙂	🙂	no information is found

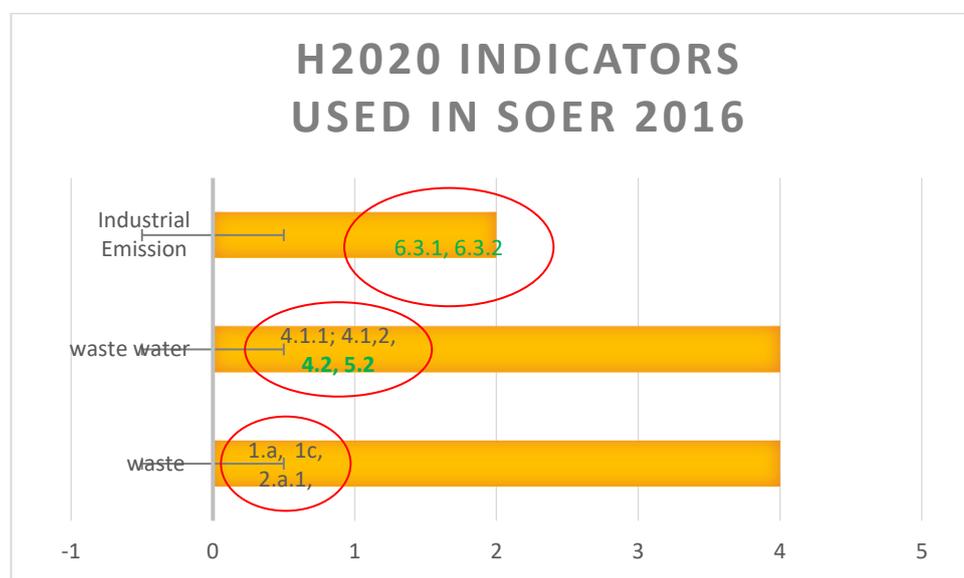| Indicator							Comment
6.2.3 Polycyclic aromatic hydrocarbons (PAH) load released from industrial installation in the Mediterranean marine environment	☹️(red)	☹️(red)	☹️(red)	☹️(red)	☹️(red)	☹️(red)	No Information is foud
6.2.4 Volatile Organic compounds (VOC) load released from industrial installations to the Mediterranean marine environment	☹️(red)	☹️(red)	☹️(red)	☹️(red)	☹️(red)	☹️(red)	No information found
6.3.1 Total quantity of generated hazardous waste from industrial installations	🙂(yellow)	☹️(red)	☹️(red)	☹️(red)	🙂(green)	🙂(green)	Some information on hazardous waste is mentioned in SoER 2016 and disposal in SWAGA landfill
6.3.2 Quantity of industrial hazardous waste disposed in environmentally sound manner relative to total quantity of generated hazardous waste from industrial installations	🙂(yellow)	☹️(red)	☹️(red)	☹️(red)	🙂(green)	🙂(green)	Some information on hazardous waste is mentioned in SoER 2016 and disposal in SWAGA landfill
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	☹️(red)	☹️(red)		☹️(red)	🙂(green)	🙂(green)	*No information is published at the national level*
6.4.2 Number of environmental inspections carried out by	☹️(red)	☹️(red)	☹️(red)	☹️(red)	🙂(green)	🙂(green)	No information is published at the national level

enforcement authorities in which industrial installations were found to be in breach of laws and regulations relative to the total number of executed							
6.4.3 Number of eliminated hotspots identified in the updated NAPs relative to the 2001 and 2015 baseline	🙁	🙁	🙁	🙁	🙁	🙁	No information is found in SoER

H2020 indicators in use in the production of national state of environment report 2016

Use of SEIS- H2020 indicators in Statistical reports

Data	Link	SEIS-H2020 Indicator
Some data on load (BoD, from industrial waste water plants (table formats) Waste water collected and waste water treated Waste water Reused Treated 2010-2015	http://dosweb.dos.gov.jo/products/environmental2014-2015/f **Arabic** **English**	**6.3.1,**
Data on waste composition And Quantity of Collected Solid Wastes by Muncipilaties by Governorate and Disposal	http://dosweb.dos.gov.jo/products/environmental2014-2015/f **Arabic** **English**	**6.3.2**
		4.1.1

Potential use of H2020 indicators for monitoring SDGs

SDG	SDG goal	H2020 indicators
6 CLEAN WATER AND SANITATION	6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations 6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally 6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity 6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate	3.1.1, 3.1.2, 3.2.1, 3.2.2
14 LIFE BELOW WATER	14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution 14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans	All SEIS-h2020 indicators
11 SUSTAINABLE CITIES AND COMMUNITIES	11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management	1.1, 1.a, 1.b, 2.a.1, 2.a.2, d.2.b, 6.3.1, 6.3.2
12 RESPONSIBLE CONSUMPTION AND PRODUCTION	12.2 By 2030, achieve the sustainable management and efficient use of natural resources 12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment 12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse **Waste management (recycling reuse** **Wastewater treated**	1.1, D2b, 4.1.1, 4.1.2, 4.2

	9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities	*Link to type of treatment of waste, waste water and best available techniques*

Existing Information systems and SEIS Principles
National Infrastructure

The National Monitoring Information System for Waste (NMISW)

To measure progress towards targets set in the National waste management strategy adopted by Jordan in 2015 and provide support to decision-making process and better management of waste the NMISW was established. The legal basis "Canoon on waste management framework law" for the establishment of the system was adopted beginning of 2020. Through the direct connection of the weighbridges to the National information system, the NMISW receives currently data in real time from two sanitary landfills, one controlled dumpsite and two transfer stations. More specifically, it receives data on quantities of waste delivered; the type of waste, the name of the municipality generated the waste as well as the capacity of the trucks. In addition, an IT application to monitor the enforcement of the provisions of the framework law was developed, municipal and hazardous waste generators have to register in the system and notify its environmental manager and submit waste management plan. In the near future, waste recycler will notify the quantities of recyclables they received and the amounts recycled. Once fully used the system will help increase the production of data on waste quality and the quality of relevant data for SEIS-H2020 indicators. The system was conceived in way to fulfill all the SEIS principles as shown in the table below.

In addition and in terms of environmental control to reduce pollution from landfills, groundwater samples from wells surrounding the landfills are analyzed data is stored in the system. In addition, the system receives data on quality of Leachate and gas emissions.

SEIS principles *(NMISW)*	
Managed as close as possible to its source	🟢
Collected once, and shared with others for many purposes	🟢
Readily available to easily fulfill reporting obligations	🟢
Easily accessible to all users	🟢
Accessible to enable comparisons at the appropriate geographical scale and citizen participation	🔴
Fully available to the general public at the national level in the relevant national language(s)	🟢
Supported through common free open software standards	🟢

Wastewater information System

The Environmental Monitoring & Assessment Directorate of the Ministry is responsible for water resources quality monitoring but does not have a laboratory. Water quality analysis is subcontracted to the Environment Monitoring and Research Central Unit (EMARCU) EMARCU is part of the Royal Scientific Society (RSS). The unit aims at managing, operating and maintaining the "National Project for Real-Time Water Quality Monitoring". The responsibility of EMARCU is to collect data and make available water quality data from a real-time monitoring system and from national water-testing laboratories. Its objective is public health and environmental protection and sustainability. Real time monitoring system is part of the Water Pollution Monitoring system.

The activities of water quality monitoring of the Ministry of Environment –MoEnv- designed in a way to avoid overlapping with the activities of Ministry of Water and Irrigation. The Ministry of Environment conducts monitoring in 5 main sectors: groundwater (19 locations), dams (10 locations), valleys and surface water (22), industrial wastewater (34) and municipal wastewater treatment plants (40).

industrial wastewaters monitoring in 8 sectors including pharmaceuticals, refinery, slaughter houses, textile sector, chemical sector, food industries, paper and cardboard, Fodder and fertilizers, Power stations (27 industrial installations and power plants, and 5 main treatment plants). Periodic testing carried out once every 4 months. With regard to domestic wastewater, 33 plants regularly monitored. Eleven stations belonging to hospitals and other public administrations are also monitored.

Currently water samples are taken by RSS and the frequency of sampling depends on the type of water and sectors. for example the analysis of groundwater twice a year, and from textile industry, normal parameters measured every 4 months, heavy metals and other special parameters once per year. The sector of chemical industries once every 4 months, food industries once every 4 months, papers and cardboard once every 4 months heavy metals and other special parameters once per year, Fodder and fertilizers normal parameters once every 4 months heavy metals and other special parameters once per year. The parameters measured are according to the parameters described in the instructions. The data is stored in an Electronic Database. The database is not accessible for others. Reports generated yearly are shared with all related ministries Ministry of Water and irrigation, Ministry of Agriculture, Ministry of Health in hard and soft copy format, which does not ease its use.

Development of self-monitoring giving the possibility for industries to report their data in an online information system is one of the priorities of the Ministry; this idea to be further explored and evaluated in another project. In addition, the future system should be easily accessible to Ministry of health and Ministry of water and irrigation.

| SEIS principles – *Wastewater information System*	
Managed as close as possible to its source	🟢
Collected once, and shared with others for many purposes	🟢
Readily available to easily fulfil reporting obligations	🔴
Easily accessible to all users	🔴
Accessible to enable comparisons at the appropriate geographical scale and citizen participation	🔴
Fully available to the general public at the national level in the relevant national language(s)	🔴
Supported through common free open software standards	🔴

National water information system

The Ministry of Water and irrigation was established in 1992 (By-law No.54/1992) and is the official body responsible for the overall monitoring of the water sector, water supply and wastewater system and related projects, planning and management, the formulation of national water strategies and policies, research and development, information systems and procurement of financial resources. Its role also includes the provision of integrated water-related data, standardization and consolidation of data. For more integrated approach to national water management the Ministry of water and irrigation started the establishment of National water information system, the first phase of implementation was finalized and was basically dedicated to updating and upgrading the existing database, to a web based system. Currently and at the end of the first phase only employees of the MWI can access the system. The system is currently experiencing errors and is not working properly. No maintenance contract was foreseen.

The objective of a second phase, still subject to funding, is to expand the system to enable access to other users, for this purpose Memorandum of understanding were signed with WAJ, JVA, DoS, RSS and other are planned to be signed. In terms of legal basis, the extension to other users represents no problem, but technically the connection with other databases needs to be established.

During the first phase of the project two modules (not yet fully finalized) were initiated, one of modules is dedicated to water accounts (use of groundwater, use of surface water at the level of catchment area and hydrological basin, precipitation at the catchment level) which can serve as tool for planning, the second module dedicated to reporting on SDG 6. Data for reporting on SDG 6 is scattered among different institutions. The calculation of SDG6 indicators, necessitate the access to data produced by DoS and RSS

At the database contains data on precipitation, water level, water use etc. and allows for data visualization, which is a good tool to spot at the first glance data errors.

SEIS principles *National water information system*	
Managed as close as possible to its source	🟢
Collected once, and shared with others for many purposes	🔴
Readily available to easily fulfil reporting obligations	🔴
Easily accessible to all users	🔴
Accessible to enable comparisons at the appropriate geographical scale and citizen participation	🔴
Fully available to the general public at the national level in the relevant national language(s)	🔴
Supported through common free open software standards	🔴

Shortcomings and Recommendations

Content, infrastructure Shortcomings

Recommendations

Data Availability Self-Assessment
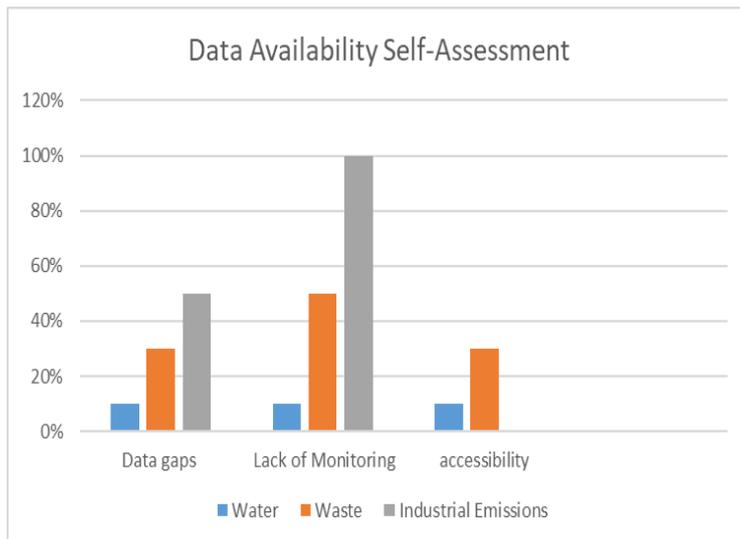
Despite the progress in enhancing the accessibility of SEIS environmental indicators some problems summarized in the above graph are encountered during the collection of data for the regional assessment. The issues are mainly linked to data availability, accessibility and Monitoring.

Municipal Solid waste composition based on studies commissioned by different institutions Ministry of local Administration, Ministry of Environment or municipalities. The data presents some discrepancies

The national information system for waste receives data on quantities of waste and type of waste from 3 landfills. The system is not yet fully a national information system as it covers only 3 out of the 19 existing landfills.

Currently very few industries are reporting to Ministry of Environment

The national water information system under construction is very important tool for better management of water resources Jordan is ranked among the poorest countries in the world in terms of water availability and Climate change may affect further the water availability.

Continue advancing in putting in place a regular data flows for the priority areas of H2020 for the monitoring of depollution of the Mediterranean sea and reporting to EEA and ensure that all indicators are produced on regular basis.

Maintain cooperation and interaction between environmental information producers to achieve full SEIS implementation;

In close cooperation with all relevant Ministries and municipalities, unify the standards and methodology to ensure studies follow the same methodology and to have comparable and reliable data and build time series.

The system needs extension to cover the quantities of waste in the kingdom for a better management and planning and to fully

Provide support to the Ministry of Environment to assess the feasibility of development of industry self-monitoring- PRTR

Secure funding for the extension of the water information system to