

Part II: Report template for publication

Plastics and Health Report

1. Introduction to the country

1.1 General overview of the country and plastics sourcing, production, use and disposal, including waste trade.

International sources:

Jordan is a small country in the Middle East with a population of around 10 million people. The plastic industry in Jordan is relatively small, and has limited domestic production capabilities, and the majority of plastic products in Jordan are imported.

Plastics Sourcing:

Jordan does not have a petrochemical industry, and therefore, the raw materials used in its plastic industry are imported from neighboring countries like Saudi Arabia, the United Arab Emirates, and Kuwait.

Plastics Production:

Jordan has small-scale plastics production facilities, but the industry is not well developed, and the country relies heavily on imported plastic products.

Plastics Use:

The packaging industry is the largest consumer of plastic products in Jordan, accounting for over 60% of the total demand. Other industries that use plastic products in Jordan include construction, automotive, and household products.

Plastics Disposal:

Jordan faces significant challenges with plastic waste disposal due to its limited infrastructure and resources for waste management. Most plastic waste in Jordan is either landfilled, burned, or dumped in open spaces. This can have severe environmental and health consequences, including soil and water pollution, air pollution, and respiratory problems.

Waste Trade:

Jordan is a signatory to the Basel Convention, which regulates the transboundary movement of hazardous waste. However, there have been reports of illegal waste trade in Jordan, including the import of plastic waste from other countries. For example, in 2018, it was reported that Jordan had received 1,500 tons of plastic waste from Italy, which was falsely labeled as "recyclable." (See reference No.8)

Feedstock Sources:

Jordan does not have a petrochemical industry that provides feedstock for primary plastics production. Therefore, the majority of the raw materials used in Jordan's plastic industry are imported from such countries as Saudi Arabia, the United Arab Emirates, and Kuwait.

Quantitative Data:

Jordan's plastic industry is valued at around \$350 million, with a compound annual growth rate of 3.8% between 2016 and 2021. (Source: Mordor Intelligence)

The demand for plastic products in Jordan was estimated at 573,000 tons in 2020, with an expected increase of 3.5% by 2025. (Source: TechSci Research)

In 2019, Jordan imported around 232,000 tons of plastic products worth \$585 million. (Source: International Trade Centre)

The most commonly imported plastic products in Jordan are polyethylene, polypropylene, PVC, PET, and polystyrene. (Source: International Trade Centre)

The packaging industry is the largest consumer of plastic products in Jordan, accounting for over 60% of the total demand. (Source: TechSci Research)

The demand for recycled plastics in Jordan is increasing, and the country has set a target to recycle 20% of its plastic waste by 2025. (Source: Jordan Times)

It is worth noting that due to the limited local production capabilities and reliance on imports, the plastic market in Jordan is heavily influenced by global market trends, especially, by oil price fluctuations.

National Sources and Reports:

The statistics of the Chamber of Industry in Amman, Zarqa, and Irbid showed an increase in the number of establishments operating in the sector reaching total of 614 with a growing rate of 6.6% during the last decade. 42.5% of the sector’s enterprises are industrial enterprises.

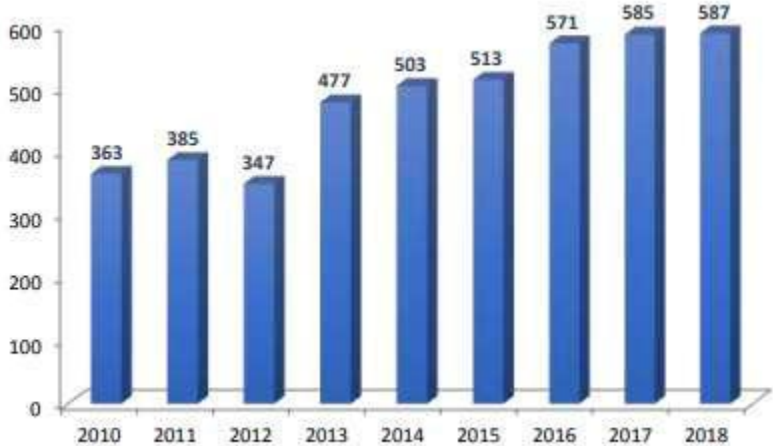


Figure 1.1 Growth of the number of companies working in the plastic and rubber industry in Jordan

The increase in the number of companies was accompanied by an increase in the employment rate as the number of industrial workers reached 9,315 during 2019 as compared to 8,392 workers in 2018. A growth of 11% in addition to an increase in the number of workers in craft establishments to 1,442 in 2019 as compared to 1,254 in 2018, with female workers representing 6% of the total employees of the sector, recording a growth of 15%.¹ The Plastic and Rubber Industry includes 4.3% of the total number of industrial employees.

The plastic industry represents a total of around 5% of total industrial production.

The current production value of the plastic industry sector is \$1.5 billion. 126.4 million worth of capital investments were made in the last decade with a growth rate of 5.9%.



Figure 1.2 Development of the production volume of the plastic and rubber industries in Jordan /In Million Dinner

The study showed (Jordan Chamber of Industry) that the local plastic industry covers 42.2% of total local plastic and package usage, which means that 57.8% of plastic is imported.

The study of plastic and rubber industries showed numerous and prominent contributions at the economic and social levels, and multidimensional links of these sectors with several other economic sectors, which increases and raises their economic contribution.

This reflects how the plastic industry in Jordan affects almost all the other sectors. Hence, plastic pollution has a huge impact on human health and environment.

The plastic and rubber industries in Jordan produce several sub-products, the most important ones are:

1. Distinguishing and measuring signs, and water pipes.
2. Water supply products, slabs, slates, bars, pipes.
3. Boards, sheets, screens, awnings, and plastic fittings.
4. Sanitary plastic fixtures, bathtubs, showers, and others.
5. Spray tools and plastic cosmetics.
6. Blood bags, plastics, and their reservoirs.
7. Plastic planting tools.
8. Sponges.

Increased potential of plastic exports

Plastic accounted for 3.6% of Jordan's total exports, a compound annual growth rate during the last decade of about 13.4% with access to more than 65 markets across the world.³

Data from the statistics and figures issued by the ITC Digital Trade Center/ Map Potential Export show that Jordan has a lot of exporting potential worldwide, including the plastic and rubber industries.

In addition to the increasing volume of waste, the composition of municipal waste is transitioning from primarily organic to a more complex mix with more plastics, paper, and cardboard as well as e-waste. Waste composition varies across the country, but in municipalities it is broadly 51% organic, 15% plastics, and 14% paper.

It is estimated that 95% of the plastic packaging that enters the economy is discarded as waste, and 32% of this waste is not covered by municipal waste management.

From the government's perspective, managing this composition requires a substantial change from business as usual, which is an opportunity for the development of more sophisticated market activities in the waste sector. Currently, most of the waste sector infrastructure and services are undertaken by municipalities under the supervision of the Joint Service Councils and the Ministry of Local Administration. In addition to infrastructure development, this strategy calls for the implementation of new policies and institutional structures to support the development of the waste management sector into an economic opportunity. For example, taking into account the 7% recycling rate (against the global average of 9%), there are untapped opportunities for waste-to-resource business development.

Waste management in Jordan engages both the formal (collection, transport, disposal) and the informal (collection, sorting, recycling) sectors. The formal sector employs roughly 6,400 people, most of whom are employed by municipalities as waste collectors and street sweepers. At the same time, an estimated 6,000 and 7,000 informal waste pickers retrieve items that have resale value at open landfills and dumpsites, functioning as the country's de facto recycling system.

While this provides economic opportunities for the disadvantaged groups, there are substantial health and safety risks from sifting through waste without protective equipment. Waste pickers, particularly refugees (which make up 4% of the total number of informal workers), make it harder to track and control polluted plastic that should not be recycled.



Photo of an informal waste collector

2. Country Plastics Data

2.1 How much plastic feedstock is produced or imported in the country?

Jordan does not have a petrochemical industry that produces plastic feedstock, and therefore, all the feedstock used in its plastic industry is imported from other countries. The most significant sources of imported plastic feedstock for Jordan are Saudi Arabia, the United Arab Emirates, and Kuwait.

According to available data, Jordan imported around 232,000 tons of plastic products in 2019, which included raw materials such as polyethylene, polypropylene, PVC, PET, and polystyrene. However, it is worth noting that not all plastic products imported into Jordan are used as feedstock for plastics production, and some are directly used for packaging or other applications.⁹

It is challenging to estimate precisely how much plastic feedstock is imported into Jordan, as data on the composition of imported plastic products is limited. However, based on the available information, it is safe to say that the amount of plastic feedstock imported into Jordan is relatively small as compared to other countries with a more developed plastic industry.

Even though Jordan is not a primary plastic producer, Jordanian factories are able to import low value commodity plastics and modify them to produce high value blends and raw materials products that are used by Jordanian producers and exported to the region and beyond.

Some of the products currently being produced by this sub-sector include:



Plastic/calcium carbonate compounds



Wire & cable production compounds



Color masterbatches

Photo Source: Plastic Sector profile- Industry overview 2020 -Jordan Chamber of Industry

According to the UNCOM trade database:

HS Code		Export (\$)	Export (%)	Import (\$)	Import (%)
6100	Apparel Knit	\$1,736,378,726	18.6%	\$332,865,111	1.55%
3100	Fertilizers	\$1,322,313,416	14.1%	\$41,232,108	0.191%
2800	Inorganic Chemicals	\$1,046,057,153	11.2%	\$291,105,599	1.35%
2500	Natural Minerals & Stone	\$613,296,545	6.55%	\$107,137,064	0.497%
3000	Pharmaceuticals	\$613,268,416	6.55%	\$703,667,541	3.27%
0800	Fruit & Nuts	\$261,892,469	2.8%	\$294,642,022	1.37%
7100	Precious Stones & Metals	\$260,390,219	2.78%	\$1,401,214,640	6.5%
8500	Electrical Machinery	\$256,084,034	2.74%	\$1,131,609,374	5.25%
3900	Plastics	\$250,930,317	2.68%	\$790,174,509	3.67%
0700	Vegetables	\$198,076,574	2.12%	\$83,749,881	0.389%

The total value of plastic articles imported into Jordan in 2021 was \$790.17 million, according to the United Nations COMTRADE database on international trade.

According to a report by the United Nations Industrial Development Organization (UNIDO) published in 2017, the plastic industry is one of the most important industries in Jordan, accounting for around 6% of the country's GDP. The report also stated that the plastic industry in Jordan is dominated by small and medium-sized enterprises (SMEs), which produce a wide range of plastic products, including packaging materials, household goods, construction materials, and automotive parts.

In terms of the types of plastics commonly used in Jordan, polyethylene (PE) and polypropylene (PP) are the most widely used. These plastics are commonly used in the production of plastic bags, packaging materials, and disposable products such as cups and plates. Other types of plastics used in Jordan include polystyrene (PS), polyvinyl chloride (PVC), and acrylonitrile butadiene styrene (ABS).

2.2 How much plastics and what type of plastics are produced?

The plastic industry represents around 5% of total industrial production.

The current production value of the plastic industry sector is \$1.5 billion. 126.4 million worth of capital investments were made in the last decade with a growth rate of 5.9%.

The study showed (Jordan Chamber of Industry) that the local plastic industry covers 42.2% of total local plastic and package usage, which means that 57.8% of plastic is imported.

2.3 What types of plastics does the country manufacture/import?

The plastic and rubber industries in Jordan produce several sub-products, the most important ones are:

1. Distinguishing signs and measuring signs and water pipes.
2. Water products, slabs, slate, bars, pipes.
3. Boards, sheets, screens, awnings, and plastic fittings.
4. Sanitary plastic fixtures, bathtubs, showers, and others.
5. Spray tools and plastic cosmetics.
6. Blood bags, plastics, and their reservoirs.
7. Plastic planting tools.
8. Sponge products.

Jordan's plastic industry primarily relies on imported raw materials, such as polyethylene (PE), polypropylene (PP), polyvinyl chloride (PVC), and polystyrene (PS). These plastics are then used to produce a wide range of plastic products, including packaging materials, household goods, pipes, and construction materials.

The total value of plastic articles imported into Jordan in 2021 was \$790.17 million, according to the United Nations COMTRADE database on international trade.

According to the official Jordan Customs website, authorized exporters under Decision No. (1) 2016 of the EU-Jordan Association Committee of 19/7/2016 are exporting plastic products under the following HS code:

Electric cables HS 8544
Nylon transparent polythene HS 3920.10
Plastic bags HS 3923.29
Polyethylene rolls HS 3921.90
Polyethylene rolls HS 3920.10
Plastic household articles HS 3924.10
Plastic bags HS 3923.29

Check the following link for further information

<https://www.customs.gov.jo/en/Exporters.aspx>

2.4 How much and what type of plastics are imported into the country?

According to the United Nations COMTRADE database, Jordan imported a total of \$226 million worth of plastics and articles thereof in 2020. The database does not provide a breakdown of the specific types of plastics that were imported. However, we can make some generalizations based on the most common types of plastic products that are imported into Jordan.

Jordan relies heavily on imported plastic products such as bags, containers, and pipes, which are used in various industries such as agriculture, food and beverage, and construction. These products are typically made of polyethylene (PE), polypropylene (PP), polyvinyl chloride (PVC), and other types of plastics.

Jordan also imports plastic raw materials such as resins, pellets, and flakes, which are used as inputs in the plastics manufacturing process. These materials are typically made of a variety of polymers such as PE, PP, PVC, and polystyrene (PS).

Overall, the exact types and quantities of plastics imported into Jordan can vary depending on such factors as market demand, economic conditions, and government regulations.

List of products by their codes imported by Jordan in 2021

at the same aggregation level as the product 3901 Polymers of ethylene, in primary forms

Source: ITC calculations based on [UN COMTRADE](#) statistics.

Code	Product label	Select your indicators		
		Value of imports in 2021 (USD thousand)	Annual growth in quantity between 2017-2021 (% p.a.)	
TOTAL	All products	21,542,435		
3901	Polymers of ethylene, in primary forms	190,232	-9	
3902	Polymers of propylene or of other olefins, in primary forms	79,360	-4	
3907	Polyacetals, other polyethers and epoxide resins, in primary forms; polycarbonates, alkyd resins, . . .	78,502	-1	
3920	Plates, sheets, film, foil and strip, of non- cellular plastics, not reinforced, laminated, . . .	66,743		
3904	Polymers of vinyl chloride or of other halogenated olefins, in primary forms	59,375	-4	
3926	Articles of plastics and articles of other materials of heading 3901 to 3914, n.e.s.	50,365	-37	

3923	Articles for the conveyance or packaging of goods, of plastics; stoppers, lids, caps and other . . .	42,216	-20
3903	Polymers of styrene, in primary forms	35,555	-5
3917	Tubes, pipes and hoses, and fittings thereof, e.g. joints, elbows, flanges, of plastics	33,127	
3921	Plates, sheets, film, foil and strip, of plastics, reinforced, laminated, supported or similarly . . .	29,183	-29
3919	Self-adhesive plates, sheets, film, foil, tape, strip and other flat shapes, of plastics, whether . . .	23,982	
3906	Acrylic polymers, in primary forms	23,641	-11
3924	Tableware, kitchenware, other household articles and toilet articles, of plastics (excluding . . .	22,222	-25
3909	Amino-resins, phenolic resins and polyurethanes, in primary forms	13,593	3
3912	Cellulose and its chemical derivatives, n.e.s., in primary forms	10,820	-6

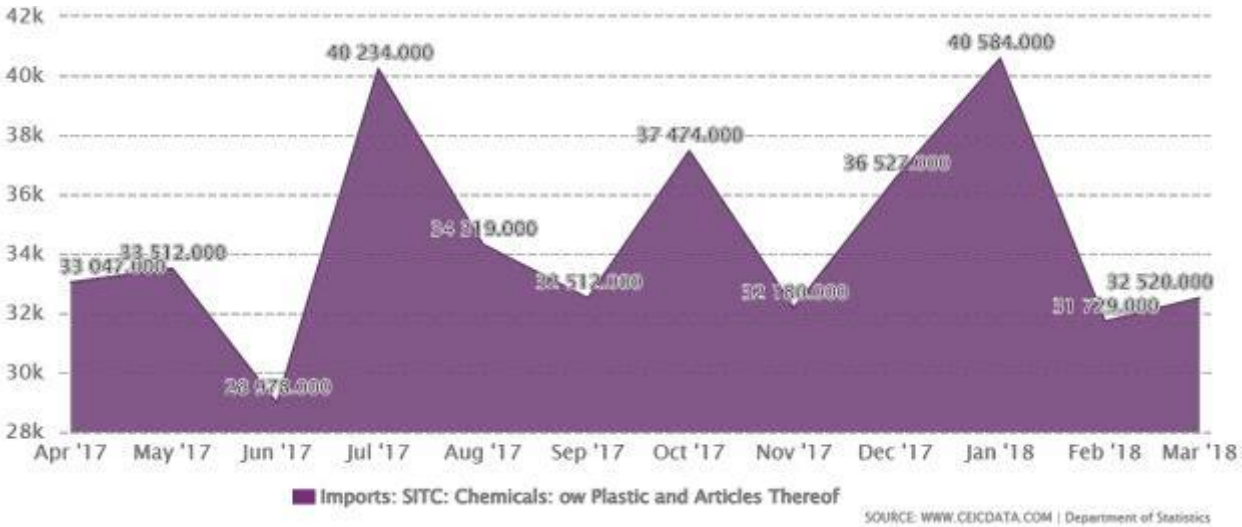
3925	Builders' ware of plastics, n.e.s.	9,111	-1	
3905	Polymers of vinyl acetate or of other vinyl esters, in primary forms; other vinyl polymers, . . .	7,364	-19	
3922	Baths, shower-baths, sinks, washbasins, bidets, lavatory pans, seats and covers, flushing cisterns . . .	5,059	-12	
3918	Floor coverings of plastics, whether or not self-adhesive, in rolls or in the form of tiles; . . .	3,256	-13	
3911	Petroleum resins, coumarone-indene resins, polyterpenes, polysulphides, polysulphones and other . . .	2,052	-20	
3910	Silicones in primary forms	1,886	-5	
3916	Monofilament of which any cross-sectional dimension > 1 mm, rods, sticks and profile shapes, . . .	971	-26	
3913	Natural polymers, e.g. alginic acid, and modified natural polymers, e.g. hardened proteins, . . .	631		

3908	Polyamides, in primary forms	434	-5
3914	Ion-exchangers based on polymers of heading 3901 to 3913, in primary forms	353	
3915	Waste, parings and scrap, of plastics	139	-6

7.1 How much chemicals for use in plastics are produced and/or imported into the country?

Jordan Imports - SITC: Chemicals: Data on plastics and plastic articles is updated monthly, averaging 23,193.000 JOD from Jan 1999 to Aug 2018, with 236 observations. The imports reached an all-time high of 55,207.000 JOD in Aug 2014 and a record low of 3,091.000 JOD in Jan 2000.

Data on plastics and plastic articles remains in active status in CEIC and is reported by the Department of Statistics. The data is categorized under the Global Database’s Jordan – Table JO.JA015: Imports: by Standard International Trade Classification.¹⁰



7.2 How much plastic waste is generated in the country? What happens to the plastic waste?

Jordan produces approximately 3 million tons of solid waste (plastic, paper, metal) annually, but 7% of it is recycled, which is a small percentage. The untreated plastic waste usually ends up in incineration or municipal waste landfills.

According to a report by the United Nations Development Programme (UNDP) in 2018, Jordan produced around 2.4 million tons of solid waste per year, of which 25% is plastic waste (which contrasted with the percentage provided by the MOE and Henrich Organization, which was 15%). This is a significant amount, considering that Jordan has a population of around 10 million people.

The most common types of plastic waste in Jordan are PET (polyethylene terephthalate) and HDPE (high-density polyethylene), which are used for such products as water bottles, food packaging, and plastic bags. However, there are also other types of plastics used in the country, including PVC (polyvinyl chloride) and LDPE (low-density polyethylene).

In terms of plastic waste management, Jordan faces significant challenges due to its limited resources, infrastructure, and funding. The country has limited landfill space, and many of the existing landfills are over capacity and not properly managed, leading to environmental and health risks.

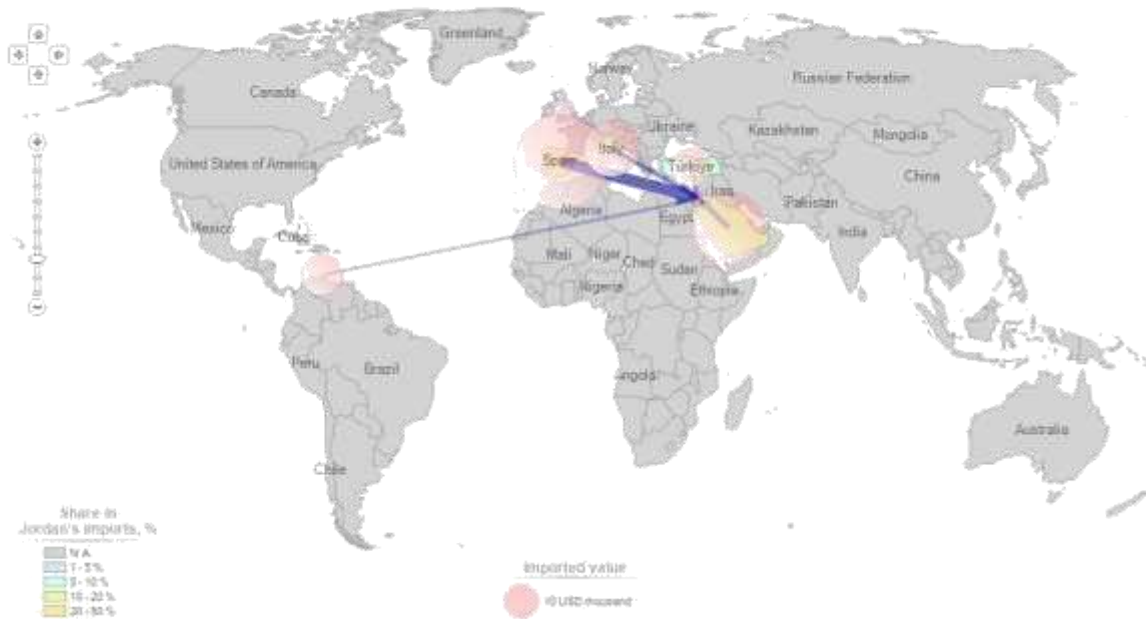
To address these challenges, the Jordanian government has implemented several initiatives to improve waste management, including the establishment of recycling centers, waste sorting facilities, and public awareness campaigns to encourage waste reduction and proper disposal.

7.3 How much plastic waste is exported from, imported into your country

The trade data website shows Jordan's imports of waste, parings and scrap (HS 3915) with a market share of 7% from various countries in 2021 as displayed in the map below.

List of supplying markets for a product imported by Jordan in 2021

Product: 3915 Waste, parings and scrap, of plastics



List of import markets in 2021

Product: 3915 Waste, parings and scrap, of plastics

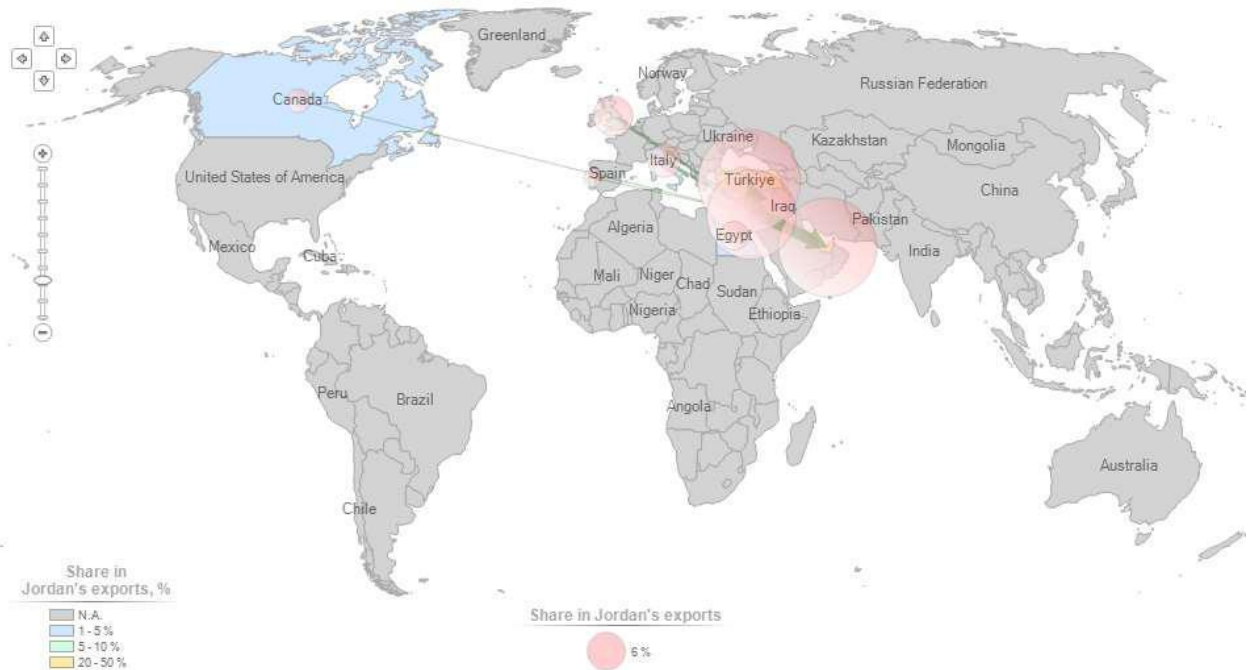
Sources: ITC calculations based on [UN COMTRADE](#) statistics.

The quantities shown in light green are estimated by UNSD. For further information, please refer to the [UNSD explanatory note](#).

Exporters	Select your indicators						
	Value imported in 2021 (USD thousand)	Quantity imported in 2021	Quantity unit	Unit value (USD/unit)	Growth in imported value between 2017-2021 (% p.a.)	Total exports growth in value of partner countries between 2017-2021 (% p.a.)	
World	139	240	Tons	579	-13	-10	
Spain	51	87	Tons	586		-16	
Saudi Arabia	27	49	Tons	551	-37	0	
Italy	18	30	Tons	600		3	
Free Zones	17	28	Tons	607	39	-56	
Aruba	12	20	Tons	600			
Türkiye	11	18	Tons	611		-10	
United Kingdom	4	7	Tons	571		-5	

List of importing markets for a product exported by Jordan in 2021

Product : 3915 Waste, parings and scrap, of plastics



The export of plastic waste with code HS 3915, where Jordan has a share of 6%

Sources: ITC calculations based on [UN COMTRADE](https://comtrade.un.org/) statistics

For further details please follow:

https://www.trademap.org/Product_SelProductCountry_Graph.aspx?nvpm=1%7c400%7c%7c%7c%7c3901%7c%7c%7c4%7c1%7c1%7c1%7c1%7c1%7c1%7c1%7c1%7c2

List of markets for Jordan's exports in 2021

Product: 3915 Waste, parings and scrap, of plastics

Sources: ITC calculations based on [UN COMTRADE](#) statistics.

The quantities shown in light green are estimated by UNSD.

Importers	Select your indicators					
	Value exported in 2021 (USD thousand)	Share in Jordan's exports (%)	Quantity exported in 2021	Quantity unit	Unit value (USD/unit)	Growth in exported quantity between 2017-2021 (% p.a.)
World	464	100	900	Tons	516	-10
Türkiye	137	29.5	264	Tons	519	-15
United Arab Emirates	120	25.9	238	Tons	504	21
Israel	96	20.7	183	Tons	525	
United Kingdom	27	5.8	51	Tons	529	
Palestine, State of	25	5.4	48	Tons	521	
Italy	22	4.7	43	Tons	512	
Egypt	18	3.9	35	Tons	514	
Canada	13	2.8	27	Tons	481	
Portugal	6	1.3	11	Tons	545	

7.4 How much plastics end up in the environment in your country?

The volume of produced waste is increasing. The composition of municipal waste in Jordan is transitioning *from primarily organic to a more complex mix with more plastics, paper, and cardboard* as well as e-waste. Waste composition varies across the country, but in municipalities it is broadly 51% organic, **15% plastics**, and 14% paper.

It is estimated that 95% of the plastic packaging that enters the economy is discarded as waste, and 32% of this waste escapes municipal waste management.

According to THE HEINRICH-BÖLL-STIFTUNG Palestine and Jordan data:

“Plastic Atlas. In light of the absence of governmental plans and programs for waste management in Jordan, sorting and recycling processes for plastic waste are limited to individual initiatives by activists and environmental organizations. The number of solid waste landfills reached 19 in Jordan and the amount of waste has increased to about 1.662 million tons annually, despite the existence of legislation regulating this process.”

According to statistical data of the Jordan Food and Drug Administration (JFDA), more than 30 million plastic bags are disposed of every year in Jordan, an average of 584 bags per person.

7.5 Were there accidents related to plastics that became public, including spills of primary plastics (e.g. pellets, fires at recycling facilities)?

Plastics can pose environmental risks if not handled and disposed of properly. Accidents involving plastic spills can occur during transportation, storage or production, and can result in environmental pollution and harm to wildlife.

In Jordan, there have been reports of environmental pollution caused by plastic waste, particularly in urban areas. The government has taken steps to address the issue, including awareness campaigns and waste management initiatives.

In terms of plastic-related accidents and spills, there have been several incidents reported worldwide. For example, in 2018, a cargo ship carrying 80 containers of plastic waste from the United States and Canada was stranded off the coast of Jordan. The containers were eventually returned to their countries of origin, but the incident highlighted the global issue of plastic waste disposal and the need for proper handling and regulation.

In 2018, a huge fire that broke out in a plastic factory in King Abdullah Industrial City in Sahab, with an area of 1,500 square meters.

In 2019, a fire broke out in a plastic factory in Marka-Amman.



Photos from the fire incident in a plastic factory in Marka-Amman, 2019

In April 2022, a fire broke out in a plastic factory in Sayeh Dhiab-Zarqa city. The firefighting teams worked to put out the fire and prevent its spread, which resulted in three people suffering from shortness of breath after inhaling the gases and fumes emitted from the fire. They were treated and transferred to Zarqa Governmental Hospital, and an investigation has been opened into the causes of the fire.

In August 2022, another plastic factory went on fire in Al-Hassan Industrial City- Ramtha city.

Many fires occurred in plastic factories and workshops, which reflects the poor safety measures applied in these industrial enterprises. A considerable volume of toxic emissions is released into the air causing a hidden threat to human health.

8. Recycling Capacity

8.1 Are there recycling centers for plastic waste in your country?

Are there plans to build them?

Yes, there are recycling centers for plastic waste in Jordan. The country has made efforts to improve its waste management infrastructure, and there are now several private companies operating recycling facilities. In addition, there are many independent non-governmental initiatives for recycling.

8.2 If yes, how many? Please provide a list to the best of your knowledge

Some of the prominent plastic recycling companies in Jordan include Hulwah for Industrial and Environmental Services, Al-Quds for Plastic Recycling, and Shamel Environmental Services. These companies collect and process different types of plastic waste, including PET bottles, plastic bags, and packaging materials.

In addition to private companies, the government has also launched initiatives to promote recycling in Jordan. For example, the Ministry of Environment established a waste exchange program to encourage the exchange of waste materials between companies and industries, which can help reduce waste and increase recycling rates.

OXFAM pioneered the first household waste sorting initiative in Jordan. In Mafraq governorate and in Za'atari refugee camp, they operated recycling centers to reduce the amount of waste sent to landfills, maintain the environment clean and help reduce greenhouse gases. This initiative provides temporary work for vulnerable Jordanians and Syrian refugees who collect and sort the waste.

OXFAM engage communities in their work and campaign nationally to encourage people to reduce, reuse and recycle their waste. They also support Jordanian authorities to engage with communities on solid waste management. Alongside this, OXFAM innovate and experiment to find sustainable solutions to local challenges and to produce evidence to support the Jordanian government's transition to a green economy.



According to OXFAM-Jordan:

34.8M

**kilograms of waste were collected between 2020-2022,
out of which 1.6M kilograms were recycled.**



A photo from OXFAM's collecting and recycling campaign

In the next ten years, the government seeks to increase to 30% the share of recycled waste in order to preserve the environment, up from the current 7%, according to the Secretary-General of the Ministry of Environment, Dr. Muhammad Al-Khashashnah. This shall be achieved through a new project to recycle plastic and glass bottles.

The project was launched jointly by Nestlé, Diageo, and the United Nations Human Settlements Organization (UN-Habitat), and was implemented by Development Inc.

The launch of the project was announced during a press conference held in October 2022 in Amman.

The project aims to increase the collection and recycling of waste packaging from the tourism and business sectors by using a variety of collection channels supported by digital tools and systems. This project works on distributing containers for collecting plastic and glass containers in more than 250 hotels and restaurants. Recycling machines will be placed in key locations in Amman for consumers to dispose of used plastic bottles, in addition to a reward system to motivate individuals to recycle their plastic and glass waste.

The project will distribute 70 smart package-collecting devices to universities, schools, and commercial centers. These devices work on the principle of reverse selling, meaning that the recycling contributors receive points that they can later convert into value for purchases.

The project will rely on digital technology for traceability, to ensure process control, accuracy, and transparency of the quantities collected and their expiry date, with the aim of creating a “bottle-for-bottle” mechanism.

The plastic and glass bottle-recycling project is in line with Nestlé’s global commitment to make 100% of its packaging recyclable or reusable by 2025. Nestlé seeks to ensure that all of its packaging is recycled and does not end up in landfills or garbage. Hence, Nestlé is facilitating recycling by supporting the Extended Producer Responsibility Program (EPRP) launched by the Ministry of Environment and providing concrete data to shape the type of EPRP model that will be adopted in Jordan.

Diageo is committed to investing in renewable energy and improving energy efficiency, while actively working with suppliers and partners to reduce indirect carbon emissions. While the company focuses on packaging, logistics, and other resources within its supply chain with the goal of achieving net zero by 2050 or earlier, Diageo has set bold goals to reduce emissions at 100% of their sites and energy use by 2030. Moreover, it may aim to reduce its suppliers’ emissions with 50% by 2030 and achieve net-zero by 2050 or earlier.

Most sorting and recycling are actually done through the informal sector - mostly by waste pickers, who collect valuable waste in the streets and landfills and then sell it to brokers and scrapyards to be re-purposed or exported. There are around 7,000 waste collectors in Jordan who have been directly subjected to hazardous exposure. This type of recycling reduces by nearly 25 times the carbon dioxide output of incineration in landfills, since waste pickers pick up nearly 58% of the plastic on the streets. The Amman Municipality has recently established a solid waste management company and they are considering taking this category under their umbrella.

A new application called “Jo recycle” aims at exchanging plastic waste for money to encourage people to collect and sort plastic waste.

Some of the recycling centers in Jordan:

BE Environmental Services

BE Environmental Services (BE) was founded in 2008 with the “aim to reduce the impact of waste on the environment and to maximize its resource value to the benefit of the Jordanian economy and population”. They have a domestic recycling center called “Cozmo Recycling Centre”, open to the public where you can bring your recyclables 7 days a week.



Cozmo recycling center – Amman Jordan

The MMAG Foundation

In cooperation with BE Environmental Services, the MMAG Foundation campus in Jabal Amman has launched a recycling center. They accept all types of recyclable waste with the exception of glass.

The center is open to the public from Saturday to Thursday, 10 am – 5 pm. One can still bring their recycling outside of these hours as there is a drop-off box as well.

Green Spot



Green Spot offers paid recycling services (paper, cardboard, paper shredding, metal, waste management, etc.).

Other recycling centres:

Jocycle Oman Company - Al Muwaqqar

Ibrahim Butcher Amman Company - Marka (for assembly only)

Issa Qawas Company Amman - Abu Alanda

Karam Al Salameen Hashemite Foundation - Zarqa

Hassan Aboura Amman Company - Marka

Montaser Al-Karaki and Partners Company Oman - Al-Muwaqqar

Elaf Recycling Company

8.3 How much plastic is recycled?

7% is the total official percentage of recycled materials including metal, plastic, paper etc.

The recycling rate for plastic waste in Jordan is not clear, but it is worth noting that the country has made progress in this area in recent years. The government has established recycling centers in several cities, and there are several private companies that operate plastic recycling facilities.

In addition to recycling centers, the government has also implemented several waste reduction measures, including a ban on certain types of plastic bags and the promotion of reusable bags.

The government has also launched awareness campaigns to encourage citizens to reduce their plastic waste and properly dispose of their trash.

However, despite these efforts, there is still a long way to go in terms of improving plastic waste management in Jordan. There is a need for greater investment in waste collection and sorting systems, as well as public education and awareness campaigns to promote the importance of recycling and waste reduction.

8.4 What types of plastics are recycled?

Different types of plastic are recycled in Jordan, including:

- Polyethylene terephthalate (PET) - used to make water bottles, soft drink bottles, and other food packaging.
- High-density polyethylene (HDPE) - used to make milk and juice bottles, shampoo and detergent bottles, and grocery bags.
- Low-density polyethylene (LDPE) - used to make plastic bags, cling wrap, and some containers.
- Polypropylene (PP) - used to make yogurt cups, margarine tubs, and some food packaging.
- Polystyrene (PS) - used to make foam packaging, disposable cups, and plastic cutlery.

Recycling centers typically sort and process plastic waste before turning it into recycled plastic pellets or other products. The recycled plastic can be used to manufacture a variety of products, including containers, pipes, and bags.

It is worth noting that some types of plastic, such as PVC and polycarbonate, are not commonly recycled in Jordan due to their properties and the challenges involved in recycling them. However, efforts are made to find ways to recycle these plastics as well.

9. Waste Disposal

9.1 Does your country have incinerators or chemical recycling facilities? Are there plans to build or create them?

Jordan has several waste-to-energy (WTE) facilities, which use incineration as a method of waste disposal. These facilities are designed to burn municipal solid waste (MSW), including plastic waste, to generate electricity or heat.

MOE launched the Swaqa Hazardous Waste Treatment Center project for treating hazardous and harmful wastes generated in the kingdom to protect the environment and public health and to achieve the principle of sustainable development and safe final disposal of generated waste.

Processing method/amount

12,000 thousand tons incinerated

210 tons of physiochemical treatment

2,500 tons landfilled

This promising project is currently organized in coordination with the Executive Authority for Privatization and the European Union on the principle of PPP-BOOT or any other economic principle.

Jordan signed several agreements and partnerships with international organizations and companies to promote the development of the recycling industry, including chemical recycling. It is possible that we may see the establishment of chemical recycling facilities in Jordan in the future as the government continues to prioritize waste reduction and recycling efforts.

9.2 Is the open burning of plastics a problem in your country? Is it regulated?

Open burning of plastics is a significant problem in Jordan, as it is in many countries around the world. Open burning of waste, including plastic waste, can release harmful pollutants into the air and can pose health risks to nearby communities.

According to a study conducted by the Ministry of Environment in Jordan, open burning of waste, including plastics, is a common practice in many areas of the country, particularly, in rural areas and in low-income neighborhoods.

In a study conducted by Green Peace-Middle East, Amman-Jordan ranked as the fourth top polluted city in the Middle East and North Africa.

Nitrogen oxides are emitted from car exhausts as a result of fuel combustion. They are also released from the combustion of coal, natural gas and most petroleum ores, and from the burning of organic waste. They are also emitted by the manufacturing of plastics, oils, copper, car tires, the ammonium nitrate industry and the nitric acid industry. Nitrogen dioxide is a toxic gas that negatively affects the respiratory system. The effect of nitrogen dioxide on human health varies according to its concentration and exposure period.

According to a press report published in 2014, unlicensed plastic grinders are spread in some regions of the kingdom, most of which are adjacent to residential homes, dealing with plastic waste, many of which contain chemicals. The Head of the Environmental Follow-up Unit in the

Greater Amman Municipality, Eng. Nidal Al-Mousa, points out that plastic grinders collect plastic waste from factories and containers, crush it, convert it into granules, and then sell it to plastic factories and do not operate within environmental requirements and do not have filters. Plastic grinders are of two types: one is for grinding plastic and selling it as a raw material, and the other type is granulation, where it converts plastic into small granules through *burning*, and this process results in dioxin gases, which are carcinogenic and dangerous.

Plastics that are not recycled usually end up in incinerators or landfills. Some people burn plastic waste indiscriminately, which leads to dangerous emissions.

9.3 Any other relevant information on plastics disposal that was not included in the questions above?

It is important to point out the random waste collectors in Jordan since most of recycled waste is collected by them. Waste management in Jordan engages both the formal (collection, transport, disposal) and the informal (collection, sorting, recycling) sectors. The formal sector employs roughly 6,400 people, most of them as waste collectors and street sweepers for municipalities. At the same time, an estimated 6,000 and 7,000 informal waste pickers retrieve items that have resale value from open landfills and dumpsites, functioning as the country's de facto recycling system. While this provides economic opportunities for disadvantaged groups, there are substantial health and safety risks from sifting through waste without protective equipment. Waste pickers, according to an Oxfam study¹², **work for 14 hours on a daily basis and in direct contact with health hazard waste.**

The results of a local study revealed that “waste collectors who work informally in this sector are **exposed to health risks** associated with their work, for which they receive low wages ranging between 150 and 250 dinars per month.”

The Oxfam study conducted in March 2022 stipulates that “the capital, Amman, is top ranked as to the percentage of informal waste collectors, with more than 3,000 people, followed by the governorates of Irbid and Zarqa, with numbers ranging between 1,500-2,000.”

Twelve percent of the waste pickers who participated in the study reported that they “do not have access to health care, **while 56 percent of them confirm that health issues are the most common type of risk they face**, related to their work.”

The study stated that “the vast majority of those participating in unofficial waste picking are men, and about 50 percent of them are between the ages of 30-44 years, and they have only school education.”

The results of the study confirmed that “50 percent of waste pickers started their work in this sector before the age of 20, while 83 percent worked for more than five years in waste collection.”

"Regional instability has led to increased pressure on Jordan's infrastructure in recent years, including the kingdom's waste dumps," said Oxfam's country director in Jordan, Nivedita Monga.

"While the Jordanian government pursues innovative strategies to develop an economically and environmentally sustainable waste management system, we hope that this study will support the involvement of waste collectors in ways that guarantee their labor rights and provide them with ways out of poverty," she added.

This study is part of the Waste to Positive Energy project funded by the European Union (the European Union Regional Trust Fund in Response to the Syrian Crisis) and the German Federal Ministry for Economic Cooperation and Development (BMZ), and is implemented through the German Foundation for International Cooperation, in partnership with the Oxfam Organization.

For her part, Nihaya Al-Abbasi, Director of the Environmental Awareness Department at the Municipality of Amman, pointed out "The importance of the study's content and timing, as it comes at a time when the Ministry of Environment is working on developing legislation that regulates the solid waste management sector."

This study is based on interviews conducted with waste collectors, scrap dealers, brokers and contractors in seven governorates, in addition to stakeholders from the relevant ministries and municipalities.

Wael Safi, project manager of the German Agency for International Cooperation (GIZ) in Jordan, hopes that "informal recycling activities will get the attention and support they deserve."

Safi pointed out that **"the informal sector is a key player in recycling activities, although it is considered fragile in terms of the health status**, income rate, and education level of waste collectors, but it remains one of the most sustainable actors in the recycling sector."

The study shows that the economic and environmental contribution of waste collectors in Jordan leads to the growth of this sector, in addition to providing low-cost materials for local industries.

This would also "reduce the amount of waste sent to landfills, and thus reduce the burden and cost of disposal for local authorities, in addition to their important role in protecting the environment," according to the study.

The study also examines the impact of regional and global crises such as the Syrian crisis and the Covid-19 pandemic on waste collectors, each of which led to large fluctuations in the prices of recyclable materials amid closed borders and disrupted trade routes.

For his part, the Director of the Department of Environmental Studies and Awareness at the Greater Amman Municipality, Eng. Omar Arabiyat, said that the Al-Ghabawi landfill receives 3,000 tons of waste per day, of which 30 percent comes from the commercial sector, with an annual increase of 5 percent.

He pointed out that the rate of waste recycling currently does not exceed 7 percent of the total waste of the city of Amman, and *that most of the recycling activities take place through the informal sector working in this field.*

Arabiyat confirmed that the recyclable waste, which includes paper, cardboard, **plastic**, and metals, amounts to about 360 tons per day, out of the total amount of waste generated by the commercial sector, which is 900 tons.¹³

10. National Policy Initiatives

10.1 Government initiatives, if any, to control the import, use and disposal of plastics and their associated chemicals?

The government took some steps and initiatives to sort solid waste (SW), including plastic. The government aims to develop a system for sorting, re-using, and recycling to reduce the percentage of SW that is disposed of in landfills from 80% to 60% by 2025, as well as increasing the percentage of treated and re-used SW from 20% to 40% by 2025, according to the Jordan Green Growth National Action Plan 2021-2025.

The Secretary General of the Ministry of Environment, Muhammad al-Khashashneh, indicated that the ministry seeks to reduce the number of waste dumps from 20 to 8 until 2034, in compliance with the National Strategy for Waste Management.

According to the same strategy, 65% of municipal solid waste must be recycled. Al-Khashashneh explains that the principle of prevention aims to avoid and reduce the production of waste, adding that producers and importers of harmful materials, according to the principle of extended liability, bear their effects and are responsible final disposal.

Jordan discussed the definition of circular economy in Jordan's Fourth National Green Growth Action Plan for the Waste Sector 2021, quoting: "A primary objective of green growth is achieving economic efficiency by internalizing externalities associated with economic growth; this is directly reliant on achieving resource use efficiency. Improving efficiency entails two elements: (1) producing the same economic output with fewer environmental inputs and lower levels of pollution, and (2) reducing the levels of pollution associated with, or embedded, in consumption. The concept of resource efficiency is closely linked to the concepts of circular economy and Sustainable Consumption and Production (SCP). SCP has evolved as a new concept defined as "the use of services and related products, which respond to basic needs and bring a better quality of life, while minimizing the use of natural resources and toxic materials, as well as the production of waste and emission of pollutants over the life cycle, so as not to jeopardize the needs of future generations." Such definition calls for both consuming less and consuming differently, *suggesting that consumers should choose products that generate the least amount of waste when consumed, or which incorporate less material use in their production.* This will inevitably lead to a reduction in waste generation rates, which has knock-on environmental impacts, and reduces the cost

burden of waste management on municipalities. Jordan's Fourth National Green Growth objective is to achieve resource efficiency. This can be defined as improving the efficiency and reducing the wastefulness of the economy by achieving a higher efficiency in the production and consumption of economic outputs". NATIONAL STRATEGY AND ACTION PLAN FOR SUSTAINABLE CONSUMPTION AND PRODUCTION IN JORDAN | 2016 – 2025¹¹

Key waste sector-related objectives of the targeted scenario by 2025 include:

- mitigating the negative effects of environmental changes on humans, including safe disposal of solid waste in landfills
- developing the recycling system and proper hazardous waste management
- raising public awareness in the field of environmental protection
- improving institutional efficiency of enterprises operating in the environment sector
- private sector participation, including in the solid waste management system, recycling and reuse as well as in the hazardous and medical waste system.

The Ministry of Environment in Jordan launched a new project in collaboration with UNDP and GEF entitled "Reduction and Elimination of POPs" for the sake of human health and environment protection. The duration of this project is five years - 2018 - 2024. The project aims at implementing a highly sustainable and replicable approach for the integrated and sound management of e-waste, hazardous waste, healthcare waste and municipal solid waste, including plastic. It will achieve the avoidance of **unintended POP and POP-PBDE emissions, PBDEs and carbon dioxide**, and at the same time, contribute to the development of waste program components based on three principles (reduce, reuse and recycle). The project has three main components: one of them is to develop a waste conversion/resource recovery capacity in order to reduce emissions of persistent organic pollutants, and this step should be accompanied by improvements related to greenhouse gases, with the aim of demonstrating a reduction in the amount of municipal waste (containing potentially **hazardous items such as plastics**, etc.) disposed of incorrectly through recycling techniques and application of waste-derived fuel (RDF) principles to modern qualified cement kilns, including improved management of hazardous waste through public-private partnerships.

Launching an institutional format for waste collectors with the aim of giving a formal and organizational status to the informal sector. Training programs have been launched to train waste pickers on best recycling practices, in addition to basic business and personal skills, in preparation for their formal and institutional integration within the recycling value chain, and issuance of instructions.

Study of the waste fees imposed on the commercial sector: a study was launched to review how to calculate waste quantities, estimate the costs and fees of waste services, and study ways to provide material and moral incentives to the commercial and industrial sector that reduces waste production or reuse it, as well as facilities that separate waste at the source and apply waste recycling activities.

For her part, the Director of the United States Agency for Development (USAID) in Jordan, Sherry Carlin, affirmed the existing partnership with the recycling project in Jordan and the Amman Municipality, and that USAID believes in the importance of protecting the environment and building trust between the Jordanian government and citizens.

“Biodegradable plastic bag organizing system 2017”. Although six years have passed since the entry into force of the system regulating the import, production and circulation of biodegradable plastic shopping bags, the scene has not changed since then, as black plastic bags are still distributed in shops and markets. The regulation issued in March 2017 prohibits the production, import and circulation of black plastic bags, except for those used to collect waste and agricultural seedlings. It also prohibits the import, production and circulation of non-biodegradable plastic shopping bags.

According to the system, heavy weight bags must add 5% of a material that makes them biodegradable out of their total raw materials, indicating that the ban on black bags came because they contain 75% of recycled materials, and they are not considered 100% clean. One of the challenges for implementing this system is that the process of decomposition of these bags reaches 18 months, in addition to the period of time required to examine the presence of degradable material in these products that may reach two weeks. To this end, a system of special standards has been established for inspection and control of facilities and agencies that produce and use plastic bags as violators of the provisions of the system are punished, according to the Ministry's laws, specifications and standards.

In 2019, the Ministry of Environment conducted a review of the mechanism used by its Inspection Directorate, whose provisions stipulated that “after the environmental inspector inspects the aforementioned items, several measures are taken, including addressing the facility to correct its situation in the event of a violation, and after the correction period expires, it is confirmed that violations were removed.

And in the event that the owner of the facility does not comply with removing the violations, information is submitted to the Public Prosecutor who will take the necessary legal action against them, but if they do not commit to transferring the seized quantity to the Environmental Protection Directorate of the Capital Governorate, then it will be confiscated”.

According to the ministry's statistics, Jordan consumes three billion bags annually, or an average of 500 bags per person. They are manufactured in more than 400 factories, of which 200 are legally licensed.

There is an environmental protection law for producers who own local factories and production lines to manufacture this product, own the trademark of the factory, modify the imported product, or contract a local or foreign factory to manufacture goods that they put their trademark on. As well as for importers of a trademark or the person who imports goods from abroad, and may or may not bear a trademark, also, distributors in the distribution chain who do not perform any manufacturing or modification of the product such as retailers or wholesalers. Consumers

who are the end users of plastic shopping bags may be a person or an entity whose logo the bags bear, including plastic shopping bags in major shopping centers.

The law defines decomposition of plastic bags as a change in their initial properties caused by a chemical break of molecular chains that make up plastic shopping bags, and plastic shopping bags as bags made of polyolefin, mainly for use as a packaging material and manufactured in the form of foil or in the form of plastic fabric of the same thickness that may or may not be printed. Biodegradable plastic shopping bags are defined as bags made mainly of polyolefin, intended for use as a packaging material, manufactured in the form of foil or in the form of plastic fabric with a handle, which may be printed or unprinted, and to which a substance is added that makes them degradable due to the presence of oxygen, water, heat, light, or due to the activity of cells at the same time or consecutively, and their validity period for use does not exceed (18) months from the date of production. The shelf life of biodegradable bags is defined as the time required to convert (60%) of the weight of the organic carbon that makes up the plastic into carbon dioxide. An additive is defined as a catalyst added to polyolefins to obtain controlled decomposition rates, when its addition leads to accelerating the rates of chemical conversion of carbon chains into carbon dioxide and others, in the presence of weathering factors such as light, heat, and/or humidity in order to reduce the presence of these plastic products in the environment. Accredited laboratories are laboratories that are equipped to conduct mandatory laboratory tests and that have obtained an accreditation certificate from a recognized accreditation body approved by the Ministry based on the International Standard Specification (ISO 17025) and its amendments.

The Ministry of Environment started a raising awareness campaign called “Don't throw it away”.

As a commitment from the Ministry of Environment to provide everything that is useful and contributes to raising and building awareness of waste generators from the commercial and industrial sectors about recycling practices, and its direct and indirect benefits, and to cover the lack of information available in the market about recycling.

In addition to the Ministry of Environment, the Greater Amman Municipality, and the recycling project in Jordan funded by the United States Agency for International Development (USAID), the Jordanian Businessmen Association, the Private Hospitals Association, the Amman Chamber of Industry, the Business and Professional Women Club Association, and the Jordanian Environment Association are participating in the implementation of the media campaign as well as the Jordan Hotels Association, the Tourist Restaurants Association, the Jordan Industrial Estates Company, the American Chamber of Commerce in Amman, and the Edamah Association.

The government seeks to increase from 7% to 30% the share of recycled waste in order to preserve the environment during the next ten years through several projects including a project jointly launched by Nestlé, Diageo, and the United Nations Human Settlements Organization (UN-Habitat) and organized by Development Inc. as mentioned before in this report.

The launch of the project was announced during a press conference held in October 2022 in Amman.

10.2 What policy and legal frameworks are in place to control the health impacts of plastics, in particular on chemical ingredients in plastics?

Jordan has implemented various policy and legal frameworks to control the health impacts of plastics, including the use of chemical ingredients in plastics. Some of these frameworks are:

The National Environmental Strategy: The National Environmental Strategy of Jordan aims to reduce the use of plastic bags and other single-use plastic products to mitigate the negative impacts on human health and the environment.

The Law on Environmental Protection: The Law on Environmental Protection regulates the use of hazardous materials, including chemical ingredients in plastics, and requires businesses to take measures to prevent pollution and protect public health.

Jordanian Standard for Plastics: The Jordanian Standards Institution set a standard for plastics used in food contact materials to ensure that they do not contain harmful chemicals that can leach into food and harm human health.

Basel Convention: Jordan is a party to the Basel Convention, an international treaty that regulates the transboundary movement of hazardous waste, including plastic waste. The convention aims to minimize the generation of hazardous waste and ensure that it is safely managed and disposed.

Extended Producer Responsibility (EPR): Jordan has introduced EPR policies for certain types of plastic products, such as beverage containers, which require producers to take responsibility for the disposal of their products and to reduce the environmental and health impacts associated with their production and disposal.

Overall, these policy and legal frameworks aim to control the health impacts of plastics, including chemical ingredients in plastics, and ensure that they are managed and disposed of in a safe and environmentally sound manner.

10.3 What is your government's policy on chemicals in plastics?

Jordan has implemented various policies to control the use of chemicals in plastics, particularly those that can have negative impacts on human health and the environment. Some of these policies include:

The Jordanian Standard for Plastics: The Jordanian Standards Institution established a standard for plastics used in food contact materials to ensure that they do not contain harmful chemicals that can leach into food and harm human health.

Regulations on hazardous substances: The Jordanian government issued regulations to limit the use of hazardous substances in various products, including plastics. For example, the Jordanian Ministry of Environment has issued regulations on the use of polybrominated diphenyl ethers (PBDEs) in electrical and electronic equipment.

Extended Producer Responsibility (EPR): Jordan has introduced EPR policies for certain types of plastic products, such as beverage containers, which require producers to take responsibility for the disposal of their products and reduce the environmental and health impacts associated with their production and disposal.

The National Environmental Strategy: The National Environmental Strategy of Jordan aims to reduce the use of plastic bags and other single-use plastic products to mitigate the negative impacts on human health and the environment.

Overall, Jordan's policies on chemicals in plastics aim to protect human health and the environment by controlling the use of hazardous substances in plastics and promoting safe disposal and management of plastic waste.

10.4 Are there restrictions (e.g. bans, limit values) on the use of any chemicals in plastics?

Yes, Jordan does have regulations in place to restrict the use of certain chemicals in plastics. The Jordan Institution for Standards and Metrology (JISM) and MOE are responsible for setting and enforcing these regulations.

One example of a chemical that is restricted in plastics in Jordan is bisphenol A (BPA), which is commonly used in the production of polycarbonate plastics and epoxy resins. In 2018, JISM issued a regulation banning the use of BPA in the production of baby bottles and sippy cups.

JISM has also established limits on the migration of certain chemicals from plastics into food and beverages. For example, the maximum allowable migration limit for lead from plastics into food is 0.05 milligrams per kilogram, and the limit for cadmium is 0.01 milligrams per kilogram.

Additionally, JISM implemented regulations that require manufacturers to provide information on the types and amounts of chemicals used in the production of plastics, and to label products accordingly. This is intended to help consumers make informed choices about the safety and potential health risks associated with different types of plastics.

In May 2019, Jordan updated its Stockholm Convention National Implementation Plan with a focus on the nine new POPs added to the treaty in 2009, including PFOS.

The updated Plan notes that PFOS has been banned under three relevant laws:

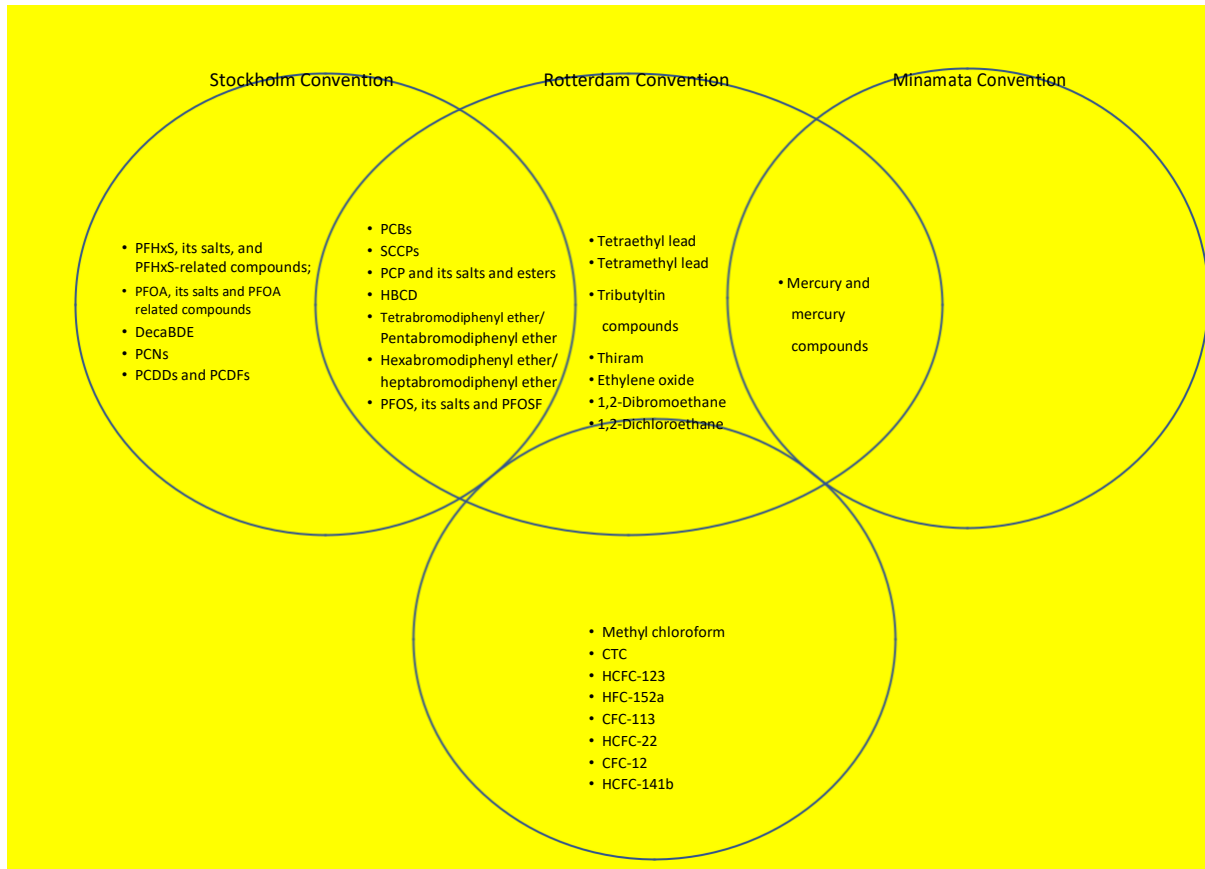
- Environmental law 52/2006 in article 6, which regulates importing and exporting of hazardous wastes.
- Import, export and management of hazardous substances is banned by the bylaws no. 24, 2005, articles 7 and 8.
- Amended Import Instruction no. 1, 2012 by Ministry of Industry and Commerce allows for the import of used computers not more than three years old.

The MOE also launched a comprehensive PCBs management system project.

The project “Phase I of a Comprehensive Poly Chlorinated Biphenyls (PCBs) Management System in the Hashemite Kingdom of Jordan” is aligned with the National Implementation Plan (NIP) for the Government of Jordan as a commitment to the Stockholm Convention on Persistent Organic Pollutants (POPs). The project is implemented in coordination with the Global Environment Facility (GEF) and the United Nations Development Program (UNDP), and the Ministry of Environment (MoE) is the implementing agency, in cooperation with other public and private institutions from Jordan.

Jordan is in a position to ban and restrict the use of chemicals listed in the Stockholm Convention annexes. Unfortunately, Jordan has no data on the volume and quantities either imported or used in the country. As far as the export of these chemicals, Jordan does not export any of them.

10.5 Does it plan to?



Montreal Protocol

Fig above: Chemicals of relevance for plastics listed by the Stockholm, Rotterdam and Minamata Conventions and the Montreal Protocol

Usually, Jordan would ban eventually on national level what is banned under the BRS Conventions.

11. Plastics Recycling

11.1 Does the country have laws on recycling plastics?

Yes, Jordan has laws and regulations related to recycling plastics. In 2006, the Jordanian government passed the Environmental Protection Law, which includes provisions related to waste management and recycling.

Under this law, the Ministry of Environment is responsible for developing and implementing policies and regulations related to waste management, including the management of plastic waste. In 2015, the Ministry of Environment issued a regulation on the management of solid waste, which includes provisions related to recycling and the collection and disposal of plastic waste.

The regulation requires waste generators to sort their waste into different categories, including plastics, and mandates the establishment of collection and recycling facilities to handle plastic waste. It also sets targets for the reduction of waste generation and the increase of recycling rates.

The government took some steps and initiatives to sort solid waste, including plastic. The government aims to develop a system for sorting, re-using, and recycling to reduce the percentage of SW that is disposed in landfills from 80% to 60% by 2025, as well as to increase the percentage of treated and re-used SW from 20% to 40% by 2025, according to Jordan's Green Growth National Action Plan 2021-2025.

The Secretary General of the Ministry of Environment, Muhammad al-Khashashneh, indicated that until 2034, the Ministry seeks to reduce the number of waste dumps from 20 to 8, in compliance with the National Strategy for Waste Management.

According to the same strategy, 65% of municipal solid waste must be recycled. Mr. Al-Khashashneh explained that the principle of prevention aims to avoid and reduce the production of waste, adding that producers and importers of harmful materials, according to the principle of extended producer responsibility, bear their effects and are responsible for their final disposal.

Jordan discussed the definition of circular economy in Jordan's Fourth National Green Growth Action Plan for the Waste Sector 2021, quoting: "A primary objective of green growth is achieving economic efficiency by internalizing externalities associated with economic growth; this is directly reliant on achieving resource use efficiency. Improving efficiency entails two elements: (1) producing the same economic output with fewer environmental inputs and lower levels of pollution, and (2) reducing the levels of pollution associated with, or embedded, in consumption. The concept of resource efficiency is closely linked to the concepts of circular economy and Sustainable Consumption and Production (SCP). SCP has evolved as a new concept defined as "the use of services and related products which respond to basic needs and bring a better quality of life, while minimizing the use of natural resources and toxic materials, as well as the production of waste and emission of pollutants over the life cycle, so as not to jeopardize the needs of future

generations.” Such a definition calls both for consuming less and consuming differently, suggesting that consumers should choose products that generate the least amount of waste when consumed, or which incorporate less material use in their production. This will inevitably lead to a reduction in waste generation rates, which has knock-on environmental impacts, and reduces the cost burden of waste management on municipalities. Jordan’s fourth national green growth objective is to achieve resource efficiency. This can be defined as improving the efficiency and reducing the wastefulness of the economy by achieving a higher efficiency in the production and consumption of economic outputs”. NATIONAL STRATEGY AND ACTION PLAN FOR SUSTAINABLE CONSUMPTION AND PRODUCTION IN JORDAN | 2016 – 2025⁸

Key waste sector-related objectives of the targeted scenario by 2025 include:

- Mitigating the negative effects of environmental changes on humans, including safe disposal of solid waste in landfills
- Developing a recycling system and proper hazardous waste management
- Raising public awareness on environmental protection
- Improving institutional efficiency of enterprises operating in the environmental sector

Private sector participation, including in the solid waste management, recycling, and reuse systems, as well as in the hazardous and medical waste system. Study of the waste fees imposed on the commercial sector: a study was launched to review how to calculate waste quantities, estimate the costs and fees of waste services, and study ways to provide material and moral incentives to the commercial and industrial sectors that reduce waste production or reuse it, as well as facilities that separate waste at the source and apply waste recycling activities.

Within the Waste Management Framework Law 2020, a Higher Committee for Waste Management was established under the chairmanship of the Minister of Environment and the Minister of Local Administration as Vice-Chairman, Minister of Planning and International Cooperation, Minister of Water and Irrigation, Minister of Public Works and Housing, Minister of Health, Minister of Agriculture, Minister of Energy and Mineral Resources, Mayor of Amman, Chairman of the Board of Commissioners of the Aqaba Special Economic Zone Authority, Chairman of the Board of Commissioners of the Petra Development and Tourism Region Authority, Director General of the Customs Department, Chairman of the Jordan Chamber of Commerce, Chairman of the Jordan Chamber of Industry, Director of the Royal Department for Environmental Protection/Directorate of Public Security, the President of engineers, a director for the private sector, to be named by the Minister.

The Committee undertakes several tasks, including approving the national plan for waste management in the region and following up on the implementation of waste management plans and strategies.

Following the Waste Management Framework Law, the Ministry is in charge of supervising waste management, providing data, issuing environmental permits, and training staff. While its partners from the above-mentioned entities carry out the waste management process, supervise

and control the collection, transportation, sorting, recycling, treating and investment for waste and its final disposal for some governmental entities.

The Directorate of Public Security undertakes inspections and controls of waste management, and brings perpetrators to court, while the Customs Department monitors waste transported across borders and compliance with international agreements.

11.2 Is there a requirement to separately collect plastic waste? Which types of waste does it cover?

Yes, there is a requirement to separately collect plastic waste in Jordan. The Regulation on the Management of Solid Waste issued by the Ministry of Environment in 2015 requires waste generators to sort their waste into different categories, including plastics. The regulation also mandates the establishment of collection and recycling facilities to handle plastic waste.

The types of plastic waste covered by the regulation include all kinds of plastic materials, such as packaging waste, plastic bottles, and other plastic products. The regulation does not specify which types of plastics should be collected separately, but generally, plastic waste is categorized based on its resin code, which identifies the type of plastic used in the product.

Separate collection of plastic waste is important for effective recycling, because it enables the waste to be sorted and processed more efficiently. When plastic waste is mixed with other types of waste, it can be more difficult and expensive to separate and recycle.

It is worth noting that while there are requirements for separate collection of plastic waste in Jordan, there are still challenges to overcome, including limited infrastructure and resources for recycling, as well as a lack of awareness and participation among the general public.

11.3 Is the recycling of certain plastics prohibited or restricted?

Yes, the recycling of certain plastics is prohibited or restricted in Jordan. The Ministry of Environment regulates the recycling of plastics, and has established guidelines and restrictions on the types of plastics that can be recycled.

One example of a plastic that is prohibited from recycling in Jordan is polyvinyl chloride (PVC), which is a type of plastic that is commonly used in construction materials, pipes, and electrical cables. PVC is difficult to recycle due to the presence of additives that can be harmful to the environment and human health, such as phthalates and heavy metals. As a result, recycling facilities in Jordan are not permitted to accept PVC for recycling.

Another example of a plastic that is restricted in terms of recycling is polystyrene (PS), which is commonly used in packaging materials, disposable cups, and food containers. PS can be recycled, but it is more difficult and expensive to recycle than other types of plastics, and as a result, many recycling facilities in Jordan do not accept PS for recycling.

11.4 Are there laws that require for the content of certain chemicals not to be exceeded in plastics?

Yes, there are laws in Jordan that require certain chemical contents to not be exceeded in plastics. The Jordan Institution for Standards and Metrology (JISM) and MOE are responsible for setting and enforcing regulations related to the chemical contents of plastics.

An example of a chemical that is subject to limits in plastics is bisphenol A (BPA), which is commonly used in the production of polycarbonate plastics and epoxy resins. In 2018, JISM issued a regulation banning the use of BPA in the production of baby bottles and sippy cups.

JISM has also established limits for other chemicals that can migrate from plastics into food, such as cadmium, mercury, and phthalates. These limits are intended to protect public health and ensure the safety of food that comes into contact with plastic packaging or containers.

11.5 Are there laws on occupational exposure related to plastics?

Yes, there are laws in Jordan on occupational exposure related to plastics. The country has regulations that aim to protect workers from exposure to hazardous chemicals and materials, including those used in the production of plastics.

The Jordanian Labor Law No. (8) of 1996 and its amendments require employers to provide a safe working environment for their employees. This includes ensuring that workers are not exposed to hazardous materials or chemicals, including those used in the production of plastics. Employers are required to provide appropriate safety equipment and training to workers to minimize the risk of exposure to hazardous chemicals.

In addition, the Jordanian Occupational Health and Safety Regulation No. 51 of 1998 and its amendments specifically address occupational exposure to hazardous chemicals. The regulation requires employers to identify the hazardous chemicals used in the workplace, assess the risks associated with exposure to these chemicals, and implement measures to control and minimize the risks.

Furthermore, the Jordanian Ministry of Health has established regulations to control exposure to hazardous substances in the workplace. These regulations require employers to conduct regular monitoring of the workplace environment to assess the levels of exposure to hazardous substances, including those used in the production of plastics. Employers are also required to provide appropriate personal protective equipment and training to workers.

Overall, Jordan has a range of regulations in place to protect workers from occupational exposure related to plastics and other hazardous substances. These regulations aim to ensure a safe and healthy working environment for employees in the country.

However, there are hundreds of unlicensed plastic factories and recycling workshops with no minimum safety measures that expose workers and their surroundings to hazardous chemicals.

11.6 Does your government have policies that allow tracking information on the chemicals used as plastics ingredients? If not, does it plan to?

Jordan has regulations that require companies to provide information about the chemicals used in plastic ingredients. The country has a number of laws and regulations in place to regulate the use of chemicals in various products, including plastics.

The Jordanian Standards and Metrology Organization (JSMO) is responsible for setting standards for the quality and safety of products, including plastics. The JSMO has established a set of standards for plastic products, including requirements for the use of certain chemicals in the manufacturing process. The JSMO also has regulations in place that require companies to provide information about the chemicals used in their products, including plastics.

In addition, the Ministry of Environment has established regulations that require companies to report on the use of certain chemicals in their products, including plastics. This includes requirements for companies to provide information about the quantities of chemicals used, as well as information about the health and environmental risks associated with these chemicals.

Overall, Jordan has a range of regulations to ensure that companies provide information about chemicals used in plastic ingredients. While there may be room for improvement in these regulations, the country does appear to be taking steps to address the issue of chemical tracking in plastics.

11.7 Is your country a party to the Basel, Stockholm, and Rotterdam Conventions?

Yes, Jordan is a party to the Basel Convention, Stockholm Convention, and Rotterdam Convention.

The Basel Convention is an international treaty aimed at reducing the transboundary movements of hazardous wastes and controlling their disposal. Jordan ratified the Basel Convention in 1995 and has since implemented a number of measures to regulate the movement of hazardous waste.

The Stockholm Convention is an international treaty that aims to protect human health and the environment from persistent organic pollutants (POPs). Jordan ratified the Stockholm Convention in 2003 and has implemented measures to control and reduce the use and release of POPs in the country.

The Rotterdam Convention is an international treaty that aims to promote shared responsibility and cooperative efforts among countries in the trade of hazardous chemicals. Jordan ratified the Rotterdam Convention in 2004 and has since implemented measures to regulate the import and export of hazardous chemicals.

Overall, Jordan is committed to implementing measures to protect human health and the environment from hazardous wastes and chemicals. The country's ratification of these conventions demonstrates its commitment to addressing global environmental challenges and working towards sustainable development.

11.8 Did your country take actions to phase out chemicals under the Stockholm Convention and the Basel related legislation?

Yes, Jordan has taken actions to implement the phase-out of chemicals listed in the Stockholm Convention and related legislation under the Basel Convention.

Under the Stockholm Convention, Jordan has developed a National Implementation Plan (NIP) to address the use and disposal of persistent organic pollutants (POPs). The NIP outlines measures to control and reduce the production, use, and release of POPs in the country. Jordan has also developed a regulatory framework to control the import and export of POPs, including listing prohibited POPs under the Basel Convention.

In addition, Jordan has implemented regulations to control the use and disposal of hazardous chemicals, including those listed under the Basel Convention. The country's regulations require companies to identify and report the use of hazardous chemicals, implement measures to control and minimize the risks associated with these chemicals, and properly dispose of hazardous wastes.

Jordan has also established a number of institutions and programs to support the implementation of these regulations, including the Ministry of Environment and the Jordanian Standards and Metrology Organization.

PFOS was banned as a result of the Stockholm Convention listing. PFOS has been banned under three relevant laws:

- Environmental law 52/2006 in article 6, which regulates importing and exporting hazardous wastes.
- Import, export and management of hazardous substances is banned by Bylaws no. 24, 2005, articles 7 and 8.
- Amended Import Instruction no. 1, 2012 by Ministry of Industry and Commerce allows for the import of used computers not more than three years old.

Jordan has conducted a preliminary inventory on uses of PFOS due to its listing in the Stockholm Convention. In May 2019, Jordan updated its Stockholm Convention National Implementation Plan with a focus on the nine new POPs added to the treaty in 2009, including PFOS. The updated Plan notes that PFOS was banned under three relevant laws. The Plan describes a preliminary

inventory of PFOS, which noted the following findings: There is a high likelihood that PFOS-containing firefighting foams are present including AFFF, ALCOSEAL, high expansion foam, and fluoroprotein foams. Principal potential users include the Civil Defense Directorate, Jordan Petroleum Refining Company, and electrical generation companies such as the AL Hussein thermal station. Only the Civil Defense Directorate responded to the inventory request sending information on PFOS-containing firefighting foams.

Jordan permits the production, import and use of perfluorooctanoic acid (PFOA) (CAS No. 335-67-1), PFOA salts (CAS no 3825-26-1) and PFOA-related compounds (CAS no 27905-45-9). Therefore, these products and other PFAS substances are not banned or restricted (production, import and use) by the Ministry of Environment according to Regulation No. 24/2005 “Management, Transportation, and Handling of Harmful and Hazardous Substances” nor prohibited or restricted according to Public Health Law No. 47/2008.

The Ministry of Environment in Jordan launched a project in collaboration with UNDP and GEF “Reduction and Elimination of POPs” for the sake of human health and environment protection. The project implementation period is five years starting with 2018 and it should be completed in 2024. Through the implementation of a highly sustainable and replicable approach for the integrated and sound management of e-waste, hazardous waste, healthcare waste and municipal solid waste, including plastic, the project will achieve the avoidance of **unintended POP and POP-PBDE emissions PBDEs and carbon dioxide**, and at the same time, 89 contribute to the development of waste program components based on three principles (reduce, reuse and recycle). The project has three main components. One of them aims at developing a waste conversion/resource recovery capacity in order to reduce emissions of persistent organic pollutants. This step should be accompanied by improvements related to greenhouse gases, with the aim of demonstrating a reduction in the amount of municipal waste (containing potentially **hazardous items such as plastics**, etc.) disposed of incorrectly due to recycling techniques and application of waste-derived fuel (RDF) principles by modern qualified cement kilns, including improved management of hazardous waste through public-private partnerships.

12. Extended producer responsibility and other economic instruments

12.1 Does the country have a policy for making plastic waste generators responsible for waste? Is there a plan to do so?

Yes, Jordan has policies in place that make plastic waste generators responsible for the waste they produce. The country has implemented a number of measures to promote the responsible management of plastic waste, including regulations that require waste generators to take responsibility for the waste they produce.

The Jordanian Ministry of Environment has issued regulations that require waste generators to separate their waste into different categories, including plastic waste. Waste generators are required to properly dispose of their waste and ensure that it is not disposed of in a way that harms the environment or public health.

In addition, Jordan has implemented a waste management strategy that emphasizes the importance of waste reduction and recycling. The strategy aims to reduce the amount of waste generated in the country and promote the responsible management of waste, including plastic waste.

Furthermore, Jordan has launched a number of programs and initiatives to encourage waste reduction and recycling, including public awareness campaigns, recycling incentives, and the development of the recycling infrastructure.

The government launched an institutional format for waste collectors with the aim of giving a formal and organizational status to the informal sector. Training programs have been launched to train waste pickers on best recycling practices, in addition to basic business and personal skills, in preparation for their formal and institutional integration within the recycling value chain, and issuance of instructions.

Study of the waste fees imposed on the commercial sector: a study was launched to review how to calculate waste quantities, estimate the costs and fees of waste services, and study ways to provide material and moral incentives to the commercial and industrial sector that reduces waste production or reuse it, as well as facilities that separate waste at the source and apply waste recycling activities.

The government took some steps and initiatives to sort solid waste including plastic. The government aims to develop a system for sorting, re-using, and recycling to reduce the percentage of SW that is disposed of in landfills from 80% to 60% by 2025, as well as increasing the percentage of treated and re-used SW from 20% to 40% by 2025 according to Jordan Green Growth National Action Plan 2021-2025.

According to the same strategy, 65% of municipal solid waste must be recycled. Mr. Al-Khashashneh explains that the principle of prevention aims at avoiding and reducing the production of waste, adding that producers and importers of harmful materials, according to the principle of extended responsibility, bear their effects and are responsible for final disposal.

The efficiency of the collection and treatment of waste is evaluated on annual basis by a specialized authority. After the evaluation, recommendations for necessary measures are made, if needed. This procedure aims to improve the performance of the waste collecting system.

12.2 Is there a general tax on virgin plastics? Are there plans to set up one?

Until September 2021, there was no general tax on virgin plastics in Jordan. However, the government has been considering implementing a tax on plastic bags as part of its efforts to reduce plastic waste.

In January 2020, the Jordanian Ministry of Environment proposed a draft law to regulate the use of plastic bags, which included a tax on plastic bags. Under the proposed law, retailers would be

required to charge customers for single-use plastic bags, with the revenue generated from the tax going towards waste management and environmental protection programs.

While the proposed law did not specifically include a tax on virgin plastics, it was seen as a step towards reducing the use of plastic in the country and promoting more sustainable practices. However, I am not aware of any specific plans to implement a general tax on virgin plastics in Jordan at this time.

It is worth noting that several other countries have implemented taxes or fees on plastic products, including virgin plastics, as part of their effort to reduce plastic waste and promote more sustainable practices.



Until 2014, the Ministry of Environment provided permits for importing recycled **plastic granules made from virgin industrial waste** under the responsibility of the Directorate of Waste and Hazardous Materials Management in the Ministry of Environment

- Environmental Protection Law No. (6) of 2017
- Ministry of Environment Letter No. 2/4/6105 dated 10/25/2007

Recycled plastic granules are forbidden now under the law, except those recycled from virgin industrial waste under specific conditions accompanied by an official letter from the concerned authority or a summons from the service applicant, including a pledge not to use these granules in the manufacturing and packaging of food and drug packages, the manufacturing of water bottles, and toys for children. These granules were tested by accredited laboratories in the Kingdom, namely for:

- The type of plastics from which these granules were made
- The share of heavy metals in the recycled granules imported from abroad within the permissible limits
- Free from any radioactive or chemical contaminants
- An original certificate of origin stating that these imported plastic granules were made from virgin materials and duly certified upon import
- Or an independent certificate of origin from the factory stating that these granules imported for the benefit of the company, factory, or local entity were made from virgin materials and not recycled or manufactured, provided that it includes the number and date of the invoice under which the goods were imported.

At present, there is a general tax on virgin plastic in Jordan which is 16%.

12.3 Is there a tax for placing plastic or plastic containing products on the market (including electronics, plastics bags, deposit return schemes)? Are there plans to set up one?

Until September 2021, there was no specific tax in Jordan for placing plastic or plastic-containing products on the market, including electronics, plastic bags, and deposit return schemes. However, the government has been considering various measures to reduce the environmental impact of plastic waste, including the possibility of introducing taxes or fees on certain plastic products.

In January 2020, the Jordanian Ministry of Environment proposed a draft law to regulate the use of plastic bags, which included a tax. Under the proposed law, retailers would be required to charge customers for single-use plastic bags, with the revenue generated from the tax going towards waste management and environmental protection programs.

In addition to the proposed tax on plastic bags, the government has also been exploring the possibility of implementing a deposit return scheme for plastic bottles to encourage recycling and reduce plastic waste.

While there are no specific plans to set up a tax on plastic or plastic-containing products at this time, the government's efforts to regulate plastic use and reduce plastic waste may lead to the introduction of such measures in the future.

The reality is that you can find thin black plastic bags and plastic products in almost every single market in Jordan. There are no fees or taxes forced on owners of the shops.

During a meeting held in 2017 at the Jordan Chamber of Industry with the President of the Jordan and Amman Chambers of Industry, Eng. Fathi Al-Jaghbir, and workers from the plastic industries, it was mentioned that plastic shopping bags must conform to Jordanian specifications and standards, and to the provisions of the regulation of biodegradable plastic shopping bags No. 45 from 2017 and its amendments.

The Ex-Minister of Environment, Saleh Al-Kharabsheh, said that the inspection teams of the Ministry of Environment intensified their visits to wholesale markets and factories to seize and confiscate plastic shopping bags that violate the above-mentioned system, stressing that the Ministry was working to promote positive environmental practices through awareness and education, and facilitate procedures related to granting licenses to control related activities.

He explained that, in line with the Ministry's directives to design a national project for recycling (circular economy) to reduce waste production and reuse, plastic factories will be allowed to use crushers within applicable requirements, and the relevant authorities will be addressed to exempt workers who collect plastic waste from sales tax to encourage investment in recycling. Waste collecting sector generates jobs to many people and contributes as environmental solution.

12.4 Is there an Extended Producers Responsibility system? Are there plans to create one?

There are Instructions for applying the national mechanism for the extended producer responsibility principle to address the negative effects of packaging materials waste for the year 2022 issued under Article (7/C) of the Waste Management Framework Law No. (16) of 2020:

“Article 3: Scope of application.

A- These instructions shall be applied to packaging materials, packed products and finished goods that are sold and consumed on the domestic market and have negative effects on the environment through the accumulation of their waste.

B- These instructions shall be applied by the producers and importers of packed goods, which generate plastic waste; as well as service packaging materials that are sold and provided directly to consumers in restaurants and shops that provide and sell foodstuffs.

C- The requirements mentioned in these instructions should be taken into consideration during the life cycle of the product or the material.

Jordan included the definition of circular economy in its Fourth National Green Growth Action Plan for the Waste Sector 2021: “A primary objective of green growth is achieving economic efficiency by internalizing externalities associated with economic growth; this is directly reliant on achieving resource use efficiency. Improving efficiency entails two elements: (1) producing the same economic output with fewer environmental inputs and lower levels of pollution, and (2) reducing the levels of pollution associated with, or embedded, in consumption. The concept of resource efficiency is closely linked to the concepts of circular economy and Sustainable Consumption and Production (SCP). SCP has evolved as a new concept defined as “the use of services and related products which respond to basic needs and bring a better quality of life, while minimizing the use of natural resources and toxic materials, as well as the production of waste and emission of pollutants over the life cycle, so as not to jeopardize the needs of future generations.” Such a definition calls both for consuming less and also consuming differently, *suggesting that consumers should choose products that generate the least amount of waste when consumed, or which incorporate less material use in their production*. This will inevitably lead to a reduction in waste generation rates, which has knock-on environmental impacts, and reduces the cost burden of waste management on municipalities. The Jordan’s fourth national green growth objective is to achieve resource efficiency. This can be defined as improving the efficiency and reducing the wastefulness of the economy by achieving a higher efficiency in the production and consumption of economic outputs”.¹¹

13 Any other issue on plastics laws and policies

Breast milk contaminated with PFAS substances

A 2015 study found significant levels of PFOS and PFOA in both breast milk and fresh cow milk. Overall, PFOA levels in Jordanian breast milk averaged 144 ppt – seven times higher than the drinking water health advisory limit of 20 ppt for PFOA, PFOS, PFHxS, PFHpA and PFNA combined in the US State of Vermont. The highest level of PFOA exposure in Jordanian breast milk was more than 60 times higher than this drinking water health advisory limit and the highest PFOS level

was nine times greater than this standard. The highest levels of PFOS and PFOA in cow milk were and 1.45 and 8 times higher than this limit.¹⁴

Human exposure to PFAS is mainly due to ingestion of contaminated food or water. These substances bind to proteins (not fats) and persist in the body where they are mainly detected in blood, liver and kidneys. Studies indicate that PFOA and PFOS can cause reproductive and developmental, liver and kidney, and immunological effects in laboratory animals. Both chemicals cause tumors in animal studies along with a variety of other effects on infant birth weight, growth, learning, infant behavior, pregnancy, endocrine system, increased cholesterol, and thyroid function. Recent studies have linked a variety of PFAS substances to many human health effects: cardiovascular disease, markers of asthma, damage to semen quality, ovarian insufficiency, altered glucose metabolism, lower testosterone levels in male adolescents, association with shorter birth length in girls, elevated blood pressure, abnormal menstruation, lower birth weight in infants, possible increased risk of female infertility due to endometriosis, and decreased lung function in children with asthma.

Owners of plastic packaging factories demanded protection for the plastic packaging industry, which faces unfair competition from imported products. During a tour organized by the Amman Chamber of Industry for journalists in 2017 to learn about the challenges facing the plastic packaging industry, factory owners said, that this industry suffers from a dumping policy, which requires government intervention to protect national products from unfair competition.

Majed Qassem, the owner of the White Plastic Factory, the top factory in Jordan and the second in the region, revealed that there is no national law banning the import of recycled plastic material regardless of its quality or chemical safety, while Jordanian plastic factories have to use virgin raw material, which is more expensive than importing recycled plastic products. Therefore, national products are more expensive than the imported plastic products.

In addition, Murad Sweiss, the owner of the Ammon plastic packaging manufacturing factory, stressed the need to protect the plastic packaging industry in Jordan, which is considered one of the first countries in the region in the packaging industry, and to impose customs duties on importers.

Mr. Alaa AbuKhazneh, representative of the plastics sector in Jordan, declared to “Hands” that Jordanian plastic manufactures are not allowed to use recycled plastic materials.

As mentioned before in this report, Jordan is a signatory to the Basel Convention, which regulates the transboundary movement of hazardous waste. However, there have been reports of illegal waste trade in Jordan, including the import of plastic waste from other countries. In 2018, for example, it was reported that Jordan had received 1,500 tons of plastic waste from Italy, which was falsely labeled as "recyclable."

Jordan ratified the SC convention years ago, but when it comes to implementing the decisions and strategies, there are weaknesses in applying the necessary measures to reduce chemical

pollution in plastic products. Government decisions are not binding for manufacturers or suppliers of plastic products to ensure compliance with chemical safety standards.

Brominated flame retardant BFRs limits for children toys controlled by the Jordan Specifications and Standards Institution were last edited in February 2015 and classified as an “optional standard”. Furthermore, a person or an institution has to pay a specified tax to be able to access PFAs regulations, which limits the ability for a proper revision. It can be discouraging for individuals/institutions to access the information.

As long as these chemical safety standards are strict enough, money makers would not comply with or apply safety standards. Those hazardous chemicals enter the market with no obstruction and no price to be paid.

Producing products with no chemicals limitation or controls will lead to further problems, which is hazardous plastic waste that the government is already handling poorly.

- The presence of violating factories and unlicensed laboratories, hidden from the eyes of the government, that produce and distribute recycled plastic granules and plastic products without supervision.

- Jordan's national priorities usually prioritize the economic aspect. Jordan is suffering under current economic conditions. Plastic factories employ a fair number of people, so there is a fear of pressuring owners, increasing costs, or taking any disciplinary action against them in case they violate environmental safety standards. Municipalities are responsible for covering the full costs of waste collection, and sometimes, the cost of disposal in small landfills. Furthermore, in some cases, municipalities also pay for waste separation at transfer stations. These costs can stretch limited financial resources, and distract from considering indirect costs. While collection, separation, transport, storage, and treatment of solid waste is expensive, the environmental costs of waste management can be difficult to assess and vary substantially depending on the specific context. Cost drivers include emissions of harmful greenhouse gases, GHGs (such as methane and carbon dioxide), and pollution from landfill leachate. Most of the initiatives to recycle plastic and collect plastic waste from the lowlands and gardens are local non-profit initiatives from civil organizations and associations.

The lack of technological support for official institutions. The XRF machine to examine BFRs was received in December 2022, and it tests plastic waste, not the initial products, which indicates that Customs Department did not subject plastic imports to any type of preliminary POPs inspection and since the specifications are not obligatory, importers are not encouraged to test the products in specialized laboratories due to extremely high costs. The linkage between environmental scientific research topics and national priorities still needs to be strengthened, and institutionalized mechanisms must be found to employ research results in the service of decision-makers and policies related to the sector. Scientific research and studies are usually

unwelcomed by officials and generate blowback for the responsible scientist or institution, instead of adopting latest achievements and working with researchers and academics to bridge gaps and improve legislation. This reaction also constitutes an obstacle for researchers and environmental activists to expand the scope of scientific research, fearing negative consequences.

- There is lack of definitions for POPs and toxic chemicals in the regulations, reports and specifications, so that the details of these pollutants or their names are not specifically mentioned. It is extremely hard to find any national report explaining what type of hazardous chemicals they are referring to or regulating.

- Currently, there are a few sorting bins distributed in some commercial and official buildings and residential neighborhoods, which makes it difficult to sort plastic waste at the source.

- There are no effective sorting mechanisms for the chemical safety of plastic waste due to the random collection of solid waste by waste pickers, which end up in recycling stations without actual control. Jordan also lacks recent data on the volume of electronic, electrical and plastic waste generated annually, as there are no accurate data on each type of waste and all are referred to as “solid waste” in light of local warnings on its increase, which requires accelerated and effective solutions for its management and disposal.

There were conflicting official and unofficial annual statistics about the rates of this type of waste. For example, the Ministry of Environment estimates the rate of electronic and electrical waste from the total solid waste (which is estimated at 3 million tons annually) between 30 thousand and 60 thousand tons, but the private sector determined that e-waste ranged from 20% to 30% of the total.

- Recycled solid waste does not exceed 7%, which means that most of it ends up in landfills and unsafe disposal, which causes environmental pollution and, if burned, leads to toxic chemical emissions.

- Overlap and ambiguity of institutional roles and responsibilities between concerned authorities.

- Low availability and reliability of MSWM data and information.

- Limited private sector participation in MSWM activities.

- Insufficient qualified personnel in municipalities and JSCs in many cases.

- No comprehensive single regulation currently in force for MSWM in Jordan.

- A lack of modern, specialized, and comprehensive legislative framework.

- The unreliability and limited availability of data in the WS sector. Lack of adequate policies and regulations for different waste streams.
- Most of the existing awareness programs were/are implemented as short-term campaigns.
- There is a lack of a national umbrella legislation, such as a national strategy for public awareness and public participation, as it is proven that implementing a national awareness program, where all municipalities are participating and collaborating, would lead to more effective results and greater success.
- There is a need for a total ban of the global plastic waste trade, along with enforceable limits on the number of plastics the world makes in the first place.

Without aggressive action to phase down plastic production, the world is on track to produce *a cumulative 26 billion metric tons of plastic waste by 2050*, most of which will be incinerated, dumped, or sent to landfills.

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