



## **Transfer to green in sorting station at Greater Jerash Municipality**



**12.August.2023**



## The purpose of the report.

The purpose of the report is to show the general concept of transferring the station to a green station by reducing energy efficiency and reducing carbon emissions.

## The main topics for transforming the station into a green station.

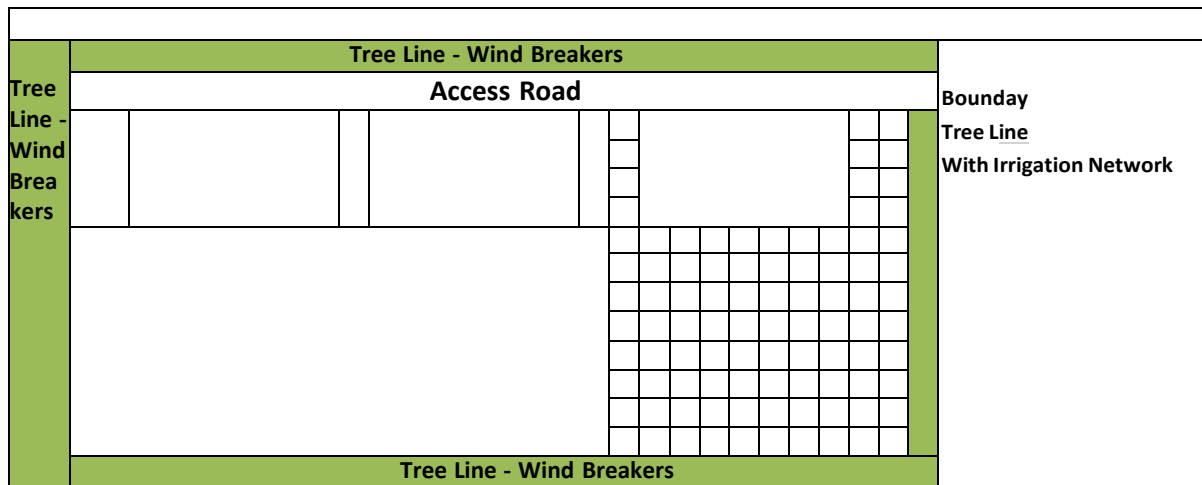
The main Topics that will be focused on reducing carbon emissions and reducing energy efficiency are as follows:

1. Increasing the green area through agriculture.
2. Reduce electricity consumption.
3. Reduce fuel consumption.
4. Increasing the quantities of recyclable materials, which leads to a reduction in carbon emissions (reducing landfilling).

## The details of the topics

### First: Increasing the green area through agriculture.

The aims of this topic are to increase the green atmosphere through agriculture; Therefore, we will aim to plant 50 trees of the Zinzelacht type as suggestion.



### Estimated budget

S#	Description	Area	Unit Price (JD)	Total Price (JD)
1	Plant 50 trees	LS	10	<b>5,000</b>
2	Irrigation Network	LS	1	<b>10,000</b>
<b>Total (JD)</b>				<b>15,000</b>



## Second: reduce electricity consumption.

The electricity monthly invoice around 150 JOD, and all of lighting system is **Not energy saving**.

The table below shows the estimated carbon emissions currently in the station.

Total Consumption	Total	Unit	CO2e emission factor	Emissions (kg CO2e)
Total Electricity consumption for reporting period* (in kWh), including renewable electricity	590	590 kWh	0.2988	176

The estimated budget for build solar energy system.

### The details of solay energy system

The calculations to establish solar system.

Monthly kWh Usage	Typical System Size	# of panels (375W)
600	4.30 kW	12

The estimated budget for establish the system.

S#	Description	Area	Unit Price (JD)	Total Price (JD)
1	Solar energy system 4.3 KW - 3 phases	LS	25,000	<b>25,000</b>
<b>Total (JD)</b>				<b>25,000</b>

The reduce in carbon emissions after established the solay system.

Total Consumption	Total	Unit	CO2e emission factor	Emissions (kg CO2e)
Total Electricity consumption for reporting period* (in kWh), including renewable electricity	270	270 kWh	0.2988	80

**Third reduce fuel consumption for the recyclable collection vehicles.**

The **Jaresh Municipality** has one compactor to collect recyclables materials form the commercial sector within the town. This vehicle consumption per month 1500 JOD than equivalent 2000 litter Disel.

There are two ways to reduce the fuel consumption:

1. Use another electric vehicle.
2. Improve the routes for collection the recyclable materials.



When using the electrical vehicles, the estimated recover **per 60 km is 25 JOD** the type of this vehicles Electric Garbage Trucks tucks that will be charged using the on-site solarPV system that will cover the annual electricity needs for the buildings and the transportation. Sample of these truck are mentioned in (<https://insideevs.com/news/339659/byd-will-deliver-first-electric-garbage-trucks-in-seattle/>)



**Estimated budget for purchase electrical vehicles.**

S#	Description	QTY	Unit Price (JD)	Total Price (JD)
2	Electric 6m3 Compressed garbage truck	1	40,000	40,000
<b>Total (JOD)</b>				<b>40,000</b>

**Improve the fuel consumption through routes system.**

S#	Description	QTY	Unit Price (JD)	Total Price (JD)
1	Make routes for 2 collection cars within two rounds to save 30% of fuel consumption.	1	4000.00	40,000
2	Assessment of collection pathways.	1	1000.00	1000.00
3	Create a new track report.	1	1000.00	1000.00
4	Training drivers on new tracks.	1	1000.00	1000.00
5	Supply of two devices GIS	2	800.00	1600.00
6	Laptop supply.	1	800.00	800.00
<b>Total (JOD)</b>				<b>9400.00</b>

The reduction of fuel consumption

Item	Cost (JOD)
Fuel consumption before application routes	1500
The reduction rate	(450 JOD) 30%
Fuel consumption after application routes	1050



#### Fourth: increasing recyclable materials received by the station.

Increasing quantities for the sorting and recycling station reduces carbon emissions by landfilling.

Item	Estimated cost (JD) - monthly	Notes
Salaries and wages (station staff)	4,300	6 workers, 1 foreman, 1 station manager.
The cost of collecting materials to the recycling station (fuel)	1,500	compactor.
Administrative expenses (maintenance, simple equipment renewed monthly)	100	Maintenance of presses, ropes.
Electricity cost (per month)	132	Municipal bills
Estimated operational cost per month (JD)		6032

The cost of transportation, collection, and landfill per ton to the municipality is 40 JOD, which saves the municipality 240 JOD per day.

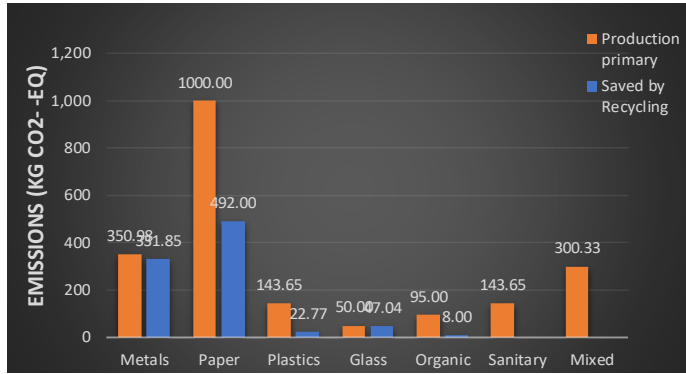
The reduction in carbon emissions when transferring 4 tons to sorting station.

Sorted by Categories of Waste					
<b>Production primary</b>	<b>Metals</b>	<b>Saved by Recycling</b>	<b>Production primary</b>	<b>Glass</b>	<b>Saved by Recycling</b>
160.5	Energy (L of petrol)	124.0	59.1	Energy (L of petrol)	28.9
4,720.0	Water (l)	2775.4	400.0	Water (l)	196.0
350.98	Emissions (kg CO2-eq)	331.85	50.00	Emissions (kg CO2-eq)	47.04
814.0	Landfill Space (l)	797.7	215.1	Landfill Space (l)	210.8
<b>Production primary</b>	<b>Paper</b>	<b>Saved by Recycling</b>	<b>Production primary</b>	<b>Organic (composted)</b>	<b>Saved by Recycling</b>
1,406.3	Energy (L of petrol)	362.8	95.00	Emissions (kg CO2-eq)	8.00
68,000.0	Water (l)	28560.0	2,958.6	Landfill Space (l)	2958.6
1,000.00	Emissions (kg CO2-eq)	492.00			
8,928.6	Landfill Space (l)	5357.1			
14.815	Trees	15.873			
<b>Production primary</b>	<b>Plastics</b>	<b>Saved by Recycling</b>	<b>Production Primary</b>	<b>Sanitary (mostly plastics)</b>	<b>Saved by recycling</b>
256.3	Energy (L of petrol)	63.8	5.1	Energy (L of petrol)	---
6,233.3	Water (l)	3235.8	124.7	Water (l)	---
143.65	Emissions (kg CO2-eq)	22.77	143.65	Emissions (kg CO2-eq)	---
4,545.5	Landfill Space (l)	2500.0	8.8	Landfill Space (l)	---
113.9	Mineral Oil (l)	62.6			
			<b>Production Primary</b>	<b>Mixed</b>	<b>Saved by recycling</b>
			8.7	Energy (L of petrol)	---
			229.8	Water (l)	---
			300.33	Emissions (kg CO2-eq)	---
			15.6	Landfill Space (l)	---

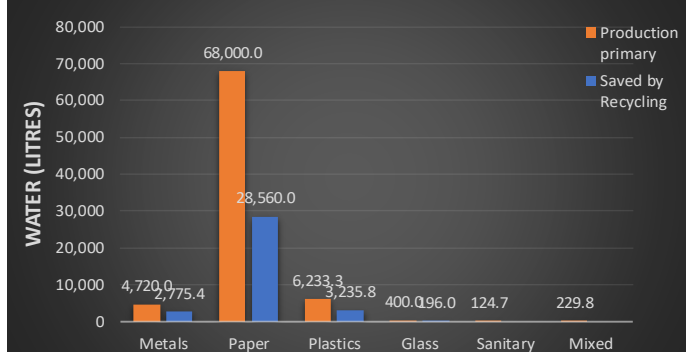


## Sorted by Units of Environmental Impact

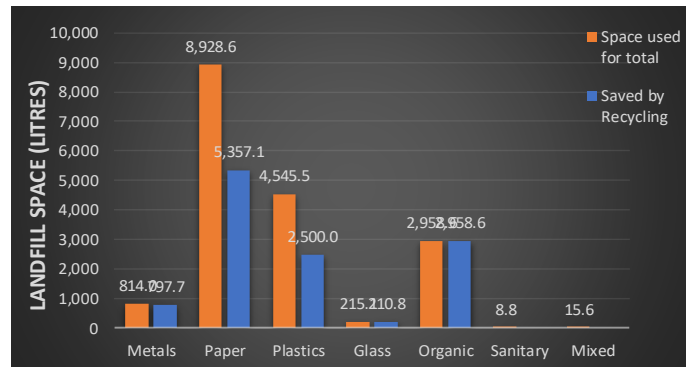
Production primary	Emissions (kg CO <sub>2</sub> -eq)	Saved by Recycling
350.98	Metals	331.85
1000.00	Paper	492.00
143.65	Plastics	22.77
50.00	Glass	47.04
95.00	Organic	8.00
<b>1639.63</b>	<b>Total Recyclable</b>	<b>901.66</b>
143.65	Sanitary	
300.33	Mixed	
<b>443.98</b>	<b>Total Non-Recyclable</b>	
<b>2083.60</b>	<b>Total</b>	<b>901.66</b>



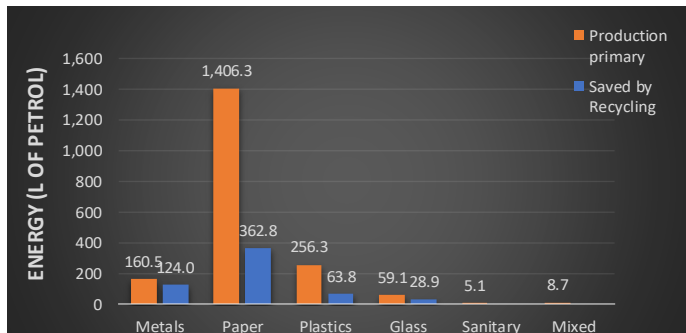
Production primary	Water (L)	Saved by Recycling
4,720.0	Metals	2,775.4
68,000.0	Paper	28,560.0
6,233.3	Plastics	3,235.8
400.0	Glass	196.0
<b>79353.3</b>	<b>Total Recyclable</b>	<b>34767.2</b>
124.7	Sanitary	
229.8	Mixed	
<b>354.5</b>	<b>Total Non-Recyclable</b>	
<b>79,707.8</b>	<b>Total</b>	<b>34,767.2</b>



Space used for	Landfill space (L)	Saved by Recycling
814.0	Metals	797.7
8,928.6	Paper	5,357.1
4,545.5	Plastics	2,500.0
215.1	Glass	210.8
2,958.6	Organic	2,958.6
<b>17461.7</b>	<b>Total Recyclable</b>	<b>11824.2</b>
8.8	Sanitary	
15.6	Mixed	
<b>24.4</b>	<b>Total Non-Recyclable</b>	
<b>17,486.1</b>	<b>Total</b>	<b>11,824.2</b>



Production primary	Energy (eq L of petrol)	Saved by Recycling
160.5	Metals	124.0
1,406.3	Paper	362.8
256.3	Plastics	63.8
59.1	Glass	28.9
<b>1882.0</b>	<b>Total Recyclable</b>	<b>579.5</b>
5.1	Sanitary	
8.7	Mixed	
<b>13.8</b>	<b>Total Non-Recyclable</b>	
<b>1,895.9</b>	<b>Total</b>	<b>579.5</b>





### The total estimated budget

S#	Description	Area	Unit Price (JD)	Total Price (JD)
1	Plant 50 trees	LS	10	<b>5,000</b>
2	Irrigation Network	LS	1	<b>10,000</b>
3	Solar energy system 4.3 KW - 3 phases	LS	25,000	<b>25,000</b>
4	Electric 6m <sup>3</sup> Compressed garbage truck	I	40,000	<b>40,000</b>
5	Improve fuel consumption through routes	I	9400.00	<b>9400.00</b>
6	Implantion recycling plan	I	2000.00	<b>10,000.00</b>
<b>Total (JD)</b>				<b>99,400</b>