DANUBE LOGISTICS

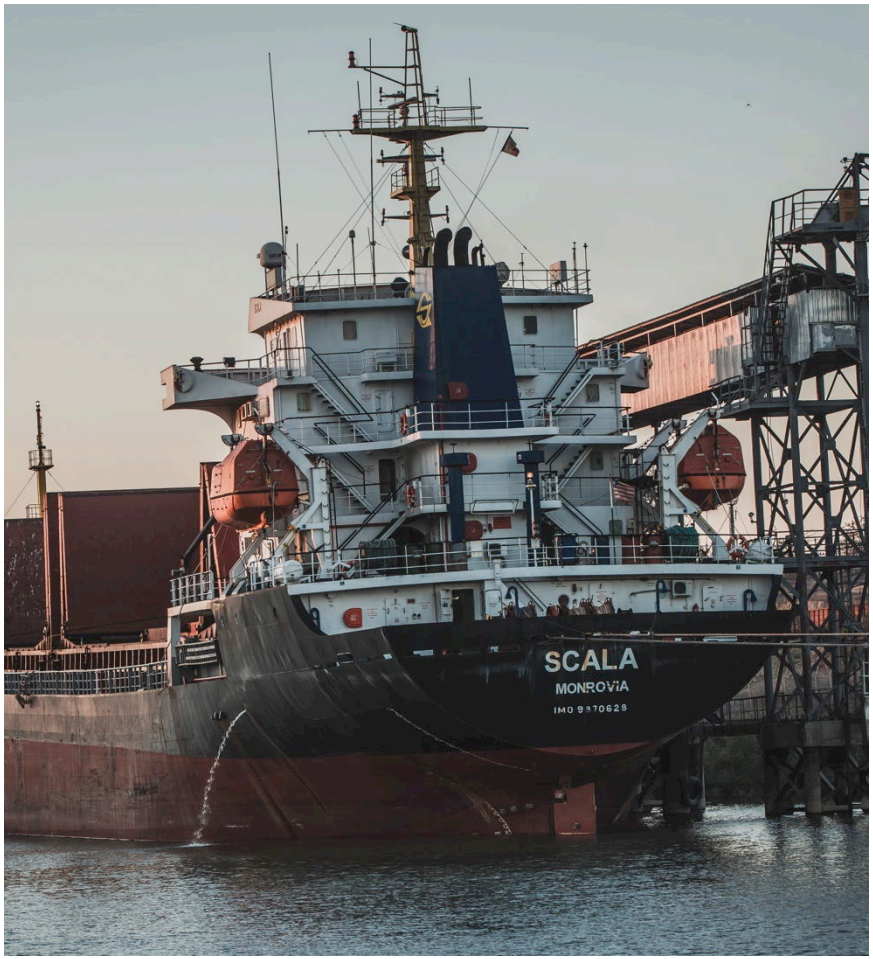
Giurgiulești International Free Port

Carbon footprint reporting 2016 – 2022, Svetlana Stirbu

Danube Commission: Port Expert Meeting
21 March 2023

GIURGIULESTI INTERNATIONAL FREE PORT

OVERVIEW



- Danube Logistics Srl is general investor and operator of GIFP
- Owner: EBRD
- Port with access to Black Sea and Danube river (km 133.8)
- 99 year lease of up to 120 ha
- Business Park
- Free Port Status until 2030
- > 50 residents
  > 550 employees
  > USD 107 m investment

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Carbon Footprint

- The Carbon Footprint is the amount of greenhouse gas emissions released by an organization over a measured period.
- Annual Carbon Footprint Reports 2016-2022
- Greenhouse Gas (GHG) Protocol (ISO 14064)
- Calculation of the Carbon Footprint

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Guidance Document

The Guidance Document *'Carbon Footprinting for ports'* issued by the World Ports Climate Initiative (WPCI).

Direct emissions

- Diesel and gasoline engines (kg CO2/liter)
- Burning of natural gas (kg CO2/m3)

Indirect emissions

- Consumption of electricity imported to the port (kg CO2/kWh)

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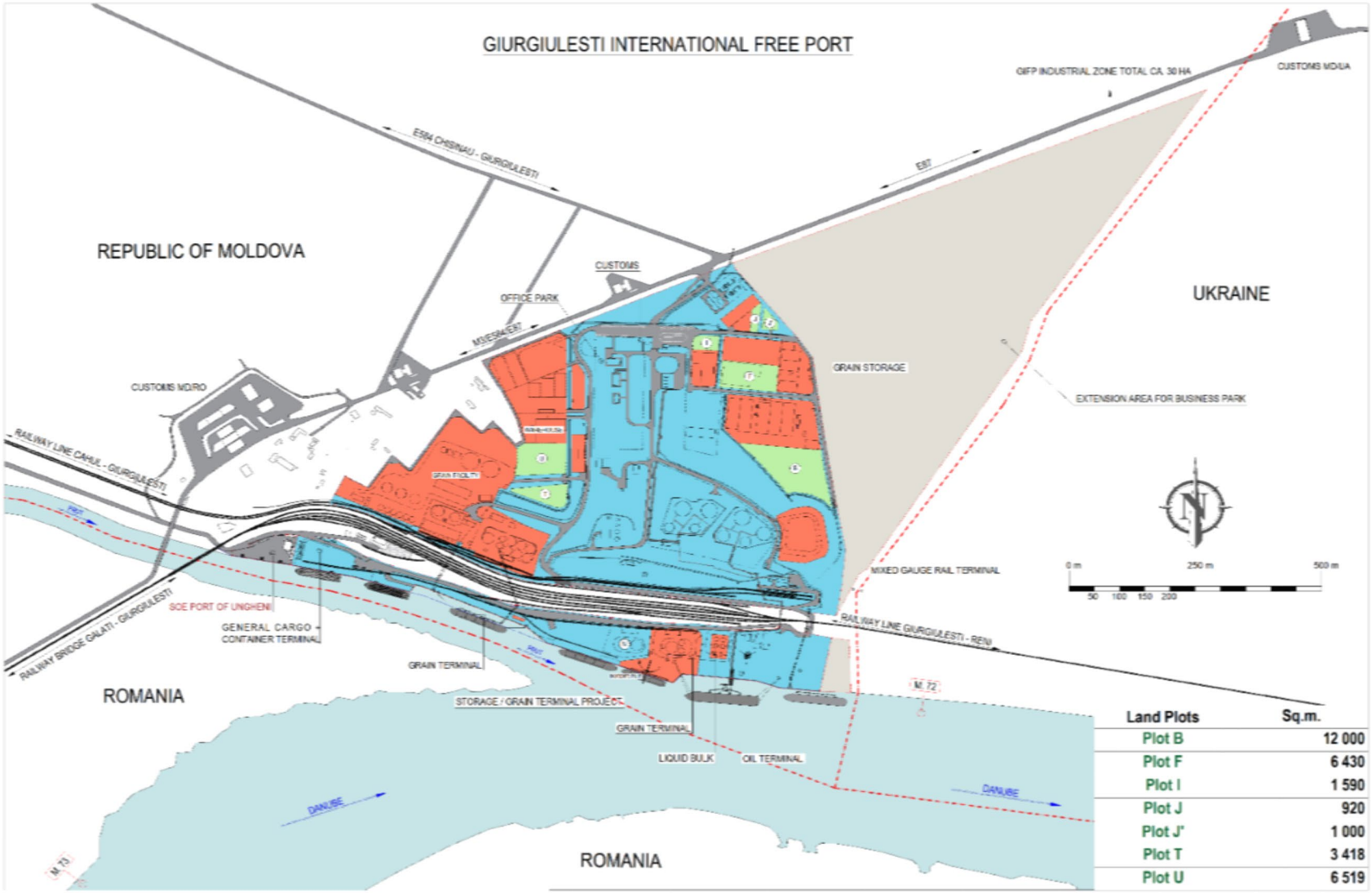
Boundaries of the Carbon Footprint



Land Plots	Sq.m.
Plot B	12 000
Plot F	6 430
Plot I	1 590
Plot J	920
Plot J'	1 000
Plot T	3 418
Plot U	6 519

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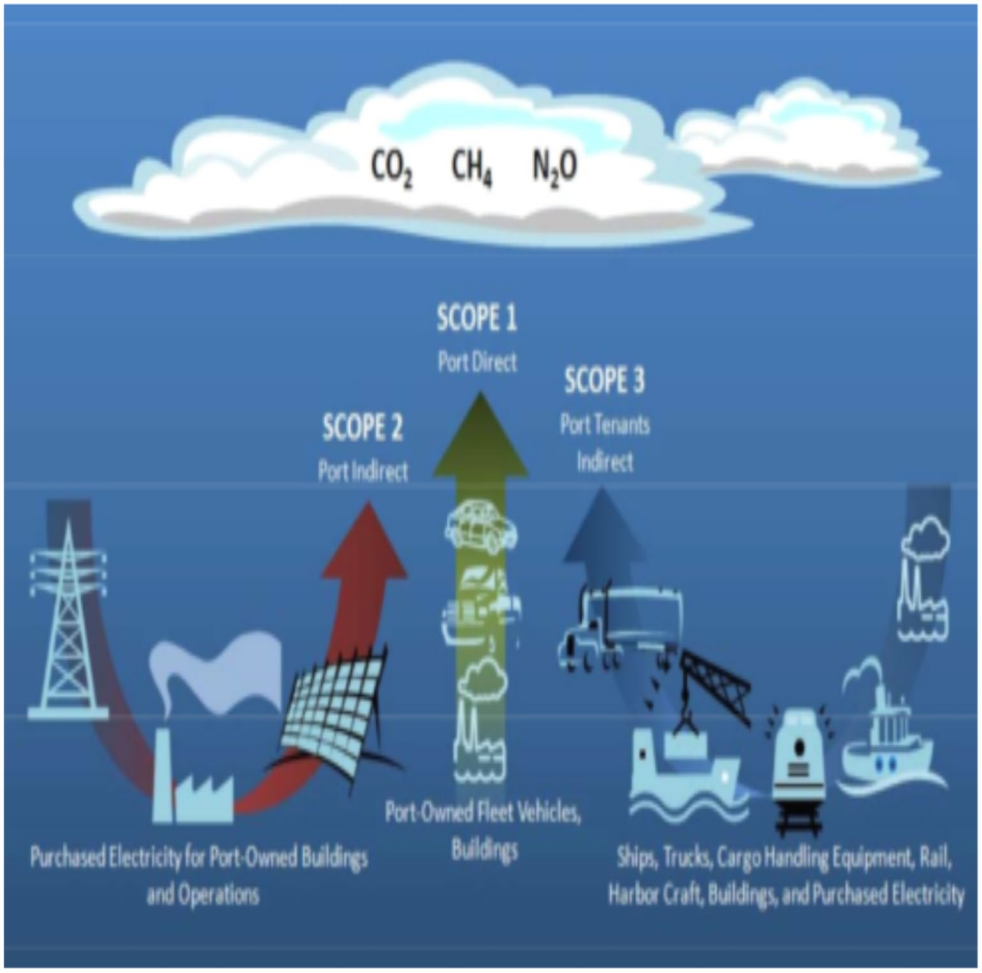
Carbon Footprint Emissions and Scopes



- Identifying the stationary and non-stationary emission sources
- Carbon Dioxide (CO2), Methane (CH4) and Nitrous Oxide (N2O)
- Scope 1: direct emissions (emissions from combustion of fuel or natural gas from operated equipment)
- Scope 2: indirect emissions (emissions from the generation of purchased electricity)
- Scope 3: indirect emissions (not applied) (emissions from sources not owned or controlled by the organization)

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GHG Emission Factors

Item	Emission factors (EF)	Units	Source
EF diesel	2.68	kg CO2/litre	*Carbon Footprinting for ports'* issued by the World Ports Climate Initiative (WPCI). Page. 63 Equation 5.17. https://sustainableworldports.org/wp-content/uploads/Carbon_Footprinting_Guidance_Document.pdf
EF natural gas	1.87	kg CO2/m^3	Conversion Guidelines - Greenhouse gas emissions - https://www.eeagrants.gov.pt/media/2776/conversion-guidelines.pdf
EF electricity	0.521	kg CO2/kWh	Electricity Emission Factors Review by EBRD review for countries https://www.ebrd.com/downloads/about/sustainability/cef.pdf

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Calculation Model

Calculation of CO2 Emissions 2022

Scope	Type of resource	EF (kg CO2/litre)	Detailed description	Quantity l	Emissions kg CO2	t CO2	t CO2 %
Scope 1	Diesel fuel	2,68	Cargo handling equipment (CH)	233.649	626.179	626,2	45,3%
			Non road fleet vehicles (NR)	33.698	90.311	90,3	6,5%
			On road vehicles (OR)	40.052	107.339	107,3	7,8%
			Stationary sources	1.609	4.312	4,3	0,3%
			Employee vehicles	3.914	10.489	10,5	0,8%
			Harbor craft (tug boat)	32.862	88.070	88,1	6,4%
			Feeder vessel at berth	0	0	0,0	0,0%
			TOTAL	309.008	926.700	926,7	67,1%

Scope	Type of resource	EF (kg CO2/m³)	Detailed description	Quantity m³	missions kg CO	t CO2	t CO2
Scope 1	Natural gas	1,88	Office	7.686	14.450	14,4	1,0%
			Canteen	6.948	13.062	13,1	0,9%
			Laboratory	3.975	7.473	7,5	0,5%
			Dispatch/Check Post Nr 1	4.382	8.238	8,2	0,6%
			TOTAL	22.991	43.223	43,2	3,1%
			TOTAL SCOPE 1	**331.999**	**969.923**	**969,9**	**70,2%**

Scope	Type of resource	EF (kg CO2/kWh)	Detailed description	Quantity kWh	Emissions kg CO2	t CO2	t CO2
Scope 2	Electricity	0,521	Oil terminal autoloading SP1	283.334	147.617	147,6	10,7%
			Office park, deposit, lighting, SP2	323.341	168.461	168,5	12,2%
			Terminal areas, lighting	128.684	67.044	67,0	4,9%
			DL other areas	54.293	28.287	28,3	2,0%
			TOTAL SCOPE 2	**789.652**	**411.409**	**411,4**	**29,8%**

TOTAL	**1.381,3**

CO2 equivalen	factor	tons	factor	t CO2e
CO2		1.381,3	1	1.381,3
CH4		0,129	25	3,2
N2O		0,008	298	2,3
Total CO2e				**1.386,8**

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CO2e Emissions Results

CO2e in tons	2016	2017	2018	2019	2020	2021	2022
CO2	858.1	851.3	942.1	906.7	864.3	1 160.4	1 381.0
CH4	1.7	1.5	1.9	2.0	1.9	2.6	3.2
N2O	1.2	1.0	1.3	1.4	1.3	1.8	2.3
Total CO2e	**861.0**	**853.9**	**945.3**	**910.1**	**867.6**	**1 164.8**	**1 386.8**

- Increase of CO2e since 2017 by 62%;
- Average annual increase of CO2e by 12.5%;
- To be analyzed in relation to transshipment volumes;
- Impacts of CH4 and N2O are negligible;

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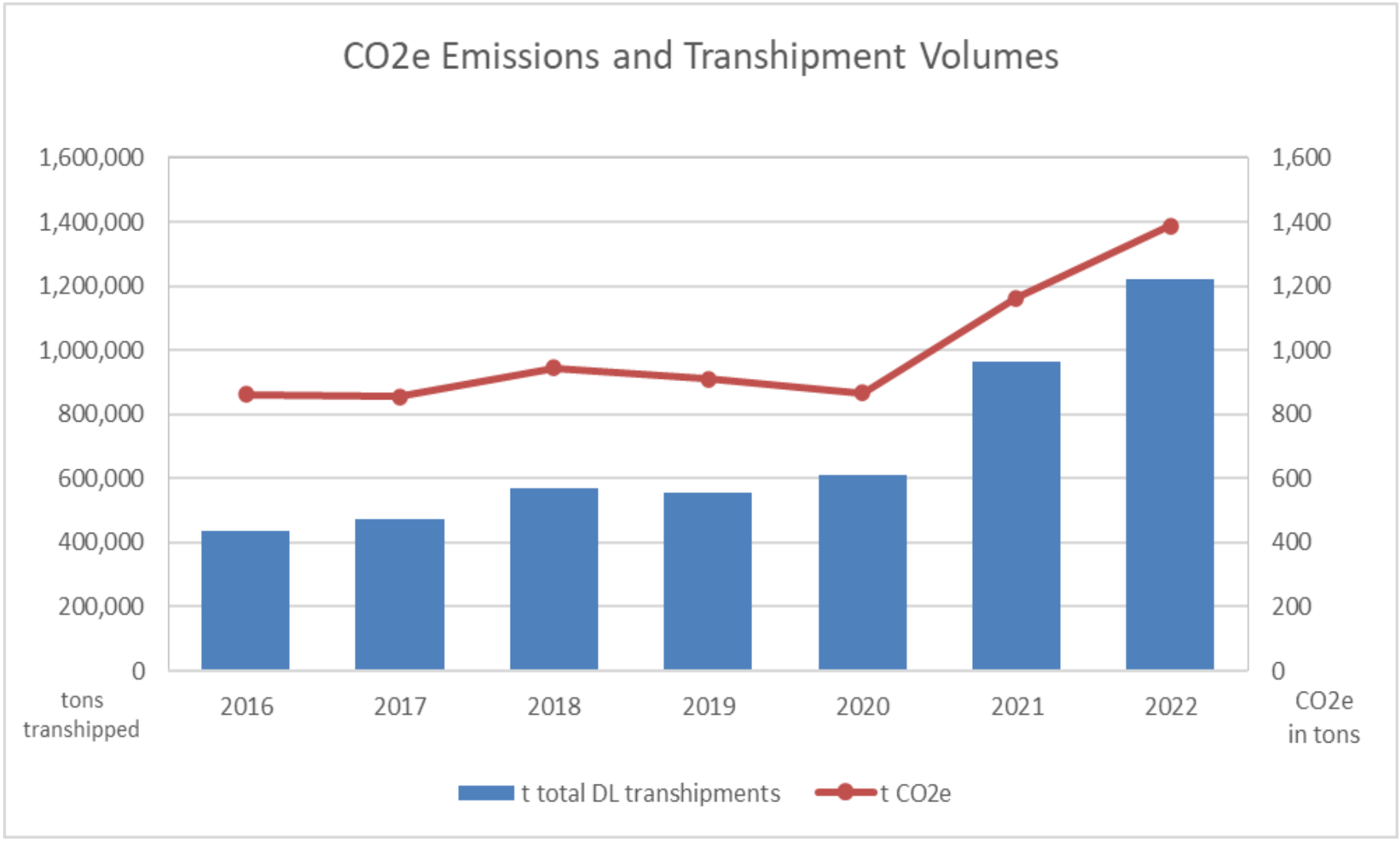
CO2e Emissions and Port Activity



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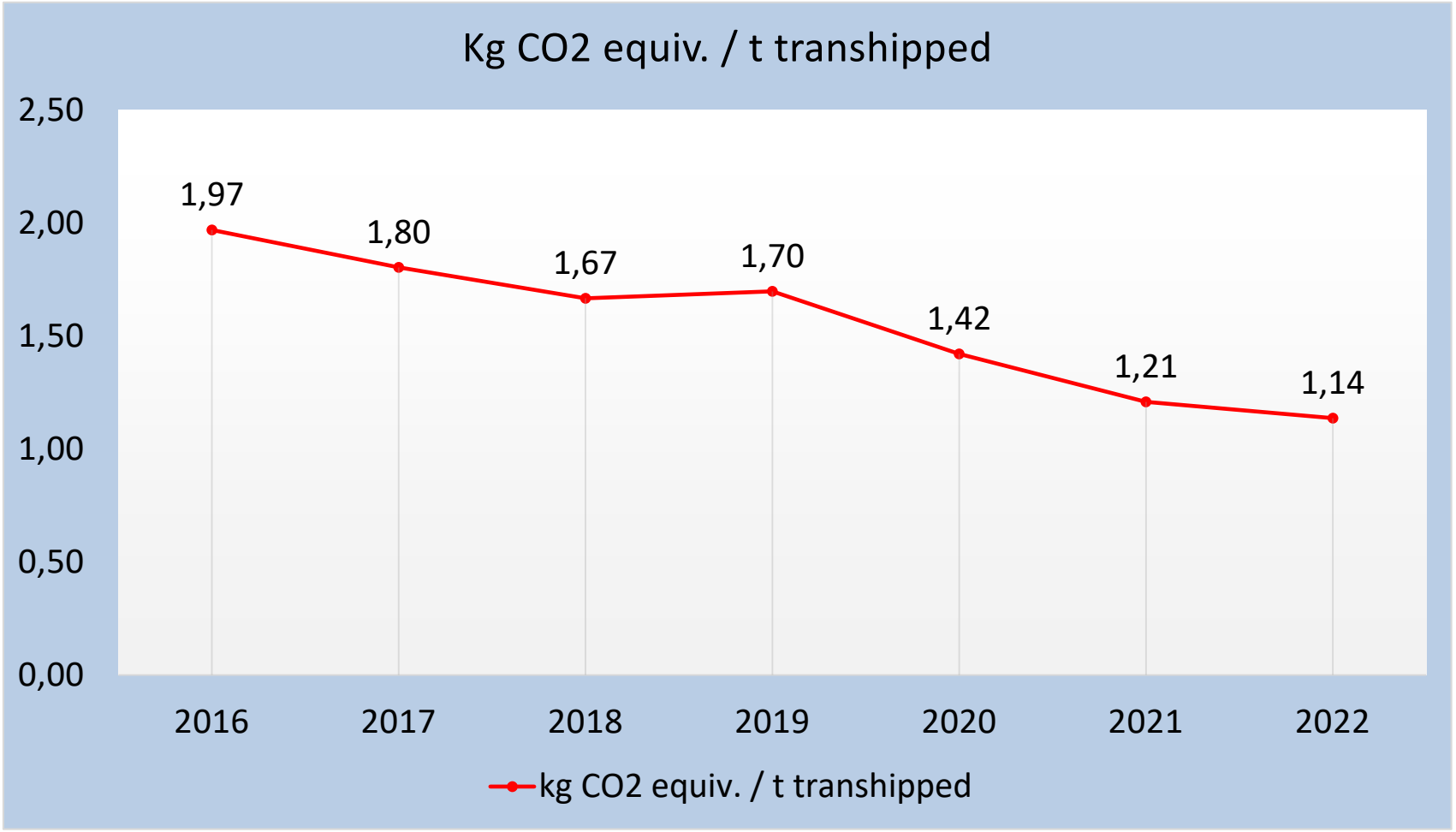
CO2e Emissions per Ton of Cargo Transshipped



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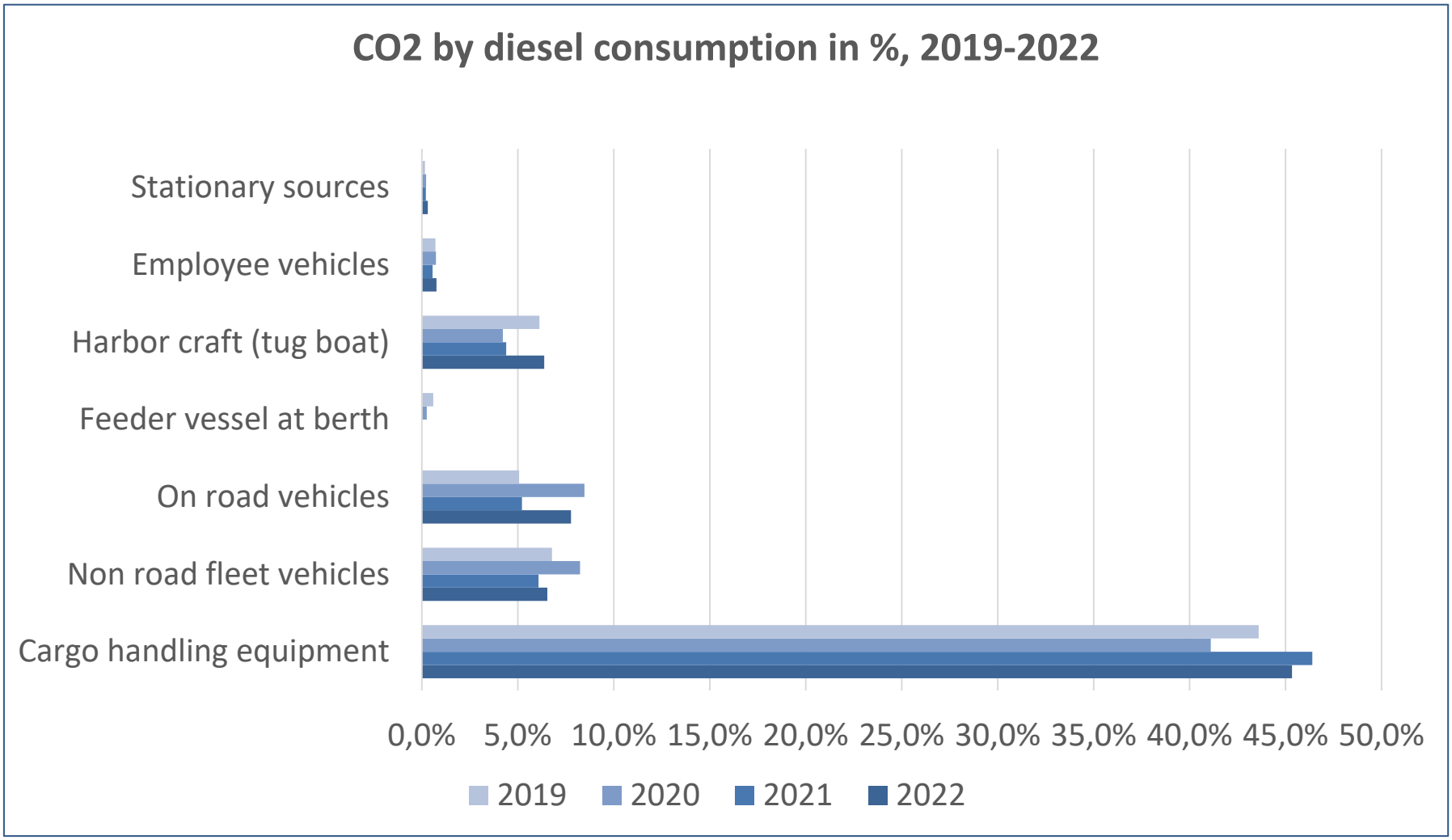
CO2 Diesel Emissions by Source



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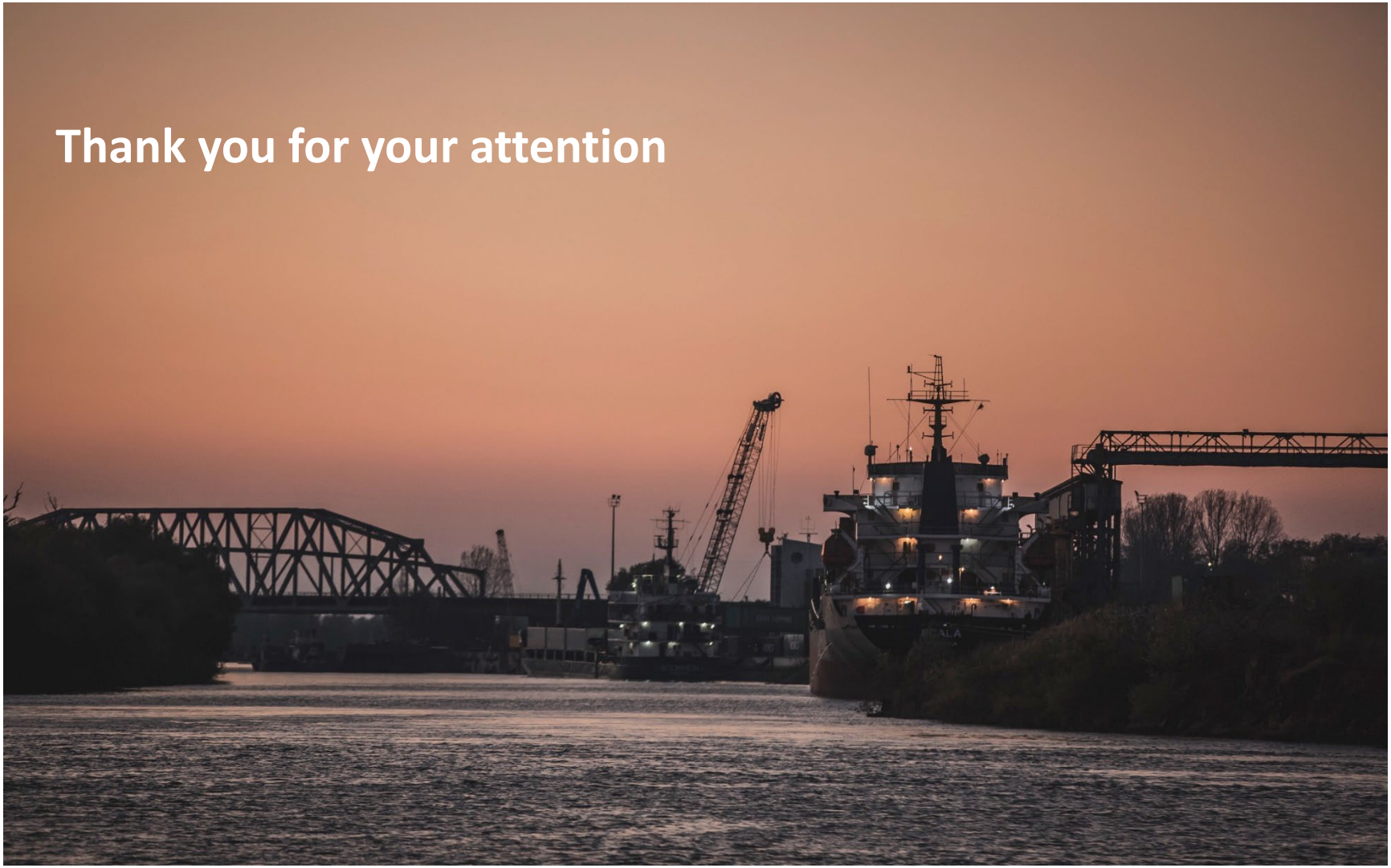
Actions for reducing CO2 emissions

- To implement an Energy Management System (ISO 50001):
  - to measure sourcing of energy and consumption;
  - to assess and identify the main sources for CO2 emissions;
- To replace fuel emitting vehicles, vessels and equipment with electrical powered vehicles, vessels and equipment;
- To replace conventional lighting by energy efficient LED lighting;
- To increase use of renewable energy:
  - procuring green energy
  - installation of solar panels or of a solar park
  - installation of wind park
  - installation of hydro-powered turbine in the water
- To optimize logistics operations;
- To engage stakeholders such as port residents;

Thank you for your attention



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