Giurgiulesti International Free Port

Report on Carbon Footprint 2019

April 2020

DANUBE LOGISTICS

Contents

I. INTRODUCTION

Starting with 2016 Danube Logistics SRL (Danube Logistics) has developed a Carbon Footprint Report for its operational activities at the premises of Giurgiulesti International Free Port (GIFP) on annual basis. Danube Logistics administrates and operates GIFP, whereas certain activities in the port are conducted by other residents and tenants. In order to calculate the carbon footprint Danube Logistics follows both control based and activity based approaches. The present inventory refers to the period from 1 January to 31 December 2019.

The Carbon Footprint Report is prepared in accordance with the Greenhouse Gas (GHG) Protocol, which is most widely used as an international carbon calculation methodology and which is compatible with other GHG standards, such as ISO 14064, that can be integrated in national and international GHG registries.

The data analyzed relate mostly to the energy production and consumption both in stationary and non-stationary emission sources. The emission sources included in the carbon footprint refer to generated CO2 emissions respectively to the emissions equivalent to CO2. Carbon dioxide (CO2), Methane (CH4) and Nitrous Oxide (N2O) are emitted during combustion of fossil fuels by port equipment and transport means used by Danube Logistics and from heating, as well as electricity consumption within port activities. Emissions from technical gases as by-product of combustion and so called F-gases emitted by cooling installations were neglected.

II. BOUNDARIES OF THE CO2 FOOTPRINTING

Greenhouse gas accounting involves the selection of two types of boundaries:

1. Organizational boundaries

Danube Logistics used the control approach for the purpose of consolidating and reporting GHG emissions, i.e. all emissions which the company can control and influence are considered. These are the activities conducted by the legal entity of Danube Logistics on the territory of Giurgiulesti International Free Port.

Thus the CO2 footprinting calculation does not include the residential companies that carry on their operations at the premises of GIFP, as their activity cannot be influenced by Danube Logistics and access to the necessary information is not ensured.

2. Operational boundaries

The total territory of GIFP currently under development comprises 55 ha. The operational activities conducted within following areas are included in the scope of this report (fig.1):

- General cargo and container terminal, dry bulk and container storage area;
- Oil terminal area including oil jetty, tank farm, auto loading facility and railway facility;
- Office park;

- Danube Logistics workshop;
- Infrastructure at GIFP premises including roads, parking areas;

Following areas are excluded:

- Grain terminals with access to Danube and Prut rivers;
- Grain storage facilities;
- Vegetable oil storage;
- Business park areas leased by third parties;

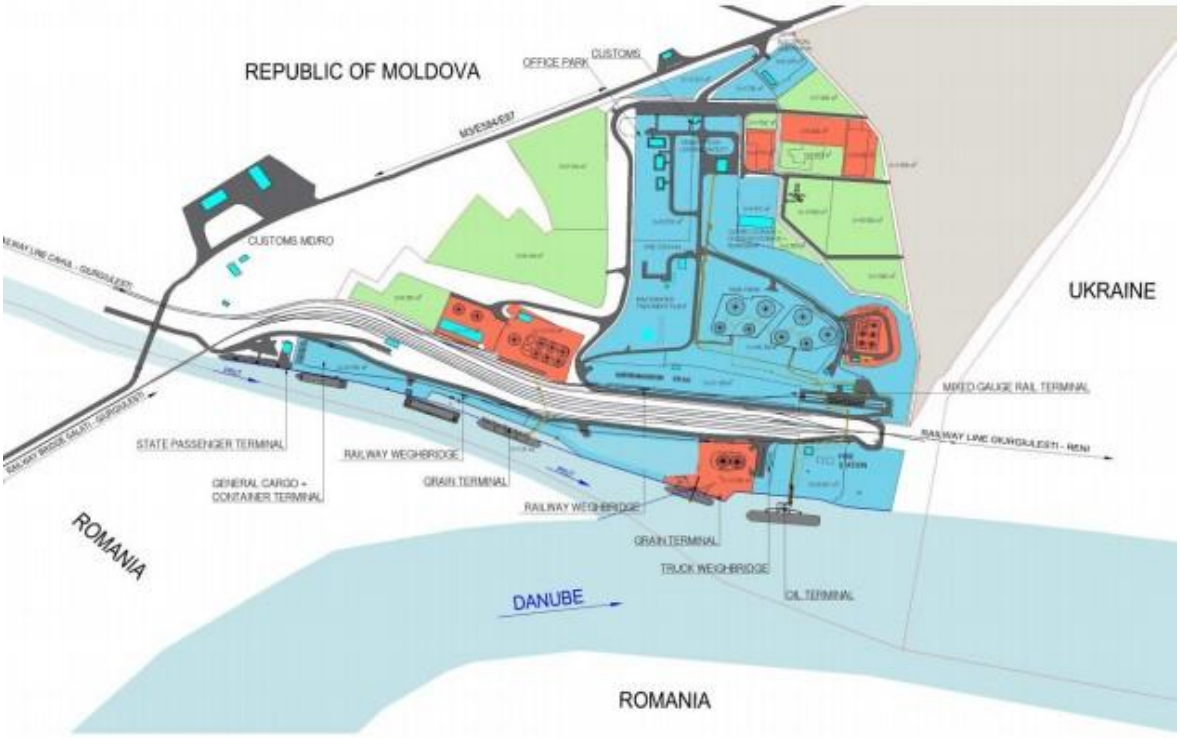

Figure 1. Port area that was taken into account for the calculation of CO2 emissions (shown in blue)

Following the recommendation of the Guidance Document "Carbon Footprinting for ports" issued by the World Ports Climate Initiative (WPCI) in 2010, the focus of this report is on emissions with scope 1 and scope 2:

a) Direct emissions (scope 1)

- Diesel and gasoline engines (kg CO2/liter);
  Fuel used by cargo handling equipment;
  Fuel used by on road and non-road vehicles;
  Fuel used by harbor crafts (tug boat) and feeder vessel at the berth;
  Fuel used by stationary sources;
  Fuel used by employee vehicles on the territory of GIFP;

- Burning of natural gas (kg CO2/m3)
  Natural gas used for heating of buildings in GIFP's office park;

b) Indirect emissions (scope 2)

- Consumption of electricity imported to GIFP (kg CO2/kWh);
  Electricity used by the pumps for the oil terminal autoloading facility;
  Electricity used for the office park, the workshop, outside lighting and railway facility pump;
  Electricity used for the terminal area including lighting;

III. CALCULATION OF GHG EMISSIONS

1. Activity-based approach

Danube Logistics applied an activity-based approach for the calculation of GHG emissions. The total GHG emissions are calculated through each type of fuel/energy used:

- The amount of diesel is calculated by summing up the recorded amounts of fuel used by each piece of equipment used on the territory of GIFP. The supply of fuel for each piece of equipment is measured using a meter installed on the pump of the bunkering truck.
- The amount of natural gas and electricity consumption is measured using calibrated and certified meters.

More than 95% of the data used for the calculation of emissions is based on real measurements of fuel and energy consumption reaching a high level of accuracy of the calculated emissions.

2. Selection of GHG emission factors

The energy consumption quantities were converted into GHG emissions by multiplying these figures with emission factors. The used emission factors comply with national and international standards of emissions for the selected types of resources. The emission factors are specific for each energy source and serve for the conversion of the quantities consumed by each energy source into GHG emissions. Table 1 shows the emission factors used for the calculation of the carbon footprint.

Table 1. Emission factors

Item	Emission factors (EF)	Units
EF diesel	2.68	kg CO2/litre
EF natural gas	1.87	kg CO2/m³
EF electricity	0.521	kg CO2/kWh

IV. RESULTS

In 2019 the total estimated GHG emissions at the premises of Giurgiulesti International Free Port of activities generated by Danube Logistics amount to 911.9 t CO2e decreasing by 3.5% compared to 2018 (table 2). The decrease is the result of reduced scope 2 electricity consumption. As in previous years the majority of emissions results from scope 1 diesel and gas combustion, however due to less electricity consumption the share of diesel and gas combustion of total GHG emissions increased from 63% in 2018 to 69% in 2019 (table 3). Emissions from CH4 and N2O are negligible.

Table 2. Total estimated GHG emissions

CO2e in tons	Factor	2017 *	2018 *	2019
CO2	1	851.3	942.1	908.5
CH4	25	1.5	1.9	2.0
N2O	298	1.0	1.3	1.4
Total CO2e		**853.9**	**945.3**	**911.9**

* Previous year values were adjusted to calculation method used in 2019 in order to be comparable

Table 3. Share of CO2 Emissions by Scope

Scope	CO2 emissions in tons	2019
Scope 1	625.0	69%
Scope 2	283.5	31%
Total CO2	**908.5**	**100%**

a) Fuel consumption (scope 1)

The total consumption of fuel amounts to 213,925 liters corresponding to CO2 emissions of 573.3 tons, which is 5.6% more than in the previous year. This increase is mainly due to the increased consumption of fuel for equipment used for cargo transshipments at the general cargo terminal. As in previous years the major consumers of diesel fuel are the mobile harbor crane and the reach stacker accounting for 60% of total fuel consumption or 44% of total CO2 emissions in 2019 (fig. 2).

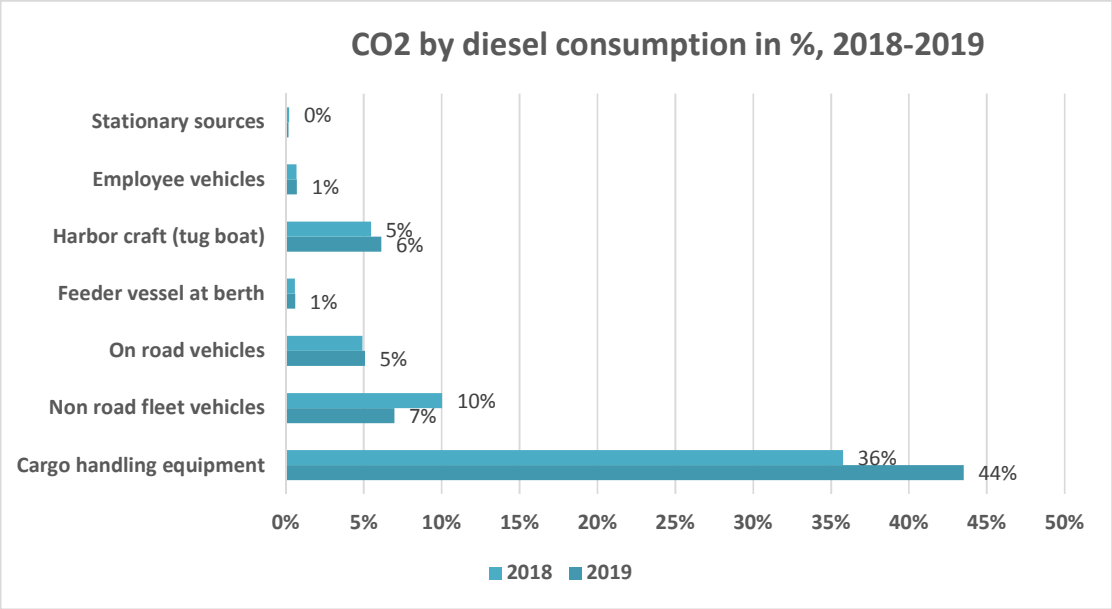

Figure 2. Share of diesel consumption of total CO2 emissions of Danube Logistics in 2018- 2019

The fuel consumption of vessels considered in this report (scope 1) includes mainly the tug boat chartered by Danube Logistics being used for navigation. In addition Danube Logistics operates a regular container transportation service between GIFP and the port of Constanta for which the fuel consumption of the vessel while moored at the container terminal berth is considered.

92% of the CO2 emissions within scope 1 refer to the consumption of fuel, the remaining 8% refer to the consumption of gas.

b) Natural gas consumption (scope 1)

The consumption of natural gas used for heating of the buildings within GIFP Business Park amounted to 27,477 m³ in 2019 remaining on the same level as in the previous year. The share of natural gas from all CO2 emissions amounted to 5.7%.

c) Electricity imported (scope 2)

Only the electricity used by the units owned and controlled by Danube Logistics was taken into consideration. In 2019 the electricity consumption reached 544.111 kWh corresponding to 283.5 tons of CO2 emissions. The decrease by 19% compared to previous year is mainly due to a reduction of truck loading activities of the oil terminal. Further the switch from conventional light projectors to LED technology was one decisive measure to reduce the energy consumption and respectively CO2 emissions over the last three years.

d) CO2 emission indicator

In order to better understand the impact of operational activities on CO2 emissions and to establish a benchmark for further GHG emissions the following CO2 emission indicator was calculated (table 4).

Table 4. CO2 Emissions indicator

CO2e indicator	2016 *	2017 *	2018 *	2019	change
t CO2e	829.3	853.9	945.3	911.9	-3.5%
t DL transshipments	437,142	473,404	567,106	556,082	-1.9%
kg CO2e/ t transshipped	**1.9**	**1.8**	**1.7**	**1.6**	**-1.6%**

* Previous year values were adjusted to calculation method used in 2019 in order to be comparable

The transshipments of Danube Logistics do not include the transshipments of grain conducted at the terminals of residents and the transshipment of vegetable oil but include the weight of cargo transported in containers. Over the past years the emission indicator decreased steadily from 1.9 to 1.6 kg CO2e per ton of transshipped cargo.

V. CONCLUSIONS

The total estimated GHG emissions equivalent to CO2 emissions generated by Danube Logistics activities at the premises of Giurgiulesti International Free Port decreased by 3,5% from 945.3 to 911.9t CO2e. This year's decrease is mainly due to the reduced volume of electrical consumption of pumps used for loading of oil tankers due to reduced business volume in this segment. At the same time the fuel consumption for cargo handling equipment at the general cargo shows an improved efficiency as the transshipment volumes increased at this terminal. Overall the increase of transshipment volumes over the last four years together with the replacement of newer lighting technology are the major drivers for the reduction of CO2e emissions per ton of cargo transshipped.

As fossil fuel used for internal combustion engines is the major source of CO2 emissions the control and optimization of diesel use for port equipment will remain important for both environmental and economic reasons.

It is planned to further refine the recordings in order to elaborate in more detail the relation between emissions and type of operational activity in the port.

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