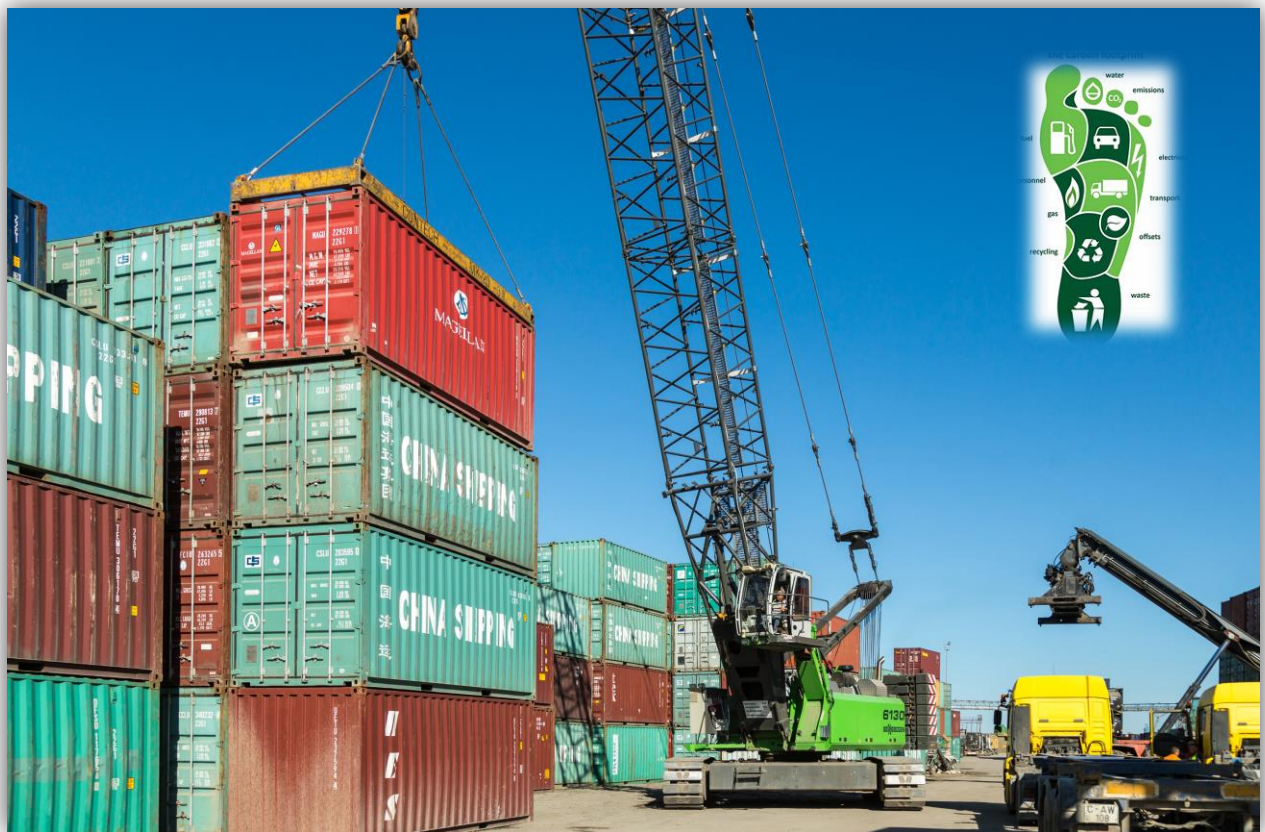


Giurgiulesti International Free Port
Report on Carbon Footprint 2016



Chisinau-Giurgiulesti
March 2017



Table of Contents

I. INTRODUCTION	3
II. BOUNDARIES OF THE CO2 FOOTPRINTING	3
1. Organizational boundaries	3
2. Operational boundaries.....	3
a) Direct emissions (scope 1).....	5
b) Energy indirect emissions (scope 2).....	5
III. CALCULATION OF GHG EMISSIONS	5
1. Activity-based approach	5
2. Selection of GHG emission factors.	6
IV. RESULTS	6
V. CONCLUSIONS	8

I. INTRODUCTION

The first Report on Carbon Footprint was developed for the operational activities of ICS Danube Logistics SRL (Danube Logistics) at the premises of the Giurgiulesti International Free Port (GIFP). 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 inventory was developed for the period from 1 January – 31 December 2016.

This carbon footprint report was prepared in accordance with the Greenhouse Gas (GHG) Protocol, which is most widely used as an international carbon calculation methodology and is compatible with other GHG standards, such as ISO 14064, which can be integrated in national and international greenhouse gas (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, 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 tenant 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):

- Dry bulk and container storage area, General Cargo and Container Terminal;
- Oil Terminal area including tank farm, auto loading facility and railway facility;
- Office park;
- Danube Logistics workshop;
- Infrastructure at GIFF premises including roads, parking areas;

Following areas are excluded:

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

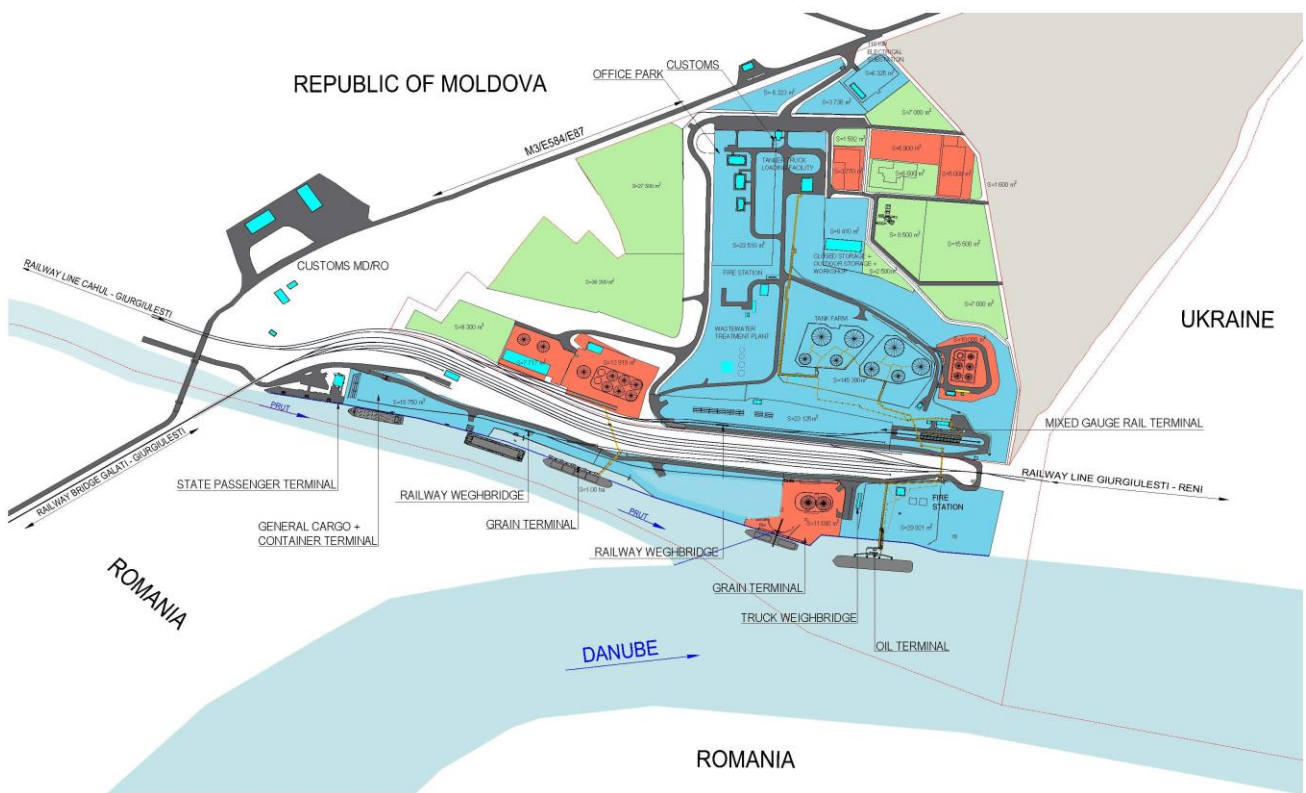


Figure 1. Port area that was taken into account for the calculation of CO2 emissions (shown in blue)

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/litre);
 - Fuel used by cargo handling equipment;
 - Fuel used by on road and non-road vehicles;
 - Fuel used by harbour 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 within buildings and GIFP' Office Park;

b) Energy indirect emissions (scope 2)

- Consumption of electricity imported to GIFP (kg CO2/kWh);
 - Electricity used by oil jetty, dry bulk and general cargo and container terminal;
 - Electricity used by oil terminal, office park and the warehouse owned by Danube Logistics;

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 natural gas and electricity consumption is measured using calibrated and certified meters.
- 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.

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/liter
EF natural gas	1.87	kg CO2/m ³
EF electricity	0.521	kg CO2/kWh

IV. RESULTS

The total estimated GHG emissions at the premises of Giurgiulesti International Free Port activities generated by Danube Logistics amount to 861 t CO₂e (Table 2). Most of the emissions result from diesel and gas combustion representing 61% of total GHG emissions (Table 3). Besides CO₂ relatively insignificant quantities of CH₄ and NO₂ emissions were registered.

Table 2. Total estimated GHG emissions:

CO ₂ equivalents	Factor	tons CO ₂ e
CO₂	1	858
CH₄	25	2
N₂O	298	1
Total CO₂e		861

Table 3. Rate of CO₂ Emissions by Scope:

ITEM	CO ₂ emission in tons	%
Scope 1	522	61%
Scope 2	336	39 %
Total	858	100%

a) Diesel consumption (scope 1)

91% of the CO₂ emissions of scope 1 refer to the consumption of fuel, the remaining 9% refers to the consumption of gas.

The total consumption of fuel amounts to 178,013 litres corresponding to CO₂ emissions of 477 tons. The major consumers of diesel are the mobile harbour crane and the reach stacker (fig.2).

The fuel consumption of vessels considered in this report (scope 1) includes the tug boat chartered by Danube Logistics and used for navigation. Further Danube Logistics operates a regular container transportation service between GIFP and the port of Constanta. For the feeder vessel the fuel consumption during stationary time at the container terminal berth is considered.

CO2 emissions by diesel consumption, %

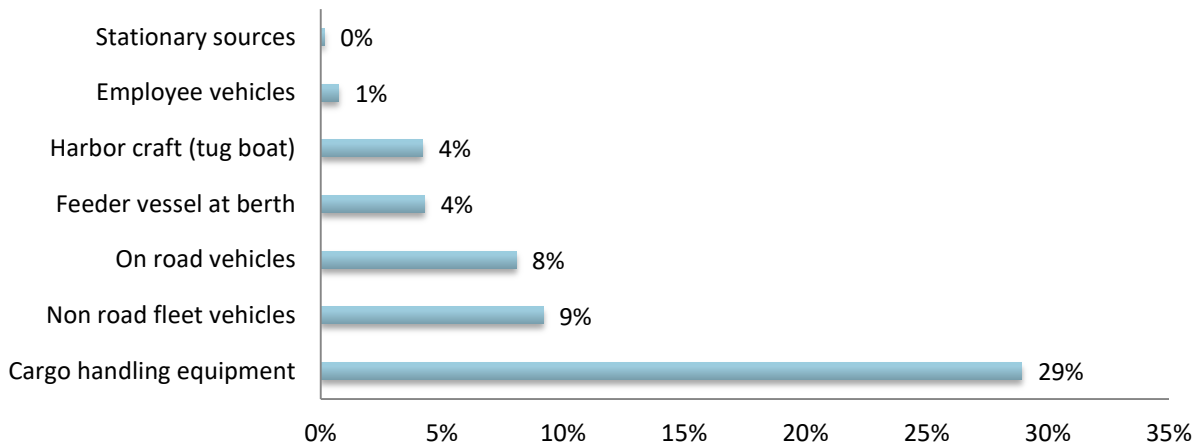


Figure 2. Share of CO2 emissions by diesel consumption of Danube Logistics in 2016

b) Natural Gas consumption (scope 1)

The natural gas consumption for heating in the buildings of the office park amounted to 23,854 m³ in 2016. The share of natural gas from all CO2 emissions is 5%.

c) Electricity imported (scope 2)

Only the electricity used by the units owned and controlled by Danube Logistics was taken into consideration. Electricity Consumption in 2016 was 645,239 kWh. Total GHG emission of Scope 2 is 336 tons of CO2.

V. CONCLUSIONS

The total estimated GHG emissions equivalent to CO₂ emissions generated by Giurgiulesti International Free Port activities amount to 861 tons. The results show that the major source of CO₂ emissions is fossil fuel used for internal combustion engines. Fossil fuel exceeds the emissions generated by electricity. Reduction of the usage of fossil fuel is desirable taking into account both environmental and economical issues.

Using the CO₂ emissions assessment for 2016, Danube Logistics will be in a position to monitor the emissions in the upcoming years and to identify the major emitter of CO₂ within operational activities. For this purpose Danube Logistics intends to refine the records in order to elaborate further the relation between emissions and type of operational activity in the port.

In order to reduce emissions Danube Logistics will strive to identify suitable measures. To these belong the further development of its energy plan and the increase of the awareness of CO₂e emissions in the operational activities of the company.

CONTACTS:

Mathias von Tucher

Operations Director

Email: m.vtucher@danlog.md

Tel: + (373) 79887171

Svetlana Știrbu

HSE Officer

Email: s.stirbu@danlog.md

Tel: + (373) 78906020