

UZMAR Carbon Footprint Report 2022

April 2023

www.eco-act.com  
  
Ada Karbon Yönetimi ve Çevre Dan. Ltd. Şti. trading as EcoAct, an Atos Company.  
  
  
  
  
Copyright and Non-Disclosure Notice

The contents and layout of this report are subject to copyright owned by © EcoAct, an Atos company 2023. To the extent that we own the copyright in this report, it may not be copied or used without our prior written agreement for any purpose other than the purpose indicated in this report.

The methodology (if any) contained in this report is provided to you in confidence and must not be disclosed or copied to third parties without the prior written agreement of EcoAct. Disclosure of that information may constitute an actionable breach of confidence or may otherwise prejudice our commercial interests. Any third party who obtains access to this report by any means will, in any event, be subject to the Third-Party Disclaimer set out below.

Third-Party Disclaimer

Any disclosure of this report to a third-party is subject to this disclaimer. The report was prepared by EcoAct at the instruction of, and for use by, our client named on the front of the report. It does not in any way constitute advice to any third-party who is able to access it by any means. EcoAct excludes to the fullest extent lawfully permitted all liability whatsoever for any loss or damage howsoever arising from reliance on the contents of this report. We do not however exclude our liability (if any) for personal injury or death resulting from our negligence, for fraud or any other matter in relation to which we cannot legally exclude liability.

Contents

[Introduction 4](#_Toc133501879)

[Summary of Carbon Footprint 5](#_Toc133501880)

[Organisational Boundary 8](#_Toc133501881)

[Reporting Boundaries 8](#_Toc133501882)

[Direct GHG Emissions 10](#_Toc133501883)

[Indirect GHG Emissions 11](#_Toc133501884)

[Biogenic CO2 Emissions and Removals 16](#_Toc133501885)

[Activities Excluded from the Scope of the Footprint 16](#_Toc133501886)

[Base Year 16](#_Toc133501887)

[Quantification Methodology 17](#_Toc133501888)

[Emission Factors 17](#_Toc133501889)

[Uncertainty assessment 18](#_Toc133501890)

[GWP Values 18](#_Toc133501891)

[Annex 1- GHG Emission Calculations 19](#_Toc133501892)

[Annex 2- List of Purchased Goods Categories 20](#_Toc133501893)

[Annex 3 – Carbon Glossary 22](#_Toc133501894)

# Introduction

The story of UZMAR commences in 1973 with the founding of “The First Private Authorised Pilotage and Towage Company” by Senior Captain Altay Altuğ (Maritime College, 1952), to provide services to private sector ports and harbours in the Aegean Sea. In 1996, UZMAR began building its own tugboats to expand its fleet by achieving the highest construction quality with the potential to export them promptly.

As of 2007, UZMAR has been executing the modular serial production method to manufacture the state-of-the-art vessels at its new shipyard in Kocaeli Free Zone. Since the very first day of its establishment, UZMAR has been following and practicing the traditions and the values of maritime heritage. Today, UZMAR exports a wide range of different types of vessels to more than 22 countries in 6 continents.

This report details Uzmar’s first carbon footprint for 2022, setting a baseline for future carbon reporting. This is an important first step into carbon management and carbon reduction. This new carbon management programme places Uzmar in front of their competitors in this field, enhances the strength of the brand, lays the foundation for future operational cost reduction and establishes a differentiated position in the market.

Uzmar measured its organisational carbon footprint with the following objectives:

• Understand its emission footprint by identifying key emissions drivers,

• Demonstrate its commitment to environmental stewardship and carbon management,

• Communicate the carbon management programme to key stakeholders.

This report includes direct and indirect emissions covering the period between January 2022 to December 2022.

## Summary of Carbon Footprint

The analysis shows that Uzmar’s carbon emissions for the period 2022 amounted to **263 644** tonnes of CO2e. The largest source of emissions was use of sold products (78%), followed by waste (16%) and purchased products (5%).

Table 1 –Emission breakdown by categories

|  |  |  |
| --- | --- | --- |
| Emission type | tCO2e | % |
| Direct | 1 946 | 1 |
| Indirect Energy | 1 609 | 1 |
| Indirect from Transportation | 1 913 | 0 |
| Indirect Associated with Product/Service Use | 54 321 | 21 |
| Indirect Associated with the Use of Products Sold | 204 574 | 78 |
| **Total Emissions (tCO2e)** | **263 644** | |

Figure 1- Emission breakdown by activities

Uzmar is a growing business and a year-on-year comparison against absolute emissions will not be a viable analysis tool strategy. Analysis of emissions benchmarked against Key Performance Indicators (KPIs) provides a better tool to assess the performance and the reductions achieved. The tracked KPI are listed in Table 2.

Table 2 – Key Performance Indicators (KPIs) monitored

|  |  |
| --- | --- |
| Parameters | 2022 |
| Carbon Footprint (tCO2e)  (Category 1&2) | 3 556 |
| Number of Full Time Employee | 497 |
| Turnover (million TL) | 1 138 |
| Number of Vessel | 8 |
| tCO2e/million TL | 3.12 |
| tCO2e/FTE | 7.15 |
| tCO2e /Vessel | 444.49 |

## Organisational Boundary

In accordance with ISO 14064, the approach used in this footprint is based on the principle of operational control. Under the control approach we accounted for 100% of the GHG emissions from operations over which Uzmar has control.

The organisational boundaries cover shipyard located in the Kocaeli Free Zone, and the Istanbul office, where sales, marketing and other administrative management activities are carried out.

## Reporting Boundaries

In this carbon footprint assessment, the carbon emissions generated by Uzmar’s organisationinal activities are measured. The assessment methodology used in this report follows the reporting principles and guidelines described by ISO 14064-1:2018 standard.

According to ISO 14064-1 2018 version, quantification of direct emissions is mandatory, and indirect emissions should be included in the inventory in accordance with the assessment criteria determined by the institution.

ISO 14064 requires an organization to report its carbon emissions in the following 6 categories.

* Category 1 –Direct GHG Emissions – Emissions from greenhouse gas sources owned or controlled by the organisation.
* Category 2- Indirect GHG Emissions from Imported Energy – Emissions from the generation of imported electricity, heat or steam consumed by the organisation.
* Category 3 – Indirect GHG Emissions from Transportation– GHG emissions occur from sources located outside the organizational boundaries. Those sources are mobile and are mostly due to fuel burnt in transport equipment.
* Category 4 – Indirect GHG Emissions from Products/Services used by the Organization – GHG emissions occur from sources located outside the organizational boundaries associated with goods used by the organization.
* Category 5 – Indirect GHG emissions associated with the use of products from the organization – GHG emissions or removals associated with the use of products from the organization result from products sold by the organization during life stages occurring after the organization’s production process.
* Category 6 – Indirect GHG emissions from other sources

All direct and indirect energy emissions from the activities of Uzmar are reported. All categories were reviewed when identifying other important indirect emission sources. Data availability and relevance with the business field were evaluated as materiality criteria. The activities included in the inventory as a result of this evaluation are given in the table below.

Table 3 – Activities Included in the Scope of Carbon Footprint

|  |  |
| --- | --- |
| Category | Activity |
| Category 1 | Stationary Combustion  Refrigerants and Fire Extinguishers  Mobile Combustion |
| Category 2 | Imported Electricity |
| Category 3 | Staff Commuting  Business Travels  Transportation  Upstream emissions arising from fuel generation and fuel transportation/distribution (Well to Tank Emissions) |
| Category 4 | Purchased Goods  Purchased Services  Water Consumption  Waste Disposal  Transmission and Distribution of Electricity |
| Category 5 | Use stage of sold products  -Fuel use  - Fugitive emissions from from equipment leaks  End of life stage of sold products |
| Category 6 | - |

In this report, the term ‘carbon emissions’ not only includes carbon dioxide (CO2) but all other greenhouse gases (GHG) covered under good practice reporting: methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFC), perfluorocarbons (PFC) and sulphur hexafluoride (SF6).

Carbon emissions are calculated and reported in tonnes of CO2 equivalent (tCO2e) as required.

## Direct GHG Emissions

Direct emissions arise from the generation of greenhouse gas emissions in company-owned or leased assets. At Uzmar, these arise from:

* consumption of natural gas and LPG in buildings (heating & hot water)
* consumption of diesel and petrol in vehicles (company cars, vessel testing and transport, heavy duty vehicles)
* consumption of diesel for emergency generators
* gas leakage (fugitive emissions) from air conditioning systems and fire extinguishers (R410A, R407C, R22 and CO2)

Uzmar’s Category 1 emissions account for 1 946 tonnes of CO2e and 1% of its carbon footprint. Details are given below.

Table 4 –Breakdown of Direct GHG Emissions

|  |  |  |  |
| --- | --- | --- | --- |
| **Activity** | **Amount** | **tCO2e** | **% of Total Emissions** |
| Natural Gas (m3) | 12 900 | 26 | 0.0 |
| LPG (ton) | 14 | 42 | 0.0 |
| Diesel (l) | 644 898 | 1 740 | 0.7 |
| Petrol (l) | 26 847 | 63 | 0.0 |
| Refrigerants and Fire Extinguishers (kg) | 72 | 74 | 0.0 |
| **Category 1 Total** |  | **1 946** | **1** |

The breakdown of direct emissions by greenhouse gases is included in Annex-1.

## Indirect GHG Emissions

Indirect emissions are evaluated under four categories.

Category 2 emissions arise from the generation of imported electricity, heat or steam consumed by the company. Uzmar had only electricity consumption during the reporting year.

Category 3 emissions arise from the transportation. These activities are:

* Staff Commuting (subcontractor’s vehicles and fuel provided the staff for commuting)
* Business travels (domestic, short-haul and long-haul international flights)
* Upstream transportation of purchased goods (road, sea and air mode)
* Upstream emissions of fuels (Extraction, production, and transportation of fuels consumed by Uzmar, e.g., well to tank (WTT) emissions for natural gas, LPG, diesel, petrol, flights and staff commuting)

Category 4 emissions occur from sources located outside the organizational boundaries associated with goods and services used by Uzmar:

* Water consumption (supply and treatment)
* Waste generated during operations (landfilling, recyling, incineration)
* Purchased products (categories of purchased products provided in Annex-2)
* Purchased services (fuel consumed during guidance, moorings, towage and drill services purchased)
* Transmission and distribution (T&D) losses of electricity purchased.

Category 5 emissions are associated with the use of products from the organization result from products sold by the organization during life stages occurring after the organization’s production process. Emission sources included for this category are:

* Use phase emissions (fuel consumption and fugitive emissions)
* End of life emissions (disposal of the vessels)

Uzmar estimated that each vessel has a lifetime of 25 years and works around 1000 hours/year. The fuel consumption per hour for each vessel type is assumed:

|  |  |
| --- | --- |
| **Model** | **Average Fuel Consumption (l/h)** |
| ASD3200WB | 300 |
| ASD2500W | 300 |
| ASD4200 | 400 |
| MPV4600 | 500 |
| ASD2350 | 300 |

Fugitive emissions from the refrigeration/air conditioning equipment throughout the lifetime of the vessels are estimated according to “Greenhouse Gas Inventory Guidance of EPA for the Direct Fugitive Emissions from Refrigeration, Air Conditioning, Fire Suppression, and Industrial Gases”. These emissions are divided into two- operating emissions and refrigerant released to the atmosphere at the disposal of the vessel. The operating emissions are estimated to be 1% of the total capacity of the equipment per year. The release during the disposal is calculated by the assumption of 80% of refrigerant remaining at disposal and 30% of this cannot be recovered.

The end-of-life emissions are estimated by the calculating the emissions from the disposal of vessels. Each vessel is divided into material categories along with the relevant constitution and each material is treated according to relevant disposal method.

There are no other emissions evaluated under category 6.

The total of Uzmar’s indirect emissions is 261 698 tons of CO2e and constitutes 99% of its carbon footprint. Details by category and activity are given below.

Table 5 – Breakdown of Indirect GHG Emissions

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Category** | **Activity** | **Amount** | **tCO2e** | | **% of Total Emissions** |
| **Indirect Energy** | Electricity (kwh) | 3 657 929 | 1 609 | | 0.6 |
| **Indirect from Transportation** | Staff Commuting(km) | 282 464 | 47 | | 0.0 |
| Staff Commuting (diesel, l) | 7 024 | 19 | | 0.0 |
| Staff Commuting (petrol, l) | 7 859 | 18 | | 0.0 |
| Domestic Flights(passenger.km) | 50 955 | 13 | | 0.0 |
| International Short Haul Flights(passenger.km) | 750 291 | 115 | | 0.0 |
| International Long-Haul Flights(passenger.km) | 1 497 414 | 289 | | 0.1 |
| Transport (Road, USD) | 167 616 | 181 | | 0.1 |
| Transport (Sea, USD) | 10 550 | 5 | | 0.0 |
| Transport (Air, USD) | 2 023 | 2 | | 0.0 |
| WTT Natural Gas (m3) | 12 900 | 4 | | 0.0 |
| WTT LPG (ton) | 14 | 5 | | 0.0 |
| WTT Diesel (l) | 661 257 | 416 | | 0.2 |
| WTT Petrol (l) | 34 707 | 21 | | 0.0 |
| WTT Vehicle (diesel 1.7- 2-liter engine) (km) | 291 584 | 12 | | 0.0 |
| WTT Flights (Domestic, passenger.km) | 50 955 | 1 | | 0.0 |
| WTT Flights (International Short Haul, passenger.km) | 750 291 | 13 | | 0.0 |
| WTT Flights (International Long Haul, passenger.km) | 1 497 414 | 32 | | 0.0 |
| **Sub Total** |  | **1 193** | | **0** |
| **Indirect from Products/Services used** | Water (m3) | 16 505 | 7 | | 0.0 |
| Waste (ton) | 2 462 800 | 42 069 | | 16 |
| Purchased Products (USD) | 44 256 778 | 12 058 | | 4.6 |
| Purchased Services (l) | 18 454 | 27 | | 0.0 |
| Transmission and Distribution of Electricity (kWh) | 3 657 929 | 161 | | 0.1 |
| **Sub Total** |  | **54 321** | | **21** |
| **Indirect from the use of products produced** | Use of Sold Products (fuel, l) | 75 000 000 | 202 410 | | 76.8 |
| Use of Sold Products (fugitive, kg) | 4 268 | 2 051 | | 0.8 |
| End of life (ton) | 5 288.91 | 113 | | 0.0 |
| **Sub Total** |  | **204 574** | | **78** |
| **GRAND TOTAL** | | | | **261 698** | **99** |

## Biogenic CO2 Emissions and Removals

No biogenic CO2 emissions occur within the scope of Uzmar’s activities and there are no biogenic CO2 removals.

## Activities Excluded from the Scope of the Footprint

All direct emission sources have been evaluated and included in the carbon footprint. Within the scope of indirect emissions, all significant activities are included in the carbon footprint calculations. For this reason, there are no significant direct or indirect activities excluded from the scope.

## Base Year

The base year was chosen as 2022, the first calculation year. In case of a change in the scope of the inventory or change in the calculation method, the base year will be recalculated.

## Quantification Methodology

Emission calculations are done by multiplying the activity data with the relevant emission factor. Emissions other than CO2 are converted to CO2 equivalent by multiplying the global warming potential (GWP).

Emission CO2, activity =Activity Data, activity X Emission Factor CO2, activity

Emission GHG, activity = Emission CO2, activity + Emission CH4, activity + Emission N2O, activity

## Emission Factors

Greenhouse gas emission factors used for direct emission activities, business travels, personnel commuting, service procurement, water consumption, waste disposal and use of manufactured products are from the "UK Government GHG Conversion Factors for Company Reporting, 2022" document by DEFRA.

For the calculation of emissions from air travel, the UK Government GHG Conversion Factors for Company Reporting state that organisations should include the influence of radiative forcing RF in air travel emissions to capture the maximum climate impact of their travel habits. Users should generally use the ‘with RF’ factors, which incorporate a 90% increase in emissions to include the effect of radiative forcing. "With RF" air travel emission factors are used for Uzmar’s flight emission calculations.

For the electricity grid emission factor, the value published by the Turkish Ministry of Energy and Natural Resources on 09.08.2022 was used.

For transportation and product use activities, EPA, Supply Chain Greenhouse Gas Emission Factors for US Industries and Commodities, 2018 expenditure-based emission factors were used. 2018 values have been adjusted to 2022 with inflation adjustment.

## Uncertainty assessment

Uncertainty assessment of the carbon footprint calculation evaluates the effect of all activity data and emission factors in the inventory. The total uncertainty of the inventory is 6.8%. Indirect emissions have the greatest impact on uncertainty.

## GWP Values

The GWPs used in the calculation of CO2e are based on the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4) over a 100-year period.

## Annex 1- GHG Emission Calculations



## Annex 2- List of Purchased Goods Categories

|  |
| --- |
| Air and gas compressors |
| Audio and video equipment |
| Automatic controls for HVAC and refrigeration equipment |
| Boats |
| Cast iron and steel |
| Clay and ceramic products |
| Clothing |
| Communication and energy wire and cable |
| Compressed Gases |
| Curtains and linens |
| Cutting and machine tool accessory, rolling mill, and other metalworking machinery manufacturing |
| Fabricated pipe and pipe fittings |
| Finished and coated fabric |
| Fluid meters and counting devices |
| Heavy gauge metal tanks |
| Household appliances and electrical and electronic goods |
| Hydraulic pumps, motors, cylinders and actuators |
| Light gauge metal cans, boxes, and containers |
| Machinery, equipment, and supplies |
| Material handling equipment |
| Mechanical power transmission equipment |
| Metal windows, doors, and architectural products |
| Mineral wool |
| Misc. fabricated metal products |
| Motors and generators |
| Navigation instruments |
| Office furniture and custom architectural woodwork and millwork |
| Other commercial and service industry machinery |
| Other plastic products |
| Other rubber products |
| Other secondary nonferrous metal products |
| Paints and coatings |
| Petrochemicals |
| Power boilers and heat exchangers |
| Printed circuit and electronic assembly |
| Pumps and pumping equipment |
| Rubber and plastic belts and hoses |
| Screws, nuts, and bolts |
| Secondary steel products |
| Signal testing instruments |
| Signs |
| Soft drinks, bottled water, and ice |
| Stationery |
| Synthetic rubber and artificial and synthetic fiber |
| Turbines and turbine generator sets |
| Valve and fittings (except for plumbing) |
| Vehicle electrical and electronic equipment |
| Vehicle engines and engine parts |
| Watches, clocks, and other measuring and controlling devices |
| Wood kitchen cabinets and countertops |
| Wooden windows, door, and flooring |
| Carbon and graphite products |

## Annex 3 – Carbon Glossary

**Carbon dioxide equivalent (CO2e):** A metric used to compare the relative global warming potential of different greenhouse gases. For example, methane is 25 times more potent than CO2 -making 1 tonne of methane equal to 25 tCO2e.

**Carbon footprint**: The total greenhouse gas emissions from an organisation or activity, expressed in tCO2e.

**Net zero:** Net zero is a state where we add no incremental greenhouse gases to the atmosphere. This means achieving a balance between carbon emissions and carbon sinks through a combination of emissions reduction and carbon sequestration.

**Carbon neutrality**: The state in which the emissions from one activity are balanced by emission reductions achieved elsewhere; e.g. a company that emits 100 tCO2e can be carbon neutral if they purchase and retire 100 tCO2e of carbon credits from outside their company.

**Carbon offsetting**: The process by which emissions from one source are matched against carbon credits derived elsewhere.

**Emission factor or coefficient**: A number used to convert units of an activity or product into units of CO2e that result from the activity or from the manufacture and/or use of the product. Emission coefficients are usually expressed as tCO2e/ [unit of activity].

**Emission reduction**: The removal, limitation, reduction, avoidance, sequestration or mitigation of greenhouse gas emissions.

**Global Warming Potential (GWP)**: The intensity with which a tonne of greenhouse gas affects global warming relative to a tonne of carbon dioxide. Some GHGs stay in the atmosphere longer than others, so relative GWP changes with time. The GWP for the six GHGs covered under the Kyoto Protocol according to AR4 are as follows:

* Carbon dioxide (CO2): 1
* Methane (CH4): 25
* Nitrous oxide (N20): 298
* Hydrofluorocarbons (HFCs): 124-14,800
* Perfluorocarbons (PFCs): 7,500-12,200
* Sulphur hexafluoride (SF6): 22,800

**Greenhouse Gas emissions (GHG):** Any of the atmospheric gases that contribute to the greenhouse effect by absorbing infrared radiation produced by solar warming of the Earth's surface. This study has focussed on carbon dioxide (CO2), methane (CH4) and nitrous oxide (NO2). Each GHG has a different Global Warming Potential (see above).

**ISO 14064-1**: A standard issued in 2006 and updated in 2018 by the International Organisation for Standards (ISO); provides guidance for quantifying and reporting greenhouse gas emissions at the organisational level and is based on the WRI/GHG Protocol for measuring organisational carbon footprints.

**Kyoto Protocol**: The agreement negotiated at the Third Conference of Parties to the UN Framework Convention on Climate Change in Kyoto, Japan in December 1997. The Kyoto Protocol defined the emission reduction obligations of Annex B countries and defined CDM, JI and emission trading as mechanisms for achieving emission reductions.

**Paris Agreement**: is a legally binding international treaty on climate change, which was adopted by 196 Parties at the UN Climate Change Conference (COP21) in Paris, France. It aims to hold “the increase in the global average temperature to well below 2°C above pre-industrial levels” and pursue efforts “to limit the temperature increase to 1.5°C above pre-industrial levels.”

**Radiative Forcing Index (RFI):** A conversion factor that accounts for the additional global warming impact of high-altitude aircraft; estimates of the value for RFI vary; while the UK’s carbon reporting guidelines recommend an RFI of 1.9 times the global warming impact of ground level emissions consistent with UNFCCC reporting convention.

About EcoAct

EcoAct, an Atos company, is an international advisory consultancy and project developer that works with clients to help them succeed in their climate ambitions. We work with many large and complex multinational organisations to offer solutions to their sustainability challenges.  
  
We believe that climate change, energy management and sustainability are drivers of corporate performance and we seek to address business or organisational problems and opportunities in an intelligent way.

EcoAct UK EcoAct France

+44 (0) 203 589 9444 +33 (0)1 83 64 08 70  
ukoffice@eco-act.com contact@eco-act.com

EcoAct USA EcoAct Spain

[+1 917 744 9660](tel:+1%20917%20744%209660) +34 935 851 122  
usaoffice@eco-act.com contacta@eco-act.com

EcoAct Turkey EcoAct Kenya

+90 (0) 312 437 0592 +254 708 066 725  
turkeyoffice@eco-act.com info@climatepal.com