

## Solstad Shipping AS

This report is an independent review of the company's Carbon Footprint Analysis based on the total energy consumption related to corporate operations. The carbon footprint gives a general overview of the company's greenhouse gas emissions, converted into CO<sub>2</sub> - equivalents and it is based on reported data from internal and external systems.

The analysis facilitates the identification of possible measures to reduce the energy consumption and thus also the overall carbon footprint. The purposes of the carbon indicators are to measure the carbon intensity per employee and per value creation in addition to showing environmental transparency towards external players.

The analysis is based on the international standard **Greenhouse Gas Protocol Initiative (GHG protocol)**, which is the most important standard for measuring greenhouse gas emissions, developed by World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD). The GHG protocol consists of two accounting standards explaining how to calculate and report GHG emissions and was the basis for the ISO standard 14064-1. The GHG protocol founds its carbon inventory and reporting on three main scopes of direct and indirect emissions. The reporting considers the following greenhouse gases, all converted into CO<sub>2</sub> equivalents: CO<sub>2</sub>, CH<sub>4</sub> (methane), N<sub>2</sub>O (laughing gas), SF<sub>6</sub>, HFCs and PFCs.

The company's total amount for 2010 is **422 630,3** tonnes CO<sub>2</sub>.

Oslo, 18. June 2011



Per Otto Larsen  
for CO2focus AS

**Key figures emissions**

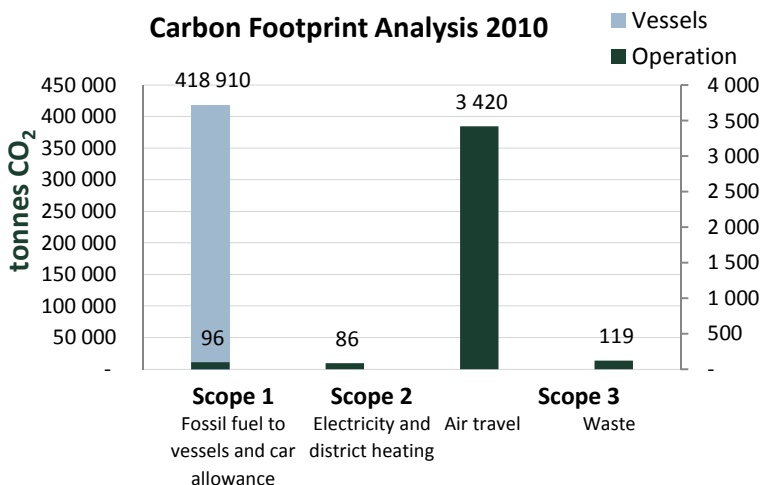
| Category  | Consumption    | Energy eq. (MWh) <sup>1</sup> | Emissions (tonnes CO <sub>2</sub> )  | Percentage   |
|---|----------------|-------------------------------|--------------------------------------|--------------|
| Petrol  | 15 690 l       | 150,6                         | 38,4                                 | 0 %          |
| E85   | - l            | -                             | -                                    | -            |
| Diesel  | 23 535 l       | 225,9                         | 57,5                                 | 0 %          |
| Marine gas oil                                  | 127 899 tonnes | 1 577 337                     | 410 045                              | 97 %         |
| Intermediate fuel oil                           | 2 813 tonnes   | 34 469                        | 8 865                                | 2 %          |
| Electric cars                                   | - kWh          | -                             | -                                    | -            |
| Fuel oil / kerosene                             | - l            | -                             | -                                    | -            |
| Propane / LPG                                   | - l            | -                             | -                                    | -            |
| Natural gas                                     | - m3           | -                             | -                                    | -            |
| <b>Sum scope 1</b>                              |                | <b>1 612 183 MWh</b>          | <b>419 006 tonnes CO<sub>2</sub></b> | <b>99 %</b>  |
| Electricity                                     | 864 563 kWh    | 865                           | 86                                   | 0 %          |
| District heating                                | - kWh          | -                             | -                                    | -            |
| <b>Sum scope 2</b>                              |                | <b>865 MWh</b>                | <b>86 tonnes CO<sub>2</sub></b>      | <b>0 %</b>   |
| Flight hours                                    | 45 243 hours   |                               | 3 420                                | 1 %          |
| General waste                                   | 428 000 kg     |                               | 116                                  | 0 %          |
| Paper   | 123 000 kg     |                               | 0                                    | 0 %          |
| Glass/metal                                     | 77 440 kg      |                               | 3                                    | 0 %          |
| EE-waste  | 7 000 kg       |                               | 0                                    | 0 %          |
| Plastic   | - kg           |                               | 0                                    | 0 %          |
| Organic waste                                   | 202 000 kg     |                               | 0                                    | 0 %          |
| <b>Sum scope 3</b>                              |                | -                             | <b>3 539 tonnes CO<sub>2</sub></b>   | <b>1 %</b>   |
| <b>Total corporate CO<sub>2</sub> emissions</b> |                | <b>1 613 047 MWh</b>          | <b>422 630 tonnes CO<sub>2</sub></b> | <b>100 %</b> |

1) Energy equivalent is calculated for the corporate main operations (scope 1 and 2) to show the yearly energy intensity related to the corporate daily activities.

**Energy and carbon indicators**

|   | 2009      | 2010      | 09/10   |
|---|-----------|-----------|---------|
| Total corporate CO <sub>2</sub> emissions:                                    | 353 057   | 422 630   | 19,7 %  |
| Total energy consumption scope 1 and 2 (MWh):                                 | 1 348 311 | 1 613 047 | 19,6 %  |
| Energy consumption per vessel (kWh / vessel)                                  | 48 119    | 42 416    | -11,9 % |
| CO <sub>2</sub> emissions per employee (tonnes CO <sub>2</sub> / employee)    | 321       | 303       | -5,5 %  |
| CO <sub>2</sub> emissions per turnover (tonnes CO <sub>2</sub> / million NOK) | 140       | 162       | 15,7 %  |

**Carbon Footprint Analysis 2010**



**Reporting according to the Greenhouse Gas Protocol**

**Scope 1: Direct emissions**

Comprises all direct emissions from company controlled sources, such as company vehicles, own power and heat generation, transportation of employees etc.

**Scope 2: Indirect emissions**

This level concerns all emissions from purchased energy, mainly electricity or district heating.

**Scope 3: Indirect emissions**

Comprises other indirect emissions from company activities originating from sources not controlled by the company, such as, emissions from sub-suppliers, service and waste management.

**Key figures emissions**

| Category  | Consumption    | Energy eq. (MWh) <sup>1</sup> | Emissions (tonnes CO <sub>2</sub> )  | Percentage   |
|---|----------------|-------------------------------|--------------------------------------|--------------|
| Petrol  | 6 594 l        | 63,3                          | 16,1                                 | 0 %          |
| E85   | - l            | -                             | -                                    | -            |
| Diesel  | 9 892 l        | 95,0                          | 24,2                                 | 0 %          |
| Marine gas oil                                  | 101 692 tonnes | 1 254 138                     | 326 026                              | 92 %         |
| Intermediate fuel oil                           | 7 606 tonnes   | 93 185                        | 23 966                               | 7 %          |
| Electric cars                                   | - kWh          | -                             | -                                    | -            |
| Fuel oil / kerosene                             | - l            | -                             | -                                    | -            |
| Propane / LPG                                   | - l            | -                             | -                                    | -            |
| Natural gas                                     | - m3           | -                             | -                                    | -            |
| <b>Sum scope 1</b>                              |                | <b>1 347 480 MWh</b>          | <b>350 032 tonnes CO<sub>2</sub></b> | <b>99 %</b>  |
| Electricity                                     | 831 000 kWh    | 831                           | 82                                   | 0 %          |
| District heating                                | - kWh          | -                             | -                                    | -            |
| <b>Sum scope 2</b>                              |                | <b>831 MWh</b>                | <b>82 tonnes CO<sub>2</sub></b>      | <b>0 %</b>   |
| Flight hours                                    | 37 719 hours   |                               | 2 852                                | 1 %          |
| General waste                                   | 324 688 kg     |                               | 88                                   | 0 %          |
| Paper   | 136 244 kg     |                               | -                                    | 0 %          |
| Glass   | 83 414 kg      |                               | 3                                    | 0 %          |
| Metal   | 60 000 kg      |                               | -                                    | 0 %          |
| Plastic   | 85 000 kg      |                               | -                                    | 0 %          |
| Organic waste                                   | 143 728 kg     |                               | -                                    | 0 %          |
| <b>Sum scope 3</b>                              |                | -                             | <b>2 942 tonnes CO<sub>2</sub></b>   | <b>1 %</b>   |
| <b>Total corporate CO<sub>2</sub> emissions</b> |                | <b>1 348 311 MWh</b>          | <b>353 057 tonnes CO<sub>2</sub></b> | <b>100 %</b> |

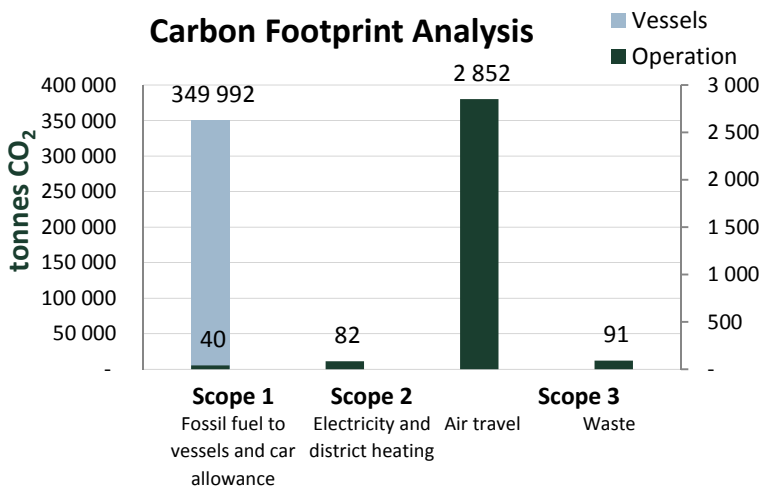
1) Energy equivalent is calculated for the corporate main operations (scope 1 and 2) to show the yearly energy intensity related to the corporate daily activities.

**Energy and carbon indicators**

**2009**

|   |                  |
|---|------------------|
| Total corporate CO <sub>2</sub> emissions:                                    | <b>353 057</b>   |
| Total energy consumption scope 1 and 2 (MWh):                                 | <b>1 348 311</b> |
| Energy consumption per vessel (kWh / vessel)                                  | <b>48 119</b>    |
| CO <sub>2</sub> emissions per employee (tonnes CO <sub>2</sub> / employee)    | <b>321</b>       |
| CO <sub>2</sub> emissions per turnover (tonnes CO <sub>2</sub> / million NOK) | <b>140</b>       |

**Carbon Footprint Analysis**



**Reporting according to the Greenhouse Gas Protocol**

**Scope 1: Direct emissions**

Comprises all direct emissions from company controlled sources, such as company vehicles, own power and heat generation, transportation of employees etc.

**Scope 2: Indirect emissions**

This level concerns all emissions from purchased energy, mainly electricity or district heating.

**Scope 3: Indirect emissions**

Comprises other indirect emissions from company activities originating from sources not controlled by the company, such as, emissions from sub-suppliers, service and waste management.

**Key figures emissions**

| Category  | 2009           | Notes | 2010           | 09/10       |
|---|----------------|-------|----------------|-------------|
| Petrol  | 16             | 1     | 38             | 138 %       |
| E85   | -              |       | -              | -           |
| Diesel  | 24             | 1     | 58             | 138 %       |
| Marine gas oil                                  | 326 026        | 2     | 410 045        | 26 %        |
| Intermediate fuel oil                           | 23 966         | 2     | 8 865          | -63 %       |
| Electric cars                                   | -              |       | -              | -           |
| Fuel oil / kerosene                             | -              |       | -              | -           |
| Propane / LPG                                   | -              |       | -              | -           |
| Natural gas                                     | -              |       | -              | -           |
| <b>Sum scope 1</b>                              | <b>350 032</b> |       | <b>419 006</b> | <b>20 %</b> |
| Electricity                                     | 82             | 3     | 86             | 4 %         |
| District heating                                | -              |       | -              | -           |
| <b>Sum scope 2</b>                              | <b>82</b>      |       | <b>86</b>      | <b>4 %</b>  |
| Air travel                                      | 2 852          | 4     | 3 420          | 20 %        |
| General waste                                   | 88             |       | 116            | 32 %        |
| Paper   | 0              | 5     | 0              | -           |
| Glass/metal                                     | 3              | 5     | 3              | -7 %        |
| EE-waste  | 0              | 5     | 0              | -           |
| Plastic   | 0              | 5     | 0              | -           |
| Organic waste                                   | 0              | 5     | 0              | -           |
| <b>Sum scope 3</b>                              | <b>2 942</b>   |       | <b>3 539</b>   | <b>20 %</b> |
| <b>Total corporate CO<sub>2</sub> emissions</b> | <b>353 057</b> |       | <b>422 630</b> | <b>20 %</b> |

**Notes**

1. Reported annual fuel consumption from car allowance.
2. Reported annual fuel consumption from 38 vessels in 2010 and 28 vessels in 2009.
3. The factor used to calculate the emissions from electricity is based on a Nordic electricity production mix, (2004-2008) and gives a value of 99 gram CO<sub>2</sub>/KWh in 2009 and 2010, source International Energy Agency (IEA).
4. Air travel is based on travel hours, corresponding to 7 013 return flights in 2010 and 5 859 return flights in 2009.
5. The amount of paper, glass, metal, organic waste and plastic, that is recycled, gives in this context zero emission. Glass that is recycled have a climate impact, that is much lower than if it was not recycled.

**Reference**

- Scope 1 - Carbon indicator for fuel; IMO, SFT (Norwegian Pollution Control Authority) and Energilink (Teknisk Ukeblad)  
- Energy converting for fuel; Energilink and NVE, NP, BP and Statoil Forskningscenter (2001-2008).
- Scope 2 - Carbon indicator for electricity is calculated from a Nordic production mix. Reference: International Energy Agency.  
- Carbon indicator for district heating is calculated out of an energy mix, reported from the district heating supplier.
- Scope 3 - Carbon indicator for flights is calculated based on information from Lavutslippsutvalget and DEFRA.  
- Carbon indicator for transportation of goods; SINTEF, DEFRA, SSB, NSB, Swedish National Road and Transport Research Institute.  
- Carbon indicator for the management of general waste: Grønn Byggallianse and recycled waste (energy- or material recycle) from Avfall Norge. Either the process of waste is energy- or recycling of waste materials, it gives in this context, zero emission.