

6.4. ENVIRONMENTAL PROTECTION

6.4.1. Environmental protection policy

The Sovcomflot Group fleet meets the highest environmental standards taking into consideration both current and planned norms and requirements.

All the new tankers of Sovcomflot Group have an additional class notation confirming their high environmental compatibility. This is another proof of the responsible attitude of PAO Sovcomflot to environmental issues.

In 2018 no spills of chemicals, oil or fuel from the fleet were registered. However, Sovcomflot Group's operating specifics are associated with certain man-made environmental impacts, which include:

- emissions from different types of ship fuel burned by ship engines;
- discharge of wastewater generated by ships.

The Sovcomflot Group environmental protection policy is an integral component of the overall management system for safe operation of ships and pollution prevention established in accordance with the International Safety Management Code, which lays down the principles, goals, objectives and key areas of the company's environmental safety activities.

The main goals of the SCF environmental protection policy are to increase environmental sustainability of the fleet and to raise the capitalisation of the Group by ensuring the reliability and environmental safety of the services rendered.

The Environmental Protection Policy provides for the following activities:

- Environmental monitoring and audit;
- Programmes aimed at increasing the competencies and awareness of personnel in relation to environmental protection;
- Investment programmes to increase the energy efficiency and environmental safety of core operations;
- Environmental risk management programmes, which include risk identification and assessment, implementation of environmental protection measures, and monitoring and assessing their adequacy.

Sovcomflot Group has in place an environmental management system, which was established in accordance with the principles, goals and objectives of the Environmental Protection Policy, and encompasses the activity of all employees of the Group, from ships' crews to top management.

On 12 September 2018, during the 4th Eastern Economic Forum, Sovcomflot Group and the Russian Ministry of Natural Resources and Environment signed an agreement on the development of long-term cooperation in ensuring environmental safety and preserving the natural environment of the Russian Arctic. The agreement, in particular, provides for the development of proposals for the implementation of comprehensive measures to stimulate the use of new environmentally

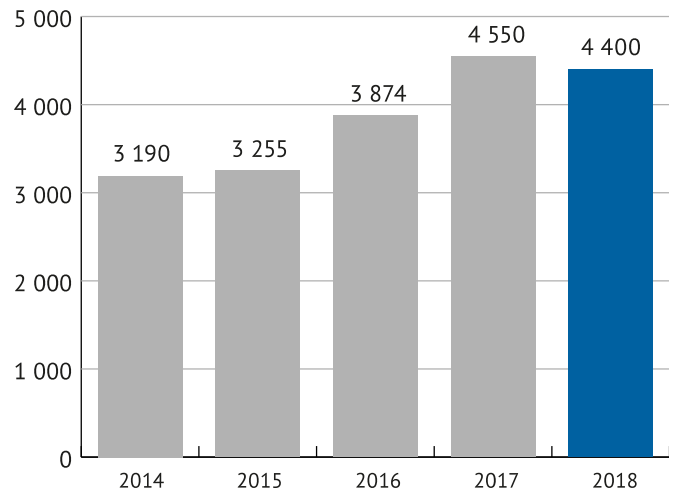
friendly types of marine fuel, primarily LNG, the development of other "green technologies," as well as information exchange and joint activities to prevent substandard navigation in the Arctic seas.

6.4.2. Atmospheric emissions

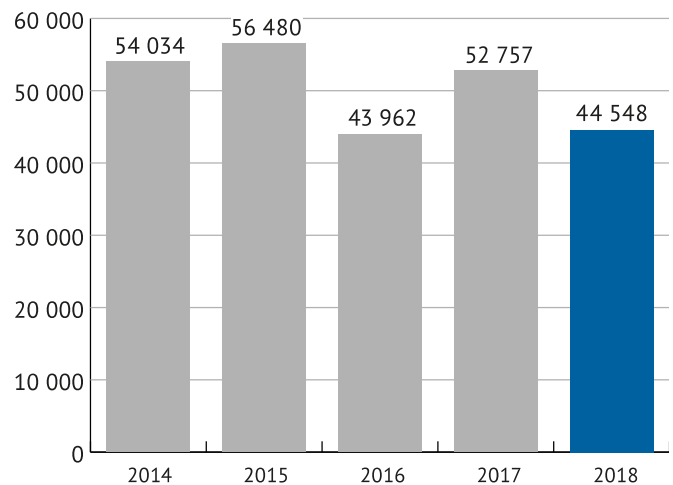
Air emissions from marine vessels account for 5 to 10% of global emissions from the transport sector.

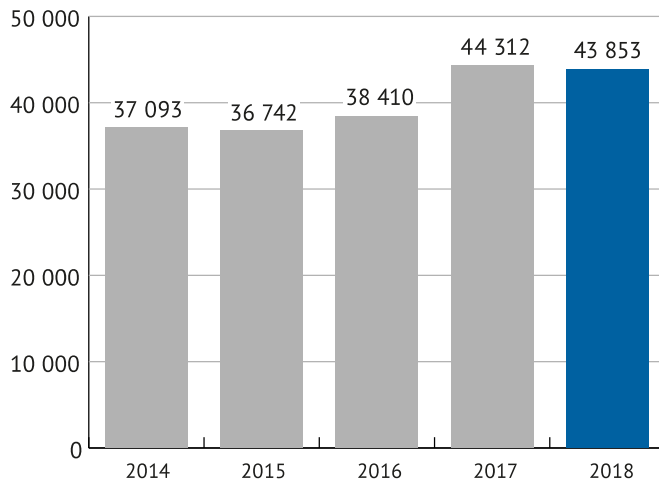
The basic components of atmospheric emissions are carbon, sulphur and nitrogen oxides formed during the combustion of fuel in ship engines.

Dynamics of carbon dioxide (CO₂) emissions, 000'tonnes



Dynamics of nitrogen oxide (NO_x) emissions, tonnes



Dynamics of sulphur oxide (SOx) emissions, tonnes

The decrease in CO₂ emissions is due to the increase in the use of LNG fuel in 2018 to 12% of the total fuel consumption of the fleet, which generally boosts the energy efficiency of ships.

Energy Efficiency Operational Index (EEOI) is calculated as the total CO₂ emissions (in grammes) produced on a voyage per total tonne-miles generated (tonnes carried multiplied by distance travelled).

The table below shows the EEOI calculation for different types of Sovcomflot Group's vessels operating on voyage (spot) contracts. In this case, fuel for the vessels is procured by the ship owner or fleet operator. A decrease in the EEOI index means a decrease in carbon oxides emissions and, accordingly, in fuel consumption per tonne-mile, which characterises an improvement in the operational performance of the company's fleet.

EEOI index of Sovcomflot Group's ships in 2018, grammes/tonne-mile

Type of vessel	Standard	Actual
Suezmax tankers	≤ 12	8.41
Aframax tankers	≤ 15	11.08
LR2 product carriers	≤ 15	11.56
LR1 product carriers	≤ 16	13.25
MR product carriers	≤ 25	19.53
Handy product carriers	≤ 25	24.59
Panamax bulkers	≤ 12	8.76

The Group is constantly supplementing the fleet with energy efficient and environmentally sustainable, new generation vessels which incorporate innovative technologies, developing a Ship Energy Efficiency Management Plan (SEEMP) for each ship in order to control emissions of hazardous substances from exhaust fumes, and fulfilling EU Council Directive 2012/33/EU on the sulphur content of certain marine fuels, using ship fuel with a reduced sulphur content.

The commissioning of the series of SCF's new generation vessels, the world's first Aframax tankers specially designed to run on LNG, has significantly contributed to environmental protection. The tankers of this series have dual-fuel main and auxiliary engines and boilers. These vessels are fitted with Selective Catalytic Reduction technology, which enables compliance with Tier III regulations governing NO_x emissions (Annex VI to the International Convention for the Prevention of Pollution from Ships)¹ even when running on diesel fuel.

Advantages of operating on LNG are most evident from figures: the reduction of sulphur oxides and soot emissions reaches 100%, nitrogen oxides emissions decrease by 76%, and carbon dioxide emissions - by 27% as compared with power plants running on conventional heavy fuel.

1. More detailed information about this series is presented in section 3.2. of this Report, 'Investment activities'.

Atmospheric emissions from an LNG-fuelled power plant, tonnes per year

