
BERGEBULK
moving mountains
BLUEMATTERS
love your ocean

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love your ocean

“Water is the driving force of all nature.”

Leonardo Da Vinci

(1452-1519)

BERGEBULK
moving mountains

Message from the CEO

Every activity, every business, and everything we do as individuals, has an impact on our planet. Even though shipping is one of the better ways of moving cargo across the world, Berge Bulk has always recognised its responsibility towards the environment, and especially the oceans. We understand that our fleet operations consume natural resources, produce emissions, and affect the ocean's biodiversity through ballast water.

At Berge Bulk we believe that preserving our planet's resources is fundamental to our current and future sustainability and success as a business. Environmental conservation thus plays an integral role in our journey to becoming one of the world's leading companies in dry bulk shipping. We have set high standards as a pro-active leader of environmental protection. We comply with, and strictly enforce, environmental law and regulations but, where possible, we are going further.

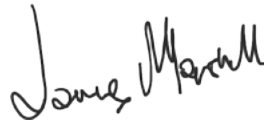
We strongly believe that increased awareness of our own impact can transfer into motivation, and a feeling of responsibility towards our planet and its oceans. This is why we have developed our "Blue Matters – Love your Ocean" campaign – it raises awareness about the effects of shipping on our oceans, highlighting Berge Bulk's on-going "blue" initiatives in keeping them to a minimum. On a day-to-day basis, the "Blue Matters" campaign reminds each of us how we can contribute to keeping our oceans clean and healthy. This means taking responsibility for our actions, and sharing experiences on how we can improve Berge Bulk's environmental performance – in our offices, amongst our crew, and across our fleet everyday.

While we can be proud of Berge Bulk's environmental achievements so far, continuous improvements in technologies will have a further very positive affect on our new fleet – providing us with the unique opportunity to make an even greater difference in the future.

We invite you to join us on this journey because, as Jules Verne (novelist, poet and playwright 1828-1905) said:
"*The sea is everything. It covers seven tenths of the terrestrial globe. Its breath is pure and healthy. It is an immense desert, where man is never lonely, for he feels life stirring on all sides.*" – and this is what we want to preserve!

Thank you to all of you who are helping Berge Bulk to keep our ocean clean and healthy.

Best reading,



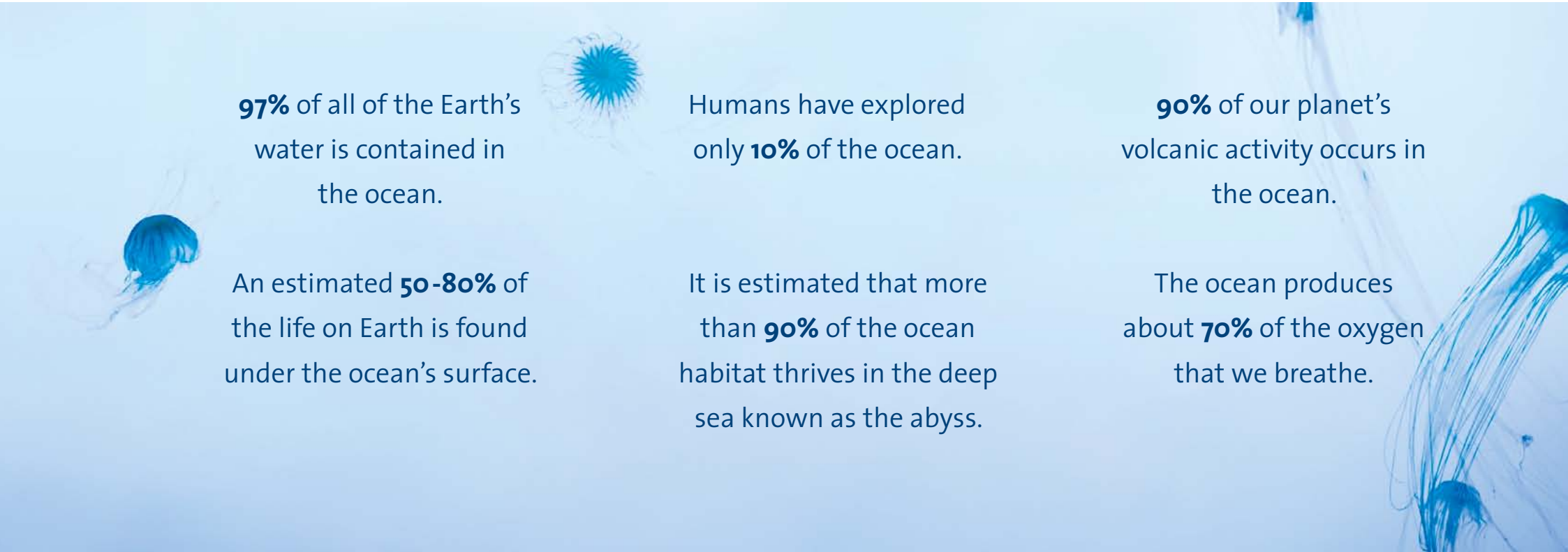
James Marshall,CEO

70% of the oxygen
we breathe is produced by

The Great Barrier Reef, measuring 1,243 miles, is the largest living structure on earth – it is made up of over 2,900 individual reefs, and can even be seen from outer-space.

The Mid-Oceanic Ridge is a chain of under water mountains, with peaks higher than the Alps – it runs for over 35,000 miles through the middle of the Atlantic Ocean.

The Pacific Ocean was named in 1520, by Portuguese explorer Ferdinand Magellan – its name means 'peaceful sea', as he met with favourable winds whilst crossing the ocean.



97% of all of the Earth's water is contained in the ocean.

An estimated **50-80%** of the life on Earth is found under the ocean's surface.

Humans have explored only **10%** of the ocean.

It is estimated that more than **90%** of the ocean habitat thrives in the deep sea known as the abyss.

90% of our planet's volcanic activity occurs in the ocean.

The ocean produces about **70%** of the oxygen that we breathe.

shipping and the environment

Berge Bulk has developed the "Blue Matters – Love your Ocean" campaign to ensure that all employees understand their responsibility to the environment. These interesting facts about shipping reinforce the aim – to strive for clean and healthy oceans.

90% of the value, and 80% of the weight of all global trade, are transported by the international shipping industry.

85% of all shipping activity occurs in the northern hemisphere, and 75% of this activity is within 400km of land.

Over 50,000 merchant ships trade internationally, transporting every kind of cargo.

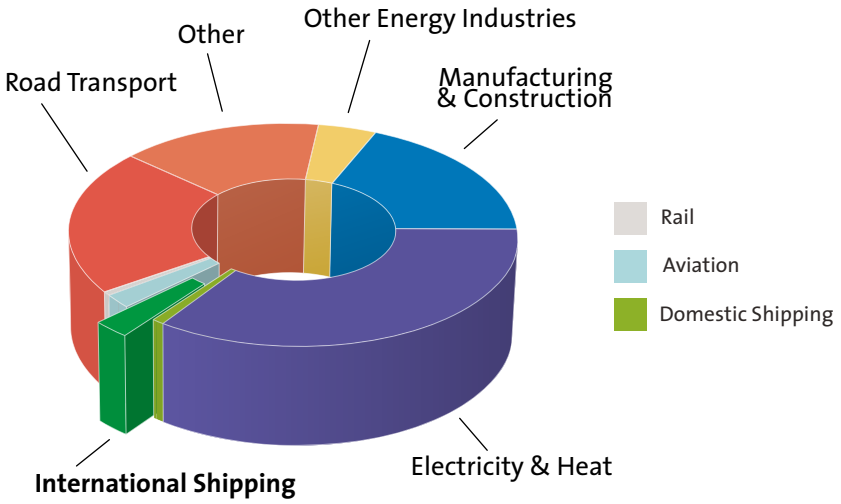
Between 2008 and 2013, world seaborne trade has increased by more than 50%, from 32,746 billion tonne miles, to an estimated 53,000 billion tonne miles.

Of all forms of transport, shipping, per metric tonne carried, is the most fuel-efficient and thus the most eco-friendly means of transportation.

Shipping is the first economic sector that is subject to legal and globally binding emission regulations: The MARPOL Annex VI, and its revisions in 2008 and 2015, regulate emissions from ships worldwide to reduce air pollution.

Of all large scale forms of transport, shipping creates the least amount of carbon-dioxide (CO_2) per ton of cargo transported over one mile. It's responsible for 2.7% of total global CO_2 emissions.

Global CO_2 Emissions

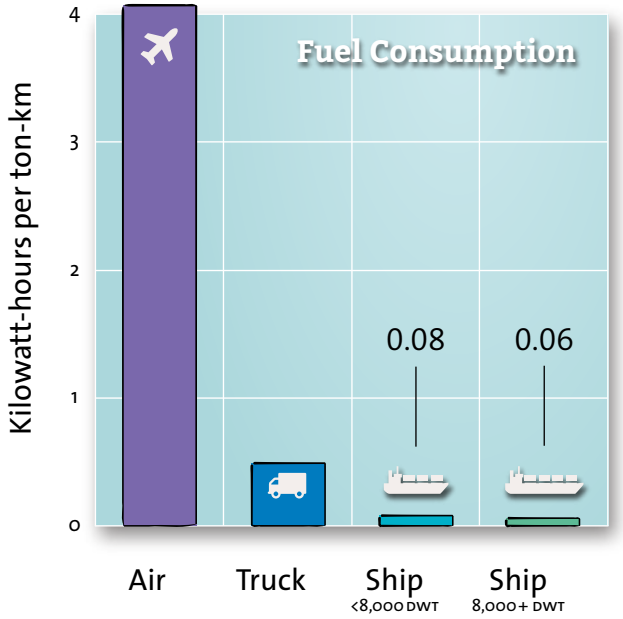


The major pathways and origins of invasive aquatic species are strikingly similar to those of major shipping routes – these species were most likely transported in the ballast water of ships.

Port operations and shipping routes also pose a potential risk to important marine eco-systems such as seagrass meadows, wetlands and mudflats.

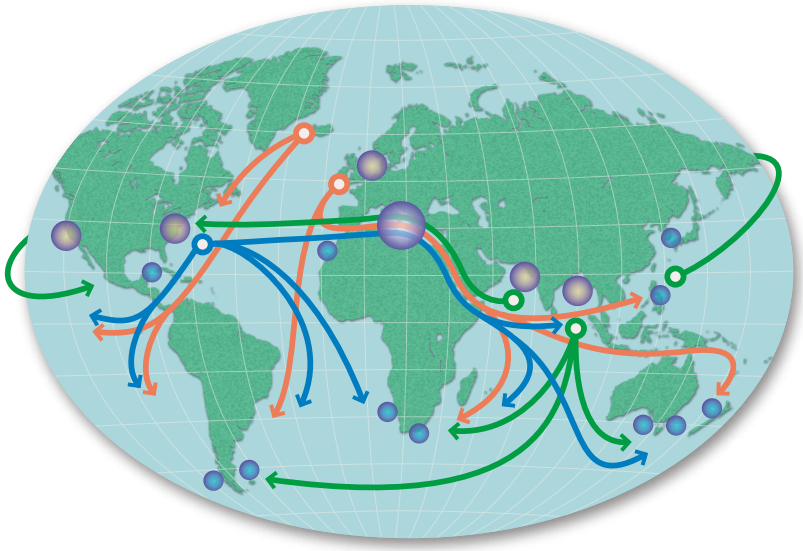
Ships also create undersea noise pollution that endangers the livelihood of marine animals by disturbing their hunting, migration and communication patterns.

Garbage, particularly plastics from ships, can be just as deadly to marine life as oil and chemicals.



Invasive Marine Species

Origins, pathways & affected areas



Major Affected Areas:

- >250 species
- 150–250 species
- <150 species

Origins & pathways:

- From NW Atlantic
- From NE Atlantic
- From Asia

Maritime transport is responsible for less than 10% of the total marine pollution generated by human activity.

Each year, an estimated 457,000 tonnes of oil enter the sea from ships and other sea-based activities. Operational discharges from ships make up 45% of the above amount, followed by shipping accidents at 36% of the input.

how ships can impact on the environment

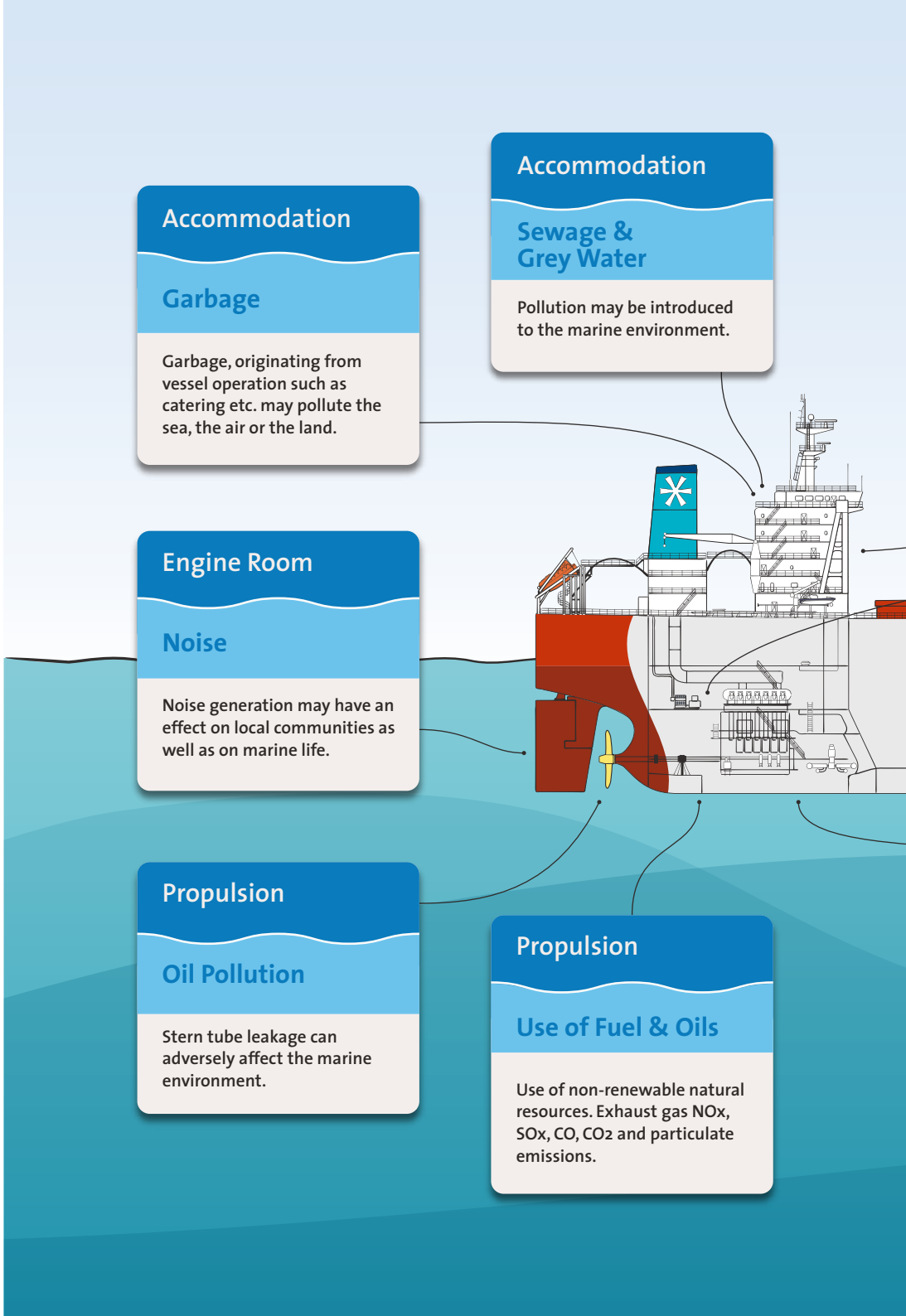
Being very aware of how shipping can compromise the environment, Berge Bulk adheres to stringent quality procedures, minimising potential risks.

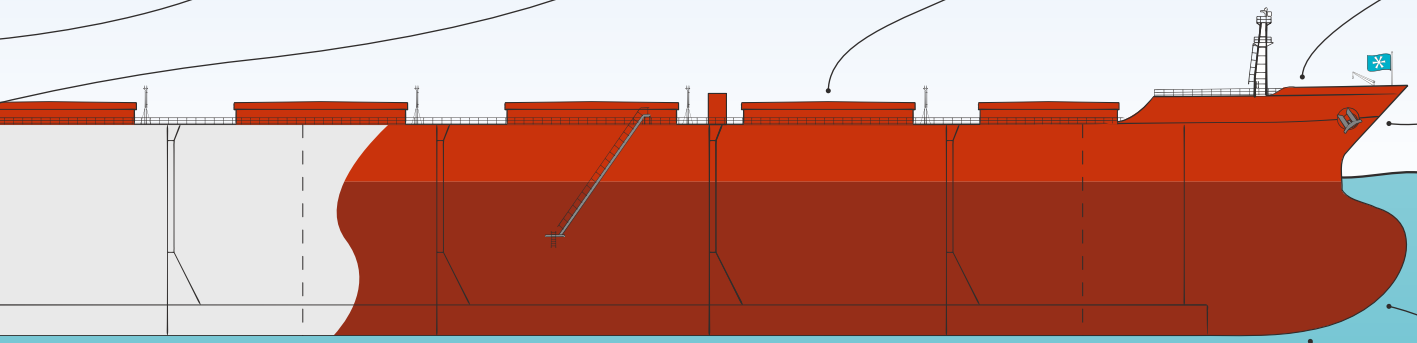
BLUEMATTERS
love your ocean

WHOLE SHIP

Incident /Accident or Scrapping

Pollution and physical impact through loss of ships and cargo or beaching of ships.





Accommodation

Cooling & Fire-Fighting

Use of (CFC, Halon, etc.) can cause degradation of the stratospheric ozone layer and contribute to global warming.

Engine Room

Incinerator

SOx, NOx PM, CO_2 emissions from incineration of sludge and garbage may disrupt the environment.

Cargo

Spills & Discharges

Threat of pollution to marine environment with potential effects on marine organisms.

Navigation

Routing

Routing through PSSAs & SAs with possible contact and disruption of marine habitat.

Hull

Cleaning Agents

Deck wash-down and run off, and above water hull cleaning, may have a toxic effect on marine organisms.

Hull

Chain Locker Effluent

Problems with sediment and marine organisms being transferred.

Engine Room

Bilge Water & Oil Spills

Pumping of engine room bilges to sea, and release of oil may pollute the water – with possible toxic effecs on marine organisms.

Hull

Marine Life

Possible contact, or disruption of habitat, can impact on marine mammals.

Cargo

Ballast Water Discharge

The introduction of invasive species to ecosystems poses a threat to biodiversity.

Hull

Cathodic Protection

Discharge of zinc, magnesium and aluminium can adversely affect marine organisms.

Hull

Antifouling Paint

Release of toxic substances from hull paint may pollute the marine environment, with added threat of hormone disrupting effects on marine organisms.

Berge Bulk and the environment

2015 Environmental KPIs

Pollution Prevention
» zero oil pollution incidents.

Fuel Consumption
» ensure accurate collection and analysis of all data to ensure a minimum reduction of 1% of fuel consumption (per ton-mile) for each ship based on data available for 2014.

» continue "Less-Is-More" bunker saving campaign.

» retrofit all planned energy saving devices within the allocated time.

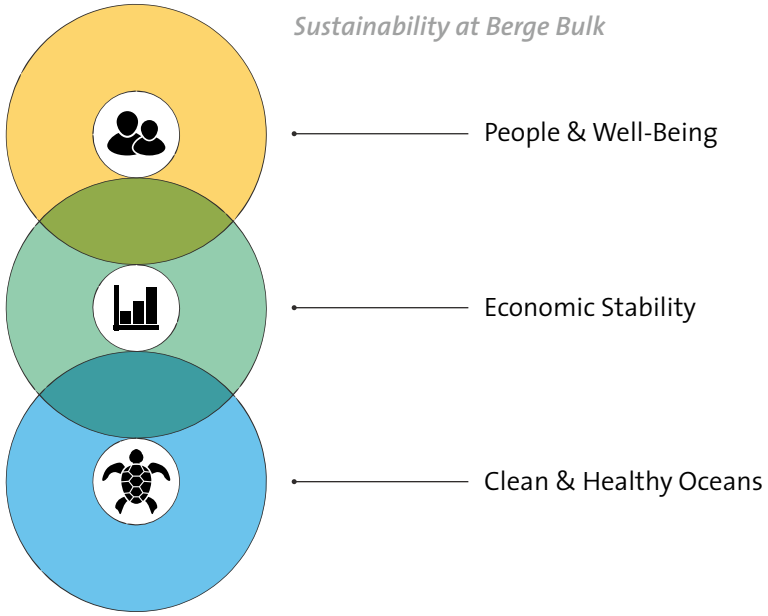
Air Pollution Prevention
» reduce CO_2 emissions per tonne x nautical mile by 3% from 2014 levels by December 2015.

» reduce the release of Ozone Depleting Substances (ODS) to atmosphere by replacing them with environmentally friendly coolants.

Chemical Inventory Management
» ensure all non-environmentally friendly chemicals are removed from fleet vessels by mid-2015.

Environmental Training
» ensure Environmental Compliance Training is completed ashore and on board.

At Berge Bulk we believe that sustainability and growth go hand in hand. While this "Blue Matters" brochure focuses on Berge Bulk's environmental agenda and "blue" initiatives, our concept of sustainability extends beyond this, and comprises the following main areas:



People & Well-Being

Berge Bulk values people – from the customer, to the supplier, to our employees, both at sea and ashore. We promote social equality within our business, and operate with an ethos of integrity and loyalty. Through the Marshall Foundation, we further support a range of programmes that "give back" to, and thus empower, those in the greater community. Often these communities have strong links with those who work with us and for us.

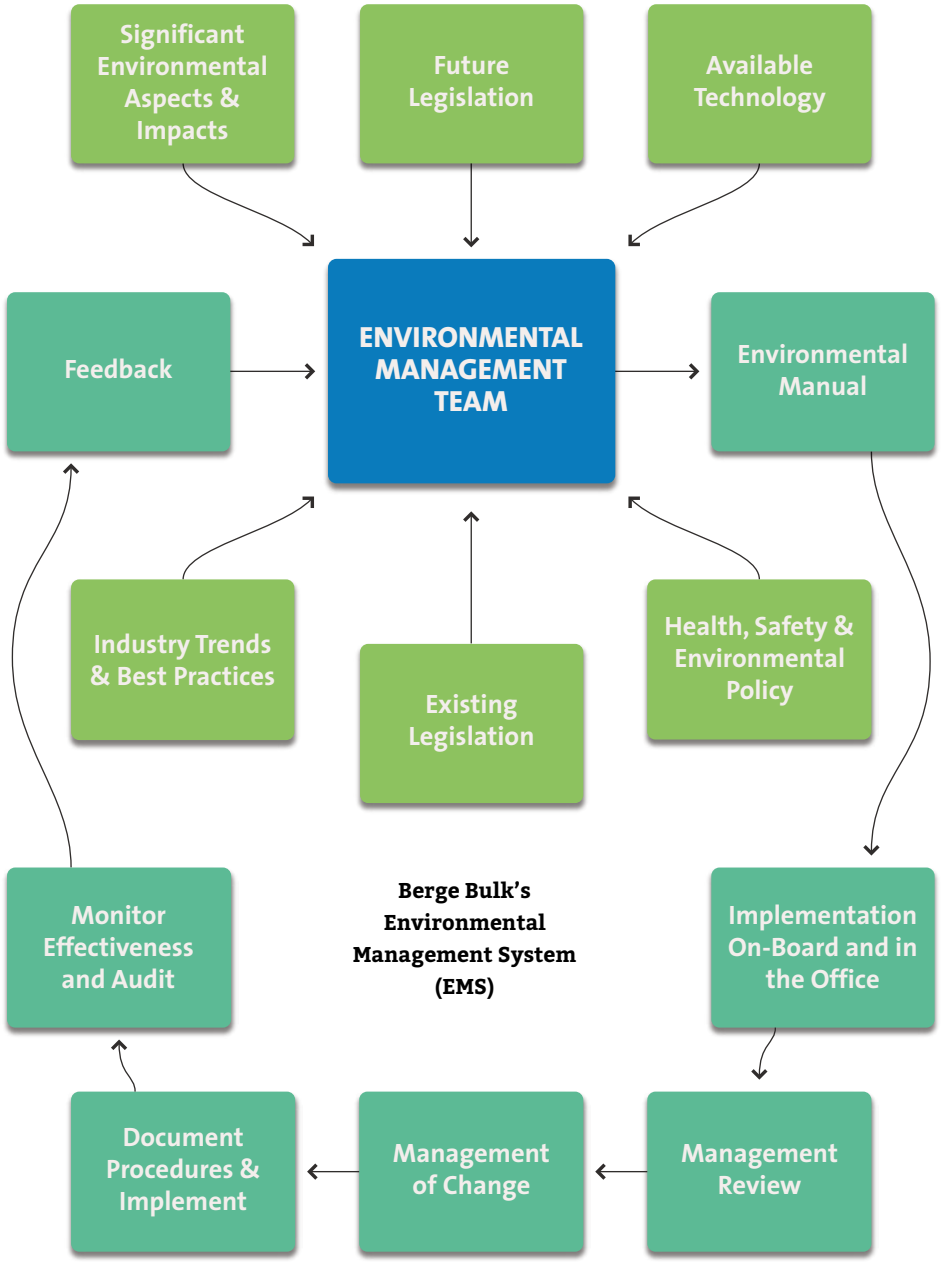
Economic Sustainability

Berge Bulk takes a holistic approach to achieving "healthy profit". Taking pride in maintaining excellent standards throughout, we reward employees and nurture long-term partnerships with customers and suppliers. With timely and well-considered investments, our finances are intelligently managed to ensure sustainable long-term growth.

Clean Environment & Healthy Ocean

Berge Bulk recognises its responsibility towards the environment, and especially to clean and healthy oceans. The protection of oceans is an integral part of Berge Bulk's culture and mind-set, both ashore and on our vessels. In order to manage and improve our environmental performance, we have established processes and practices, through an Environmental Management System (EMS), that extends across both the office and the fleet. This EMS serves as a framework to ensure that our ecological footprint is kept to a minimum – helping the Company to achieve its environmental targets.

The Berge Bulk "Incredible Bulk" character inspires and reminds all Berge Bulk employees of their responsibility to the environment.



Ensuring Statutory Compliance

Berge Bulk strives to provide safe and high-quality marine transport with minimal impact on the environment. It goes without saying that the Company fully complies with international, national, and local regulations, and this is verified officially by classification societies. Compliance with the International Convention for the Prevention of Pollution from Ships (MARPOL) is also checked during Port State Control (PSC) inspections.

In addition to these mandatory controls, Berge Bulk takes extra measures to ensure it follows all regulations. In-house auditors conduct annual environmental audits on each vessel in the fleet, and some Berge Bulk vessels are also independently audited by third parties, such as Lloyd's Register, to ensure full compliance. Berge Bulk is doing its best to establish and enhance a strong compliance culture. "*We believe in open communication with our crew, and additional environmental awareness training,*" explains Berge Bulk's Marine Manager Valentin Gherciu, who is also the Company's Environment Manager. "*And we maintain zero tolerance amongst our seafarers for non-compliance with MARPOL regulations*."

Above and Beyond

"Blue Matters" has evolved out of Berge Bulk's determination to do more than is statutorily required, and is deeply embedded within the Company's strategy and working culture. It is built upon two main pillars – the Health Safety & Environmental Policy, and the ISO 14001 standard as published by the International Organization for Standardization (ISO).

Berge Bulk's responsibility towards the environment extends into every decision-making process. Our Health, Safety and Environmental Policy is a declaration of our present and future commitment to the environment. "*It provides a unifying vision to guide the actions of company's employees, management, customers, suppliers and other stakeholders,*" says Gherciu.

Berge Bulk is ISO 14001:2004 (office & entire fleet) and ISO 9001:2008 (office) certified by Lloyd's Register Quality Assurance (LRQA). The ISO provides a systematic framework on managing immediate and long-term environmental impact of an organisation's services and processes.

"*We comply with ISO 14001 standards on a voluntary basis and, with this certification, we also willingly submit ourselves to controls from third parties, providing even more transparency on our environmental practices and management,*" states Gherciu.

To improve the Company's environmental performance further, it is essential to know where it stands at present. All Berge Bulk vessels have their individual Ship Energy Efficiency Management Plans (SEEMP), and Masters submit monthly environmental reports on the ships' consumption figures and other environmentally relevant data, such as the amounts of garbage and sludge produced.

"*We are especially proud of our pioneering measures when it comes to monitoring our operational performance across the fleet,*" says Berge Bulk's Operations Manager Atul Trehan. "*By keeping such a close track on performance, we can easily identify areas for improvement*."

An Even Brighter Future – ISO 50001

In the future, Berge Bulk is aiming even further. The Company is preparing its fleet for compliance with ISO 50001 international standard by LRQA, which involves systematic management of all energy usage and requires the detailed monitoring of all energy saving measures on board. We have already conducted a gap analysis in order to identify all measures that need to be taken in order to bring our performance to ISO 50001 standards.

"*In a second stage, we are now working on a software with Samsung Heavy Industry that allows for real-time monitoring of energy consumption and other environment-related measures as required under the international standard,*" explains Gherciu. The plan is to apply the software on Berge Bulk's new buildings from G.S.I. Longxue shipyard in Guangzhou, China, by August 2015, and likely roll it out across the existing fleet thereafter. Gherciu concludes: *"This new technology will provide more precise consumption reviews, so we will be able to take the action needed on board to bring our environmental performance to an even higher level.*"

In compliance with ISO 14001 standards, Berge Bulk established an Environmental Management Cell represented by key employees of all departments. At regular intervals, the Company's environmental aspects, impacts and goals are reviewed and updated.

LLOYD'S REGISTER · LRQA ISO 14001 UKAS MANAGEMENT SYSTEMS 001

LLOYD'S REGISTER · LRQA ISO 9001 UKAS MANAGEMENT SYSTEMS 001


The Incredible Bulk says

our people and the environment

Support from the Top

The environmentally friendly operation of our business is of great importance to Berge Bulk's Senior Leadership Team. "*The only way we can make big improvements on our environmental performance is by creating awareness and deeply embedding a culture of energy efficiency into all areas of the business – and this starts with people*," says CEO James Marshall.

The protection of our environment, and especially the ocean, thus forms part of the Company's long-term strategy, and this is embedded into the personal key performance indicators (KPIs) of every Berge Bulk employee. "*If everyone at Berge Bulk knows about the company's environmental agenda, and how they can contribute towards it as individuals, we can truly change the way we work and how our business impacts the environment,*" explains Marshall.

Creating Awareness

Berge Bulk has several environment-related campaigns, running across the fleet and on shore, to promote energy efficiency and to place the protection of healthy and clean waters on the agenda.

You can learn more about our fuel saving initiatives in the section on our "Less-Is-More" bunker-saving campaign. We also hold staff activities and events to celebrate international observance dates such as World Water Day, Earth Day or World Ocean Day.

In 2015, Berge Bulk is enjoying an environmental "Blue Matters" Ocean Week – to launch this "Blue Matters" campaign with our employees, as well as with our customers and suppliers. For one full week in June, our employees engage in daily activities – such as a mangrove coastal cleaning, and a sharing session on marine biodiversity – helping to raise awareness on the things each and every one of us can do to keep the ocean clean.

Training Our People

To ensure compliance with environmental legislation on our vessels, all of Berge Bulk's Second Officers – as on board Environmental Officers – need to undergo a mandatory environmental training (40 hours). In early 2014, the Company went one step further, requiring each of its Senior and Junior Officers to attend a computer based ISO 14001 Environmental Management training course (10 hours). This training takes places either onshore or on board. Training on ISO 14001 familiarisation is also imparted to office staff at regular intervals.

Berge Bulk further employs three Fleet Training Officers who provide on board training to the crew on specific topics – including on-going environmental campaigns and initiatives such as Berge Bulk's "Less-Is-More" bunker saving campaign, the garbage management and "minimisation of garbage at source" initiatives, etc.

Berge Bulk crew undergoing video training on board.

world water day

In March 2015, Berge Bulk honoured World Water Day by participating in Singapore's "Keppel Water Challenge" – highlighting the fact that 44% of the world's population lack access to safe drinking water.

Fifteen Berge Bulk participants experienced first-hand what it is like to walk long distances to fetch clean water for their families every day. Over a course of 10.5km, they carried up to five litres of water in recycled jars, bags or bottles through Singapore's midday heat.

Every litre that reached the finish line – poured into a ceremonial well – was matched with S$1 in donations to 'charity: water', a non-profit organisation that provides clean and safe drinking water to people in developing countries. Overall, the 500 Water Challenge participants carried more than 2,400 litres to the finish line!

our ships and the environment

Improving Energy Efficiency

Energy efficiency describes how much output is gained from any energy consumed. By increasing efficiency, less energy is used. This results in cost savings and fewer emissions. Compared with other forms of transportation, shipping is highly energy efficient. Nevertheless, the shipping industry faces growing pressure to further improve energy efficiency, as legislation is becoming tighter.

At Berge Bulk, we promote energy efficiency mainly in terms of fuel efficiency through our in-house "Less-Is-More" bunker saving campaign. True change requires a whole team effort, and that means attention and commitment from all aspects of our business – from planning ship routing, to daily operations and routine maintenance, to building new vessels.

The "Less-Is-More" campaign focuses on three main areas:

1. Improved Scheduling & Routing
2. Ship's Structural Design & Equipment
3. Emissions Reduction

Regular meetings and performance reviews are held to promote the campaign, ensuring that everyone is clear on their personal responsibilities in the company-wide effort to save energy. "*Pre planning and awareness are very important,*" says Atul Trehan, Operations Manager, in charge of the "Less-Is-More" bunker saving campaign. "*If the engineer on watch knows in advance what demands to expect on the propulsion plant, he can configure the plant accordingly. This will help save fuel.*"

To allow such planning, daily consumption reports and optimum transit speed curves are posted in the Engine Control Room. Berge Bulk's ship management team also promotes energy conservation practices on board and assures all crew members are aware of their responsibilities and the Company's expectations of them.

This way, every single Berge Bulk crew member understands his role in the company-wide effort to attain energy efficiency, and receives positive reinforcement to do so – whether at sea, during anchorage, or whilst working in port.

BUNKERS

LESS IS MORE
CAMPAIGN

Did you know?

Reducing energy consumption on our vessels – however small – has a huge impact when taken across our entire fleet. Just saving one metric ton (MT) of fuel per day on each ship, in a fleet of 40 vessels, accumulates to 14,600 MT of fuel saved in a year. This also results in lower emissions, which is good for the environment.

Improved Scheduling & Routing

"*The most straightforward way to minimise energy consumption per tonne mile carried, is by reducing the time that a vessel spends in ballast*," says Duncan Bond, Berge Bulk's Chief Commercial Officer.

As a result, Berge Bulk puts a lot of effort into smart voyage scheduling. This includes good planning of maintenance services and dry-dockings, as well as assigning the most suitable vessel to each particular voyage. "*To do so, we need to know exactly how our ships perform*," says Trehan. "*That's why, for each vessel, we've identified critical data that we keep a close track on.*"

With a growing fleet and more ships, Berge Bulk is also becoming increasingly flexible with assigning its vessels to specific contracts. This also allows for careful pre-planning of dry-dockings and other maintenance services.

Speed is another key element. Just a small reduction in speed, from 14 to 12 knots, can bring down power consumption to 63% of the original usage. This leads to significant fuel savings and considerably lower GHG emissions. "*That's why we focus on improving our voyage optimisation by guiding our vessels with the optimum speed consumption parameters,*" explains Trehan.

Berge Bulk provides its vessels with professional routing advice, ensuring the safest, shortest, and most optimal routes. This involves detailed guidance on the vessels' optimum speed, whilst taking into account numerous factors such as the weather and currents, the vessel's structure and age, her stability and cargo load, and her fuel consumption performance statistics. Berge Bulk has specifically trained its Operators in providing such professional and detailed routing advice.

The environmental benefit is evident. Voyage optimisation and smart scheduling generate one percent in fuel savings per day on each vessel. Accumulated over a fleet of 40 vessels that accounts for a significant reduction in emissions and overall fuel consumption. "*Vessels also waste less time in port, waiting to berth or manoeuvre, which further increases their efficiency,*" concludes Bond.

In addition to efficient route planning, with consideration of the weather and oceanographic conditions, other "Less-Is-More" initiatives include making sure that the vessels carry the optimal ballast for safety and stability, and avoid dead-weight. Berge Bulk further ensures that its vessels sail on optimum trim to reduce resistance and wave making tendencies at the bow. The Company also adheres to various fuel saving practices in the engine room.

Operations Manager Atul Trehan, working with Applied Weather Technology (AWT).

Ship's Structural Design & Equipment

Hull Shape & Vessel Design

Industry experience shows that early design decisions determine up to 80% of a vessel's fuel consumption later on. The planning stage for newbuildings is thus absolutely critical when implementing energy saving measures on board – to save fuel and reduce emissions.

Apart from complying with the latest environmental regulations, looking into optimising parts – such as the new building's hull shape, its rudder design, the shape of its fore and aft body, or its ballast and cargo requirements on specific trading patterns – can truly make a difference to the ship's environmental efficiency and ongoing operational costs.

"*We focus especially on hull design to reduce resistance and optimise propulsion efficiency,*" explains Berge Bulk's Newbuildings Manager Rens Groot. This further reduces fuel consumption and helps to reduce pollution. In fact, advanced simulations from the shipyards and design houses that Berge Bulk cooperates with suggest that improved water flow to the propeller can save up to 8% in propulsion fuel. "*We test these Computational Fluid Dynamics (CFD) calculations in scale Model Tests to quantify the resistance and power requirements,*" adds Groot.

Research from one of Berge Bulk's designs indicates that improved hull design should result in an increase of 2.6% in the hull's fuel efficiency performance. Berge Bulk's new building team requested that the hydrodynamic researchers focused on designing a ship with optimal performance at an average speed (of around 12 knots) and draught, thereby compromising performance slightly at top speed and gaining efficiency. "*It's comparable to tuning your car so that it runs most efficiently at 80km/hr, and not at its maximum speed of 200km/hr. Similarly, we are willing to reduce our top speed a few notches, in order to gain efficiency at normal speed,*" explains Groot.

Berge Bulk has also chosen very efficient Main Engines to propel its new ships. Not only are they highly energy efficient because they harvest nearly all of the energy out of the fuel, they are also tuned for 'Low Load' – again performing at their best at

around average as opposed to top speeds. In total, this generates significant fuel savings. "*Our Main Engines are so efficient now that the amount of waste heat they release no longer produces enough steam to keep the accommodation and fuel oil warm,*" says Groot. "*We are hence installing steam generating 'economisers' on our electricity generators as well, to re-capture their heat loss and put it to good use.*"

Matching a ship's design to its future trading patterns is another way for Berge Bulk to increase the efficiency of its vessels. "*We optimise the ship's size, in relation to its cargo capacity, to allow more tonnes of cargo carried per mile, while also taking the ship's service speeds and principal dimensions into account,*" explains Groot. "*For example, we consider the ports that a vessel may call at – if these generally have a width restriction, we would build the ship with a relatively larger draught and length. Vice versa, if water depth is limited, she will be designed to have a wider beam,*" he specifies. "*What's most important is that we ensure that the overall dimensions are not imposing manoeuvrability and safety. For each ship it is a fine balance to find the perfect fit – having her run safely as well as with minimal impact on her surrounding environment.*"

A newbuilding scale model used to perform fluid dynamic tests.

Hull Fouling

Hull fouling is another major focus area for Berge Bulk. The layer of slime and marine growth that collects on a ship's hull and propellers causes extra friction, and slows down the vessel as it moves through the water. As a consequence, sailing efficiency is compromised, and the ship needs more fuel to attain the same power.

Keeping under water hull surfaces smooth and clean is thus crucial to Berge Bulk's efforts in keeping fuel consumption and greenhouse gas emissions low. Berge Bulk is using the latest technology in hull paints to coat the underwater hull of its vessels. These special types of premium marine paints from leading paint manufacturers such as Jotun, Hempel, and International Paints, prevent organisms from attaching themselves to the ship's hull, and minimise friction during sailing.

"*Blasting off the old paints and applying selected high-performance coatings has delivered up to 15% propulsion efficiency gains, much more than we can expect from other alternatives in the market,*" explains Alan Lowry, Berge Bulk's Dry Docking Director. The paints are also self-polishing. "*It's great because the paint becomes smoother as time goes on, so there is less and less friction, and the ship's sailing efficiency improves over time without any further intervention from us,*" praises Lowry.

The new technology coatings also allow for greater flexibility in terms of vessel activity and speed. "*The paints offer sufficient protection against marine growth, even during long waiting periods,*" explains Lowry.

The high-performance coating comes at a price. "*Berge Bulk can spend up to 600,000 $US per ship on a full hull coating,*" shares Lowry. With no less than 50 dry-dockings scheduled over the coming years, this is a significant investment for the Company. "*But it pays off,*" says Lowry. "*The fantastic results on sailing efficiency, and remarkable cut-down in emission, make this more than worthwhile.*"

Extensive planning goes into the dry-docking schedule. At present, most dockings take place in China, where the underwater hulls are spot blasted and fully blasted every five years, before the new anti-fouling coating is applied. To keep fuel consumption and emissions at a minimum in-between dockings, Berge Bulk has set up a rigorous regime of underwater hull and propeller inspections at three monthly intervals under the "Less-Is-More" bunker saving campaign. If necessary, the hull is scrubbed and the propeller polished to keep friction and fuel consumption to a minimum.

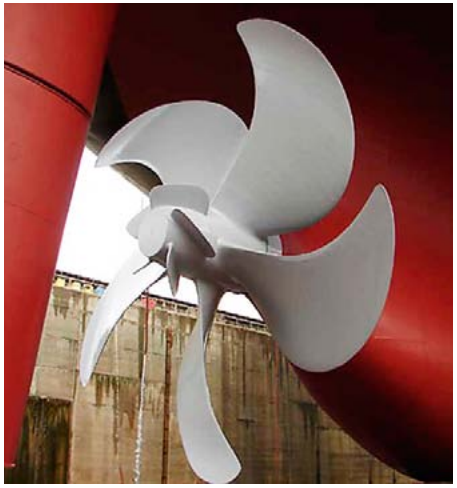
High-performance anti-fouling paint is applied to all vessels, to reduce friction.

Retrofitting Ships with Energy-Saving Devices

Some of the older vessels in the Berge Bulk fleet were not built according to today's modern standards of efficiency. Berge Bulk has therefore performed several retrofits on older vessels while they were in dry-docking.

One of the latest technologies that is adopted on the existing tonnage is the Propeller Boss Cap Fin (PBCF) and the EnergoProFin by Wärtsilä. By mid-2015, most of Berge Bulk's fleet were fitted with this innovation that has gained worldwide recognition. The special design of the propeller fin boosts sailing speed by 2%, or reduces fuel consumption by 5%, with the corresponding reductions in emissions to air. The PBCF technology also lowers propeller torque and vibration in the stern by reducing hub vortex. Consequently, ships make less noise whilst moving through the water, with less disturbance of the hunting grounds and migration, and communication patterns of sea mammals.

Berge Manaslu and a number of other vessels are also equipped with a rudder bulb and rudder fins. The bulb and fins optimise interaction between the propeller, the ship's hull and the rudder – extracting waste energy from the propeller, thus increasing propulsion efficiency by 3%-4%.



Typical installation of a PBCF on Berge Bulk vessels.

Typical installation of a rudder bulb fin.

In 2012, Berge Bulk fitted the Berge Elbrus with a Mewis Duct – a duct positioned ahead of the propeller, together with an internal integrated fin system. The duct straightens and accelerates waterflow to the propeller, and produces a net ahead thrust. The fin system provides a pre-swirl to the ship wake, which increases propeller thrust at given propulsive power. Both effects contribute to each other and help to save fuel.

Retrofitting a vessel with the Mewis Duct energy-saving device helps to save fuel. Installation costs around 0.7million USD per ship.

Optimising Engine Performance

Besides these propeller and rudder optimisations, Berge Bulk has made several investments in energy saving devices. Berge Bulk vessels have been fitted with Engine Shaft Power Metres (ESPM) that measure torque and shaft speed to calculate the power output of our ships' propulsion engine.

"*We can compare the 'real time' data with the optimum propeller performance, so we avoid overloading the engine", explains Lowry. "And, by measuring our fuel consumption, the crew on board can immediately optimise the sailing speed and engine management.*"

Berge Bulk's four 388,000 dead-weight tonnage ships – Berge Everest, Berge Aconcagua, Berge Neblina and Berge Jaya – and the newly delivered Berge Tai Shan and Berge Heng Shan, are equipped with advanced main engine control systems. Berge Bulk further fitted these vessels with electronic engine, and intelligent combustion control monitors. These automatically inject fuel into the engines, whilst taking account of the ship's loading and other requirements. This way, we permanently ensure optimal engine operation and automated balancing of compression and firing pressures.

Berge Bulk benchmarks its fuel efficiency with shop trial Specific Fuel Oil Consumption (SFOC). "*This means that we compare engine performance to an optimum base line, allowing us to easily monitor and control our fuel efficiency,*" says Claus Jensen, Berge Bulk's Technical Director.

Throughout day-to-day operations, Berge Bulk achieves further fuel savings by ensuring power balance between cylinders through efficient sludge, waste and purifier management; as well as by performing diligent and regular engine maintenance. Berge Bulk vessels also save power by recovering waste heat, not only from the main engine, but also the auxiliary engines. The collected waste heat then serves as an additional power source – for usage such as heating water on board.

In addition, the Company's "Less-Is-More" bunker saving campaign focuses on optimised purifier management to ensure that fuel impurities and water are eliminated. At the same time, fuel wastage is reduced through efficient sludge management and control.

Reducing Emissions

While greenhouse gases - methane and carbon dioxide – are natural components of the atmosphere, carbon-based fuels increase their concentration and this is associated with climate change. Ships also generate sulfur oxides (SOx), nitrogen oxides (NOx) and particulate matter (PM), such as ashes. SOx cause acid rain, which leads to groundwater and soil acidification, and also harms the Earth's biodiversity. When broken down into small sulfate particles, it increases the risk of health problems. NOx emissions are a by-product of combustion within the engine, and are linked to higher levels of ground level ozone – harming both human health and the biodiversity. PM emissions (ashes) released through exhaust fumes, while ships are berthing, can further compromise local air quality.

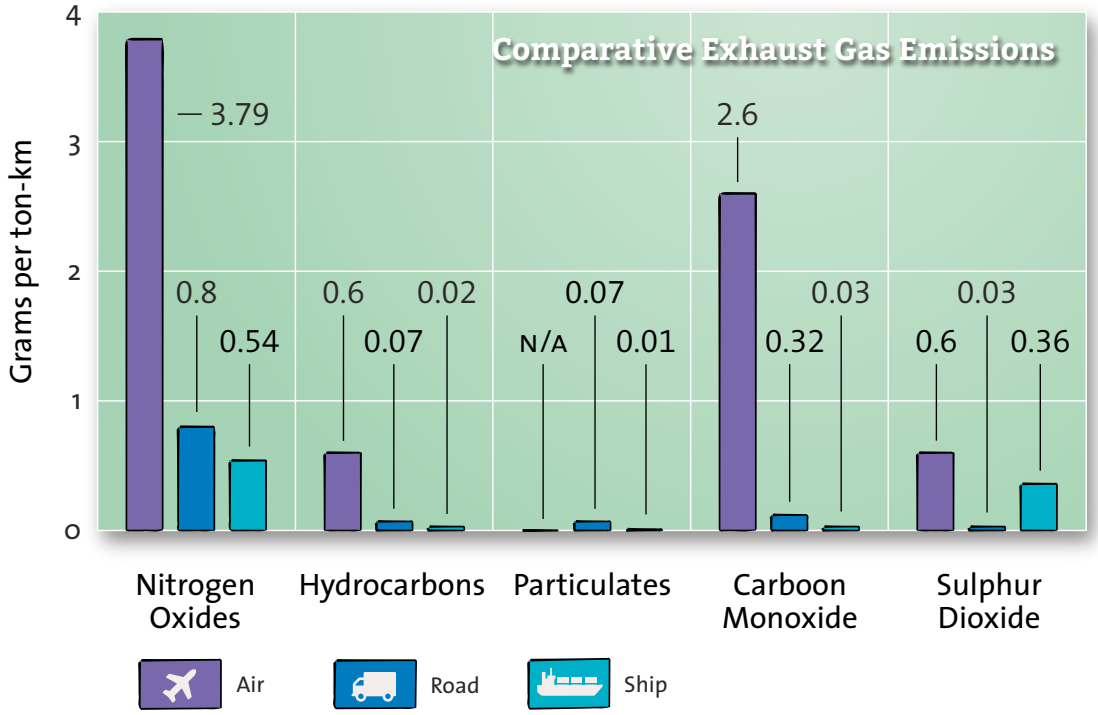
With a growing fleet, Berge Bulk is committed to minimising the potential effect our emissions have on local air quality and climate change.

"*Besides lowering fuel consumption, the easiest way to reduce emissions is by using machinery only when it is absolutely necessary,*" says Jensen.

The working hours of generators and other equipment on Berge Bulk vessels are thus kept under close scrutiny. On board power demand is also kept low through efficient Ship System Management – which is further promoted through the "Less-Is-More" bunker saving campaign. As Jensen explains: "*If we work together, and carefully plan when to use specific equipment, we can cut-down a vessel's energy consumption significantly.*"

To keep emissions low in accordance with present MARPOL VI regulations, Berge Bulk runs its vessels on low sulfur fuel oil (LSFO) with 0-1% sulfur content when sailing in so-called Emission Control Areas (ECAs), and on low-sulfur gas oil (LSGO) with maximum 0.1% sulfur content whilst alongside. "*By doing so, we not only ensure compliance with most recent ECA legislation from January 2015, but we go beyond that, switching to low sulfur marine fuel oil well in advance of what is actually required,*" says Jensen.

The coolants used in ship's refrigeration and air-conditioning systems pose another potential risk – releasing Ozone Depleting Substances (ODS). These substances destroy the ozone layer of the atmosphere, thus driving climate change. Berge Bulk is currently undergoing retrofits on those few vessels fitted with the old ODS systems, replacing them with environmentally friendly coolants. We also ensure that these new environmental standards are built into all new vessels.



Did you know?

We calculate air emissions (CO_2, SOx, NOx, PM, ODS) individually for each ship in our fleet. All ships owned by Berge Bulk are ISO 14001 certified.

Shipping is the first economic sector that is subject to legal and globally binding emission regulations – the MARPOL Annex VI and its revisions in 2008 and 2015.

Ballast Water Treatment

Reducing Spread of Invasive Species

Shipping has been identified as a major pathway for introducing aquatic species to new environments through its ballast water and sediments.

In order to keep a ship stable and allow for a safe voyage, ballast water is pumped into the ballast tanks and discharged again at the destination – which may easily be on the other side of the world. As the ballast water can contain bacteria, microbes, small invertebrates, eggs, cysts and larvae, these organisms are released into new eco-systems where they may survive, reproduce, and start out-competing native species.

The infestation of such invasive species presents a major threat to marine biodiversity, posing dramatic ecological and economic consequences as well as health problems. With the expansion of sea-borne trade and traffic volumes, the number and severity of such bio-invasions is growing at an alarming rate.

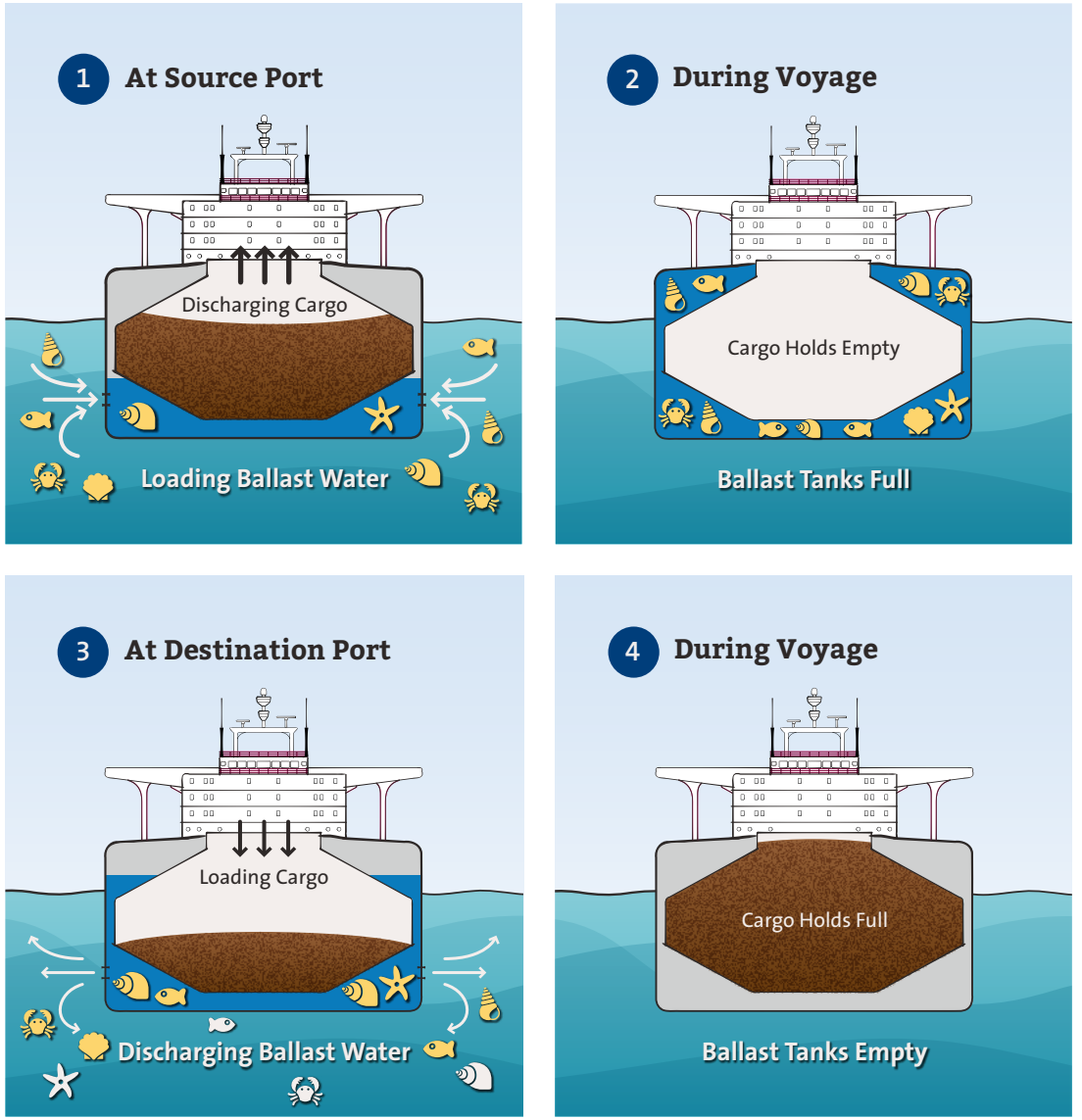
To minimise this risk, the International Maritime Organisation (IMO) developed Ballast Water Guidelines and, in 2004, a Ballast Water Convention which has not yet been ratified.

Berge Bulk supports the universal implementation of the IMO's ballast water management regulations. "*We have implemented strict management plans across our fleet, and are equipping our ships with the newest technology in ballast water treatment solutions as they go through the dry-dockings,*" says Berge Bulk's Technical Director, Claus Jensen.

Despite the fact that the IMO's convention is not yet ratified, Berge Bulk is fitting all its newbuildings with Ballast Water Treatment Systems (BWTS). The BWTS is based on the principles of pre-filtration and disinfection, with an optional nitrogen supersaturation of the ballast water. "*With investments on the BWTS of about 1 million $US per ship, we are bravely leading the industry here, because the BWTS has not yet been proven to comply with the unilateral US regulations,*" explains Jensen.

Ballast Water Cycle

The Risk of Spreading Invasive Species



Risk Management

The biggest environmental risk of shipping operations is that of an oil spill. Berge Bulk's main priority is to prevent any leakage, however small, in the first place. The Company practices a "Zero Spill" policy, which is embedded as the number one key performance indicator for the technical fleet support team.

"*We put a lot of effort into ensuring spills don't happen,*" says Valentin Gherciu, Berge Bulk's Marine Manager "*This includes detailed risk assessment of all activities, engineering design, additional training of staff, and setting up well established procedures and vetting operations.*"

Before Berge Bulk vessels call a port, the on board management and shore-based support teams perform a thorough risk assessment, and a detailed study of the port's safety. That allows enough time to set up necessary controls and preventive measures in case of any shortcomings.

Precautions to prevent pollution are also taken during the ships' voyages, and highest safety and quality standards are followed throughout all activities of vessel operation.

Berge Bulk's emergency response team also runs regular emergency drills and training sessions to keep in practice and to ensure an immediate and professional response, in the unlikely case of an actual pollution incident. Based on the feedback and lessons learned during these exercises, the response system is continuously improved to guarantee maximum preparedness.

A detailed risk assessment is carried out every time, before a vessel calls at a port.

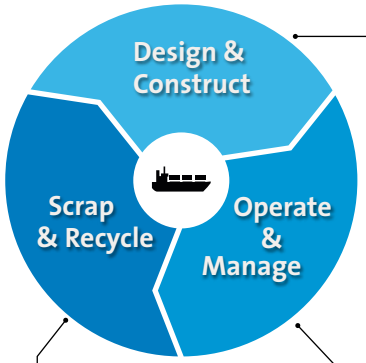
Green Passports

In striving to enhance risk management, Berge Bulk introduced the voluntary certification of the entire fleet with an Inventory of Hazardous Materials (IHM), otherwise known as the "Green Passport" in 2012.

The IHM is intended to comply with Regulation 5 of the Hong Kong Convention. Essentially, it is an inventory of materials present in a ship's structure, systems and equipment that may be hazardous to human health or the environment. Prior to recycling, details of additional hazards in stores and wastes are added, and the document can then be used to help an authorised recycling facility formulate a safer and more environmentally sound plan for decommissioning the ship.

"*When it comes to harmful substances on board our vessels, we want to know the full detail,*" says Gherciu. "*By being ahead of the game, and knowing what we are dealing with, we can evaluate alternatives and remove certain harmful parts, or at least set up preventive measures to avoid the substance from causing damage to human health and the environment.*"

Ensuring a Green Ship Life-Cycle



When building, keep in mind ship's final disposal and use materials that can be recycled.

Minimise the use of anything that's harmful to health and the environment.

Prepare and provide full inventory of all hazardous materials on board.

Minimise the amount of potentially hazardous materials on board.

Keep accurate inventories of these hazardous substances on board.

Our handy-size vessel Berge Daisetsu under construction.

Procurement & Waste Reduction

Ensuring a Green Supply Chain

We are taking an active role in creating a low-impact value chain. Not only by consuming resources more efficiently and sustainably ourselves, but also by engaging our employees, customers and suppliers in the process. This creates a powerful business model for sustainable growth.

Whenever possible, we use suppliers and vendors who are ISO 14001 certified, thus complying with common environmental standards.

Berge Bulk's procurement standard terms & conditions further encourage all suppliers to use environmentally friendly packaging. This extends to delivering products only with minimal necessary wrapping, and collecting and recycling the packaging material.

On the Berge Bulk ships, several measures have been applied to reduce the waste at source. "*We are cutting down on the plastic bottles, and produce drinking water on board,*" explains Sim Teck Siang, Berge Bulk's Procurement Manager.

All Berge Bulk vessels are equipped with waste compactors and holding bins for better garbage control, allowing the ships to store all waste until they reach the shore.

Waste management on board is strictly regulated by laws and regulations. The processes for the management of the refuse categories are strictly defined, and accurate records are maintained across the fleet. "*We hence know exactly what we produce,*" confirms Valentin Gherciu, Berge Bulk's Marine Manager. "*We strive for maximisation of garbage and sludge landing ashore for further processing.*"

Did you know?

It takes about 450 years for a plastic bottle to dissolve at sea.

Plastic debris causes the deaths of more than a million seabirds every year, as well as more than 100,000 marine mammals.

supporting environmental initiatives

THE MARSHALL FOUNDATION

The Marshall Foundation was established in 2009 as a sister organisation to Berge Bulk. The aim of the Foundation is to support community and energy efficiency projects in parts of the world where the Company has some kind of relationship or involvement. These projects, led by non-profit organisations, social enterprises or other charitable foundations, are chosen based on their relevance in addressing societal or environmental concerns that the Marshall Foundation is passionate about. In the last two years, an increased focus has been placed on India and Southeast Asia, with an added interest in environmental protection, health of our ocean, and access to clean water. Following, are some examples of projects supported...

Environmental Awareness for Children in the Philippines

The Marshall Foundation supported its partner Stairway Foundation with the construction of a boat named "Berge Apo SAS" as part of their Environmental Awareness for Children & Youth (EACY) programme in 2014. The boat serves as a "Sea Adventure School", taking students out to sea to learn first-hand about coral reefs, mangroves, sea grass, and the importance of protecting these precious eco-systems. The EACY programme was so well-received that, in 2015, the National Department of Education endorsed its inclusion into the public high school curriculum – so that even more students will come on board the Berge Apo SAS to learn about the ocean.

The Berge Apo "Sea Adventure School" teaches children about the ocean.

Providing Clean Water to Children in Cambodia

Since January 2015, the Marshall Foundation cooperates with the Social Capital Venture Development Foundation (SCVD) to deliver clean drinking water to Cambodia's rural communities. With the Marshall Foundation's support, the organisation is installing bicycle-system water pumps and filtration systems in 25 rural schools over this year alone. This will not only lead to an 80% drop in water related stomach illnesses, the children will also learn about the importance of clean water, sanitation and personal hygiene in education programmes. The bicycle-pumps are run by the children themselves and do not consume any fuel or energy.

Protecting Sharks and Manta Rays

WildAid raises awareness about the devastating consequences of manta ray and shark fin soup consumption for marine biodiversity. The Marshall Foundation funds the organisation's shark fin social media campaign across China and Hong Kong, which is part of a larger communication campaign that broadcasts a "Say No to Shark and Manta Ray" message. It's a great success – WildAid's campaign, in combination with government bans at official events, has already contributed to a 50%-70% decrease in China's shark fin consumption.

Waste Recycling in India

The social enterprise Waste Ventures India (WVI) collects and sorts municipal waste, creating compost which then serves local farmers as organic fertiliser. The WVI's pioneering door-to-door waste collection service reduces the risk of ground water contamination and provides a desperately needed alternative to chemical fertilisers, bringing back valuable minerals into the soil. Supported by the Marshall Foundation since 2014, WVI began its work in Andhra Pradesh and has since extended its operations to four additional municipalities – Bihar, Maharashtra, Madhya Pradesh and Odisha.

“The sea, once it casts its spell, holds one in its net of wonder forever.”

Jacques Cousteau

(1910-1997)

We hope you’ve enjoyed this “Blue Matters” brochure. Please share it widely and let us know what you think.

If you’d like to send a comment or suggestion on ‘Blue Matters’ to Berge Bulk’s environmental working group, please send an email to **bluematters@bergebulk.com**. For more information on our engagement towards a blue and healthy ocean, have a look at the environmental section of the Berge Bulk website: **www.bergebulk.com**

References **Information about the environmental issues covered in this document was sourced from the following organisations:** UNCTAD – United Nations Conference on Trade and Development; IMO – International Maritime Organization; NTM – Swedish Network for Transport and the Environment(Source GESAMP); WWF – World Wildlife Fund; PNUMA/GRID – United Nations Environment Programme/Global Resource Information Database; ITOPF – International Tanker Owners Pollution Federation; SMM – Society for Marine mammalogy

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