











Quality









Destinations

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Governance

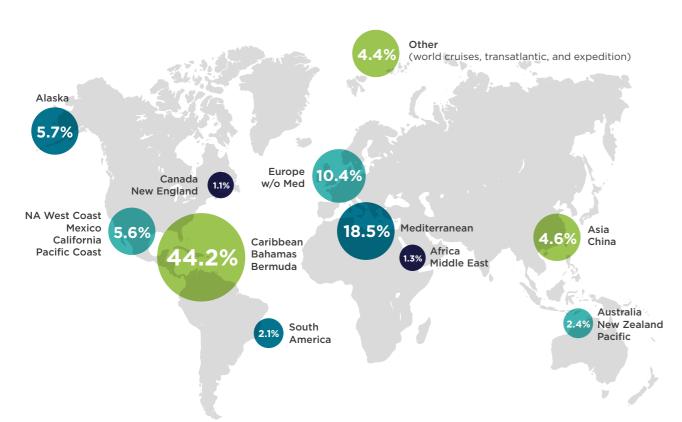
Overview of the Cruise Industry

Cruise Lines International Association (CLIA) is the preeminent cruise association, providing a unified voice for the industry as the leading authority of the global cruise community. The association has representation in North and South America, Europe, Asia and Australasia.

CLIA represents oceangoing member lines which comprise 95% of global cruise passenger capacity, including the world's most prestigious ocean, river, and specialty cruise lines, as well as a business community of leading ports, destinations, shipyards and maritime business services providers and the largest network of travel professionals who specialise in cruise travel.

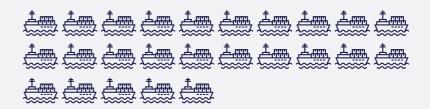
Together with its members and partners, CLIA supports policies and practices that foster safe, healthy and sustainable cruise operations; tourism strategies that maximise the socioeconomic benefits of cruise travel; and technologies and innovations that both protect and preserve our planet.

Global Cruise Industry



Source: CLIA data; percentage of cruise passengers traveling to major destinations (2022)

Cruise ships account for less than 1% of the total ocean-going commercial fleet of vessels worldwide





CLIA I SUSTAINABILITY PAPER



passenger ships



oil and LNG tankers



container ship



chemical tankers



Our global commitment to sailing to a better future extends well beyond minimising environmental impacts to also include harnessing the power of travel to support responsible tourism, connecting people and places, and inspiring lifelong cruisers and generations of new-to-cruise travelers to sail responsibly.

Our vision is for the cruise industry to be recognised as a leader in responsible travel and the best way to experience the world, sustainably. "This past year has been one of significant milestones for CLIA member cruise lines as they pursue net zero carbon cruising by 2050. Our member lines are investing in building a more sustainable future for cruise travel, both at sea and on shore."



KELLY CRAIGHEAD
President and CEO,
Cruise Lines International Association (CLIA)



Foreword

Key areas of focus among CLIA member lines include climate action, sustainable tourism, conservation, diversity and inclusion, with the health, safety and security of passengers and crew foremost in everything CLIA members do.

Although small in size the cruise industry has a powerful impact in terms of innovation in the sustainability arena. The CLIA member fleet each year becomes more efficient – embracing new technologies, innovations and, as available, the uptake of sustainable alternative fuels.

Cruise lines are implementing processes to scale up the use of advanced biofuels, green methanol and synthetic fuels. They are also deploying new sustainable energy sources such as electric batteries, hydrogen fuel cells and even wind and solar to reduce significantly their environmental footprint. To reduce emissions in port, 120 CLIA member cruise line ships today are capable of plugging into shoreside electricity, where available.

On ships and on shore, the cruise industry is working to be the best way to travel responsibly. Cruise companies collaborate with destinations, ports and other organisations around the world to embed sustainable practices such as managing

traffic flows, supporting local community initiatives, and educating cruise passengers to be culturally sensitive, and more environmentally aware. Cruise lines increasingly are incorporating sustainability education in their communications, onboard offerings, and shore excursions.

Accessible to a broad range of travelers, including those who would otherwise be unable to travel due to physical, neuro, sensory or other challenges, cruise is considered an essential and key factor in many travelers' lives. The same can be said of the effect of the industry on livelihoods in local coastal communities and on national economies; and on crew who come from approximately 150 countries around the world. The crew comprises a workforce that mirrors the cultural diversity of destinations visited by cruise ships.

CLIA member lines have set inspiring sustainability goals both as individual companies and as an association and have already made significant progress. CLIA is proud of its members' work in supporting various recognised goals and standards, including many of the United Nations Sustainable Development Goals, designed to help protect the planet for future generations.

About This Paper

This paper examines cruise industry efforts to make positive impacts for the long term.

CLIA member oceangoing cruise lines, which comprise 95% of global capacity, are reporting their sustainability efforts and achievements in their respective sustainability reports. These efforts cover matters in their direct control at sea and ashore, in their role as companies operating ships with passengers and crew and, where applicable, as terminal operators and providers of shore excursions.

Partnerships are crucial to the cruise industry. Business entities ashore constitute the broader cruise ecosystem and contribute significantly to the sustainability of cruise. This cruise ecosystem extends to shipyards, suppliers, port authorities, terminal operators, provisioning companies, destination management organisations, tourism operators, hotels, restaurants, catering and ground transportation, among others.

The interconnected nature of the cruise community means that many different actors play distinct but critical roles that contribute towards the achievement of our overall sustainability goals. Through membership and partnership, CLIA brings together a community of ports, manufacturers, travel trade members and many more, as collaboration is key to unlocking innovation and solutions for the future.

Cruise ships sail across oceans, taking people to visit places all around the world. The cruise industry relies on clean oceans and air, the beauty of natural places and the preservation of cultural heritage.

As an industry with a global reach and local impact, CLIA member cruise lines are aligning their operations and vision with internationally recognised sustainability goals such as the United Nations Sustainable Development Goals (SDGs).

CLIA and its cruise line members have identified the SDGs to which the industry is contributing and can make a difference. These SDGs, referenced throughout this report, include Climate Action, Sustainable Cities and Communities, Good Health and Well-Being, Life Below Water, Life on Land and more.

The Chief Executive of every CLIA oceangoing cruise line annually certifies the cruise line's implementation of the CLIA policies, which are subject to internal and third-party audits.



CLIA members are committed to pursue net zero carbon cruising by 2050. To demonstrate progress towards realising our vision, CLIA tracks the uptake of sustainable renewable fuels and energy sources by CLIA member cruise lines and publishes the data showing the deployment of environmental technologies and practices on board cruise ships. This paper includes the 2022/2023 data

Cruise ships undergo multiple and frequent inspections, including by port states, flag states and classification societies, and the cruise industry often exceeds local, national and worldwide requirements.

With the advice and consent of its membership, CLIA advances policies intended to enhance shipboard safety, security, and environmental stewardship.

These policies are outlined in CLIA's Compendium of Member Maritime Policies. The chief executive of every CLIA oceangoing cruise line annually certifies the cruise line's implementation of the CLIA policies, which are subject to internal and third-party audit. Highlights of the Compendium of Member Maritime Policies are available on CLIA's website at: https://cruising.org/en/about-the-industry/policy-priorities/clia-oceangoing-cruise-line-policies.

While this paper is focused on oceangoing vessels, many river cruise lines have sustainability commitments that are similar to those being pursued by the oceangoing cruise lines.



CLIA and its cruise line members have identified the SDGs to which the industry is contributing and can make a difference. These SDGs, referenced throughout this report, include Climate Action, Sustainable Cities and Communities, Good Health and Well-Being, Life Below Water, Life on Land and more.



GOOD HEALTH AND WELL-BEING

Ensure healthy lives and promote well-being for all at all ages.

GENDER EQUALITY

Achieve gender equality and empower all women and girls.





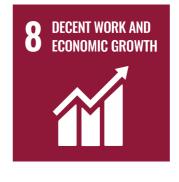
AFFORDABLE AND CLEAN ENERGY

Ensure access to affordable, reliable, sustainable and modern energy for all.



CLEAN WATER AND SANITATION

Ensure availability and sustainable management of water and sanitation for all.



DECENT WORK AND ECONOMIC GROWTH

Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.



CLIMATE ACTION

Take urgent action to combat climate change and its impacts.

CLIMATE



SUSTAINABLE CITIES AND COMMUNITIES

Make cities and human settlements inclusive, safe, resilient and sustainable.



LIFE BELOW WATER

Conserve and sustainably use the oceans, seas and marine resources for sustainable development.



RESPONSIBLE

PRODUCTION Ensure sustainable consumption and production patterns.

CONSUMPTION AND

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.











While the cruise industry focuses on future use of sustainable fuels and new technologies, the fuels in use today will continue to be needed until alternative fuels are available at scale. Accordingly, ship emissions must comply with air quality requirements of the International Convention for the Prevention of Pollution from Ships (MARPOL).

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Air Quality

By 2028, 72% of the global CLIA fleet will be capable to connect to shoreside electricity. This represents 74% of global passenger capacity.



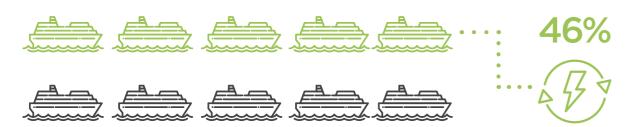
Equipping Ships to Connect to Shoreside Electricity (SSE)

All CLIA member ocean cruise lines have made a commitment that all ships calling at ports capable of providing shoreside power are anticipated to be equipped to either use SSE by 2035 or to be able to use alternative low-carbon technologies, as available, to reduce emissions in port.

As part of the EU's Fit for 55 program, by 2030, major ports in Europe will be required to have shoreside power, which will further

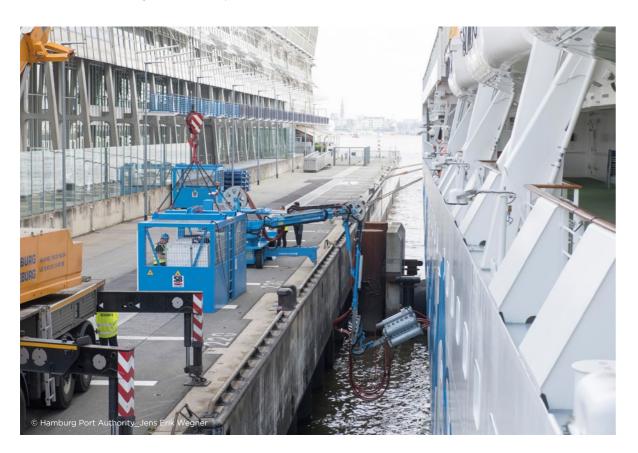
accelerate the available port infrastructure investment in that region.

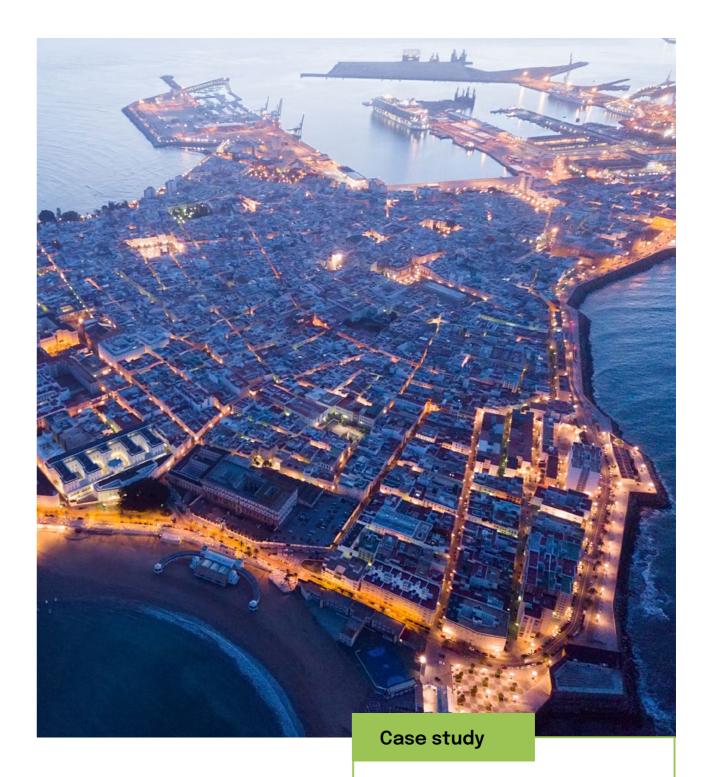
Pioneered by Princess Cruises in Juneau, Alaska, plugging into shoreside electricity (SSE) allows ship engines to be switched off, reducing emissions while a ship is in port. In 2018, there were 55 ships with shoreside power capability. The number has grown to more than 120 ships and continues to grow. By 2028, there will be more than 210 ships with shoreside power capability, plus additional ships to be retrofitted with the capability.



Across the CLIA cruise-line member fleet, 120 ships (46% of the total) are equipped to connect to shoreside electricity, with 88% of CLIA member ships coming online between now and 2028 specified for shoreside electricity systems.¹

CLIA Environmental Technologies and Practices Report, 2023





Investing in the Development of Infrastructure

The deployment of shoreside electricity (SSE) infrastructure at a port is a multi-million dollar investment project. SSE is a core element of many local public policies to improve air quality and reduce noise levels for the wider benefit of mobility infrastructure, but also of some national decarbonisation strategies. As such, it is essential that SSE projects, like other public infrastructure development initiatives, benefit from the financial support of national and local authorities.

Working with renewable energy company Endesa X, the Port of Cádiz will be among the first ports in Spain where cruise ships will be able to connect to an onshore power supply. According to Spain's Puertos del Estado, replacing onboard electricity generation with a ship's own connection to 100% renewable onshore electrification is expected to reduce NOx emissions by 96%, SOx by 8%, particulates by 94% and CO₂ by 64% from ships.

CLIA I SUSTAINABILITY PAPER 2023

Ports with at least one berth for cruise ships, active, funded or planned.



Source: CLIA port analysis (15 September 2023)

ACTIVE 33

CANADA Halifax, NS | Montreal, QC | Vancouver, BC

CHINA Guangzhou | Qingdao | Sanya | Shanghai

Shenzhen | Tianjin | Xiamen

DENMARK Aarhus

GERMANY Hamburg | Kiel | Rostock

ICELAND Hafnarfjörður

LATVIA Ventspils

NORWAY Ålesund | Bergen | Fredrikstad | Karmsund (Haugesund)

Kristiansand | Lyngdal | Skjolden (Sognefjord)

SOUTH KOREA Incheon (Seoul)

SWEDEN Verkö

UK Southampton

USA Brooklyn, NY | Juneau, AK | Long Beach, CA Los Angeles (San Pedro), CA | San Diego, CA | San Francisco, CA Seattle, WA

FUNDED 24

AUSTRALIA Sydney

CANADA Victoria, BC

FRANCE Marseille | Toulon

GREECE Piraeus (Athens) | Heraklion

ITALY Genoa | La Spezia | Livorno | Civitavecchia (Rome) Savona

MALTA Valletta

NETHERLANDS Amsterdam | Rotterdam

NORWAY Flåm | Oslo | Stavanger | Tromsø

SPAIN Barcelona | Bilbao | Cádiz

SWEDEN Stockholm

UK Portsmouth

USA Miami, FL

PLANNED 16

DENMARK Copenhagen | Fredericia | Skagen

ESTONIA Tallinn

FINLAND Helsinki | Mariehamn

FRANCE Le Havre

GERMANY Bremen

ICELAND Reykjavik

NORWAY Arendal | Trondheim

SWEDEN Goteborg (Gothenburg) | Helsingborg (Scania)

IIK Type

USA Fort Lauderdale, FL | Galveston, TX

10

Today, ships comply with low sulphur requirements by using low-sulphur fuels or with exhaust gas cleaning systems (EGCS).

These systems are a recognised alternative to the use of low-sulphur fuels because they are designed to remove the emission components that are deemed harmful. Even though heavy fuel oil can continue to be used in ships' engines, EGCS are capable of achieving emission reductions equivalent to low-sulfur fuels. In addition, a 2021 study prepared by CE Delft, Comparison of CO₂ emissions of MARPOL Annex VI compliance options in 2020, found that on a lifecycle basis, EGCS achieve significantly better CO₂ lifecycle emissions compared to marine gas oil (MGO) or very low sulphur fuel oil (VLSFO) due to the high-energy requirements associated with fuel quality improvements for distilled fuels.

Currently, 60% of ships operated by CLIA cruise line members, representing 77% of global capacity, utilise EGCS to comply with the IMO 2020 Global Sulphur Cap and the more stringent requirements of Emission Control Areas (ECAs).

EGCS technology installed on ships is designed to remove 98% of sulphur and well over 50% of particulate matter, with a 12% reduction in NOx. The vast majority additionally include washwater filters, and some include a catalytic filter on the engine exhaust prior to the EGCS as well as continuous monitoring equipment to automatically record all parameters. A variety of technologies further clean the EGCS washwater stream including fine-mesh filtration, purification, centrifugal separation and dissolved air with flocculant. EGCS washwater filter residue and process tank residue are disposed of ashore.

Emission Control Areas (ECA)

technology installed on ships is designed to remove 98% of sulphur and well over 50% of particulate matter, with a 12% reduction in NOx

reduction in NOx.

Several studies supported by credible science have found that ships with EGCS have washwater discharge that is well within stringent water quality standards. Washwater discharges are governed by international guidelines promulgated by the IMO and are under ongoing review. As discussions continue at the IMO, CLIA has suggested a risk-analysis approach be utilised prior to consideration of any limitations on EGCS use in or near coastal areas. In its paper EGCS Washwater discharges and accumulation levels in port water and sediment, submitted to the IMO at PPR 7/INF.18, CLIA has recommended this be accomplished using the Marine Antifoulant Model to Predict Environmental Concentrations (MAMPEC) model, which has been reliably used for ballast water management.



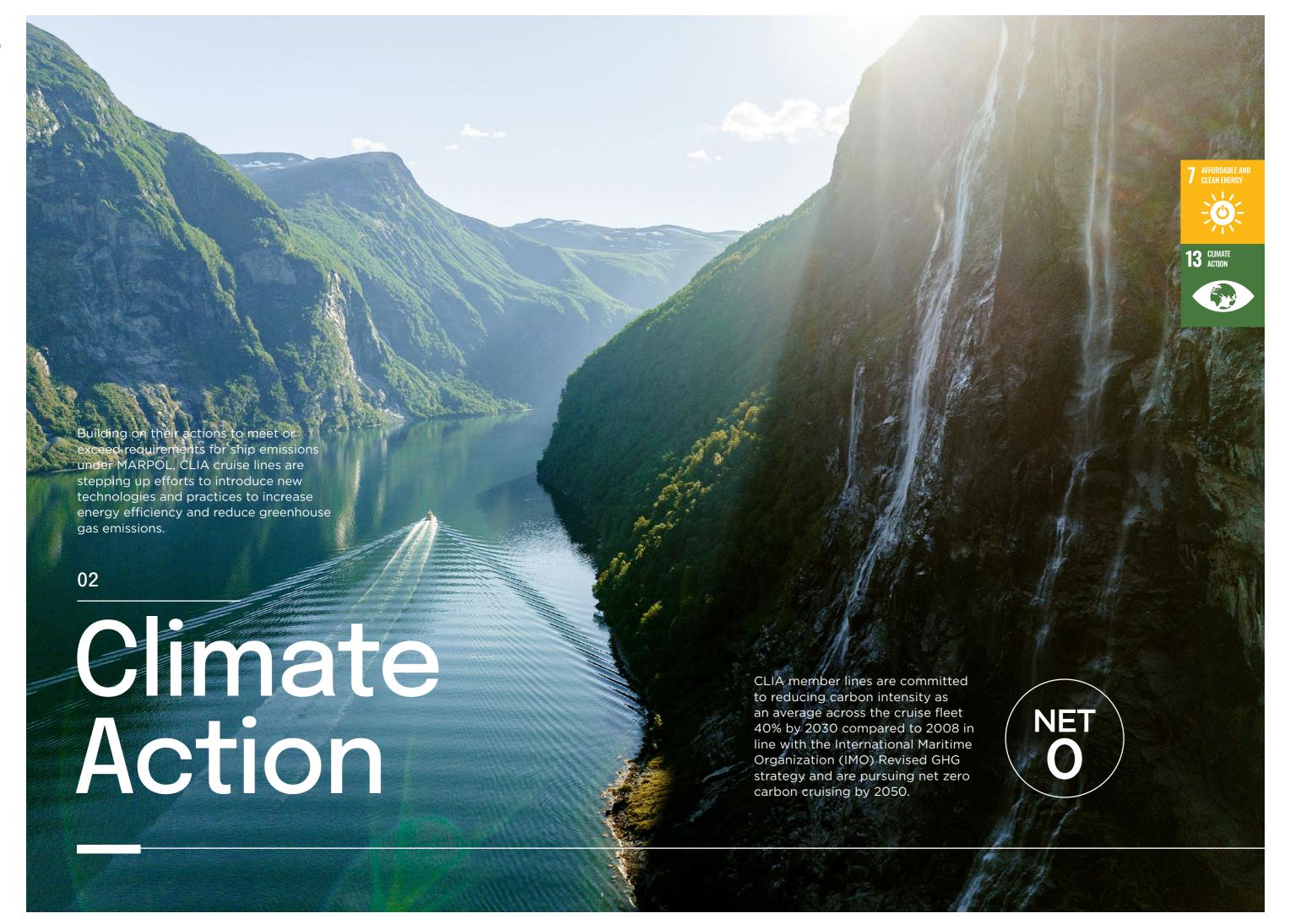
Liquified Natural Gas (LNG), BioLNG, and Synthetic LNG

Anticipating the IMO emissions limits standard on SOx and NOx, cruise lines have invested significantly in vessels powered by Liquified Natural Gas (LNG) for the last ten years. In 2018, AIDAnova became the first 100% LNG-powered cruise ship and 15 LNG ships are now in operation (eight in the Carnival Corporation fleet) with 13 more ships on order industrywide until 2028. Based on analyses by SeaLNG and others, LNG is currently the fossil fuel available at scale that has the best performance in reducing atmospheric emissions. LNG has virtually zero sulphur emissions and particulate emissions, reduces NOx emissions by approximately 85%, and achieves up to a 20% reduction in greenhouse gas emissions.

Yielding benefits now in eliminating PMs and SOx emissions, LNG technology offers a pathway to future fuels and propulsion technologies being developed for use at scale.

Ships designed with LNG engines and fuel supply systems will be able to switch to more sustainable alternative fuels such as bio or synthetic LNG in the future, with little or no modifications. The LNG engine technology and infrastructure of today offers a clear pathway to sustainable cruising in the future.





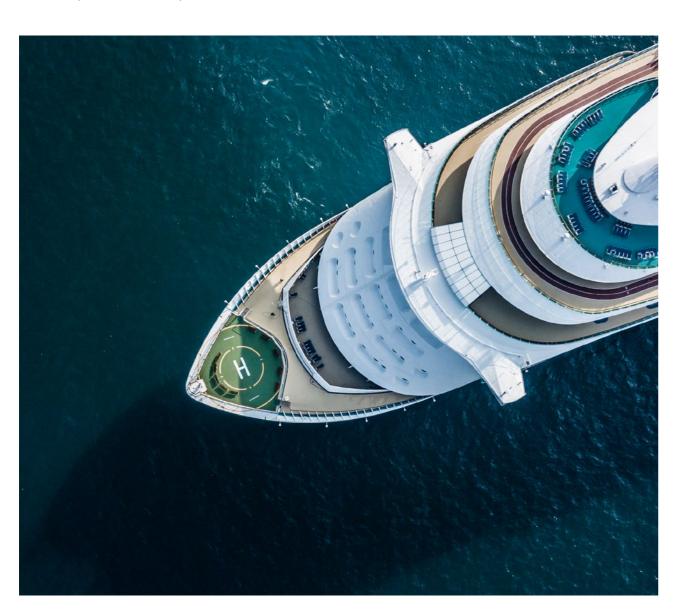
Cruise lines have invested in the development of innovative environmental technologies and practices aimed at reducing emissions and have contributed significantly to the development of sustainable marine fuels and environmental technologies.

The cruise industry is making significant investments to reduce its environmental footprint and become one of the most sustainable and responsible forms of holiday travel.

CLIA member lines actively collaborate with governments, fuel suppliers and technology companies around the world, and count on all to do their part to support a net zero carbon future. This includes faster access to funding for sustainable shipbuilding, maritime equipment manufacturing and for the development and supply of affordable sustainable fuels at scale.

Future development of environmentally friendly technologies, such as the transition to cleaner fuels, increased shoreside electricity (SSE) availability and energy efficient ship designs, are expected to further mitigate the impact of cruise ships.





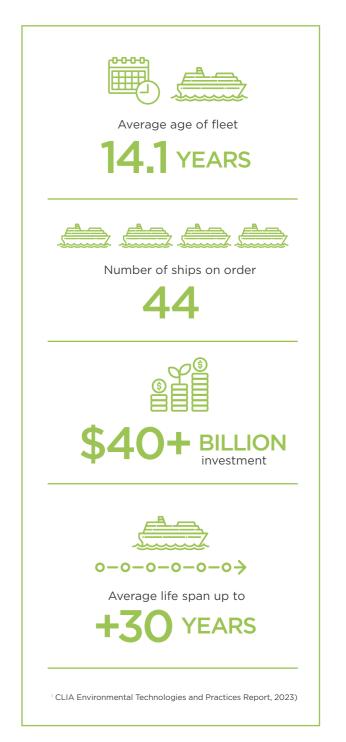
More than 15% of cruise ships entering service in the next five years will be equipped with battery storage to allow for hybrid power generation once the technology is more readily available.1

New Engine and Propulsion Technologies Driving Ships of the Future

The cruise sector is doing its part to adopt innovations and technologies in pursuit of its goals. The progress of CLIA member lines in pursuit of net zero carbon future reinforces the cruise industry's credentials as an early adopter of environmental technologies.

Cruise lines are investing today in fuel flexibility and propulsion technologies with conversion capabilities for the future. Multiple pilot projects and collaborative initiatives with sustainable fuel producers and engine companies are underway or in the works.

As cruise lines identify future fuel pathways to move away from fossil fuel, a variety of new and more sustainable alternative energy sources are being pursued such as biofuels made from nonfood biomass (plant material and animal waste); synthetic e-fuels such as e-methane and e-methanol; electric batteries; bio-LNG and/or synthetic LNG, methanol and hydrogen fuel cells, wind, and solar.



Investing in the Development of Sustainable Alternative Fuels

Alternative sustainable fuels are a critical element in the maritime industry's decarbonisation strategy. The cruise industry is working with manufacturers, classification societies and other entities to study potential pathways for the deployment of these fuels.

The cruise sector is doing its part to adopt innovations and technologies in pursuit of its goals. As with other forms of travel, the maritime industry faces the challenge that, today, there currently are no sustainable alternative fuels available at scale to achieve its decarbonisation ambitions.

Availability of sustainable alternative fuels will impact how quickly the industry can progress towards a more sustainable future. This means that there is a critical need for governments to invest in the infrastructure necessary to increase availability of bunkering for new fuels at ports around the world.

Choosing sustainable alternative fuel involves addressing multiple technical issues. For example, storage properties for fuels impact their viability for use in shipping. Some fuels require significantly more space than others, while providing the same amount of energy, and a wide range of safety aspects must be addressed with the introduction of any new fuels, systems, procedures and training.

Focus on Low-Carbon and Sustainable Fuels



32 PILOT PROGRAMS

are currently underway testing sustainable fuels





Among the pilots,





are trialing synthetic



A range of alternative energy sources are active or on the order book

These include LNG fuel cells, dual fuel engines, hydrogen fuel cells, photovoltaic/solar, battery storage and wind (including solid sail technology)

Need for Fuel Availability

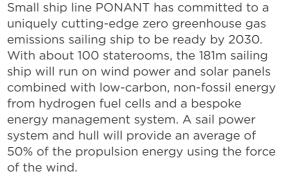
CLIA is in dialogue with policymakers about the need for a regulatory environment that supports the production, distribution, and use of renewable fuels. Given the technology forecast, in the short term (up to 2030), the decarbonisation of cruise will rely on maximising energy efficiency improvements, supplemented by use of dropin biofuels and biogas. In the mid term (2030-2040), newbuild ships will principally rely on gas as a marine fuel, including Methane (green CH₄) or Methanol (Green MeOH). For the longer term (2040-2050 and beyond), green hydrogen and bio-based feedstocks derived from renewable energy and electrolysis will be needed to meet net zero ambitions.

The entire maritime sector, including cruise, will need sustainable alternative fuels in volumes to meet targets such as the European Union's Fit for 55, which mandates 2% use of alternative fuels in 2025 and 6% in 2030. The IMO Revised Strategy includes a target of 5% (striving for 10%) uptake of alternative fuels across the maritime industry by 2030. The global community of governments and broader stakeholders, including engine manufacturers and fuel suppliers, will play a critical role in providing necessary technologies and available fuels.

The Revised Strategy agreed at the IMO sends a strong signal to markets and fuel suppliers that should provide the advanced technologies and alternative fuels needed in order for the maritime sector to do its part in achieving the Revised Strategy's ambition for net zero GHG emissions by or around 2050.

The IMO Revised Strategy includes a target of a target of 5% (striving for 10%) uptake of alternative fuels across the maritime industry by 2030.

Case study



CLIMATE ACTION



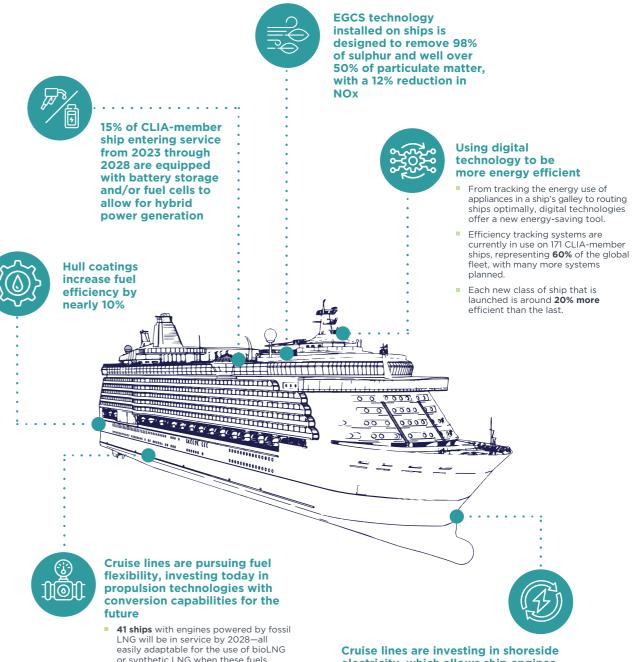


With a typical lifespan of around 30 years, cruise ships being launched today will be sailing in 2050 and beyond. To meet sustainability goals, the focus is on developing new ships that are future-focused with the latest innovations, state-of-the-art equipment and adaptability to work with new sustainable fuels once available to meet the challenges of the future.

Did you know?

The cruise industry is one of the pioneers in maritime environmental protection, as shown in its leadership role in the adoption of innovative maritime technologies. These innovations represent significant investments that have resulted in substantial reductions in air emissions:

- + Testing and use of sustainable fuels and battery/hybrid power.
- + Advanced wastewater treatment systems which are often better than shoreside treatment plants.
- + Air lubrication systems for ship hulls that reduce drag and fuel consumption.
- + Energy efficient engines that consume less fuel and reduce emissions.
- + The use of shoreside power capability for emission reduction at ports of call.
- + Special hull paint coatings that reduce fuel consumption by up to 5%.



easily adaptable for the use of bioLNG or synthetic LNG when these fuels become available at scale.

7 ships will launch between 2023 and 2028 that are either methanol ready on delivery or methanol capable,

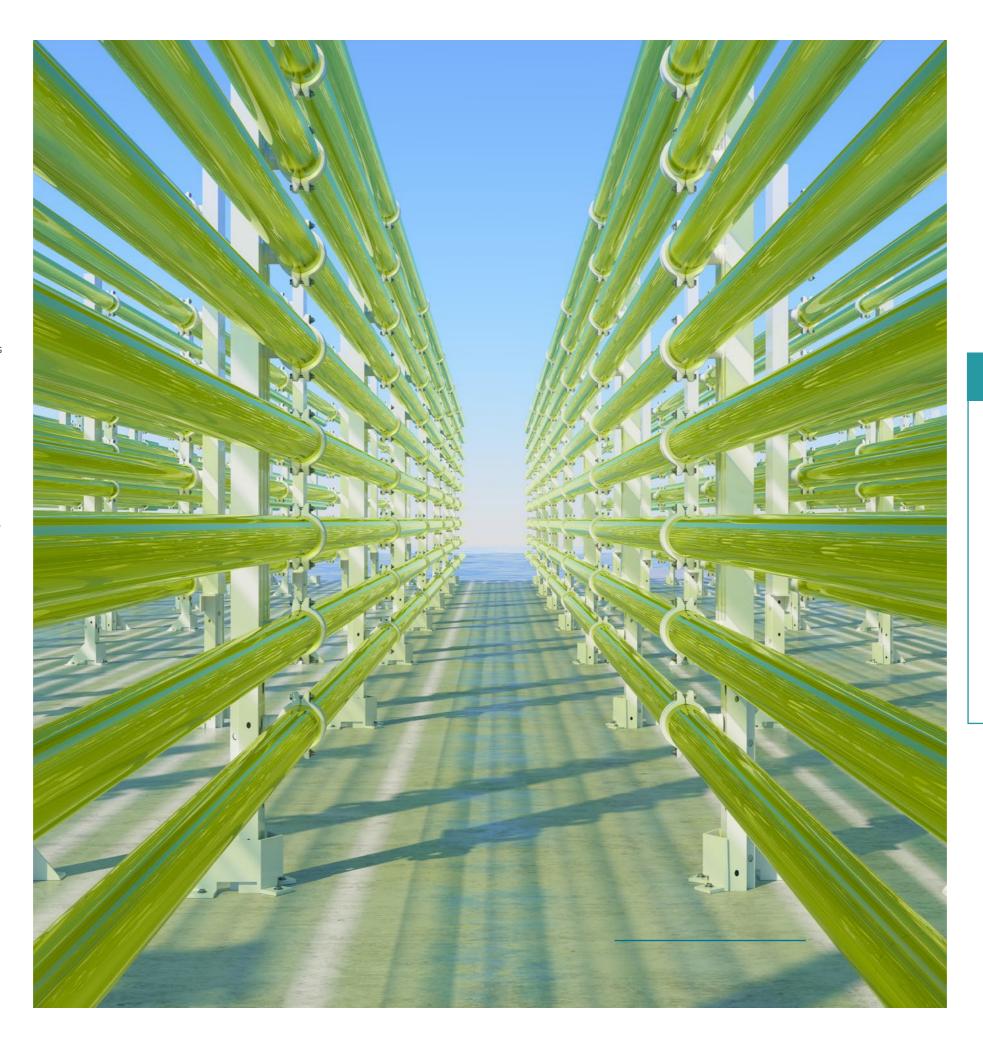
Cruise lines are investing in shoreside electricity, which allows ship engines to be switched off at berth, reducing emissions by up to 98%, depending on the mix of energy sources

representing 15% of the order book

- Today, 120 ships, representing 46% of the CLIA-member fleet, are equipped to connect to shoreside electricity—a 48% increase from the prior year
- By 2028, more than 210 ships with shoreside power capability, plus additional ships to be retrofitted with the capability.
- Only 2% of the world's ports currently have at least one cruise berth with onshore power.

Methanol

As CLIA member lines work towards a future free of fossilfuel, they are developing the first ships incorporating engines than can run on methanol. Methanol has the potential to be a long-term solution for decarbonisation. Many of the safety considerations for bunkering and operations with methanol are already known, and once available at scale, green methanol - such as biomethanol and e-methanol - will make operations almost climate neutral. Construction on the first methanol-ready cruise ship began in 2022. Seven ships, either methanol ready on delivery or methanol capable, and representing 15% of the current order book through 2028, will make their debut from TUI Cruises, Celebrity Cruises and Disney Cruise Line and Norwegian Cruise Line. These ships represent a significant investment in new engine technologies that will accelerate the maritime transition towards a future of low to zero carbon fuels.



Did you know?

Seven ships, either methanol ready on delivery or methanol capable, will make their debut over the next five years through 2028.

In addition, by 2028 there will be 41 ships with engines designed for fossil LNG, all easily adaptable for use of bioLNG or synthetic LNG when these fuels become more widely available.²

² CLIA Environmental Technologies and Practices Report, 2023) CLIA members are focused on investment in solutions to increase efficiencies in ship operations to reduce energy consumption. Energy efficiency is a focus of CLIA member lines as they work to achieve a 40% carbon emissions reduction by 2030 (compared to a baseline of 2008). Between now and 2030, the industry will need to maximise energy efficiency improvements alongside the uptake of sustainable drop-in biofuels and biogas.

Today's global cruise fleet is the most efficient in history, with each new class of ship approximately 20% more energy efficient than the one it replaces. This represents around 4% to 5% energy efficiency gains year-on-year to date.

Examples of innovation that increase energy efficiencies can be seen throughout a cruise ship, including:





Hull coatings.

Use of nontoxic anti-fouling paints helps a ship move more efficiently through water, reducing energy consumption. CLIA cruise line members have long been committed to using advanced green paints and varnishes and silicon-based anti-fouling coatings.



Air-lubrication systems.

Many cruise ships now use a built-in air lubrication system which channels air to the bottom of the hull, creating millions of microscopic air bubbles, which reduces drag and conserves fuel and energy.



Hull design.

An optimised hull design can reduce drag and improve fuel efficiency by generating a bow wave which can result in up to 15% energy savings.



Optimised speed.

Software to optimise fuel efficiency and energy management has become a significant factor in achieving efficiency gains – in addition to adjusting speed and sailing with currents.



Waste heat recovery.

Even the most efficient engine will produce some waste energy. CLIA cruise line members have invested in technologies that put this waste energy into use on ships. One way to recover lost heat energy is to install heat exchangers to turn water into steam. Steam generated from the engines is used to create fresh water for showers, pools, galleys and heating cabins.



Energy efficient lighting.

Intelligent lighting systems significantly reduce energy use. Some ships are built with keycards that allow lights and other devices to be activated only when a cabin is occupied. Motion-sensitive lighting in passages allows lights to be automatically dimmed when not in use. A move to LED lighting also has reduced power consumption. LED lighting uses 80% less energy than traditional lighting.



HVAC systems.

Heating, ventilation and air conditioning systems are among the largest consumers of energy on board ships. As cruise ships operate in temperature extremes, demands on systems vary significantly. Many CLIA member cruise lines have upgraded their HVAC systems to more efficient technology that reduces power consumption.

Hull coatings increase fuel efficiency by nearly 10%.

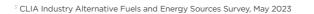
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Digitalisation and Data Use

Cruise lines are rolling out technology upgrades to save both energy and fuel. A large majority of the CLIA member fleet are using efficiency tracking systems and software to cut fuel consumption. From tracking the energy use in a ship's galley to routing ships to use less fuel, digital technologies offer a new energy-saving tool. Many cruise lines now continuously monitor fleet operations remotely from their land-based offices. The aim is to support decision-making by collecting and analysing data on various components of ship operations such as routes, speed, engine performance and emissions data and then transmitting it back to the operational crew.



Efficiency tracking systems are now in use on 171 CLIA-member ships, with many more systems planned³.









Waste management

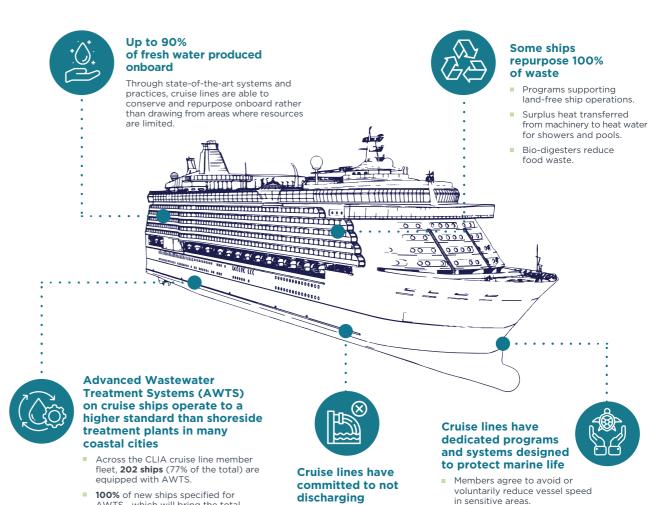
The agreement to implement the CLIA Waste Management Policy is a condition of membership in CLIA. The policy outlines advanced practices and covers waste disposal, including of cooking oil, incinerator ash, photo processing, dry-cleaning fluid waste, electronic equipment, pharmaceuticals, batteries, sewage, graywater, trash, bilge and oily water residues and plastics.

Waste management considers the entire lifecycle from planning to onboard consumption, and more. The cruise industry is deploying technologically advanced systems to reduce waste - with some cruise operators able to repurpose up to 100% of waste generated on board by removing, reusing, recycling, and converting waste to energy.

In addition to being adept at waste management, cruise lines participate in the development of international standards that apply to all ships traveling internationally, with MARPOL and its annexes setting the international standard for prevention of pollution related to oil and oily waste, hazardous substances, garbage and sewage, among others.

Did you know?

Exhaust Gas Cleaning Systems (EGCS) are a highly regulated equivalent technology. EGCS must achieve an equivalent or better emission reduction than compliant fuel and the IMO has established discharge parameters for EGCS washwater. Other countries and regions have additional standards. In the U.S., these are further strengthened by Environmental Protection Agency (EPA) requirements through the Vessel General Permit and the Vessel Incidental Discharge Act. When EGCS are operating in ports, the washwater monitoring takes place continuously.



untreated sewage

normal operations

anywhere in the

world, during

Underwater noise and vibration

Onboard scientists to support

important ocean and marine

reduction systems

AWTS—which will bring the total

Since 2019, the number of ships with

advanced wastewater treatment

Today, nearly one-third of CLIA member ships have this capability

to 242 (80% of the fleet).

number of ships with these systems

systems capable of meeting the more

stringent standards of the Baltic Sea Special Area has increased 167%.



Recycling on Board

Recycling is a critical component of efforts by CLIA member cruise lines to effectively manage shipboard waste.

Onboard measures utilised by cruise lines to minimise waste include separating recyclable materials, compacting aluminum cans into bricks with below-deck equipment, compacting plastics and crushing glass by onboard crushing machines, flattening or shredding of paper and cardboard, and partnering with suppliers to reduce packaging.

Recyclable materials are offloaded when a ship arrives at port and sent to a suitable recycling facility. Cruise lines inspect these facilities regularly to confirm recycling takes place as contracted.

Case study

As of 2022, Carnival Corporation, with nine brands, has eliminated more than 500 million single-use items and is focused on eliminating and reducing additional items – both by working with supply chain partners to purchase products in bulk and replacing items with sustainable products, such as paper, wood and bamboo. The impact is significant. Among items eliminated by the end of 2022 were 50 million individual sauce packets that, if lined up end-to-end, would stretch approximately the distance between New York and Los Angeles.





Food Waste Management

While it is widely known that food and beverage are vital components of the cruise experience, food sourcing and food management are equally important and are integral components of sustainability and a major focus for the cruise industry. Several cruise lines contributed to the United Nations World Tourism Organization (UNWTO) Global Roadmap for Food Waste Reduction in the Tourism Sector, a roadmap for sustainable and circular management of food, with an emphasis on preventing food waste in the tourism sector.

While percentages vary between cruise lines, the cruise industry goes to great lengths to minimise waste to levels lower than other consumer-facing businesses and even the level of waste that occurs in homes. To achieve reduction goals, cruise lines use technology such as digitisation to monitor consumption, determine trends, and order only what is needed.

CLIA cruise line members work with a broad network of diverse organisations to advance food waste sustainability efforts throughout the supply chain.

Did you know?

CLIA member cruise lines have a track record of leadership in food waste reduction. This includes:

- + Carefully ordering based on consumption trends.
- + Prioritising local sourcing of food, reducing the carbon footprint of the supply chain.
- + Working with small businesses as part of overall cruise line food and beverage strategies.
- + Supporting local businesses and communities and, as a result, helping improve lives and quality of life in the destinations ships visit.
- + Continually working to reduce food loss further.





Conserving Water

CLIA member lines recognise water as a precious resource and through state-of-the-art systems and practices, work to conserve and repurpose water rather than drawing from areas where resources are limited.

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Management of water use on cruise ships includes reclamation and reuse of water for non-potable purposes. CLIA members use various techniques to minimise onboard water use, such as repurposing condensation produced by air-conditioning for use in systems that do not require potable water, including flushing toilets, doing laundry, and washing the open deck.

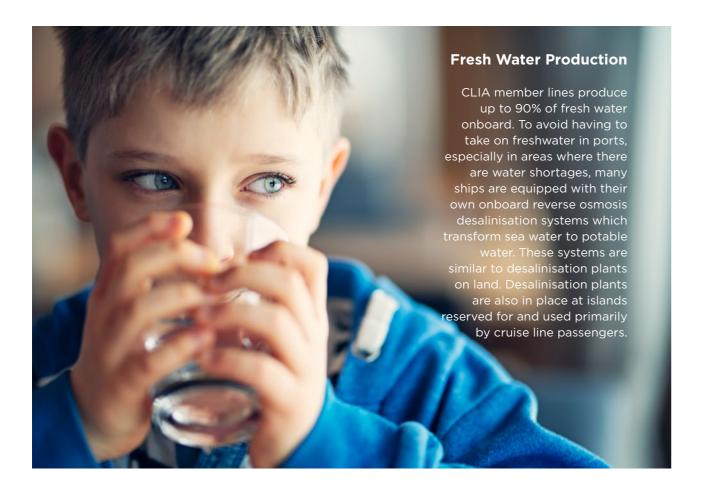
Active water conservation efforts also include reduced-flow shower heads and vacuum systems for toilets, and upgrading dishwashers and laundry equipment for water efficiency, as people do in their homes. Crew are continually trained to conserve water, and guests are encouraged to save water by, for instance, reusing towels and linens.

Oil/water mixtures from machinery and engines, or bilge water, are held in storage tanks. These mixtures can only be discharged after meeting strict environmental regulations to clean and purify the water, and discharges are always monitored and logged. Bilge water that cannot be discharged is collected and offloaded on shore by approved vendors.

Did you know?

Since 2019 the percentage of ships with advanced wastewater treatment systems capable of meeting the more stringent standards of the Baltic Sea Special Area has increased 150%. Today, nearly one-third of CLIA member ships sailing meet this standard. The Baltic standards are the strictest in the world and apply only to newly built ships.





Cruise ships produce up to 90% of the freshwater used on board through state-of-theart systems—and conserve and repurpose water rather than draw from areas where resources are limited.

Did you know?

Ships fill ballast tanks with seawater for a more stabilised and comfortable cruise. Because tiny microorganisms from the sea may be drawn in with the water - and may travel to areas of the world where they are non-native or invasive cruise ships treat ballast water before release to safeguard local ecosystems consistent with the Ballast Water Management Convention and National regulations.

Safeguarding Ocean Habitats

CLIA member cruise lines make every effort to avoid sensitive areas where marine life is observed or voluntarily reduce vessel speed while sailing in these areas. Underwater noise and vibration mitigation measures in cruise ship design include specially designed hulls, propellers and noise suppression devices as well as, on some ships, dynamic positioning systems that allow ships to hover in sensitive areas rather than dropping anchor.

A range of dedicated programs are focused on ocean and marine life protection, such as coral reef restoration, partnerships with a variety of ocean and marine life protection organisations.

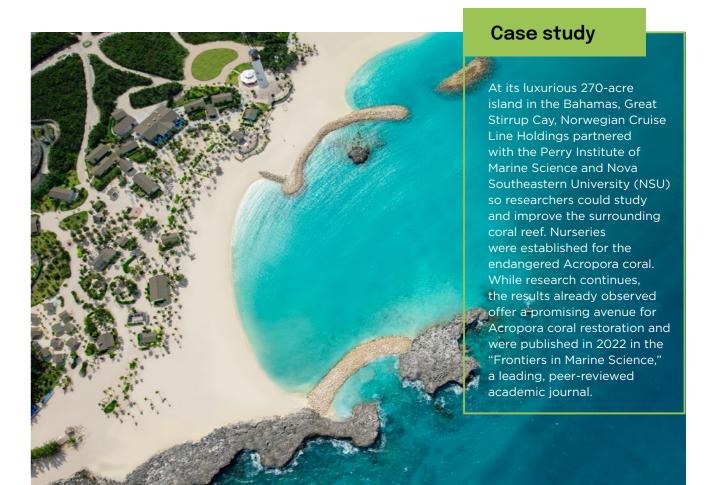
Some ships host onboard scientists, with cruise lines supporting important ocean and marine life research in addition to educating passengers and crew. These efforts include research on climate change in places such as Antarctica, the Arctic and the Galapagos.

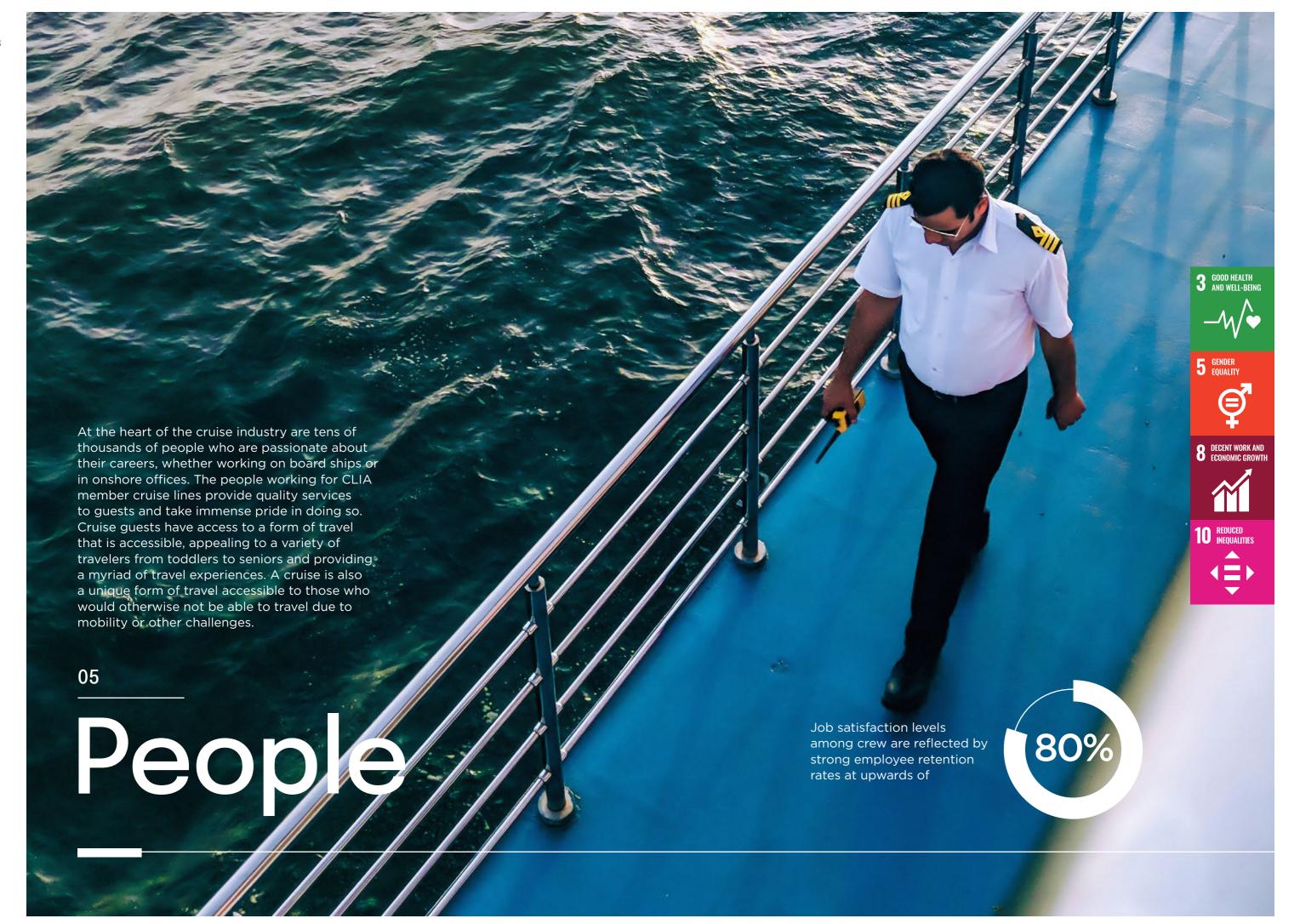
Case study

MSC Cruises and the MSC Foundation are partnering with Nature Metrics to gather biodiversity data from marine species by using innovative e-DNA technology to analyse the genetic material from sea water samples. The data collected and analysed will be made available to third parties including the 'eBioAtlas' programme, a joint IUCN and Nature Metrics initiative to support global conservation. Four MSC Cruises' vessels are collecting seawater samples over 11 cruises and 114 sampling days during 2023. The data will be made freely available to third parties, fostering conservation and restoration efforts throughout the North Atlantic.

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Case study

In Switzerland, CLIA has partnered with the United Nations World Tourism Organization's Bella Vista Institute of Higher Education (BVIS) to support education and skills for people considering a career in travel and tourism, specifically the cruise industry. The program includes maritime disciplines, a wide range of onboard roles from hospitality to retail and entertainment as well as medical careers.

94% of women seafarers across the world are working in the cruise industry.

Case study

Windstar Cruises this year hosted Family Days in Semarang, Indonesia and Manila, where many crew members who live near the ports were able to invite their families on board the yacht where they work to learn about what they do and life on board, ask questions and meet other crew members, and explore the ship. The families had an opportunity to relax on board, swim in the pool, enjoy a meal together, and take in views from the ship's bridge. Crew can share their experiences and highlight the important work they do.

Diversity

CLIA member cruise lines employ a multinational workforce. Often more than 60 nationalities may be working together onboard a ship at any time. For cruise companies, it is a source of pride to employ so many people from different nationalities, cultures and backgrounds. Multinational crews work together to deliver a guest experience unique to a cruise holiday.

As well as offering an inclusive, multi-cultural work environment, the industry is also leading the way in supporting female leadership roles - from the navigation bridge to the boardroom. Cruise provides the most advanced opportunities for women in maritime - 94% of women seafarers across the world are working in the cruise industry.

CLIA member cruise lines have also focused on programs that remove barriers for entry and offer independence for workers with disabilities.

Case study

In the UK, students from St John Bosco College participated in a program aimed at increasing awareness of cruise career opportunities including on-site visits to ships in Southampton.



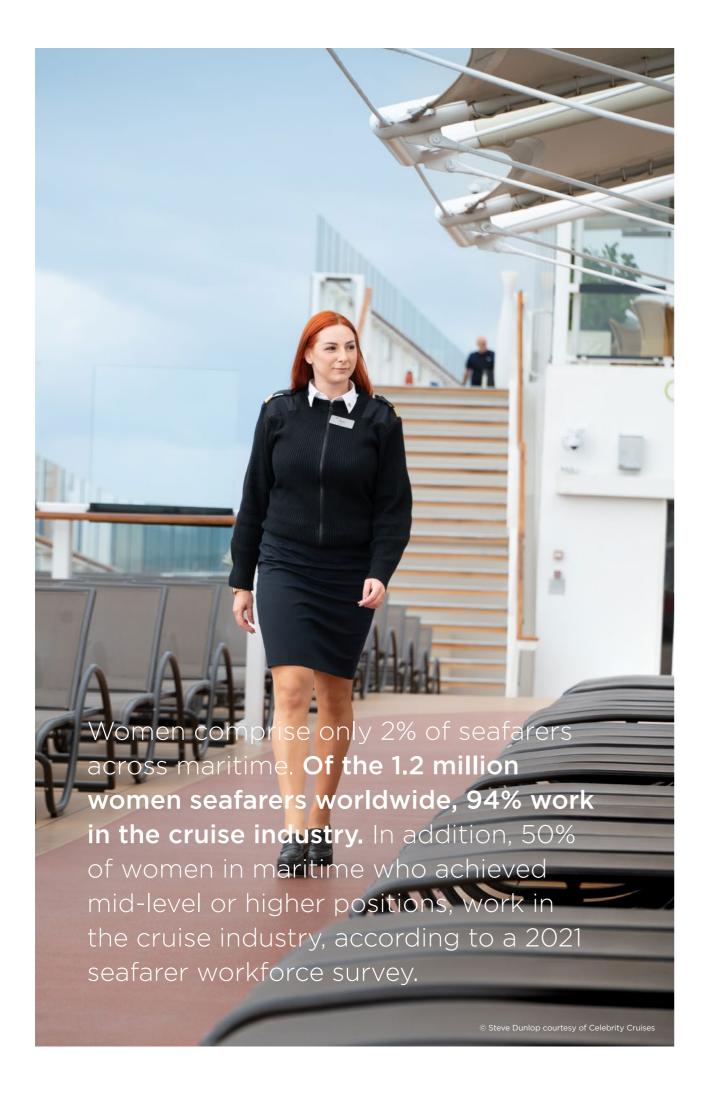




Case study

CLIA, jointly with TUI Cruises, hosted an opportunity for Tourism Management students from the Business College of Athens to visit a ship and learn about careers in cruise. Building skills for the next generation of seafarers is part of CLIA's proposed action plan for Greece.

PEOPLE





Training and Development

Cruise lines provide training across marine education and nautical sciences, such as navigation, marine engineering and electrical engineering.

As the cruise industry continues its course towards net zero carbon cruising by 2050, a new and critical area to be managed is how seafarers obtain the skills needed for safely operating innovative technologies, including navigation systems and handling of alternative fuels and propulsion equipment. Further digitisation of the cruise industry requires the expertise of skilled engineers to manage the new technologies and practices being utilised on cruise ships across the world today.

CLIA is actively engaged with the International Chamber of Shipping's (ICS) Maritime Just Transition Taskforce, which seeks to strengthen and coordinate collaboration between governments, industry, and academia towards a safe, equitable and human-centered approach to the transition towards a decarbonised shipping industry.



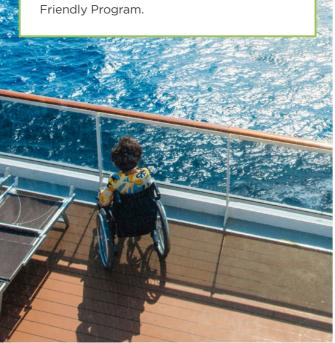
Accessibility

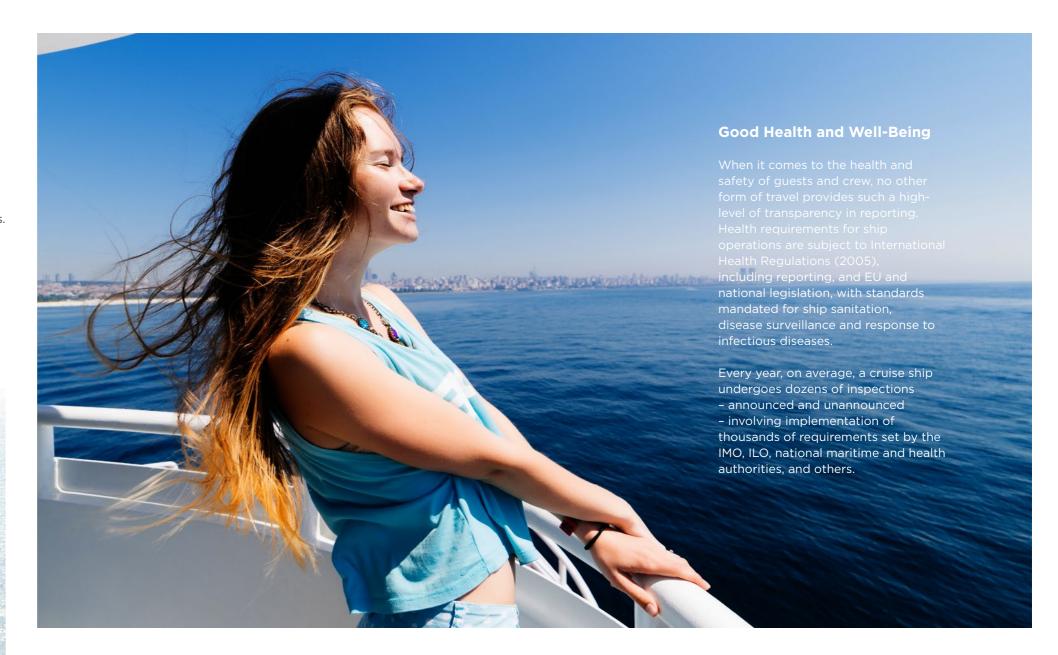
The vast range of types of cruise experiences and variety of price points, even on the same ship and itinerary, appeal to a variety of travelers and make cruises available to a broad range of travelers. This is one reason that cruising appeals to group and multi-generational family travel; there is something for everyone on modern cruise

Cruise is also one of the most accessible forms of travel for those with physical, neuro, sensory or other challenges. Accessibility is a growing need. In fact, 82% of travelers say that cruise is the only holiday option for people with limited mobility. In response, cruise lines are adding features such as more accessible cabins, automatic doors and wheelchair accessible shore excursions.

Case study

Royal Caribbean International's Access Department is dedicated to the global disability market and has grown from one employee more than 25 years ago to more than 30 people today. The department has pre-cruise contact with guests and travel advisors to plan accessible cruise vacations and shore excursions. A Disability Inclusion Team, for instance, focuses on enhancing guest (and employee) experiences with a focus on digital accessibility, physical accessibility and inclusion efforts. Royal Caribbean makes accessibility information clear both in online micro-sites and accessible cruising brochures - one specifically highlighting the line's Autism Friendly Program.





In the United States, CLIA member cruise lines have a longstanding collaboration with the U.S. Centers for Disease Control and Prevention (CDC) through the Vessel Sanitation Program (VSP). The VSP conducts twice-a-year sanitation inspections on board any cruise ship sailing to or from a U.S. port. If a ship sails outside the U.S. for an extended period, it is reinspected when it returns to the U.S. Following each inspection, the VSP publishes a report on each individual cruise ship, with scores made public on the CDC website. There is no comparable federal program in the travel sector for hotels, planes or trains.

Medical Facilities

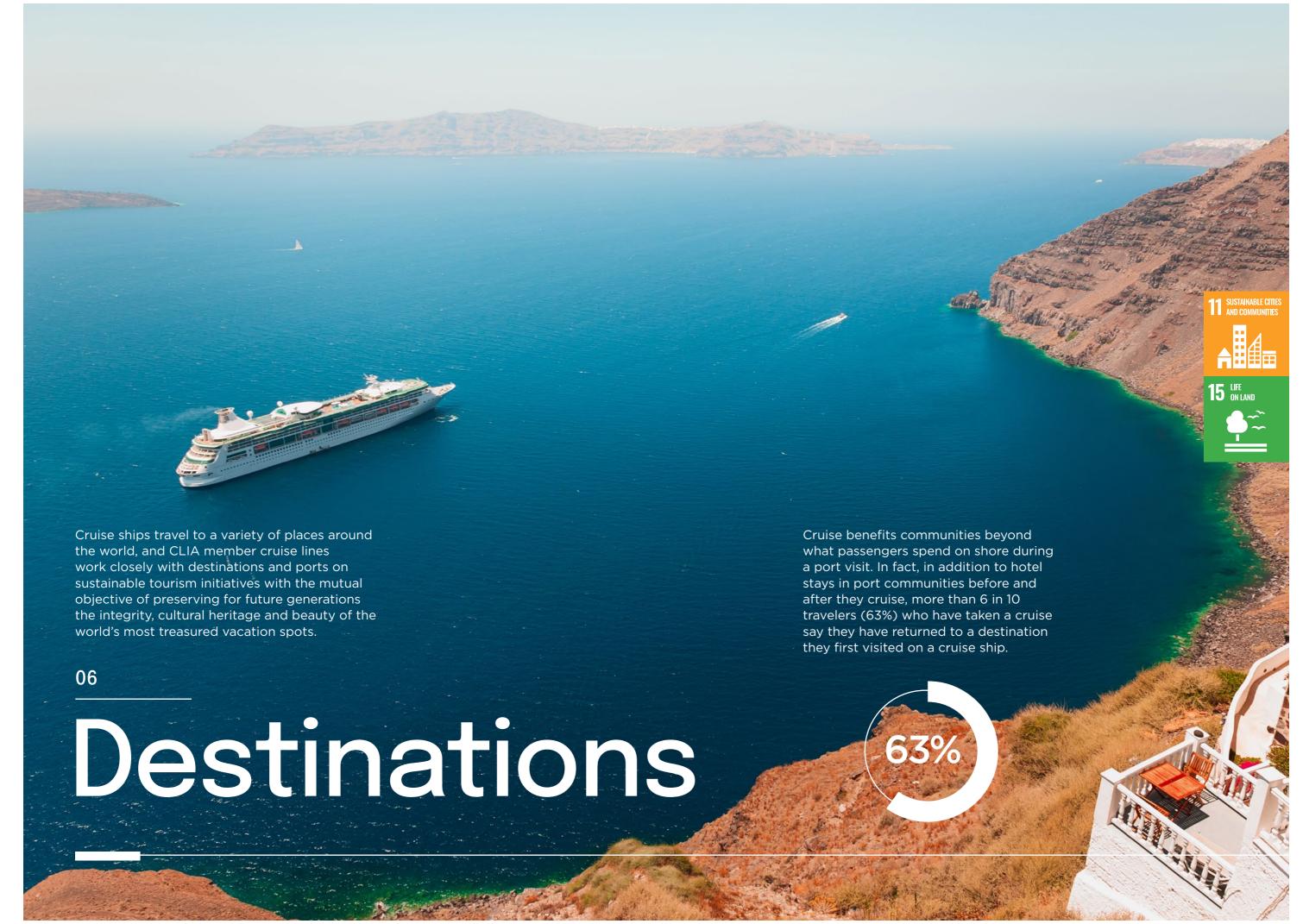
CLIA members take a proactive role in addressing the quality of shipboard medical care for both guests and crew. Many cruise ship physicians are members of the American College of Emergency Physicians (ACEP). In addition, CLIA oceangoing cruise lines worldwide carrying 100 or more persons on board and traveling in international waters, agree by policy, as a condition of CLIA membership, to meet or exceed ACEP's guidelines for cruise ship medical facilities, staffing, equipment and procedures.

Medical facilities on ships provide emergency medical care. The medical team stabilises patients and/or initiates diagnostic and therapeutic intervention and facilitates the evacuation of seriously ill or injured patients, when deemed necessary by cruise ship physicians.

Cruise lines also operate with appropriate public health measures to mitigate the introduction and/or spread of infectious illnesses on board with both prevention and response protocols.

PEOPLE







Sustainable Communities

CLIA member cruise lines are dedicated to preserving the local culture heritage and way-of-life at the destinations they visit. Cruise tourism is different than other types of travel in that it is tourism that can be managed.

The industry cooperates with community organisations and stakeholders at ports and destinations around the world to carefully manage tourist volumes. Ship arrival and departure schedules are established with ports up to three years in advance and most passengers participate in shore excursions organised by the cruise lines with local providers.

CLIA and our cruise line members are helping to develop a methodology, in conjunction with many respected third parties and industry bodies, such as the United Nations World Travel Organization (UNWTO), World Travel & Tourism Council, and the Global Sustainable Tourism Council, that will help port cities analyse the causes of overcrowding and find solutions.

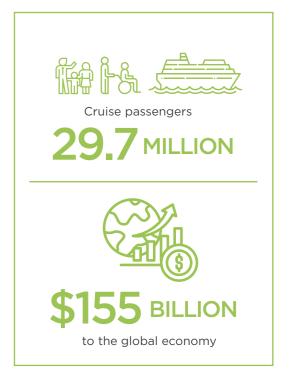


Economic and Social Impact

The cruise industry has a significant positive economic impact on the places ships visit. Small coastal communities around the world benefit from the cruise industry bringing in visitors to support local travel enterprises and provide jobs. Cruise travelers generate economic benefits before, during and after each sailing.

In 2019, with passenger volumes of 29.7 million cruise passengers, the cruise industry contributed \$155 billion to the global economy, 1.2 million jobs worldwide, and \$50 billion in wages. In 2023, the cruise sector is expected to move closer to 2019 levels, with passenger volume forecast to reach 27 million to 33 million cruisers globally.

In Europe, cruise contributes significant economic impact, in large part attributable to the fact that 98% of cruise ships are built in Europe.









24 CRUISERS

worldwide supports one full-time equivalent job



Cruisers spend an average of

\$750 USE

per passenger in port cities over the course of a typical seven-day cruise



More than

6 IN 10

who have taken a cruise say that they have returned to a destination that they first visited via cruise ship

The Cruise Industry's Economic Impact is far-reaching







#1 Services and Government







#2 Transportation







#3 Wholesale & Retail Sales







#4 Manufacturing







#5 Finance, Insurance & Real Estate (FIRE)







#6 Agriculture, Utilities & Construction

Community Engagement

CLIA member cruise lines are committed to being good partners with the communities that member ships visit.

Collaborative and sustainable tourism initiatives led by the cruise industry, destinations, ports and other organisations are in place to achieve mutual objectives, such as preserving the integrity, cultural heritage and beauty of cherished places for travelers in future generations.

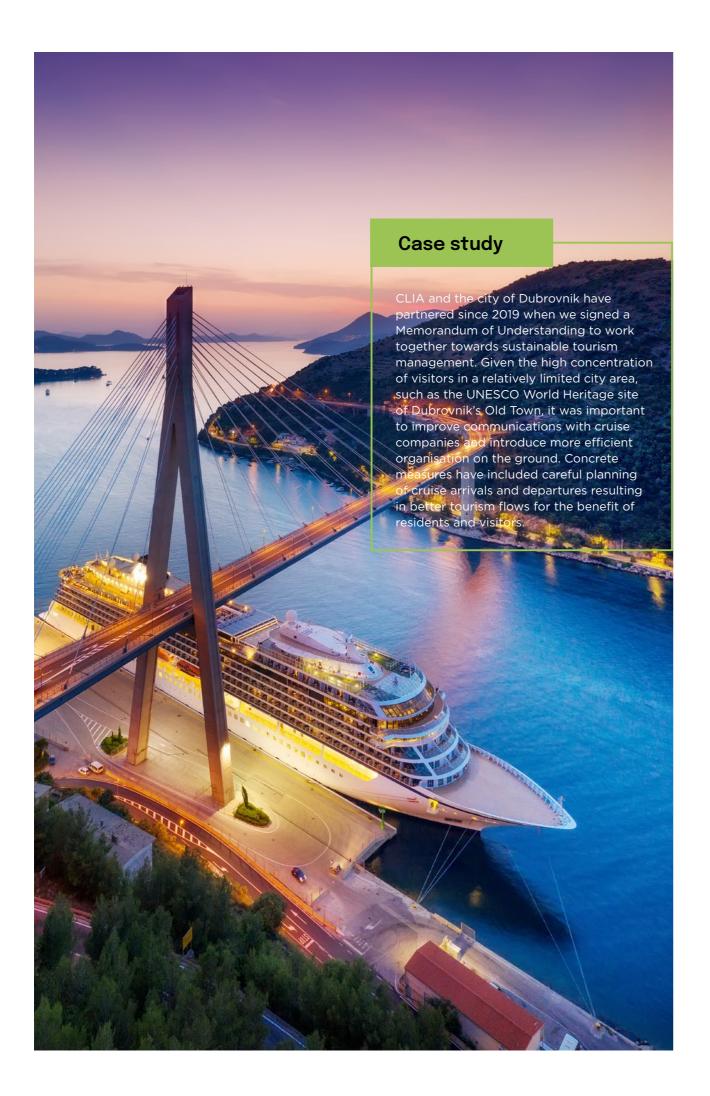
This includes pioneering work on sustainable managed tourism initiatives in Juneau, North America; Dubrovnik, Croatia; Santorini, Greece and Palma de Mallorca, Spain.

Case study CLIA member cruise lines bring cruise traffic to ports across Alaska. According to CLIA's 2019 Economic Impact Study (the last full season before the pandemic), the economic contribution of industry is significant in Alaska, with direct spending of \$1.28 billion, 23,000 jobs and \$1.23 billion in income. The cruise industry also generates income to state and local municipalities through taxes and fees, wages, direct and indirect spend impacting total state GDP and supports the tourism industry throughout the state with repeat visitors.

Case study

In Rio de Janeiro, cruise passengers may join a walking tour to explore the history of the area known as "Little Africa," and learn about the legacy of the African diaspora in Brazil. The four-hour tour explores the tragic history of the port zone and what was the largest slave market in the world, recognised as a UNESCO World Heritage Site. At the same time, the tour celebrates participation of Black people in the Brazilian national identity highlighting, for instance, the cultural significance of Samba music and dance, and important Black public figures. It is an experience that connects the past and present.





Local Sourcing

Cruise lines are working with organisations such as the Marine Stewardship Council, the Aquaculture Stewardship Council, and local organisations to source food responsibly, prioritising local sourcing of food and other supplies. A goal is reducing the carbon footprint of the supply chain by reducing the distance food and supplies travel to ships. We support local businesses and communities and, as a result, help improve the lives and quality of life in the destinations our cruise ships visit.



Sustainable Shore Excursions

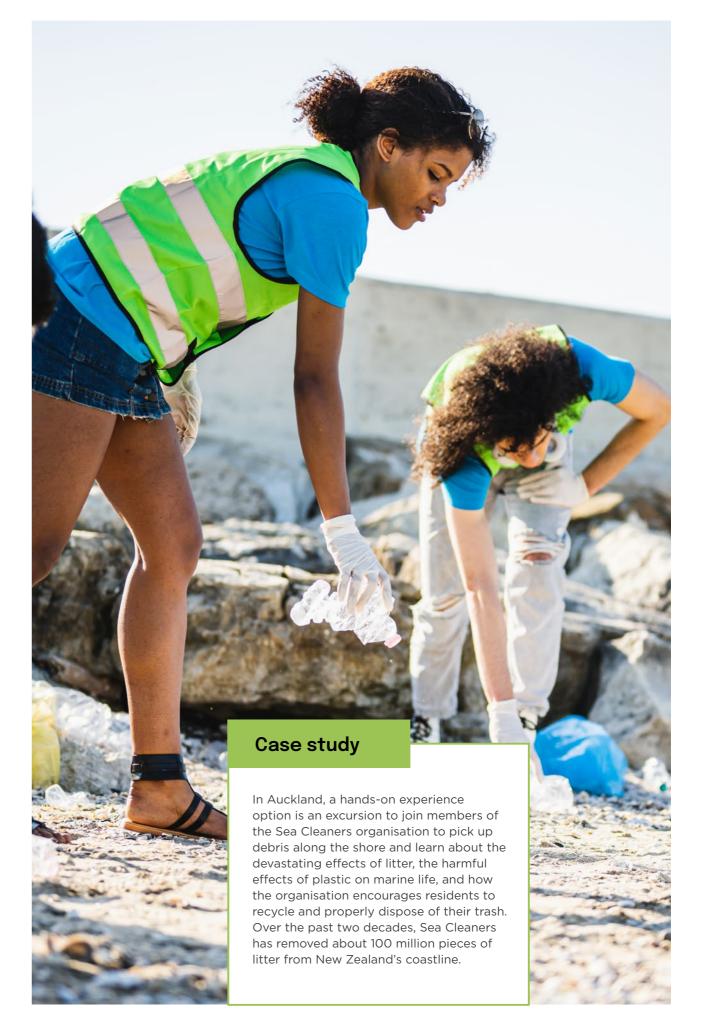
Many cruise lines offer a variety of sustainable and eco-friendly shore excursion programs and are pursuing sustainable tour excursion certification with respected conservation organisations based on the GSTC criteria. The GSTC criteria are organised around four main themes: effective sustainability management, maximising social and economic benefits for the local community, enhancing cultural heritage, and reducing negative impacts to the environment.

CLIA has partnered with GSTC and cruise destinations on sustainability assessments for popular destinations such as Corfu and Heraklion in Greece to fulfill the cruise industry's commitment to responsible travel.

In addition, cruise lines have developed a variety of responsible, sustainable and eco-friendly shore excursion initiatives through partnerships with respected conservation organisations, such as the World Wildlife Fund and the UNESCO World Heritage Centre

The wide range of sustainable shore excursions include those that take travelers to national parks, wildlife rehabilitation centers, biodynamic farms and sustainable businesses, as well as support species and habitat protection. Because shore excursions are locally sourced, they create jobs that benefit local communities.





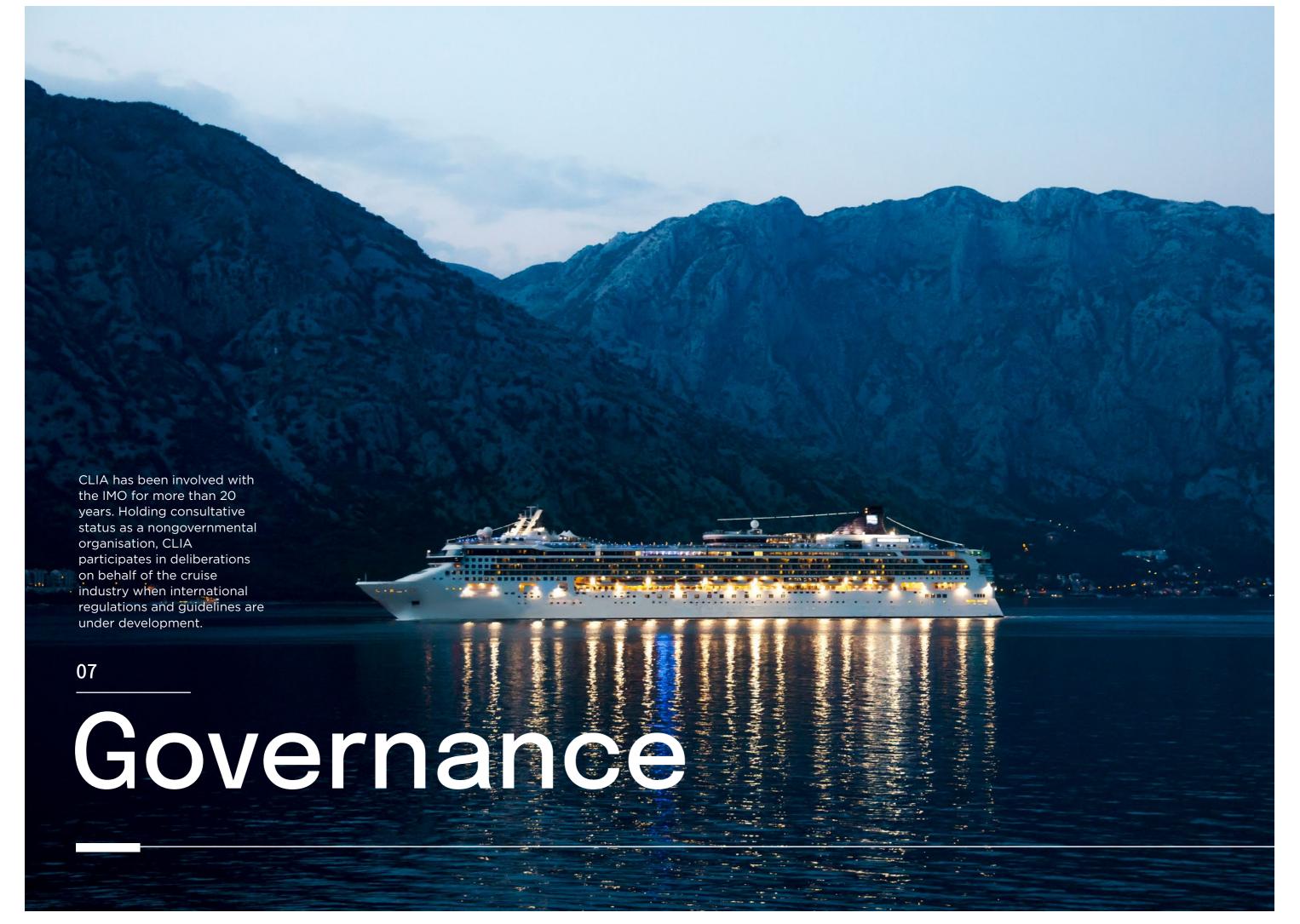


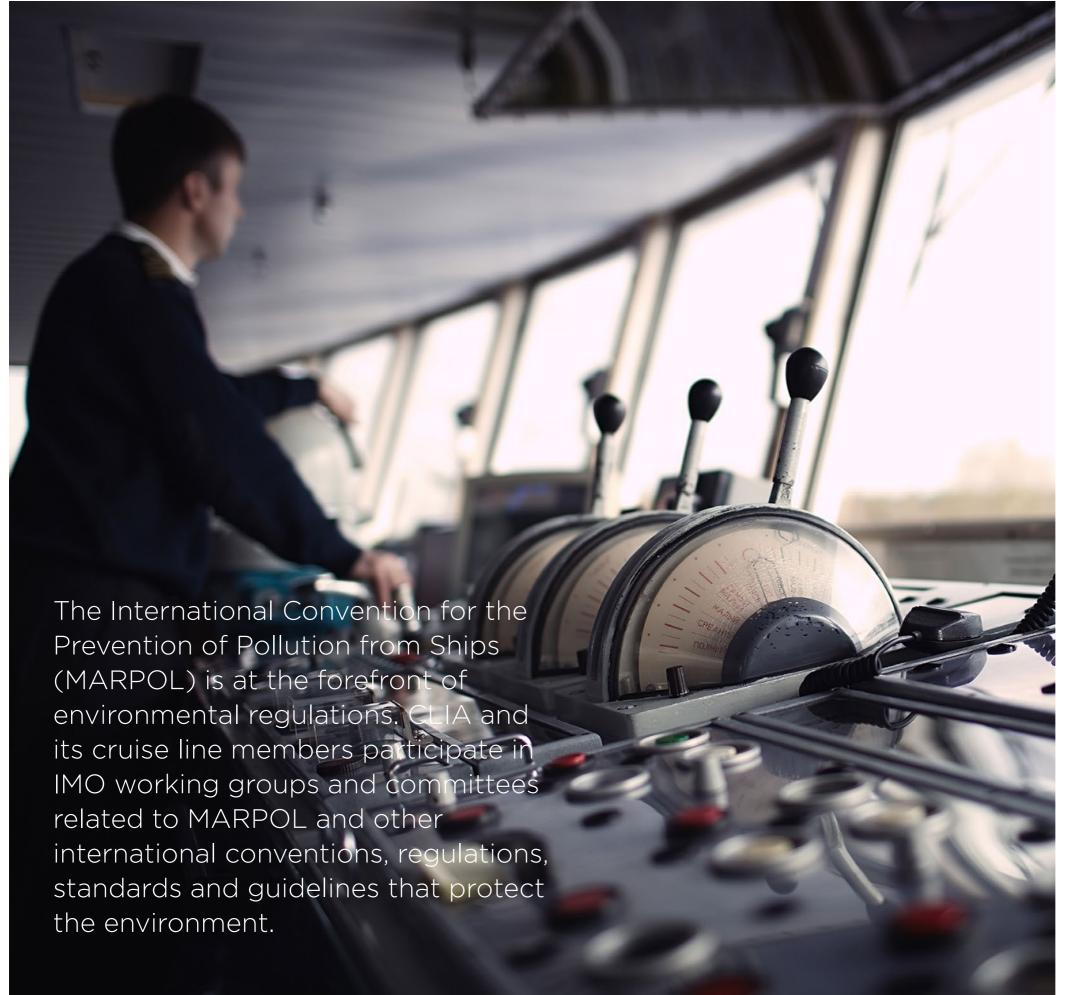
Online Sustainability Toolkit

CLIA has produced an online interactive resource showing how the cruise industry is advancing its sustainability agenda. The toolkit contains information that can be downloaded including reports, statistics, maps, posters and infographics. Launched in March 2023, the toolkit currently is available in English, French, German, Italian, Norwegian, Brazilian Portuguese and Spanish.

The cruise industry supports 1.2 million jobs worldwide. As well as featuring the various environmental innovations being introduced on board ships, the toolkit is a way to share stories and to raise awareness with local communities and the wider public about how cruising is an integral part of societies and economies. The site includes good practice examples of cooperation between cruise lines, business organisations, ports and local authorities.









National Implementation of IMO Requirements by Flag and Port States

While the maritime industry operates under a comprehensive set of regulations established by the IMO, international conventions must be implemented and enforced through national legislation on the part of member states. Accordingly, national laws are enforced by member state regulatory agencies for ships that fly their nation's flag (Flag State requirements). In addition, foreign vessels that call in a nation's ports are subject to Port State Control (PSC) which empowers the country being visited to verify compliance with international standards. Typically, this takes the form of announced and unannounced inspections.

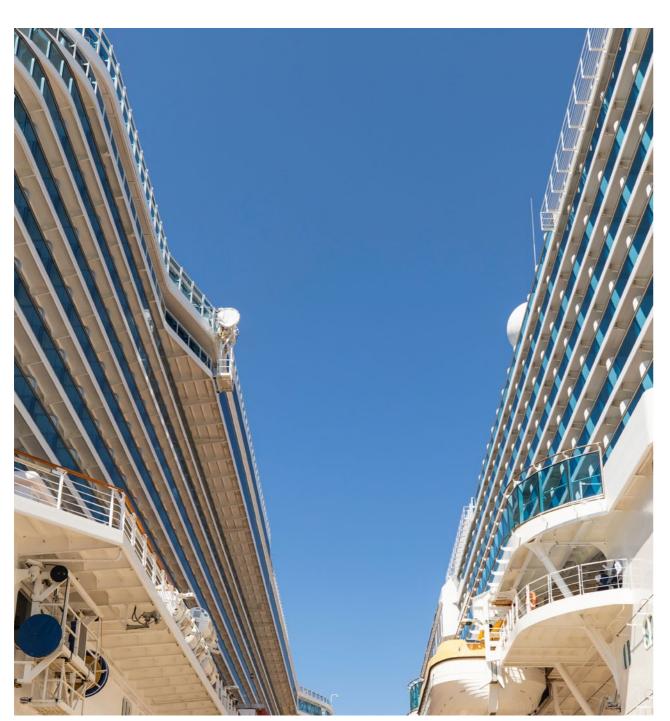
National Port State Control authorities have long coordinated on a regional basis to share information on the performance of flag states, classification societies and ship types. For example, the Paris MOU consists of 27 maritime administrations which share information on ship compliance principally in the Atlantic and Mediterranean. Likewise, the Tokyo MOU consists of 21-member administrations primarily focused on the Pacific. Other PSC-MOUs are in place in various other regions of the world. In the U.S., the U.S. Coast Guard publishes annual performance data in its Port State Control Annual Reports. These types of reports support risk-based PSC regimes and form an important layer in ensuring compliance by global shipping.

Should a vessel fail to meet international or national standards during a port state control examination, it could be subject to detention in port until the deficiencies are remedied.

Classification Societies

Classification societies are nongovernmental organisations that conduct inspections of cruise ships under construction and throughout their lifecycles, ensuring compliance with the many applicable rules and requirements. Most major classification societies are specifically recognised and accredited by individual IMO member states to perform flag state inspections on their behalf and to issue the required certifications. The verification regime comprises initial plan approval and onboard surveys, as well as surveys held at periodic intervals to confirm compliance is maintained.

There are multiple members of the maritime community contributing towards comprehensive standards, including safety, security, crewmember protections and environmental practices. These include flag states, port states, national coast guards, maritime administrations, national health authorities, national environmental organisations and customs and border protection.



Partnerships On behalf of its cruise line members, CLIA participates in and partners with global and regional organisations to advance sustainable cruise tourism and maritime operations including: Global: + UN World Tourism Organization + UN International Maritime Organization + UN International Labor Organization + World Travel and Tourism Council + World Ocean Council + Destinations International + Global Sustainability Tourism Council + United for Wildlife Transport Taskforce + Women's International Shipping and Trading Association WISTA + International Chamber of Shipping, including development of a Shipping Energy Commission to facilitate collaboration on research and development and cross-sector information sharing. + Global Maritime Forum as a supporting organisation for the Getting to Zero Coalition Call to Action for Shipping Decarbonisation + Roundtable on Sustainable Biomaterials Regional: + North America Marine Environmental Protection Association (NAMEPA) + Caribbean Marine Environment Protection Association (CARIBMEPA) + US Travel Association + Pacific Northwest to Alaska First Mover Initiative partners and stakeholders + European Tourism Manifesto Alliance + European Sustainable Shipping Forum + European Commission Renewable and Low Carbon Fuels Value Chain Industrial Alliance CLIA members are also involved with numerous partnerships at global and local levels.

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Mercy Ships

CLIA is proud to support Mercy Ships as our charity of choice, as it continues to deliver its life-transforming legacy to those in need. Since 1978, Mercy Ships has performed more than 105,500 surgeries and provided specialised mentoring and training opportunities for more than 49,000 professionals.

More than 40% of the world's population lives within 100 miles of the coast. Mercy Ships delivers state-of-the-art hospitals to port cities, providing life-transforming surgery and medical care for thousands of people without access to the type of care that Mercy Ships can provide.

Mercy Ships is a two-ship fleet, continuing to serve in Africa, and able to do more in each area of specialty, as well as training local professionals





Reference sources:

- + Sustainable Cruise Tourism in the French Mediterranean: https://mer.gouv.fr/sites/default/files/2022-10/charte.pdf
- + European Commission Dialogue Good Practices Report: https://blue-economy-observatory.ec.europa.eu/system/ files/2023-02/good%20practices%20for%20sustainable%20 cruise%20tourism-KL0322272ENN%20%281%29.pdf
- + CLIA's 2023 State of the Cruise Industry Report:

 https://cruising.org/-/media/clia-media/research/2023/2023-clia-state-of-the-cruise-industry-report_low-res.ashx
- + CLIA's interactive sustainability toolkit: www.cruiseinfohub.com





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www.cruising.org