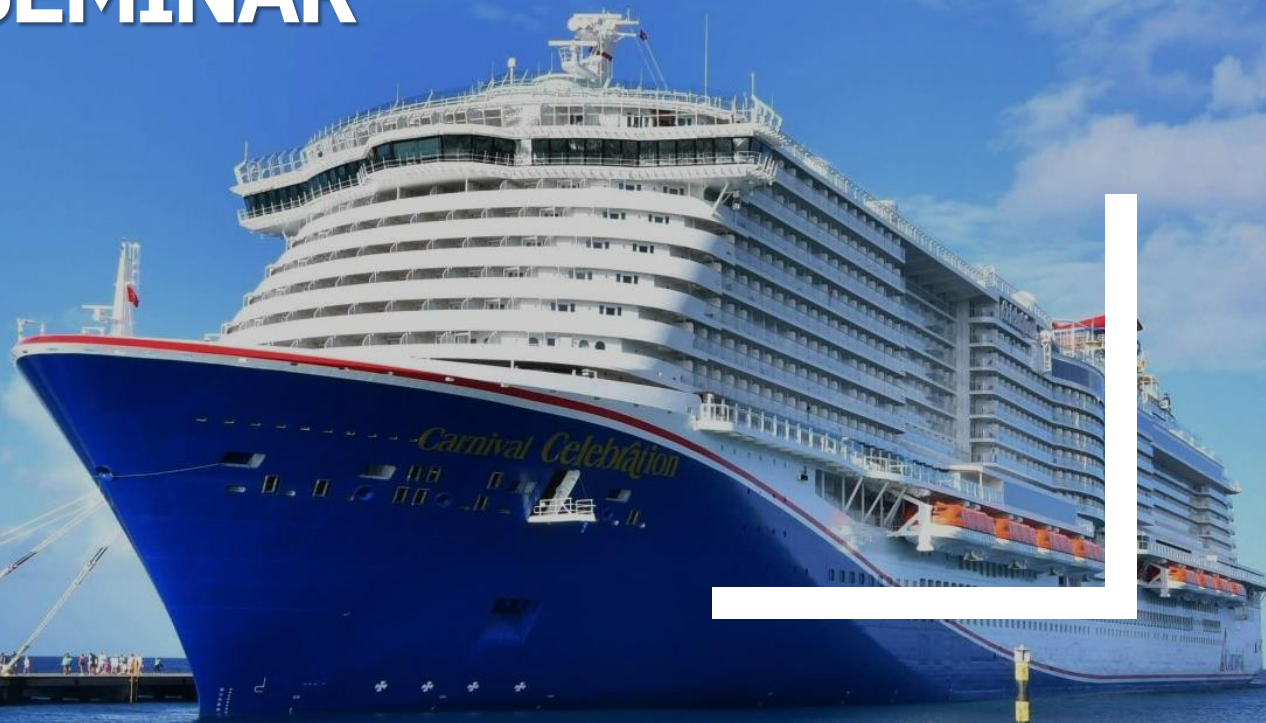


CRUISE SPECIAL INVESTOR SEMINAR

11 June 2024

VOW



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ON THE AGENDA

- › **A new era in wastewater and waste treatment at sea**
Henrik Badin, CEO, Vow ASA
- › **Carnival Cruise Lines: Sustainable from ship to shore**
Sandra Bratland, Director Destination Affairs, Carnival Norway
- › **Realising zero discharge and end of waste**
Per Carlsson, Chief Technology Officer, Vow ASA
Hamid Gorbani, VP Sales, Vow Maritime Solutions
- › **Cruise industry outlook in a shipbuilding perspective**
Jørn Bakkelund, Senior Analyst, Clarksons
- › **Q&A panel session**
Henrik Badin, Sandra Bratland and Jørn Bakkelund
Eline Hvamstad, moderator
Question from the room and online

A NEW ERA IN WASTEWATER AND WASTE TREATMENT AT SEA

Henrik Badin
CEO Vow ASA

VOW





100 YEARS IN BUSINESS

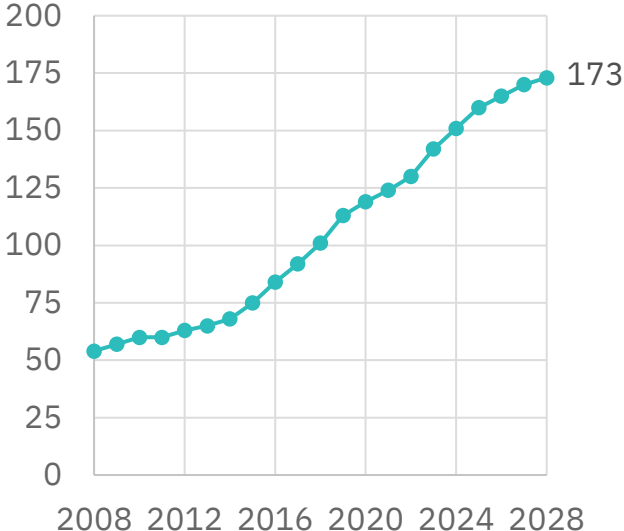


Royal Caribbean Group

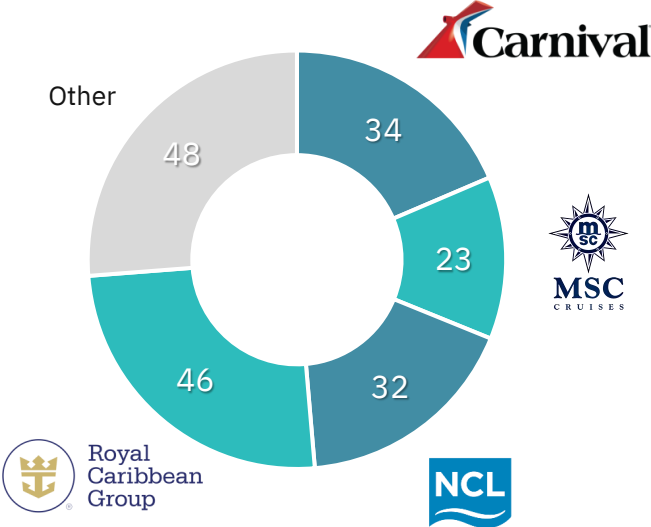


SCANSHIP IN CRUISE

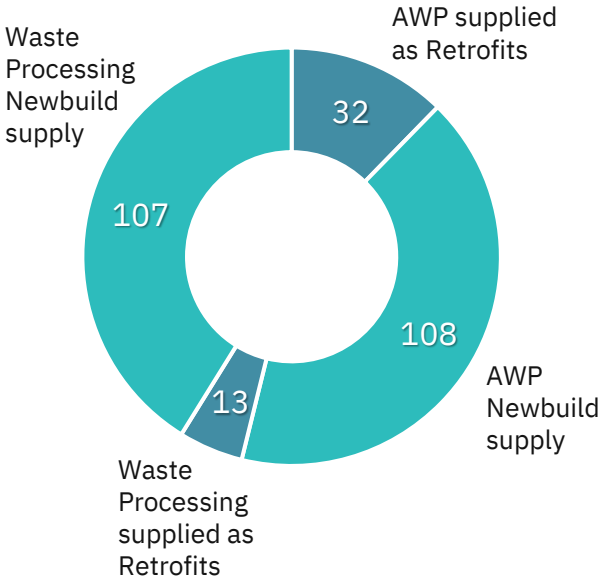
Number of cruise ships with Scanship equipment onboard Accumulated



Cruise ships by shipowners equipped with Scanship technology



Type of Scanship supply



TOWARDS CLEAN SEAS

The cruise industry moved to action before the legislators



	1995 Food waste processing	2002 Sludge handling	2013 AWP for Alaska and Baltic	2019 Garbage handling with pyrolysis	2026 Complete circularity with EAP
	1996 Garbage handling with incinerators	2003 AWP for Alaska			

1976	1988	1995	2002	2011	2012	2014	2019	2021	2023	2024
-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------

MEPC 2(IV)		North Sea Convention		Designation Baltic Sea as special area MEPC.200(62)		Review of available technology MEPC67		MEPC 227(64) Chapter 4.2 Required for existing ships		MEPC.373(80) Thermal waste treatment devices (TWTd) adopted 7 July 2023
North Sea Convention agreement for TP and TN Marpol Annex (V)			Alaskan Murkowski		Standard for type approval MEPC 227(64)	MEPC.244(66) new requirements garbage incinerators		MEPC 227(64) Chapter 4.2 Required for new ships		

Years shown indicate year of ship operations
 MEPC = Marine Environment Protection Committee
 AWP = Advanced wastewater purification

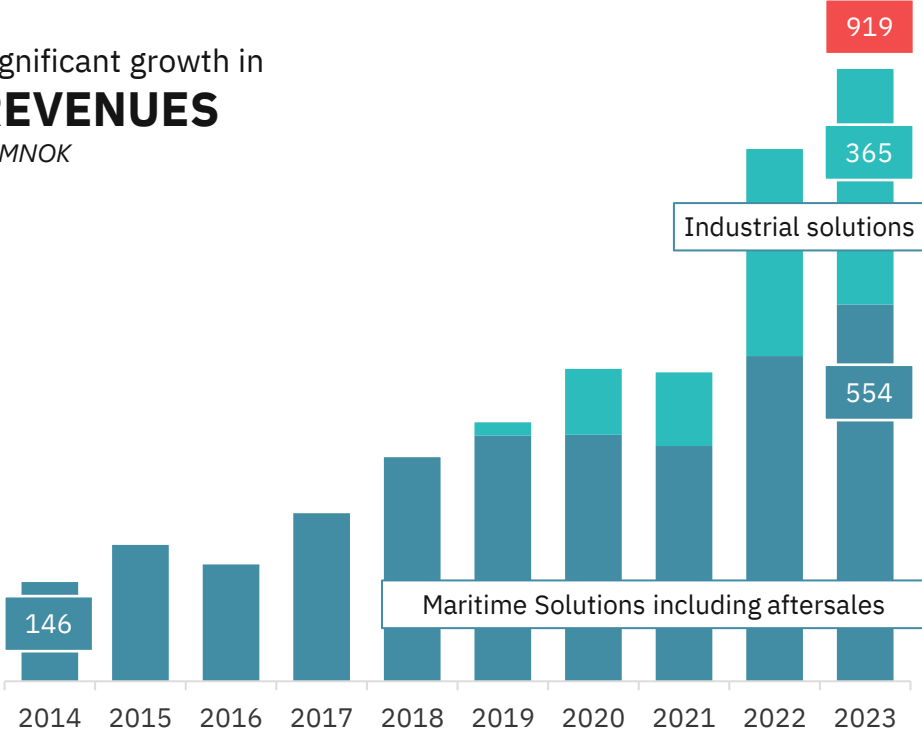


WELL ESTABLISHED TECHNOLOGY PROVIDER WITH A PROVEN DELIVERY MODEL

117
patents
 45 proprietary technologies and 35 proprietary technology applications

230
employees
 with operations in six countries: Norway France Poland, US, Canada and Italy

Significant growth in **REVENUES**
in MNOK



150
systems in backlog
 to be delivered over the next 3-5 years

4450+
systems installed

IMPORTANT Q1 WINS IN CRUISE

Cruise newbuild contracts awarded | total value EUR 47.7 million

February 2024
EUR 19.3 million 1+1

Customer
undisclosed



- › Wastewater purification, food waste processing and garbage handling systems
- › Solids handling to prevent discharge overboard, including dewatering, thermal hydrolysis, drying, and pyrolysis
- › Delivery scheduled for 2024 and 2025
- › Baltic Sea and Alaska standard

May 2024
EUR 28.4 million 1+1

Carnival

- › Wastewater purification, food waste processing and garbage handling systems
- › Solids handling to prevent discharge overboard, including dewatering, thermal hydrolysis, drying, and pyrolysis
- › Delivery scheduled for 2025 and 2026
- › Baltic Sea and Alaska standard

A BUSY 2024 FOR VOW AT EUROPEAN YARDS

- Scanship’s scheduled activities in 2024
 - Commissioning on 9 ships 
 - Main system deliveries for 16 ships 
- A trusted technology provider and supplier to leading cruise operators and their preferred shipyards



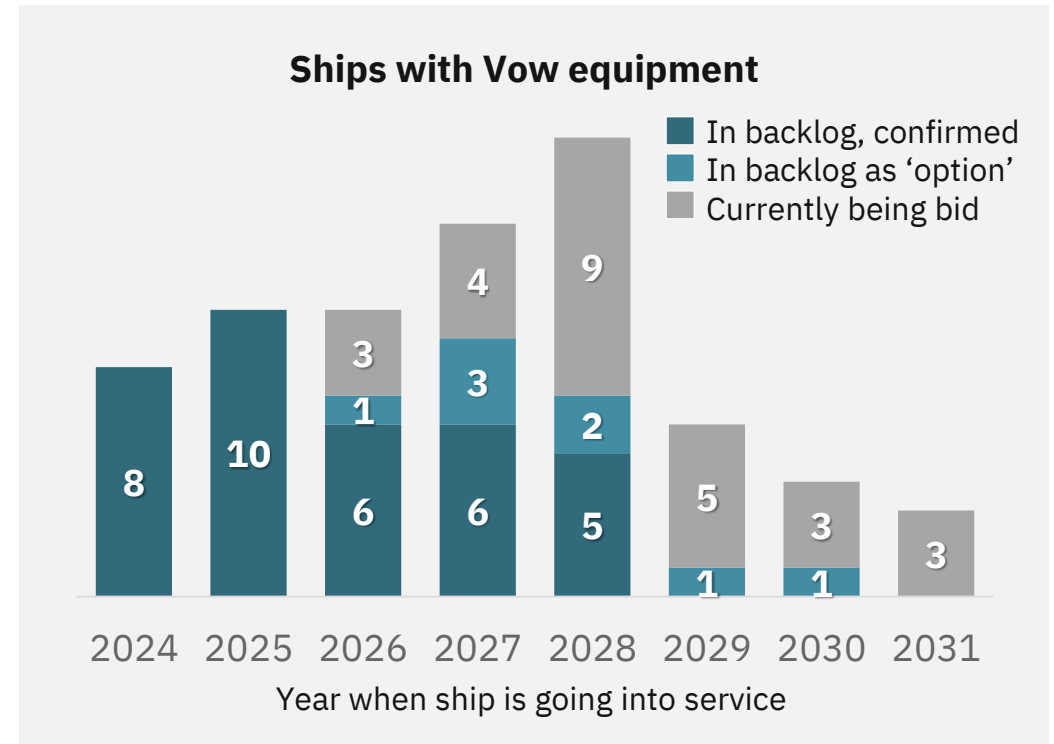
	   
Royal Caribbean Group	   
	   
VIKING	
	   
NORWEGIAN CRUISE LINE	
	   
MSC CRUISES	

	
NYK LINE	
	 
THE RITZ-CARLTON YACHT COLLECTION	
	 
CARNIVAL CORPORATION & PLC	(retrofits)

STRONG BACKLOG AND PIPELINE IN CRUISE

Significant tendering activity with promising growth opportunities

- NOK 1,282 million order backlog in cruise, including options and contracts awarded so far in Q2
- Backlog comprises 35 confirmed orders for cruise ships under construction
- Number of options reduced to 8 as owners are renewing their fleets with bigger and more sophisticated ships
- Orders signed to date this year amount to EUR 48 million
- Currently tendering for 27 newbuilds
- Significant market for retrofit of new waste management systems



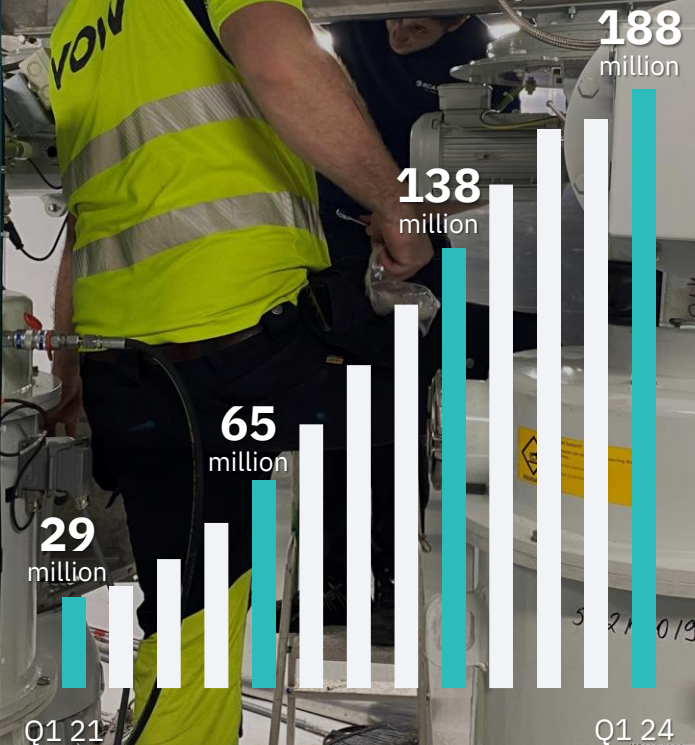
AFTERSALES

Strong rebound in Aftersales after pandemic

- Aftersales business is approaching 200 million in annual recurring revenue
- Enjoying favourable position with leading cruise operators and large installed base of Scanship systems
- Delivering spare parts, consumable chemicals and operation assistance, with Florida as base
- Scanship's high market share in system deliveries to newbuilds and retrofits is also attributed to high service level in Aftersales

Aftersales revenues

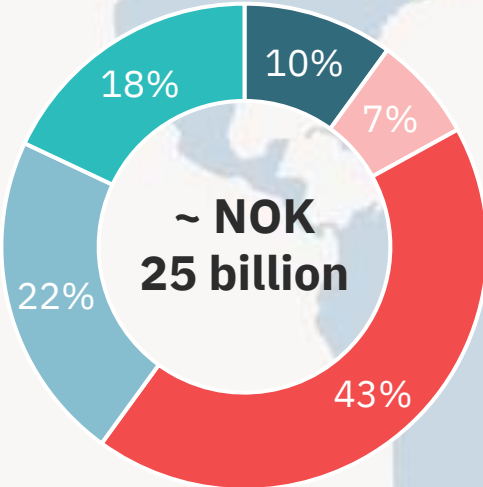
in NOK million
12-month rolling



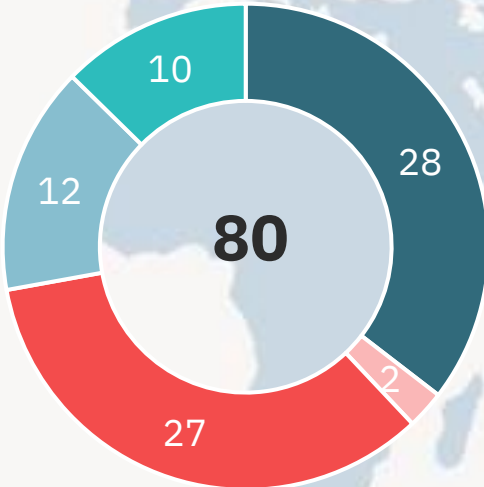
INDUSTRIAL SOLUTIONS BID PIPELINE LARGEST EVER WINDOW OF OPPORTUNITY

With potential final investment decision towards 2029

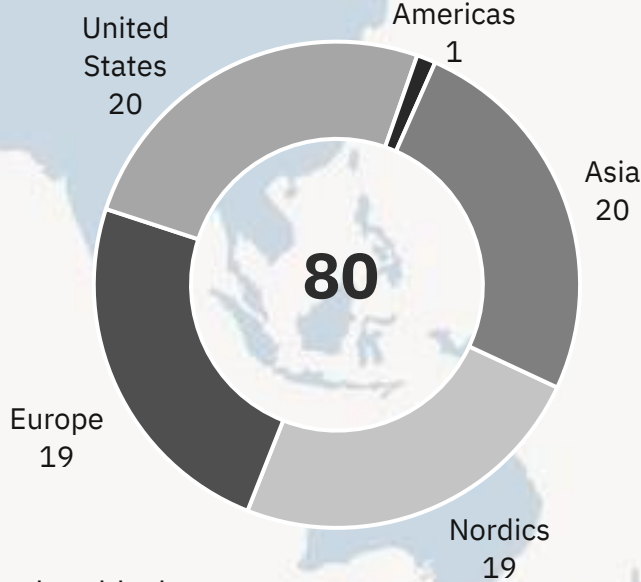
By application
in equipment value



By application
of projects



By region
of projects



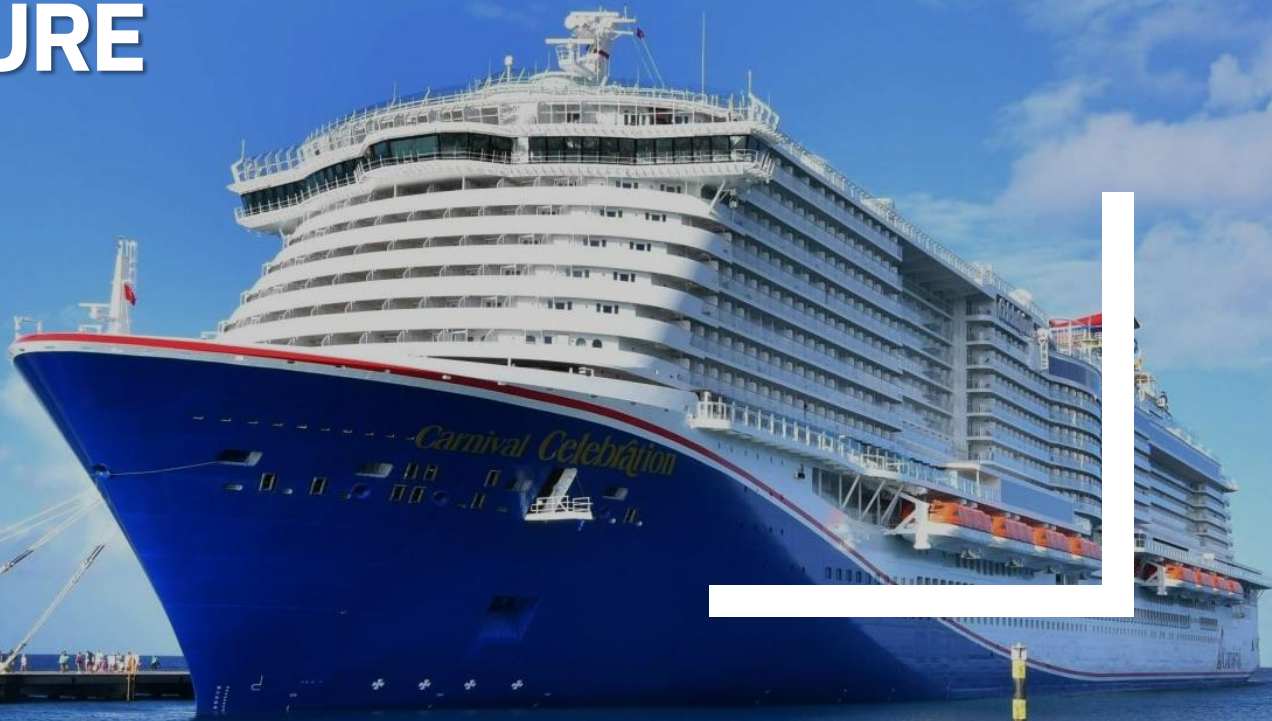
- Sewage sludge valorisation
- Biocarbon to metallurgy
- ELT to recovered carbon black (rCB) and pyrolysis oil (TPO)
- Waste valorisation
- Biomass valorisation

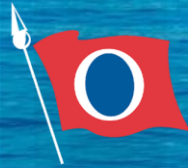
VOW AT A GLANCE

- **Cruise** Solid backlog and strong position, which leads to predictable and increasing revenues, solid margins and cashflow
- **Landbased** First milestone projects secured and in commissioning. Final investment decisions pending on several industrial scale projects and in infinite pipeline of prospects
- **Technology** Successfully completed comprehensive R&D programme which has positioned the company for several industry verticals
- **Organisation** Streamlined and scalable with systems and procedures in place to control cost and progress in projects and preserve cash. Well-established relationships to reliable partners in supply chain
- **Supported by megatrends** Environmentally conscious cruise tourism. Regulation and economic incentives that stimulate recycling, decarbonising, carbon capture etc.

**BELIEVING IN A FUTURE WHERE
INDUSTRY IS HARMONIZED
WITH NATURE**

VOW





CARNIVAL
CORPORATION & PLC.

Oslo 11.06.24 – Vow ASA

Sandra Diana Bratland
Director Destination Affairs, Carnival Norway

Who We Are

Carnival Corporation & plc is the **largest global cruise company** with a portfolio of world-class cruise brands. Together these brands comprise a fleet of **90+ ships** making **22,000 calls** to over **800 ports worldwide**.

Our talented and diverse workforce of over **160,000 team members from 150 countries** served nearly **12.5 million guests in 2023** – accounting for nearly **half of the overall global cruise market**.

We seek to deliver unforgettable happiness to our guests by providing extraordinary cruise vacations, while **honoring the integrity of every ocean we sail, place we visit and life we touch**.

Carnival Corporation & plc's

BRANDS AT A GLANCE

With nine of the world's leading cruise lines, we sail to all seven continents.

Three of our nine brands, representing nearly 40% of our fleet, are led by women: Christine Duffy, President of Carnival Cruise Line; Natalya Leahy, President of Seabourn; and Katie McAlister, President of Cunard.



**51 YEARS
IN OPERATION**

Miami, FL, USA
25 Ships



**58 YEARS
IN OPERATION**

Santa Clarita, CA, USA
15 Ships



**27 YEARS
IN OPERATION**

Rostock, Germany
11 Ships



**151 YEARS
IN OPERATION**

Seattle, WA, USA
11 Ships



**75 YEARS
IN OPERATION**

Genoa, Italy
10 Ships



**37 YEARS
IN OPERATION**

Seattle, WA, USA
7 Ships



**186 YEARS
IN OPERATION**

Southampton, UK
7 Ships



**91 YEARS
IN OPERATION**

Sydney, Australia
3 Ships



**183 YEARS
IN OPERATION**

Southampton, UK
3 Ships

Carnival Corporation Brands Norway

7 of 9 Brands Sail in Norway

51% Share of cruise market (2023)

26 Ships sailing from Jan – Dec

1,100 Calls planned in 2024

3.3M Day visitors brought to Norway

40 Different ports served

MNOK 1847 Spent with Norwegian suppliers for goods & services alone





Climate Action

Investing in low- and zero-carbon emission technologies, and advanced air quality solutions; partnering with others to advance efforts to lower GHG emissions



Sustainable Tourism

Partnering with destinations to create shared value while respecting and helping them maintain their culture, history and natural resources

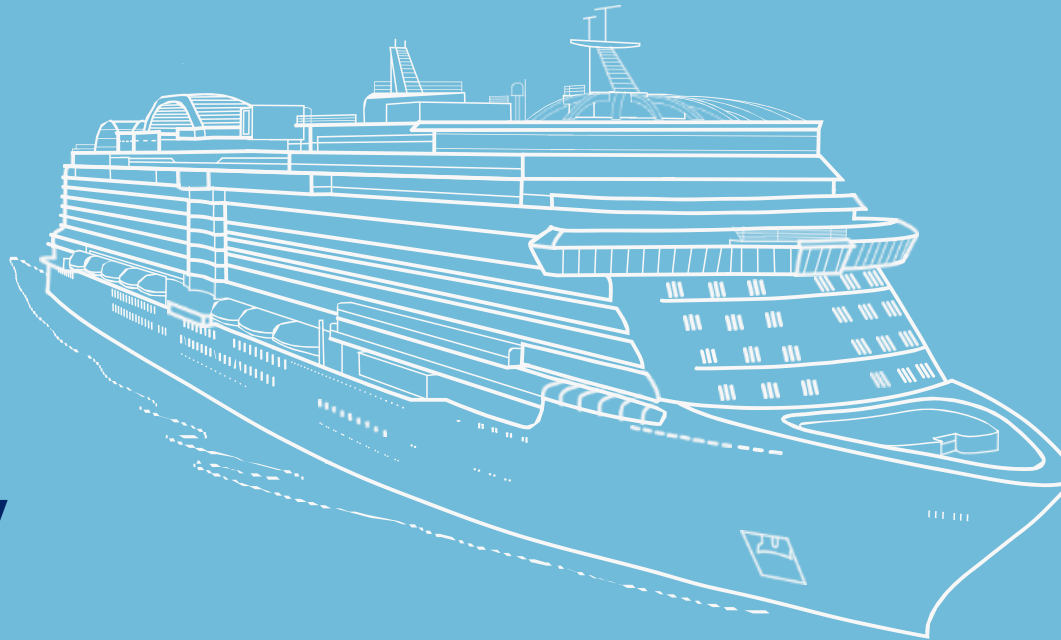


Diversity Equity & Inclusion

Striving to provide a welcoming and inclusive environment where people from different backgrounds, experiences and walks of life can thrive



SUSTAINABILITY FOCUS AREAS



Good Health & Well-Being

Expanding well-being programs to support employees' physical & mental health, encourage social connectivity and promoting a balanced lifestyle



Circular Economy

Diverting a substantial portion of waste from landfills by recycling, composting, reusing, or eliminating items from supply chain, ships and ports



Biodiversity & Conservation

Investing in programs supporting biodiversity & conservation; partnering with the communities we visit to help maintain and improve their ecosystems



Footprint Reduction Leadership

Carnival Corporation is pioneering key sustainability initiatives in the industry:

- ✓ Producing fewer GHG emissions than one decade ago (10% less since 2018 despite 30% more capacity)
- ✓ 13 LNG Ships by 2028 (10 in operation today)
- ✓ 64% of fleet is shore power-capable
- ✓ Advanced Air Quality Systems
- ✓ Reduced food waste by 42%, exceeding 2025 40% goal
- ✓ Cut 500 million+ single use plastics items since 2018

Confidentiality notice: This presentation contains privileged and confidential information intended for internal use by the brands of Carnival Corporation & plc. Distribution outside of the organization is strictly prohibited and a violation of policy.



25%

of capacity will be LNG
capable by 2028

- 13 LNG-powered cruise ships in the fleet through 2028 (10 already in operation)
- Emissions (vs. marine diesel fuel)
 - Up to 20% reduction in GHG emissions
 - Zero sulfur
 - 85% reduction in nitrogen oxides
 - 95-100% reduction in particulate matter

**Pioneered LNG in the
Cruise Industry**

42%

reduction in food waste per person

- 600+ food waste biodigesters
- 60+ food waste dehydrators
- Introducing “Hungry Giant”

⁴ Versus 2019 baseline





Investing in Advanced Fuel Technologies

Fuel Cells

- 1st major cruise ship provisioned for fuel cell system retrofit

Maritime scale battery technology

- First-of-its-kind lithium-ion battery storage system

Alternative Fuels

- Several successful industry-first biofuel trials, including ROTTERDAM 100% biofuel project in 2024
- Physical bio-LNG trial planned in 2024 (Costa Smeralda)
- Evaluating methanol engine conversions
- Exploring synthetic fuels, ammonia, hydrogen, others

Supply Chain

Major Norway Suppliers



Network data and communications supplies



Waste-water purification and recycling



Technical ship management services

BRUNVOLL

Propulsion and manoeuvring technologies



Automated control and energy management systems



Ship assurance and certification services

Total spend with suppliers in Norway:
\$168m / MNOK 1847 in 2022

THANK YOU

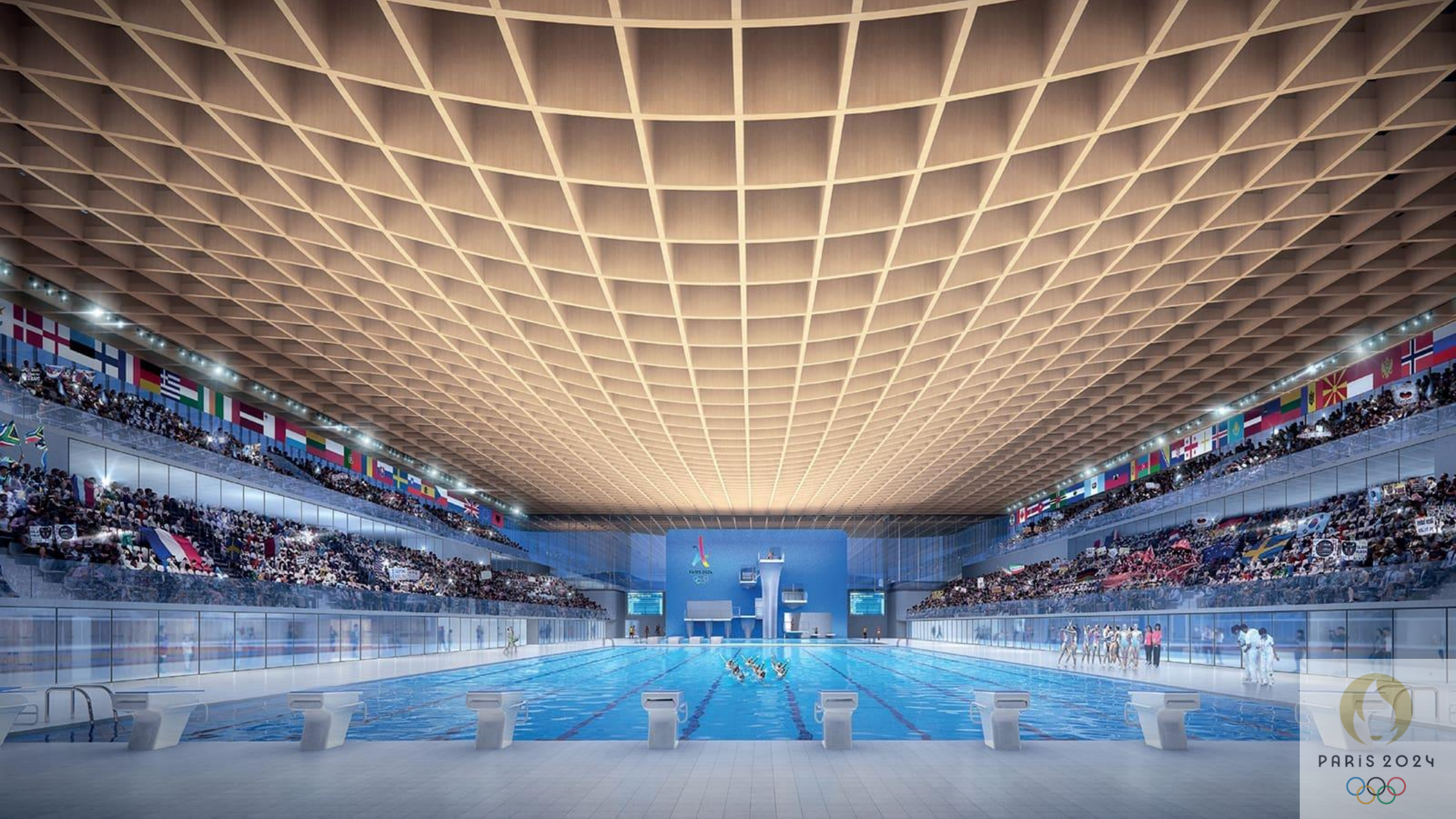




REALIZING ZERO DISCHARGE AND END OF WASTE AT SEA

Per Carlsson, Chief Technology Officer, Vow ASA
Hamid Gorbani, VP Sales, Vow Maritime Solutions





Grey and blackwater

$\frac{1}{10}$

Dry garbage

Food waste

Glass, cans and tins

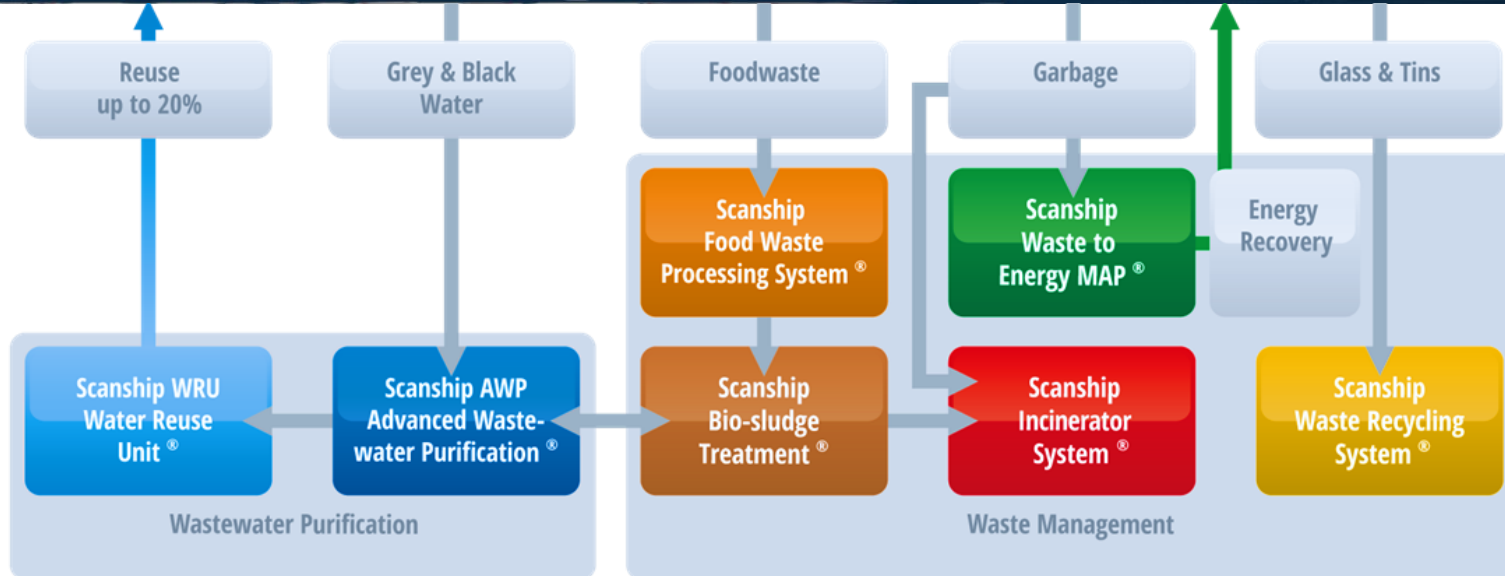
Clean effluent

$\frac{1}{10}$

Biocarbon

Material to recycling

Renewable energy



TECHNOLOGY OUTLOOK

› Stricter Regulations

- Flue gas emissions standards are becoming increasingly stringent, approaching those for land-based applications
- Implementation of more advanced systems to meet these regulatory requirements

› Larger Ships

- The increase in ship size results in larger volumes of waste, necessitating more sophisticated waste collection and treatment systems

› Heightened Focus on Sustainability

- A continued and intensified emphasis on sustainability practices within the industry

› Public Acceptance and Perception

- The importance of maintaining positive public perception and acceptance, particularly regarding environmental impact and sustainability efforts

› Alignment

- For cleaner oceans through collaborative efforts with cruise owners and yards



VOW

CCL XL PROJECT TIMELINE VESSEL #1



Initial contact with owner

Opr. Center Visit in Miami



Budgatory proposal

Preliminary GA



Owner visit Scanship facilities



Eng. start



SHIPOWNERS DRIVING THE CHANGE

- › Determined philosophy
- › Extreme focus in energy efficiency
- › Innovation like no other
- › Steering the industry towards sustainable tourism
- › Recycling, reusing and re-gaining valuable materials
- › Passionate leaders with proactive mindset
- › Dedicated teams onshore and onboard ensuring best possible operations
- › Willingness to change to improve and to push boundaries for change



MARKET OUTLOOK

- › Vow is having a strong order backlog
- › Experiencing high activity among shipbuilders and owners
- › The vessels that are on the drawing board will require larger and more complex systems
- › Some of the key drivers
 - Landing challenge
 - Reduced operational costs
 - Operations in port
 - Cost of CO2 Emissions
- › When choosing Scanship solutions, the shipowners achieve all above points



VOW



CLARKSONS

Newbuilding cruise market

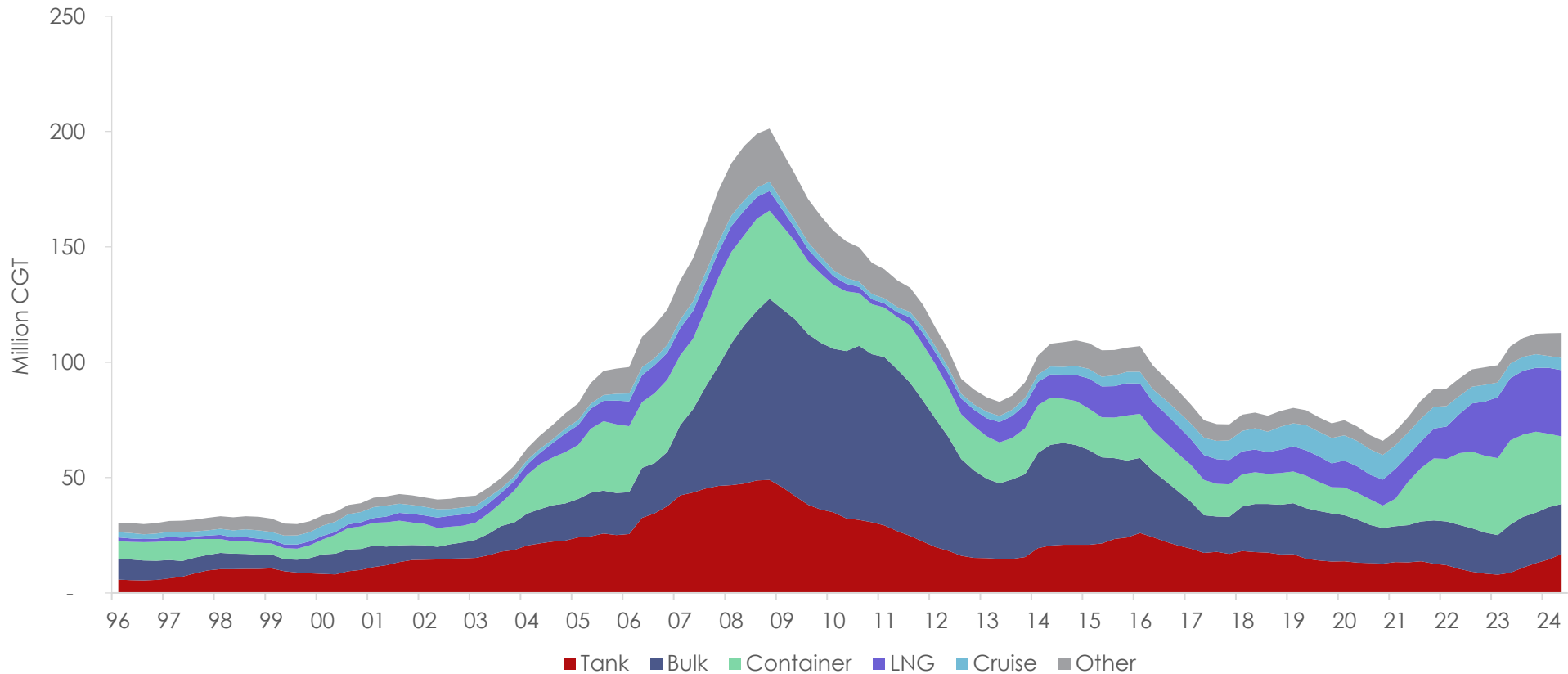
By Clarksons

for VOW

11 June 2024

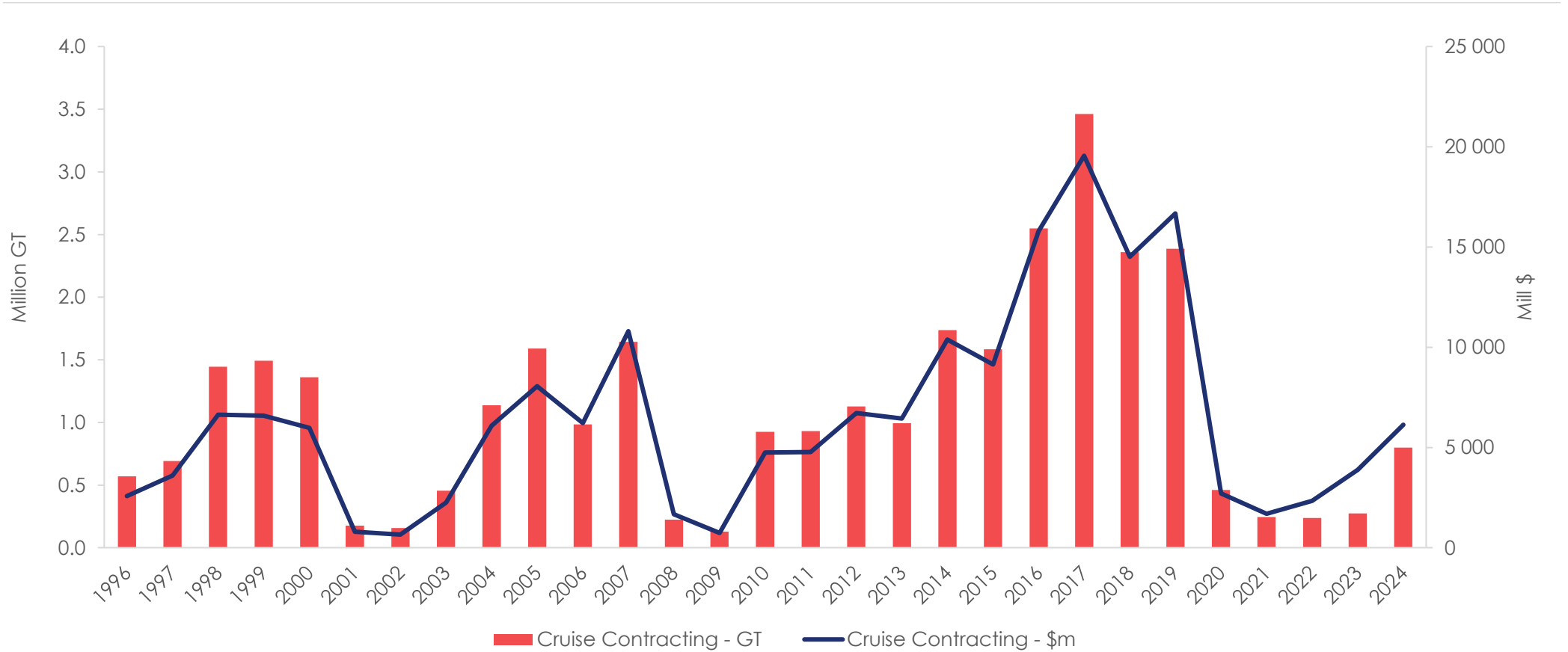
Cruise ship orderbook currently accounts for less than 5% of total orders

At peak Cruise ships represented 16% of the order backlog in second half 2020



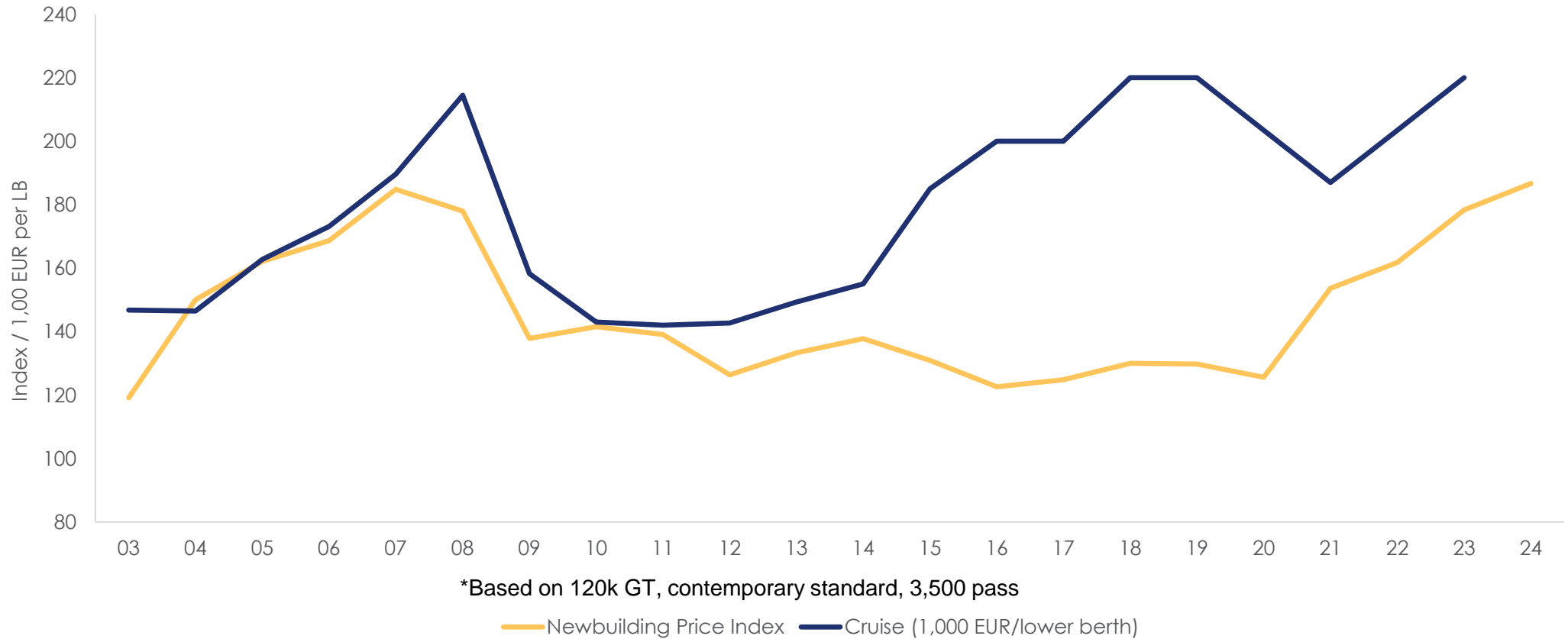
Source: Clarksons Research – in million compensated gross tons (CGT)

Cruise ships ordering is picking up



All newbuilding prices generally follow the same trend, but

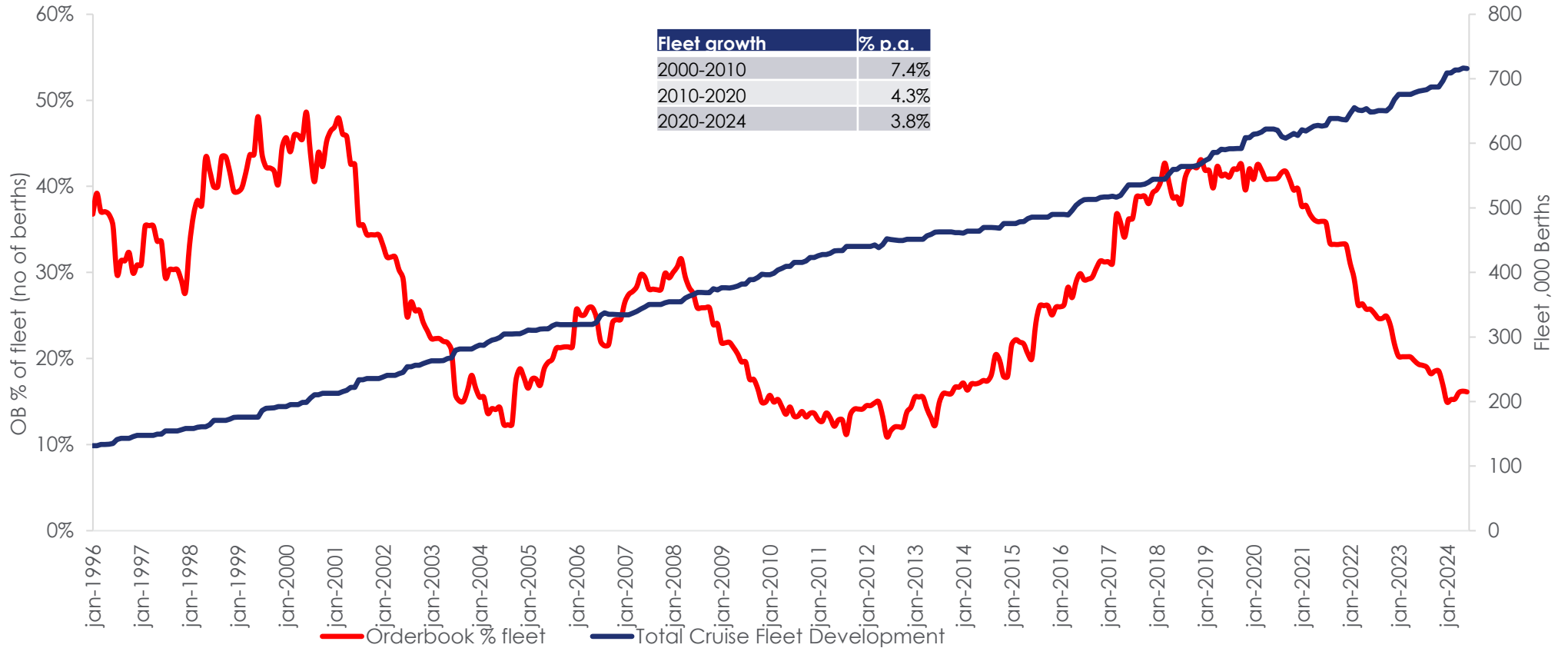
... price for cruise ships* diverted from this trend in the period 2015 - 2021



Source: Clarksons Research

Total cruise ship orderbook 16% of existing fleet fleet

Cruise fleet, 1996-2024 monthly

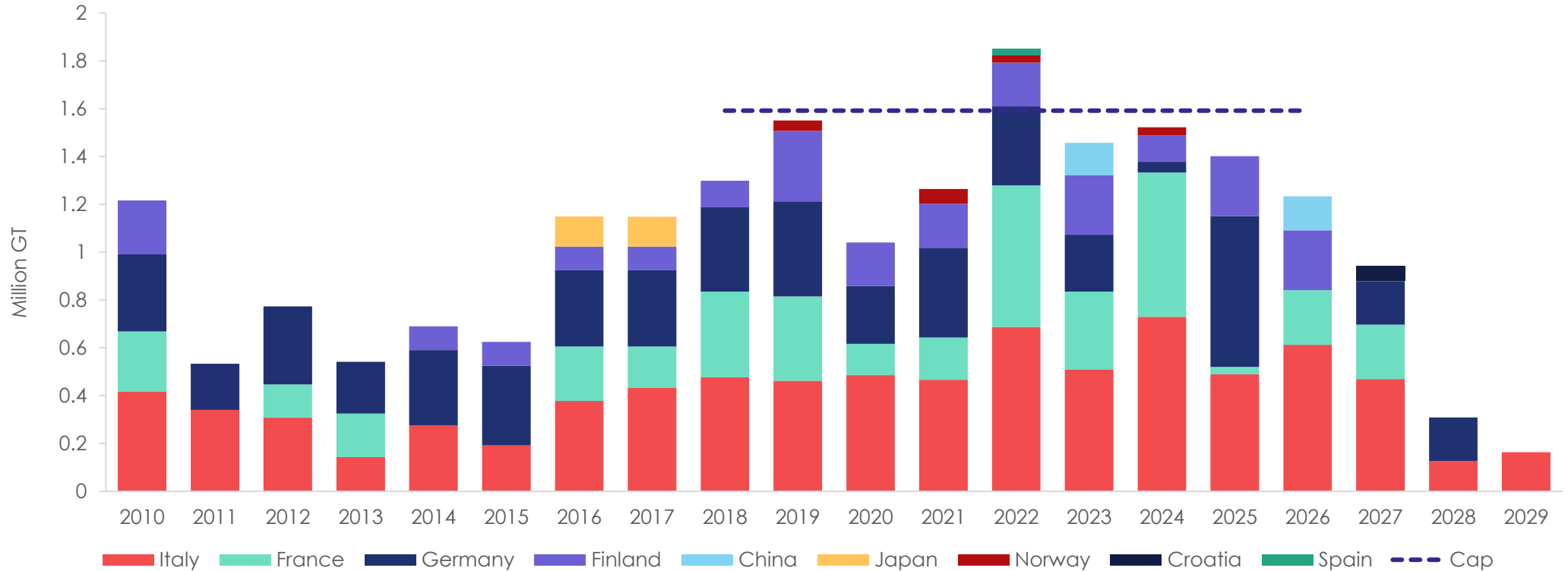


Source: Clarksons Research Service

Cruise ships building capacity ~10 cruise ships* per year = 5.3% of current fleet

Italy, Germany, France and Finland: capacity 8-9 ships per year

Deliveries of large cruise ships +20,000 gt per year by country



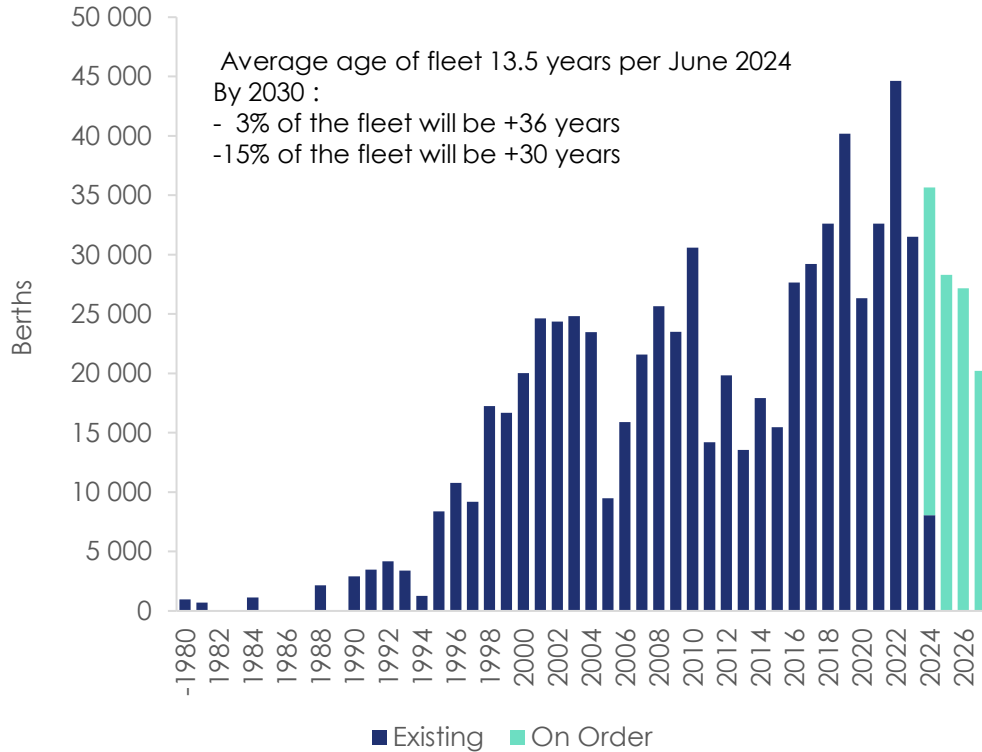
Source: Clarksons

* of 4,000 LB/160,000 GT

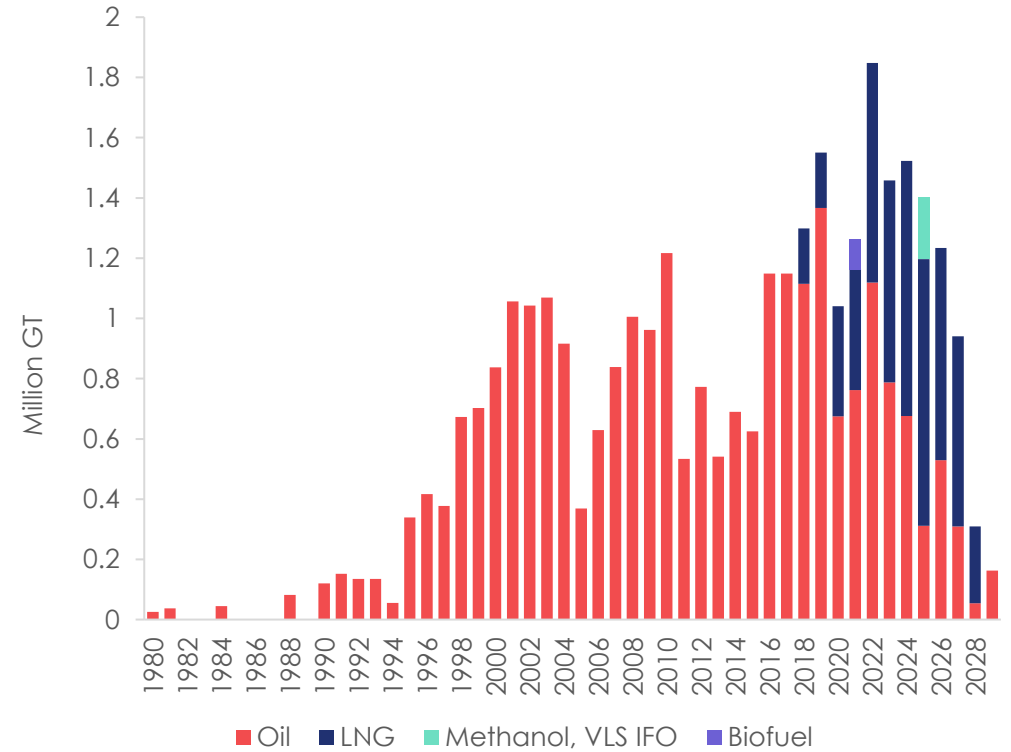
Will regulation increase the need to replace older ships ?

60% of ships delivered from 2024 are dual fuelled while only 9% of current fleet are dual fuelled (GT)

Cruise ship fleet above 20,000 gt by building year



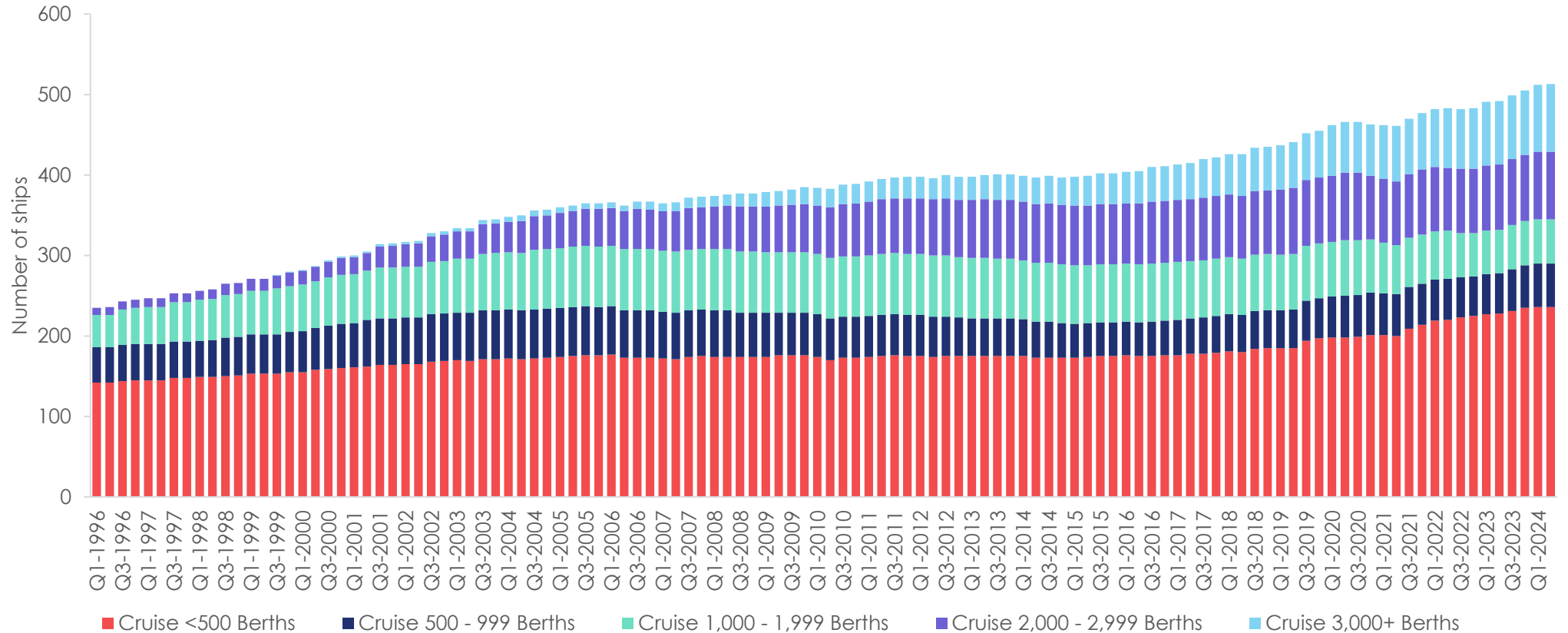
Cruise ships above 20,000 gt by fuel type



Source: Clarkson Research Service - above 20,000 gt

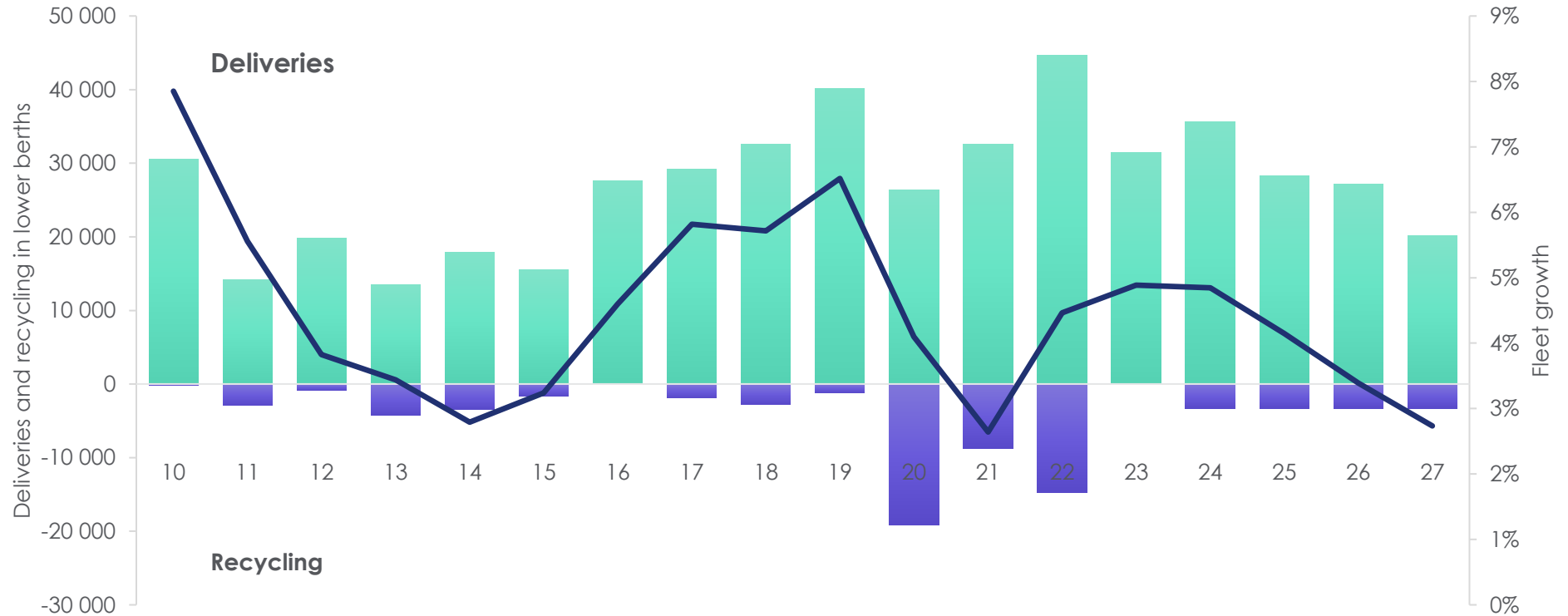
Cruise ships fleet: The smallest and largest size of ships are in flavor

Cruise fleet development in number of ships



Cruise fleet continues to grow as orderbook is delivered

Ocean cruise fleet (above 20,000 GT), 2010-2027



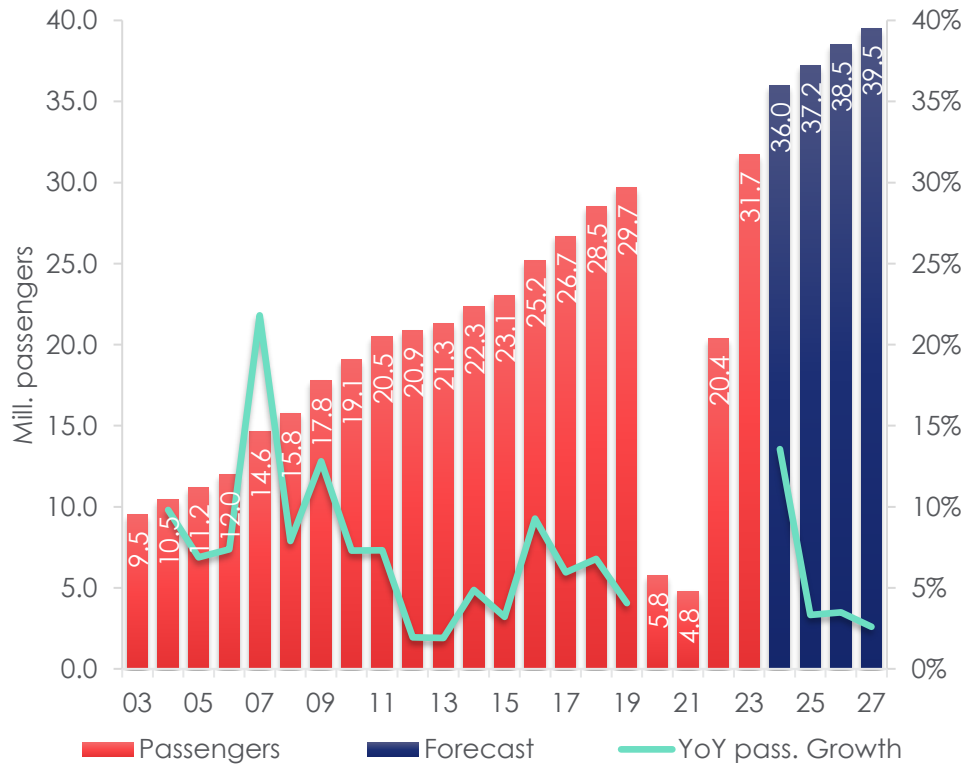
From 2022; based on current orderbook and removal at age 36 year, equal to latest removal age

Source: Clarksons Research Service

Cruise market to be “fully recovered” this year

Cruise market scenario

Global cruise passengers to 2027

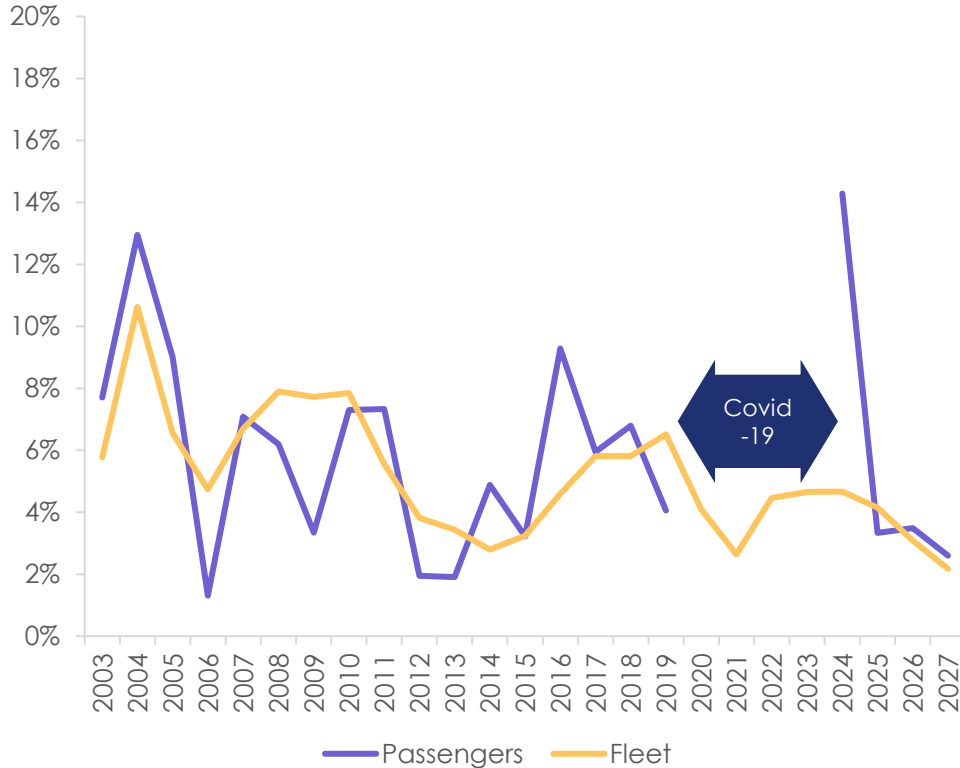


Source: CLIA September 2023

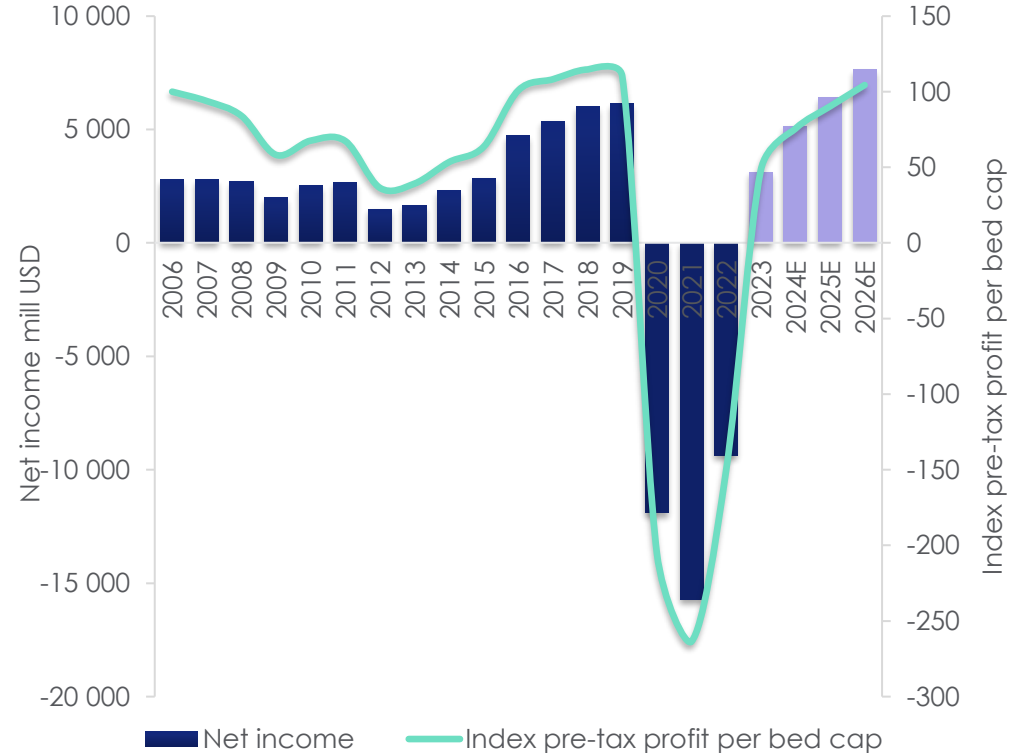
- Cruise passenger increased by 7.4 pct per year from 2003 to 2019 - Asia market main driver mainly due to China
- In 2020 the number of passengers was hit by Covid19 and subsequently cruise lines halted operations.
- CLIA base case scenario (Sept 2023) for growth in number of passengers YoY:
 - 2023 54%
 - 2024 14%
 - 2025-27 ~3% p.a.

Cruise market balance: Number of passengers determined by fleet capacity, profit per bed capacity a better indicator

YoY Cruise passenger vs cruise fleet growth, 2003-2024



Net income per bed capacity*



Source: CLIA, Clarksons * Estimates based on Carnival, RCCL and NCL. 2023-2026 based on forecast from Reuters per June 2024

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**BELIEVING IN A FUTURE WHERE
INDUSTRY IS HARMONIZED
WITH NATURE**

VOW

