

A large cruise ship with a white hull and blue accents is sailing on a deep blue ocean. The ship is viewed from a high angle, showing its multiple decks and curved structure. The background is a vast expanse of water under a clear sky.

**‘Monsters of the Seas’:** Why are cruise-ships getting bigger and what is their impact on ports and the environment?

**‘Ungeheuer der Meere’:** Warum werden Kreuzfahrtschiffe immer größer und welche Auswirkungen haben sie auf Häfen und die Umwelt?  
(‘Science goes Public’ Series - Bremerhaven, 02. Mar 2023)



Prof.Dr.Dr.Alexis Papathanassis

Cruise Tourism Management  
Bremerhaven University of Applied Sciences

E: [apapathanassis@hs-bremerhaven.de](mailto:apapathanassis@hs-bremerhaven.de)

T: +49 471 4823 100

M: +49 173 613 2565

# ‘Marine Monsters’

## Future Concepts from the Past!

# Freedom Ship: A \$10.000.000.000 Concept of the 90s!

*Construction repeatedly delayed due to cost-issues...*

## Voyage of the Freedom Ship



Passenger Capacity: 100.000

- 40,000 full time residents
- 30,000 daily visitors
- 10,000 nightly hotel guests
- 20,000 full time crew

Ship Size (L: 1370m / W: 230m / H: 110m)

## Project Objectives:

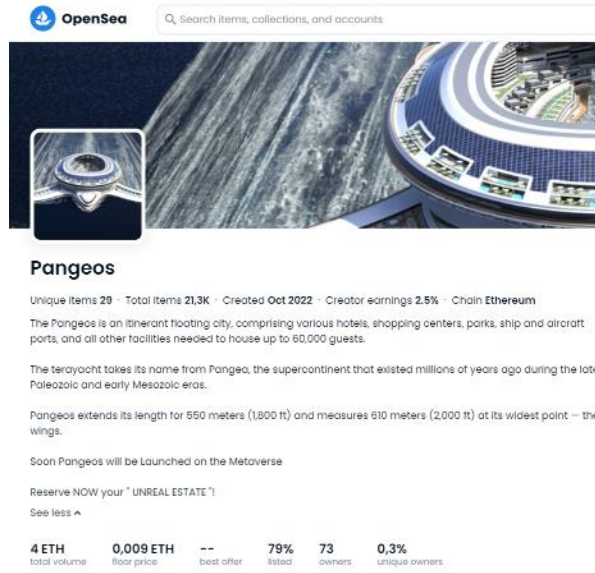
- Provide a unique, traveling **residential community**, combining the amenities of a modern city with those of the finest resorts, in an attractive, stimulating, and secure environment.
- Create a vigorous **commercial community** whose privately owned and operated on board enterprises will sell their products and services worldwide.
- Establish the world's largest **duty-free retail shopping mall** and bring it to markets around the world with a steady and substantial stream of resident and visiting customers.
- Develop the standard in **education** (US grades K through 12) for the entire world.
- Provide the residents and crew with the finest **healthcare facilities** and plans possible.





# Pangeos – A \$8.000.000.000 Terrayacht Concept from 2009

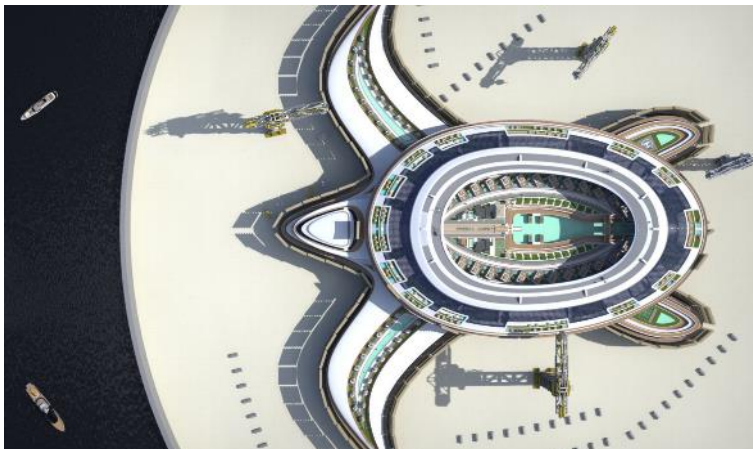
*It will finally become... An Animation in the Metaverse!*



**Passenger Capacity:**  
60.000

- 40,000 full time residents
- 30,000 daily visitors
- 10,000 nightly hotel guests
- 20,000 full time crew

**Ship Size (L: 610m / W:**  
**550m / H: 67m)**





Prof.Dr.Dr.Alexis Papathanassis

Cruise Tourism Management  
Bremerhaven University of Applied Sciences

E: [apapathanassis@hs-bremerhaven.de](mailto:apapathanassis@hs-bremerhaven.de)

T: +49 471 4823 100

M: +49 173 613 2565

# Real Marine Monsters...‘Mega -Cruises’

Size (Always) Matters!

# RCL's Icon of the Seas – Polarisation trend in cruising

*Floating Destination: 20 decks, 8 neighbourhoods, 10.000 pax and crew*



Tonnage:  
250,800 GRT

Length: 365 m

Passenger  
Capacity:  
7600

Crew: 2350

Fuel: LNG

Sail start:  
28 January  
2024

28 Cabin  
Categories

8 Neighbour-  
hoods/  
Districts



Thrill Island

Slide waterpark (6  
waterslides)



Chill Island

Pool area (7 pools) ft  
largest pool at sea



Surfside

For young families, with  
places to eat, drink, and  
play



Hideaway

Look and feel of a beach  
club, multilevel terrace,  
infinity pool



Aqua Dome

Theater, Tallest waterfall  
at sea



Central Park

Park with real plants,  
boutiques, live  
entertainment and  
restaurants



Royal Promenade

Ice arena, shops, catering  
venues



Suite Neighbourhood

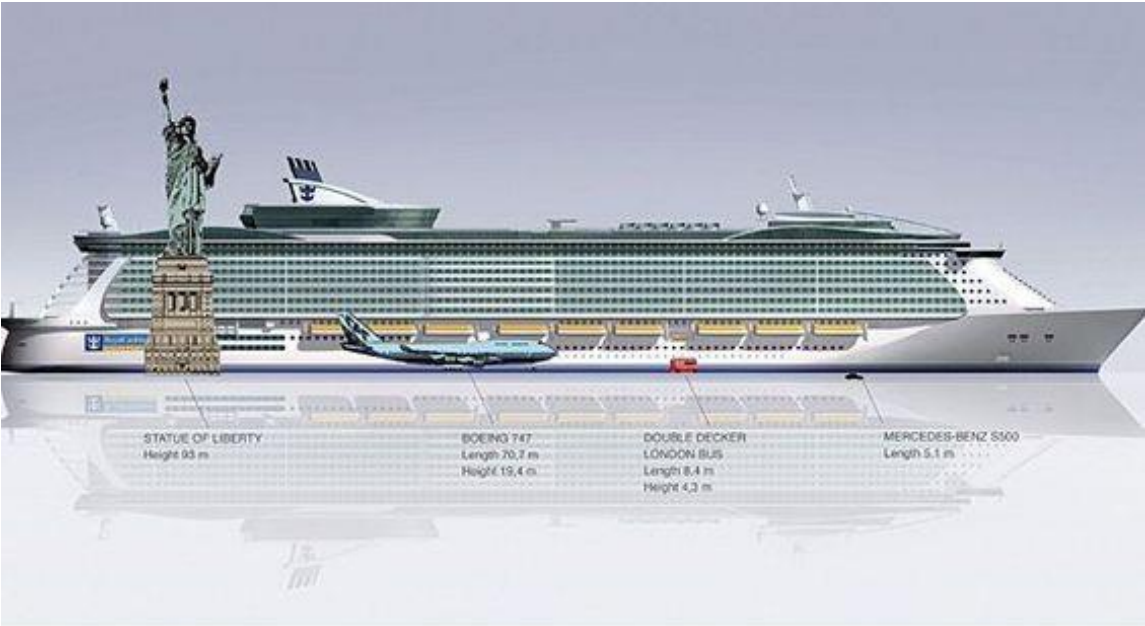
Restaurant, sun deck,  
restaurants, pools





# RCL's Icon of the Seas vs. Titanic

## Mega Space for Passengers, Less Crew Attention!



	Titanic	Icon of the Seas
Gross Tonnage (GT)	46328	250800
Guests	2435	7600
GT/Guest (Space)	19	33
Crew	892	2,350
GT/Pax (Space)	14	25
Guest/Crew (Service)	2,7	3,2

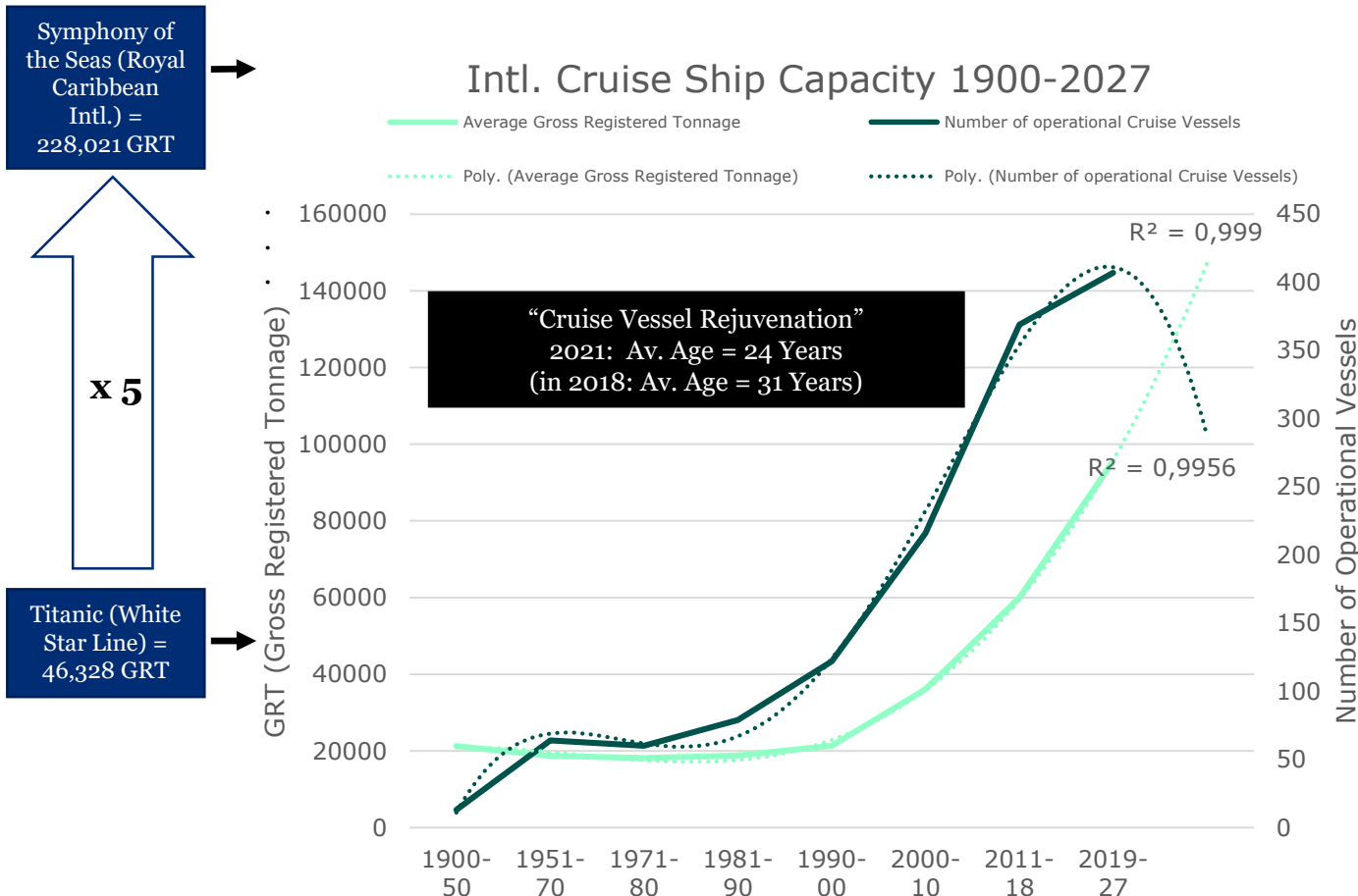


<https://www.pinterest.de/pin/704954147903160223/>



# A Short History of Cruising: Size Matters!

*A history of resilience and technology-enabled transformation*



Sources: Papathanassis, A. (2019). The growth and development of the cruise sector: A perspective article. *Tourism Review*. <https://doi.org/10.1108/TR-02-2019-0037>, [https://en.wikipedia.org/wiki/List\\_of\\_cruise\\_ships](https://en.wikipedia.org/wiki/List_of_cruise_ships), <https://www.cruiseindustrynews.com/cruise-news/cruise-ship-orderbook.html>

## 1960-70s: Crisis in passenger shipping

- Early 20<sup>th</sup> Century, mainly focused on Transatlantic crossings
- Crisis through the commercialisation of jet-engine flight transportation

## 1980s: Transformation of a cruiseline voyage to a cruise holiday

- Amenities and facilities on board
- Increasing vessel size – floating resorts, enabled by ship-building technological advances

## 1990s: Capacity investments and modernisation

- New-builds and capacity investments
- Gradual reduction of prices / ‘democratisation of cruising’

## 2000s: Consolidation

- Horizontal M&A resulting to high concentration

## 2010-Today: Crisis in Cruise Tourism’s Supply Chain

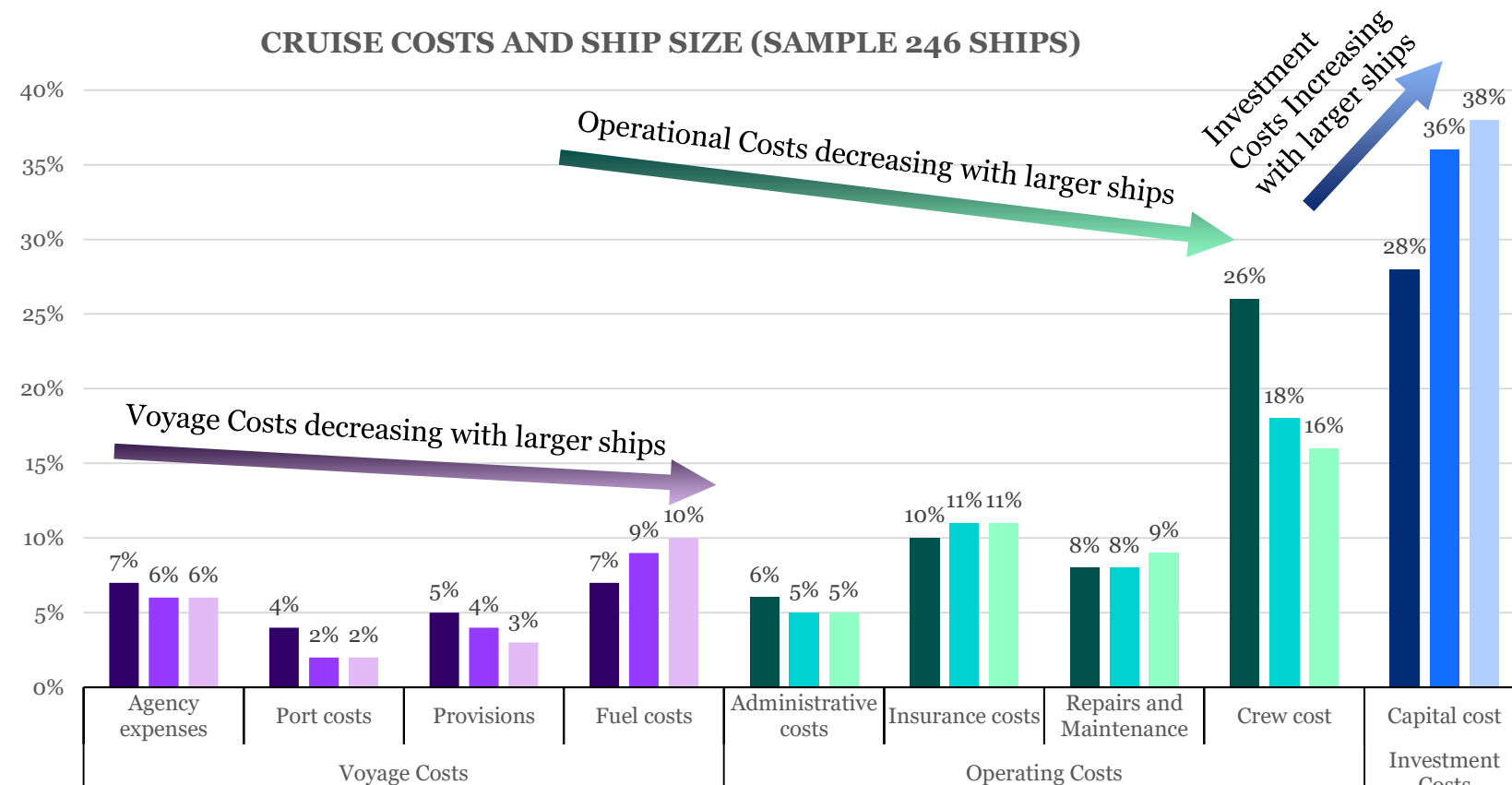
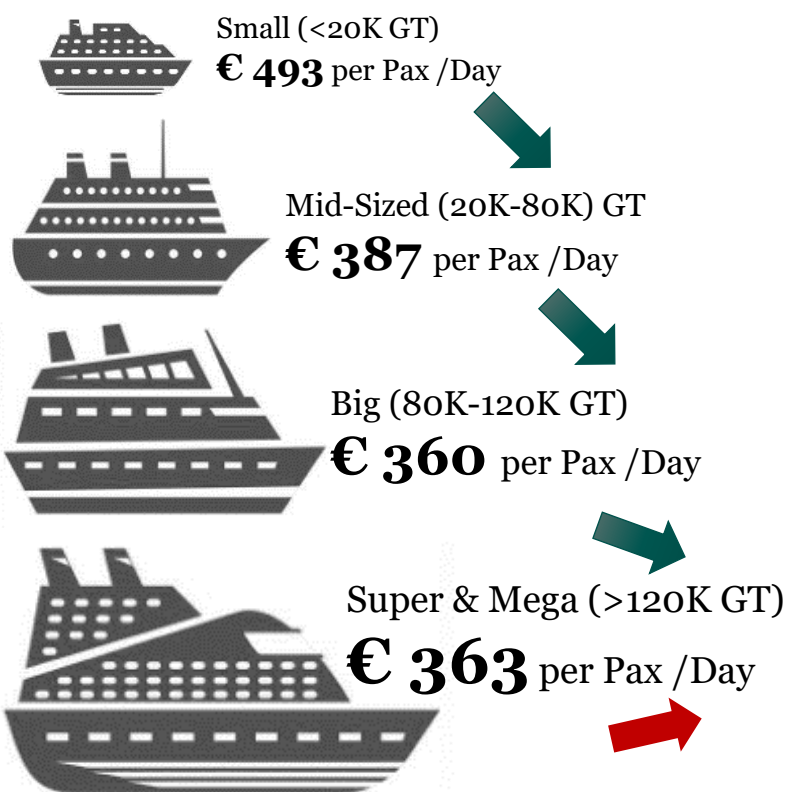
- Maturity in main source markets
- Sustainability-, Health and Safety Regulations
- Overcrowding / Port infrastructure / Destination Carrying Capacities





# Bigger is Cheaper to Run... But Expensive to Build!

## Cost-Comparison between Ship Sizes

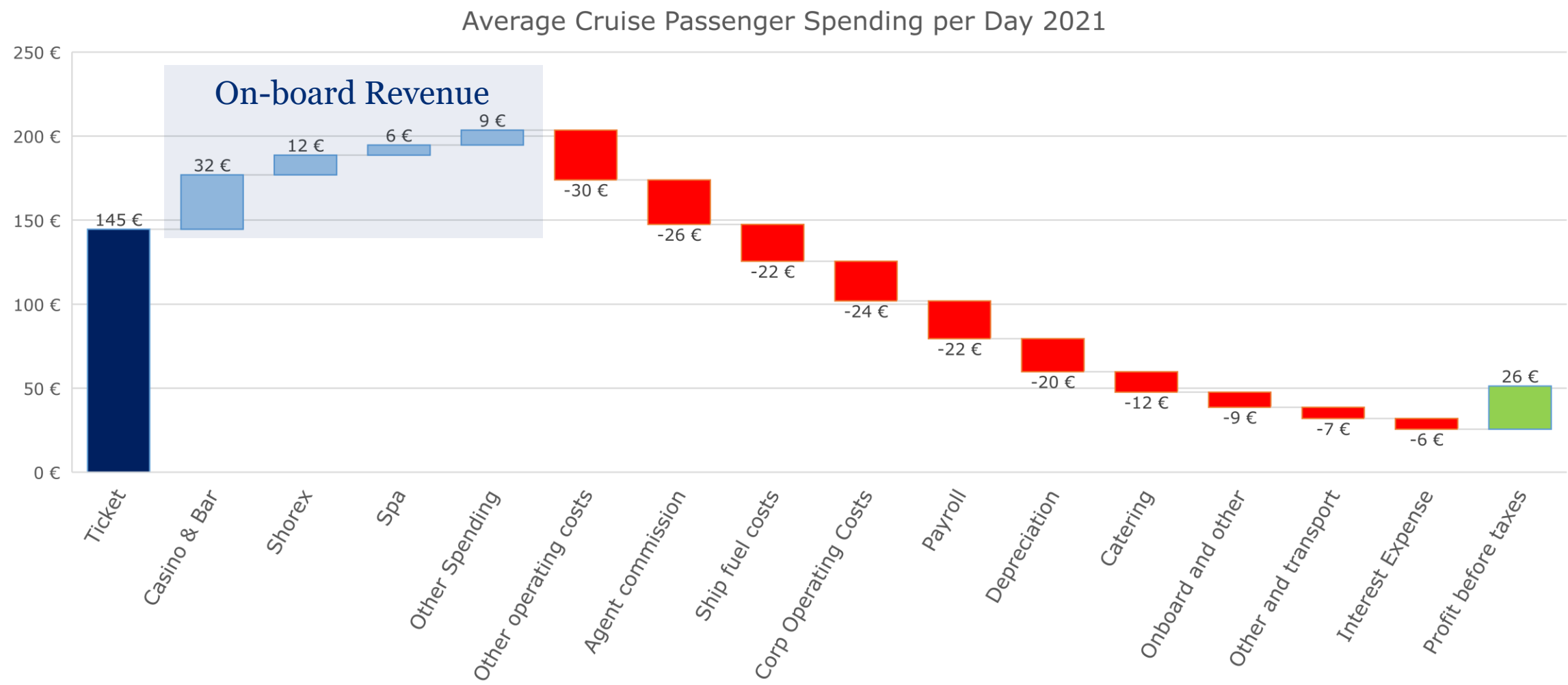


VC: 23% - OC: 50% - CC: 27%	Small Cruises (< 20 000 GRT)	7%	4%	5%	7%	6%	10%	8%	26%	28%
VC: 21% - OC: 43% - CC: 36%	Mid-Sized & Big Cruises (20 000 - 120 000 GRT)	6%	2%	4%	9%	5%	11%	8%	18%	36%
VC: 21% - OC: 41% - CC: 38%	Super and Mega Cruises (> 120 000 GRT)	6%	2%	3%	10%	5%	11%	9%	16%	38%



# In 2021, the Average Cruise Passenger spent €204

... and cost €178 per Day.



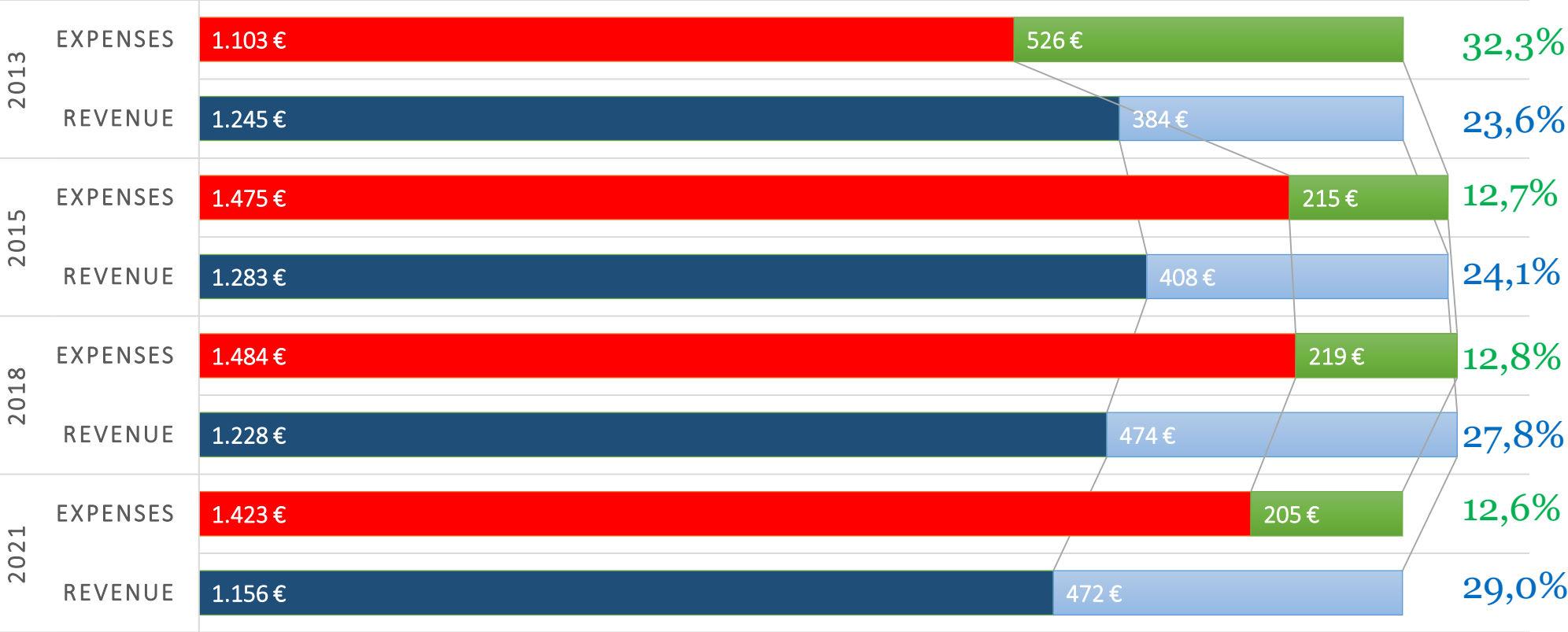


# Onboard Revenue and Captive Pricing

*A Driver of Ship-Size and Competition for Port-Economies?*

AVERAGE CRUISER FINANCIAL BREAKDOWN 2013-2021

■ Ticket Revenue   ■ OnBoard Revenue   ■ Total Expenses   ■ Profit before Tax



In real current prices (1 Dollar = 0.95 Euro)

The **Competition on Land and Monopolies on Board** create the premises for **Captive Pricing**. On Board Revenue is vital for **economic survival** and profitability



Prof.Dr.Dr.Alexis Papathanassis

Cruise Tourism Management  
Bremerhaven University of Applied Sciences

E: [apapathanassis@hs-bremerhaven.de](mailto:apapathanassis@hs-bremerhaven.de)

T: +49 471 4823 100

M: +49 173 613 2565

- Sustainability is
- about Regulation
- and Technology...

- ...Not Size!

- 

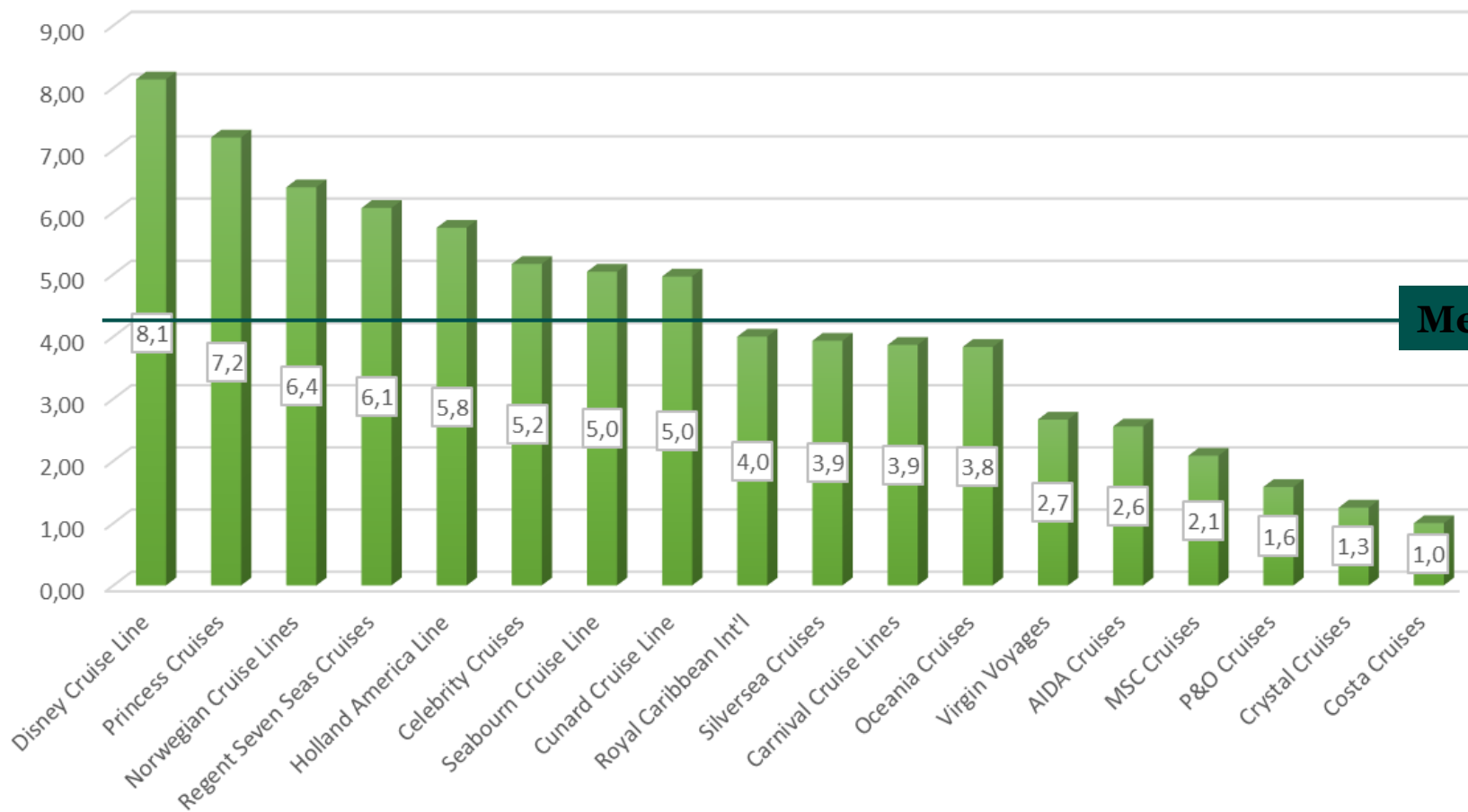
-



# The Critics...

## Environmental Sustainability - FoE Scorecard 2009-2021 (Average)

FoE Cruise Line Score (2009-2021)



Mean 4.2

FoE Score	Own Points	Description
A+	13	Excellent
A	12	
A-	11	
B+	10	Satisfactory
B	9	
B-	8	
C+	7	Needs Work
C	6	
C-	5	
D+	4	Poor
D	3	
D-	2	
F	1	Unacceptable



# Evaluation of FoE-criteria according to Ship Class:

*Large Ships score with Technology, the small ones Compliance*

	Sewage Treatment (% of Total Ships)		Water Quality Compliance (% of Total Ships)					Air Pollution Reduction (% of Total Ships)				
Ship Class	Grade F (1)	Grade C (6)	Grade F (1)	D	Grade C (6)	B	Grade A (12)	Grade F (1)	Grade C (6)	B	Grade A (12)	Ship Class % of Total
Mega (>5000 Pax)	6%	94%	95%	2%	2%	0%	0%	51%	19%	26%	4%	26%
Large (3000-5000 Pax)	38%	63%	77%	16%	1%	0%	6%	56%	20%	22%	2%	47%
Mainstream (1000-3000 Pax)	25%	75%	58%	29%	4%	0%	8%	58%	10%	33%	0%	19%
Small (<1000 Pax)	29%	71%	25%	0%	0%	25%	50%	88%	0%	12%	0%	8%
<b>Total</b>	<b>26%</b>	<b>74%</b>	<b>78%</b>	<b>2%</b>	<b>2%</b>	<b>1%</b>	<b>6%</b>	<b>58%</b>	<b>16%</b>	<b>24%</b>	<b>2%</b>	<b>100%</b>

**Sewage Treatment:** Whether a cruise line has installed the most advanced sewage and graywater treatment systems available instead of dumping minimally treated sewage directly into the water.

**Water Quality Compliance:** To what degree cruise ships violated 2010-2019 water pollution standards designed to better protect the Alaskan coast. Ships were also failed for scrubber use since they generate toxic water pollution.

**Air Pollution Reduction:** Whether a cruise line has retrofitted its ships to “plug in” to available shoreside electrical grids instead of running polluting engines when docked. Or uses the lowest sulfur fuel worldwide or both.



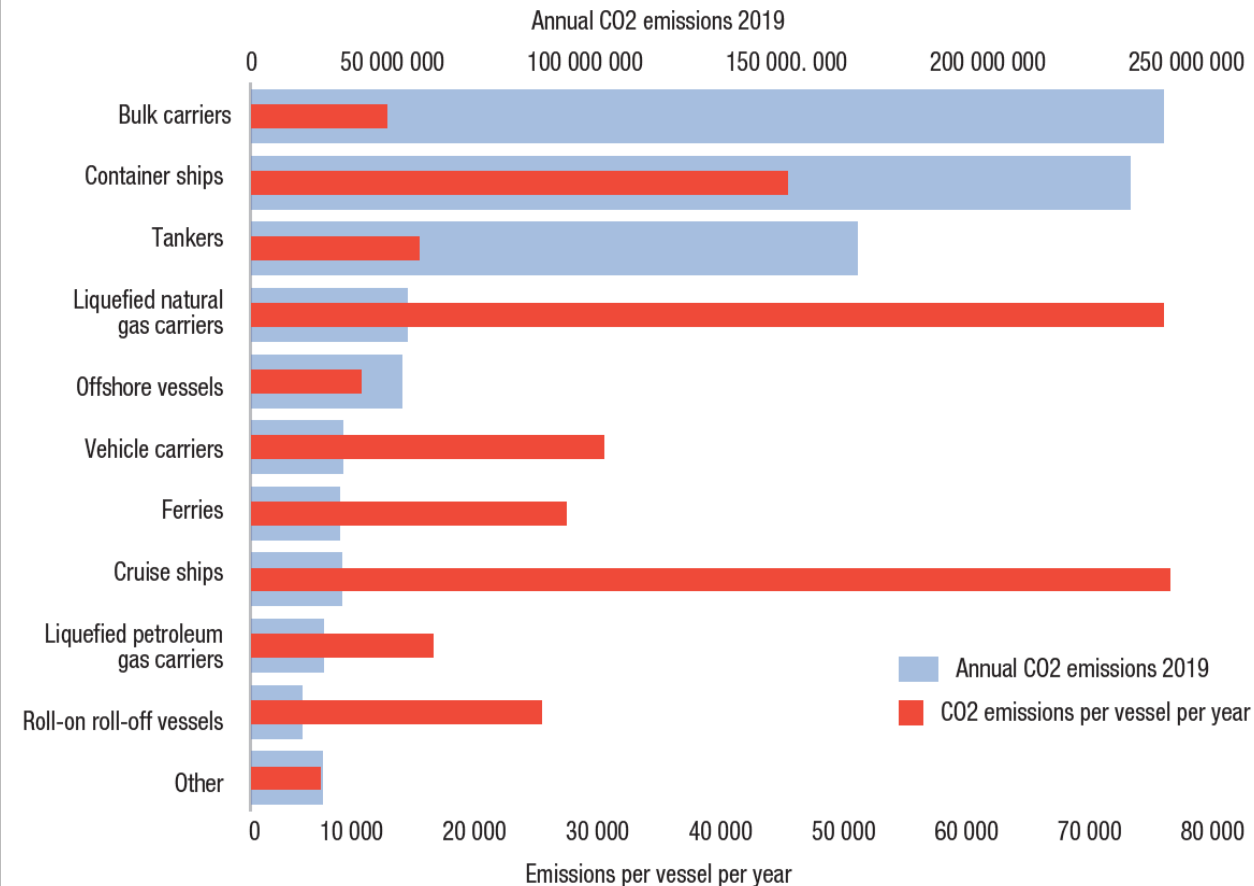


# Cruise ship orderbook 2021-2027:

## *Commitment to sustainability or merely 'organic modernisation'?*

	TOTALS	%
<b>Ship Orders (2021-2027)</b>	<b>107</b>	
<i>Small and Expedition Vessels</i>	34	32%
<i>Maistream Vessels</i>	27	25%
<i>Mega Ships</i>	46	43%
<i>LNG Powered Vessels</i>	22	21%
Total Inv. Cost (M \$)	62.474	
Total Inv. Cost / LNG-powered Vessels (M \$)	21.424	34%
Average Inv. Cost / Vessel (M \$)	584	
Average Inv. Cost / LNG-powered Vessel (M \$)	931	+59%
Total Tonnage	9.222.705	
Total LNG-powered Vessel Tonnage	3.640.150	39%
Average Tonnage / Vessel	86.194	
Average Tonnage / LNG-powered Vessel	158287	+83%
Total Pax Capacity	215.151	
Total LNG Powered Vessel Pax Capacity	89.851	42%
Average Pax Capacity / Vessel	2.011	
Average Pax Capacity / LNG-powered Vessel	3906	+94%

Data Source: <https://www.cruiseindustrynews.com/cruise-news/cruise-ship-orderbook.html>



Source: UNCTAD calculations, based on data provided by Marine Benchmark.  
<https://unctad.org/news/covid-19-cuts-global-maritime-trade-transforms-industry>



Prof.Dr.Dr.Alexis Papathanassis

Cruise Tourism Management  
Bremerhaven University of Applied Sciences

E: [apapathanassis@hs-bremerhaven.de](mailto:apapathanassis@hs-bremerhaven.de)

T: +49 471 4823 100

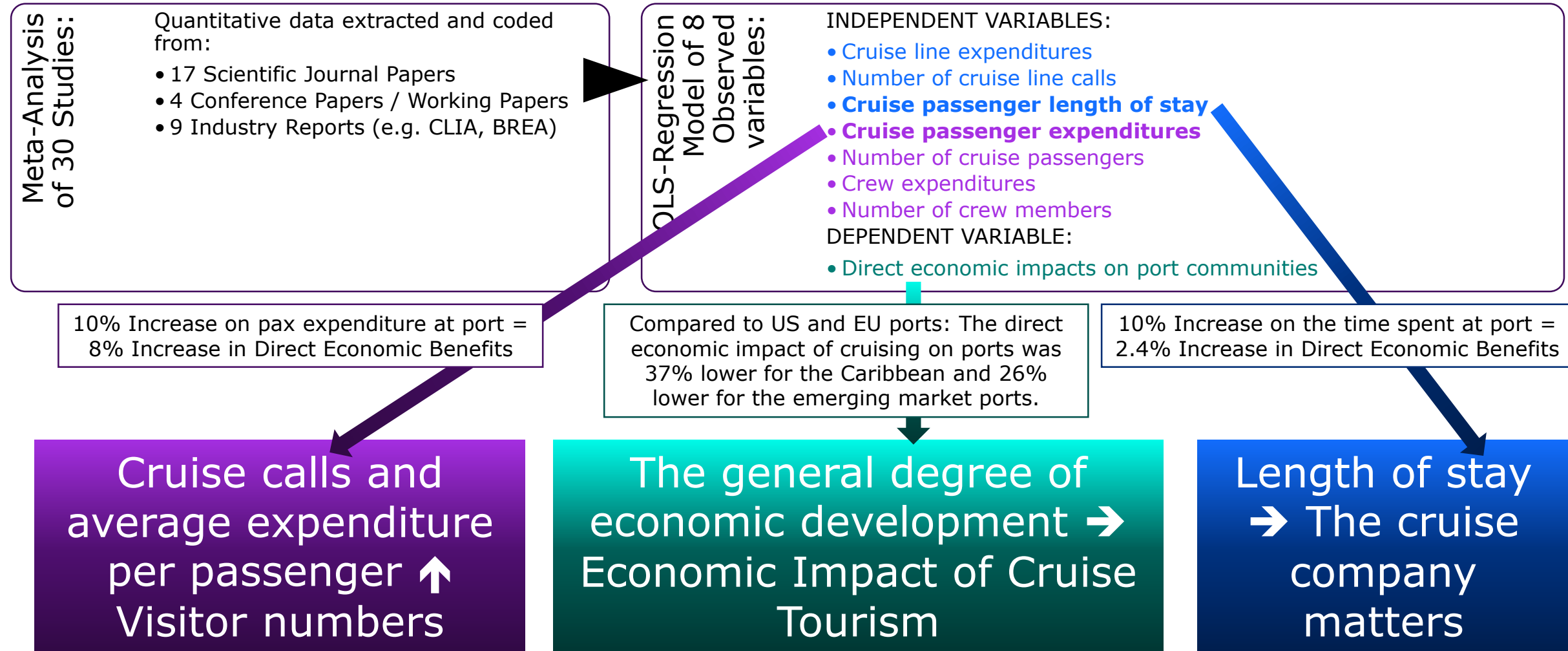
M: +49 173 613 2565

- **For Ports it is a**
- **matter of Quality**
- **and Experience...**

- **... Not Port Infrastructure**
- **and Passenger Numbers!**

# The economic impact of cruising on ports varies...

## *A Meta analysis of the economic impact of cruises on destinations*





# The Question of Regulation...

## *Regional Restrictions vs. Globalisation*

Home » Activities » Bonaire's One Cruise Ship Policy

### Bonaire's One Cruise Ship Policy

by Tanya Deen for the Bonaire Insider | Feb 11, 2023 | Activities, Local News, Tourism Announcements



#### Bonaire gets closer to enacting the “One Ship Policy.”

In a recent press conference, an update was given on the “one ship policy” aimed at a better Bonaire experience for [cruise tourists](#) as well as residents of Bonaire. By handling a maximum of one large cruise ship per day, several improvements are being made for Bonaire. For the cruise tourists, the service and experience of the island visit will improve by spreading out the number of visitors. Bonaire can also better serve the increased number of cargo ships, partly due to the strong growth in the number of inhabitants, and entrepreneurs can offer more service to visitors. This will also relieve pressure on Bonaire's infrastructure.

The “one ship policy” already came into effect last year, resulting from the Tourism Recovery Plan, but Bonaire is still seeing two cruise ships at a time due to older contracts that cannot be broken. As of mid-April, there will mostly be one cruise ship in port. However, smaller ships with less than 700 passengers will be allowed as a second ship. The revision of the criteria and requirements for port bookings was also discussed. Incentives for motivating cruise lines to visit during the low season is also being considered.

Port ≠ Land  
Experience

Cruise News » Royal Caribbean News

### Royal Caribbean to Increase Capacity at its Private Island

Royal Caribbean will increase capacity at PerfectDay at CocoCay to 13,000 passengers by adding Hideaway Beach, CEO Jason Liberty revealed.

By Robert McGillivray Affiliate Disclaimer Modified Date: Feb 8, 2023



Photo Copyright: Melissa Mayntz / Cruise Hive

Royal Caribbean Group has big plans for Perfect Day at CocoCay, its private island in the Bahamas. During the recent Q4 earnings call on February 7, CEO Jason Liberty and Royal Caribbean International President Michael Bayley revealed plans to increase the island's capacity to 13,000 visitors daily.

Perfect Day at Cococay has quickly become one of the most popular destinations for cruise travelers. With the launch of *Icon of the Seas* coming and with the addition of the new Hideaway Beach, an adult-only neighborhood set to launch in the fourth quarter of 2023, the island is sure to become even more popular.

# Industry size into perspective

*"Too small to make a difference... unless it's positive!"*

Global Capacity	2017	Number of Units	Cruise Fleet / Sector as a % of...	Data Source
	Cruiseships	369		
	Airplanes	24,400	1.51%	Statista (2018a)
	Merchant Ships	52,000	0.71%	Statista (2018b)
	Hotels	184,449	0.20%	STR (2018)
Global Economic Contribution	2017	Direct Contribution (mil USD)		
	Cruise Sector	\$61,020,000		CLIA (2018)
	Tourism Sector	\$2,036,000,000	3.00%	WTTC (2017)
	2017	Employment (Jobs /FTEs)		
	Cruise Sector	1,100,000		CLIA (2018)
	Tourism Sector	118,454,000	0.93%	WTTC (2017)
	2017	Direct Contribution per Arrival / Port Visit		
	Cruise Sector	\$445.82		CLIA (2018)
	Tourism Sector	\$1.538.93	28.97%	WTTC (2017)

'If you were to close the cruise industry tomorrow, it would make zero difference to overtourism issues.'  
(David Dingle, Carnival U.K.\*\*)

"The cruise industry goes to about 1,000 places. The vast majority want more tourists from us, not less."  
(Adam Goldstein, vice chairman of Royal Caribbean Cruises Ltd)\*\*

"Venice alone attracts 24 million tourists annually, nearly the same number of people the entire cruise industry carried in 2017. So I mean we are quite small"  
(Carnival Corp. CEO Arnold Donald)







Prof. Dr. Dr. Alexis Papathanassis  
Hochschule Bremerhaven  
T +49 471 4823-100  
M +49 173 6132-565  
W [www.hs-bremerhaven.de](http://www.hs-bremerhaven.de)  
E [apapathanassis@hs-bremerhaven.de](mailto:apapathanassis@hs-bremerhaven.de)

Hochschule  
Bremerhaven

# Thank you for your attention

