CRUISING INDUSTRY: SUSTAINABILITY PERFORMANCE AND SOCIAL RESPONSIBILITY

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Abstract

The context of globalization favored the conditions enabling the tourism and hospitality industry to become the largest industry in the world accounting for the highest growth levels over the past consecutive years. This study was conducted with the aim of analyzing various aspects pertaining to the cruising industry's commitment towards sustainable development and their goal to minimize the environmental impact of tourism growth on the global touristic destinations.

The methodology is based on an extensive research of the existing literature as well as an introspective analysis of the cruising industry reports. The reports provide a glance at the environmental activity of one of the leading global cruise brands in alignment with the maritime environmental management standards within the cruising industry.

The study is also investigating factors linked to the environmental impact of tourism on the global scale in relation to the efforts invested towards achieving the goal of making tourism an efficient instrument that creates value by coexisting in harmony with the natural landscapes. From this perspective, the analysis indicates that the cruising industry has taken a leading role displaying corporate social responsibility through the discovery of innovative sustainable solutions and commitment to overcome advanced systems implementation challenges ensuring consistency across the brands within the industry and across geographical regions.

Keywords

Sustainable tourism, environmental protection, environmental impact, innovative sustainable solutions, corporate social responsibility, landscape conservation.

State of the industry - Sustainability and corporate social responsibility in hospitality industry

The increasing evolution of the tourism industry at the global level in the recent years fostered unprecedented economic growth. World travel had been transformed over the years with dramatic increases in the number of tourists and the seasonality challenges from the past had been reduced by expanding the services portfolio to various geographical destination areas allowing for thriving business year-round. With tourist traffic set to rise there are many positive effects in terms of product and service diversification, customer experience innovation, enhancement of operations, expansion of shore excursion programs, all designed to appeal to the desires of modern travelers.

Along with the positive effects it is well-known that there are also negative effects with undeniable impact on various aspects related to the environment, social and economic, culture and geo-politics (ECC, 2012 and ICCA, 2012). It is also the aim of this research to reflect the efforts of drawing attention to the dangers that may result from the development of the tourism industry and join the sustainable development cause highlighted by non-governmental organizations, local administrations and tourism and environmental specialists.

Sustainability as it is defined rests on three essential pillars: environmental, social and economic, each one of them can be associated with three dimensions of our existence: planet, people and profits. "The social responsibility of business encompasses the economic, legal, ethical and discretionary expectations that society has of organizations at a given point in time"(Carroll, 1979). It's objective is to find the thin balance between supply and deman and it refers to the use and preservation of resources in such a way as to ensure a continuing existence of our species on this planet in the long future.

The rapid development of the hospitality industry brings along environmental protection and natural landscape conservation challenges forcing well-established brands and global corporations to display a good set of principles and practice corporate social responsibility along with their financial performance.

"As society's stakeholders become more concerned with staff welfare, the impact on the environment and local communities, they will put pressure on the most visible corporations to address the issues" (Bonilla-Priego et al., 2014)

All around the world international conferences, forums and interactive panel discussions addresses the urgency of sustainable development situation, as the majority of players within the world's biggest industry join their forces to tackle the severe issues of tourism growth and creatively find innovative solutions to ensure environmental sustainability.

Examination of the sustainability in cruising industry

The sustainability movement had its debut over 20 years ago when for the first time in Alaska regulations pertaining to wastewater discharge have been imposed to the visiting cruise ships (ADEC, 2002). Shortly, the Baltic region and the West Coast followed suit in what was at the time an altogether new daring approach. Ever since that time the industry has come a long way evolving in their objectives and practices towards a desirable zero emissions target. As the entire world is becoming increasingly aware of the imminent environmental changes that ought to occur, so do the port communities are becoming more concerned about the air emissions generated by cruise ships when in ports, converging with the cruise industry's active engagement in developing technologies and fuels to reduce emissions both at sea and in ports. The success of this environmental tactic depends on the ambition and determination of the cruise operators with the implication of the official authorities from the local regions specific to the visited ports.

The industry's bold initiative takes into account improvements intended to radically affect the water and air environment at sea as well as in ports, through efficient emissions restrictions.

As such, Norwegian authorities have taken the lead declaring that by latest 2026 the heritage fjords shall be emission free (Offshore Energy, 2019).

The regulations established at the IMO level and the cruise industry's mandatory compliance has been essential for the efficiency of the environmental practices and the overall improvement in sustainability of the terrestrial ecosystem. As such, various actions have been employed by the cruise industry from the inception of shore-power installations and exhaust gas cleaning equipment also known as scrubbers, marine fuels sulfur content restrictions or use of alternative fuels, such as LNG (OECD/ITF, 2016).

The latest Energy Efficiency Design Index issued for 2020 - 2025 provides requirements that all the newly built ships must be 20 to 30 percent energy efficient.

Following to this directive, a major deployment of funds have been invested by the global cruise operators working closely with research and development organizations and shipyards in order to create and design advanced technical systems resulting in more energy efficient powerplants, HVAC systems (IMO / EEDI, 2016) efficient wastewater treatment systems for a cleaner discharge into the sea, in addition to energy management plans and more efficient operations. Not too far sighted is the invention of new systems able to transform the garbage into energy which then could be used as fuel to power the over 180,000 tons mega cruise ships.

Environmental impacts and the effects of cruise overtourism

Without a doubt the fastest growing sector within the world's largest industry is the marine and coastal tourism which over the past two decades recorded exponential growth and global geographical expansion (Fig. No.1). Yet despite increased awareness of the economic and environmental significance of tourism, it is only in recent years, scientific researches have emerged (Hall, 2001). Negative impacts from tourism occur when the level of visitor use is greater than the environment's ability to cope with this use within acceptable limits of change. Uncontrolled conventional tourism poses potential threats to many natural areas around the world (Sunlu, 2003). Natural tourist destinations in particular require the consideration and care displayed by the tourists towards the landscape, flora, fauna and its biodiversity. Touristic city destinations rich in history and culture demand respect for its inhabitants and touristic attractions as well as preservation of archaeological sites, however a poor destination management will destabilise the equilibrium of the nature, overcrowding the cities and affecting the people who live there - reffered to as overtourism (UNTWO, 2007).

In his research (Johnson, 2002) categorizes the impact of cruise tourism on the environment based on a life-cycle analysis referred to as LCA methodology. According to Johnson the *infrastructural impacts* refer to the alterations of the natural landscape for construction of cruise infrastructure and terminals; *operational impacts* are those affecting the air quality and the ocean ecosystem caused by exhausts emission; *waste impacts* caused by sewage, grey water, garbage, oils and hazardous chemicals which should be disposed in ports; *distribution impacts* are linked to the traveling logistics of the cruise passengers and overcrowding of destinations; *use impacts* refer to nature and volume of activities organized and their impact on the local communities and wild life.

While there are success stories of ecosystem conservation programs around the world, there are also recorded natural habitats and entire ecosystems depleted by the environmental missmanagement of the industry.

The following statistic reflects the number of cruise passengers carried worldwide from 2007 to 2019. The highest numbers were recorded in 2019, 14.13 million passengers from North America and 6.35 passengers from Europe and 4.84 from the rest of the world were carried on cruise ships to various touristic ports.

Records indicate that the cruising industry witnessed an exponential development over the past two decades and it continues to grow on a global scale.

UN's Sustainable Development Goals (SDGs) for 2030 is set to eradicate poverty in the world by accelerating progress and address climate change eliminating the environmental degradation. The majority of world cruise operators within the industry responded adhering to the UN's SDGs goals acknowledging the impacts of mass cruise tourism. They set out to take actionable measures to address the issues with social responsibility towards raising awareness and protect natural environments by implementing a series of sustainability policies and ensure consistent corporate reporting that demonstrate the actions taken.
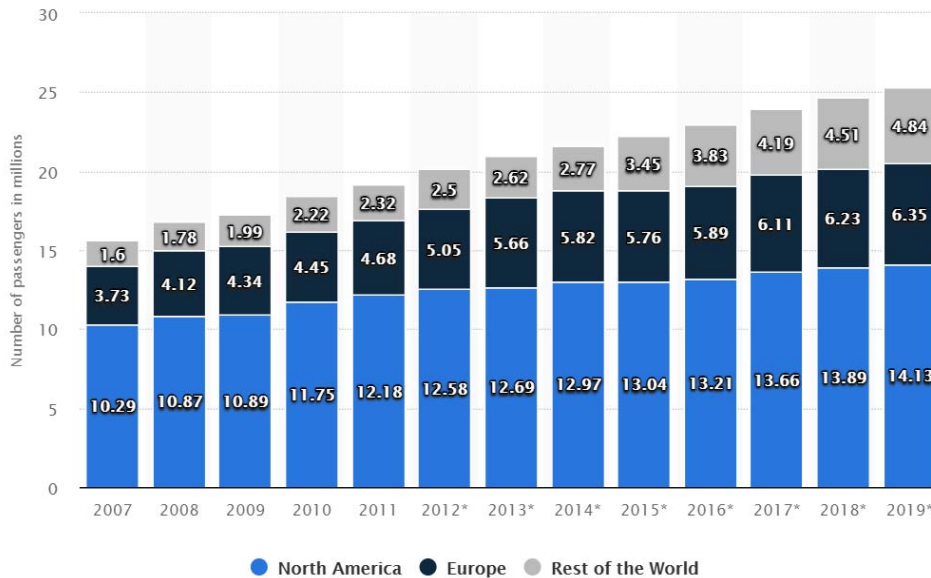

**Fig. no. 1 Number of cruise passengers carried worldwide
from 2007 to 2019 (in millions)**
*Source: Statista – retrieved from: https://www.statista.com/statistics/270605/cruise-passengers-
worldwide/*

This exploratory review was conducted to reflect the sustainability approach employed by some of the operators and exemplify some of best practices publicly reported by the selected leading cruise companies on their corporate websites and yearly sustainability reports. Taking an introspective glance on their sustainability strategies and how that translates into their operations with direct environmental, social and economic impact is also the focus of this empirical study. The selected quantitative data serves the explanatory purpose, in terms of some of the actionable measures adopted within the industrys' sustainability approach and this paper has its limitations and does not intend to focus on a comparative analysis.

As the cruise industry continues to expand, gradually its environmental footprint becomes noticeable by various forms of pollution specific to the industry: air emissions, oils, chemicals and other pollutants, balast, grey and black water, sewage releases, solid waste, noise.

(Table no.1) presents data relevant to the fluctuating waste water volume over three referenced years 2016 through 2018. This CCL issued shipboard report presents information reflecting the magnitude of emissions and waste generated on a yearly basis by the entire fleet of vessels allowing a relevant comparisson of the notably decreasing values of waste inspite of the increasing number of ships.

Table no. 1 CCL waste water discharge fleetwide statistics in 2016-2018

	Units	2016	2017	2018
Total Ships	**Number**	**102**	**103**	**104**
Bilge Water Discharged to Sea7	Metric Tons	205,846	178,152	165,133
Bilge Water Sea Discharge Rate7	Liters/NM	21.9	18.5	17.1
Gray Water Discharged to Sea	Metric Tons	17,862,704	17,048,797	17,742,316
Gray Water Sea Discharge Rate	Liters/Person-Day	155.9	144.6	146.6
Black Water Discharged to Sea	Metric Tons	7,915,258	7,775,545	7,873,151
Black Water Sea Discharge Rate	Liters/Person-Day	69.1	65.9	65.0

Source: Carnival Cruise Lines - https://www.carnivalcorporation.com/transparency-and-reporting/sustainability-reports

Another report issued by Carnival Cruise Lines lists quantitative data pertaining to emissions associated with gases such as nitrogen oxides (NOx), sulphur oxides (SOx), as well as ozone depleting substances (ODS) emissions 1,3 such as carbon dioxide (CO_2) specific to the exhausts of marine diesel engines and a decreasing trend was noted in three consecutive years 2016 through 2018 (Vlasceanu et al, 2020).

The World Tourism Organisation (WTO, 2019) forecasted that by 2030 the number of tourists will reach 1.4 billion having a major impact on the global environment. The affordability of flight fares and the increase of flights volume operated by low-cost carriers enabled a continuous flow of tourists throughout the world, in addition to the impressive number of newly built mega-size vessels that are introduced every year which exerts enormous environmetal pressure over the oceans and the destinations of the world.

„It can lead to impacts such as soil erosion, increased pollution, discharges into the sea, natural habitat loss, increased pressure on endangered species and heightened vulnerability to forest fires. It often puts a strain on water resources, and it can force local populations to compete for the use of critical resources" (Hilaire, A., 2007).

Table no. 2 CCL waste disposal statistics registered fleetwide in 2016-2018

	Units	2016	2017	2018
Total Ships	Number	102	103	104
Total Waste	Metric Tonnes	354,156	357,767	378,142
Hazardous Waste8	Metric Tonnes	127,105	137,957	144,236
Non-Hazardous Waste	Metric Tonnes	227,051	219,810	233,906
Waste Rate (Excluding Recycling)	Kilograms/Person-Day	2.3	2.2	2.2
Waste Recycled	Percent	26.5	28.0	30.1

Source: Carnival Cruise Lines - https://www.carnivalcorporation.com/transparency-and-reporting/sustainability-reports

The values listed above reflect a slighty increasing trend between 2016 throughout 2018 associated mainly with the higher number of cruise ships.

Although it may seem that zero emissions target is far off, the race towards finding alternative sustainable energy sources fosters the appropriate conditions for new discoveries and emergence of disruptive green technologies to drive fuel efficiency while preserving the global ecosystem. In 2019 Carnival Corporation's german brand AIDA Cruises made history with it's newly built 183,900-ton AIDA Nova being the first world cruise ship LNG powered (liquified natural gas), while both at sea and in port.

Table no. 3 CCL ship fuel statistics registered fleetwide in 2016-2018

Total Ships	Units	2016	2017	2018
Emissions Type	Number	102	103	104
High Sulfur Fuel Oil (HSFO)	Percent	75.8	74.0	73.3
Low Sulfur Fuel Oil (LSFO)	Percent	3.0	5.4	6.1
Marine Diesel Oil/Marine Gas Oil (MDO/MGO)	Percent	21.2	20.5	20.6
Liquefied Natural Gas (LNG)	Percent	0.01	0.03	0.01

Source: Carnival Cruise Lines - https://www.carnivalcorporation.com/transparency-and-reporting/sustainability-reports

The above ship fuel report reflects a considerable decreasing trend validating CCL's commitment and compliance with 2020 IMO regulations. The IMO's future objective is by 2050 all ships must comply with the 50% reduction in CO2 emissions, driving the industry towards science and research to discover alternative energy and storage technologies besides LNG such as advancing fuel cell, hydrogen, methanol and ammonia-based energy as well as solar and even wind power.

One of the most committed companies towards sustainable tourism is Carnival Corporation with 11 LNG-fueled ships on order, having the largest orderbook of green ships in the cruise industry (CCL, 2018).

The industry modified the advanced emission purification scrubber systems as to remove the sulphur component from the fuel. The newly introduced technical measures, although in incipient phase require major investments to be made by the cruise operators, ultimately drives benefits for the environment as well as increasing the fuel savings cost.

Nevertheless, in spite of the advanced technical developments and the high costs associated with it, cruise operators continue their pursuit towards finding ways to increase the level of conservation and reduce the environmental footprint by lowering the energy consumption.

Conclusions

Findings of this research paper conclude that in addition to the disclosure of management and good practices, cruise companies publish valuable data and internal performance indicators specific to the industry's environmental regulations. During the research process the volumetric data was collected accessing publicly published reports and their analysis reflected the compelling evidence of the difficulty of achieving sustainability efficiency aboard the mega-cruise ships. Supporting this statement, some of the reports reflected a descending trend in waste and pollutants, while other data and numerical indicators showed a slight increase, correlated with the higher number of cruise ships comparing to the previously referenced years.

Unlike the wide spread of hotel brands, global cruise companies are focused on achieving a zero impact on climate by the implementation of environmental management standards, known as ISO 14001, which can ensure the carbon neutral independent functionality while at sea, eliminating CO2 emissions on all ships.

The cruise companies are committed to employ new technologies in order to reduce the CO2, and other emissions with the daring target of achieving zero emissions. As such, it is documented that throughout the leading cruise brands major investments have been deployed working along with research institutes and shipyards to achieve the goal of sustainable tourism and ultimately help preserve the eco-system, enhance the marine biodiversity and equally support communities that solely rely on the sea (Carnival Corporation and PLC, 2018).

As cruise tourism continues to grow and develop it's global expansion, achieving sustainable tourism becomes increasingly concerning and therefore addressing and monitoring the socio-

economic, cultural and environmental implications, becomes essentially important for all the stakeholders involved.

Some authors consider the industry's commitment as being „a compromise that essentially requires very little change from dominant economic driven practices but effectively works to defuse opposition, increase legitimacy and allow business as usual" (Roper, 2012). Taking into consideration the dramatic increase of accommodation capacity resulted from newly built cruise vessels one might question the true meaning of sustainable development while struggling to improve environmental sustainability levels and relax the pressure upon natural resources. As with most industries, economies of scale mean that larger vessels provide greater profits for the company hence there is an increasing trend toward gigantism (Soriani et al., 2009).

While the cruise industry's commitment in the development of new environmental approach might applaudable, meanwhile the global natural landscape is irreversibly affected by environmental degradation, therefore considerations need to be continually analysed as to implement more stringent guideliness on oceans and air pollution and encourage innovative and efficient solutions to aleviate this problems.

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