2023 Year in Review

IBEROSTAR
GROUP

2023 Year in review

In 2018, Iberostar Hotels & Resorts initiated the transformative Wave of Change movement to protect ocean health, leading to the establishment of its ambitious 2030 Agenda. This strategic roadmap, featuring science-based and time-bound targets, has not only reshaped our approach but has also positioned Iberostar as a global leader in sustainable travel and tourism.

Our journey began with impactful milestones, demonstrating our commitment to ocean stewardship. Iberostar successfully eliminated single-use plastics from our hotels by the end of 2020. Recognizing the importance of responsible waste management, we established a dedicated 3R department overseeing waste reduction, reuse, and recycling efforts across our hotels, implementing AI-assisted systems to reduce food waste in our kitchens.

Expanding our focus to climate action in our circular economy journey, we developed the most ambitious decarbonization strategy in accommodation, validated by the Science-Based Targets initiative (SBTi), with the goal of achieving carbon neutrality by 2030. Spearheading the transition towards renewable energy in our destinations, we aim to reduce energy consumption and emissions in Iberostar's operations.

In line with our commitment to protecting coastal and marine ecosystems, we launched a comprehensive program restoring reefs, mangroves, and coastal dunes in the Caribbean. We performed research to safeguard critical ecosystems like coral reefs in the Caribbean and Posidonia oceanica seagrass in the Mediterranean.

Building on Wave of Change, our evolution into the first innovation hub born from the tourism industry signifies a commitment to catalyzing transformative change across the private sector. Our objective is clear: to address ocean challenges through innovative and sustainable strategies extending beyond our operations.

Focused on circular economy, blue foods, nature-based solutions, climate action, and destination stewardship, our innovation hub combines out-of-the-box thinking, leveraging expertise from specialists in collaboration with key stakeholders. This collaborative approach sets the stage for pioneering solutions redefining sustainability in the tourism industry.

This report signifies the evolution of Wave of Change, celebrating significant progress in Iberostar's sustainability journey. Committed to continuous improvement and innovation, we anticipate ongoing strides ahead, striving to enhance ocean literacy and action in the private sector.

Circular Economy

A Circular Economy as a pathway to regenerative tourism at Iberostar

A circular economy can be summarized as a paradigm shift in how humanity uses resources and seeks to address inherent inefficiencies in the prevalent linear "take-make-dispose" economic model. By fostering the continuous circulation of materials, products and resources within closed loops, the circular economy aims to decouple economic growth from resource depletion and environmental degradation. Strategies such as designing products for durability, reuse, remanufacturing and recycling, play a pivotal role in reducing waste generation and extending the lifespan of materials, thereby lessening the need for virgin resource extraction.

A circular economy, when efficiently transitioned, also benefits businesses. At its core, embracing circularity fosters greater efficiency, reduces material costs and minimizes waste and pollution impacts. As circularity also requires rethinking business models, it stimulates innovation, catalyzes novel business models and fosters novel collaborations across industries. For tourism, this concept is particularly relevant as it addresses key concerns such as over-tourism and negative impacts on biodiversity and local communities and bolsters resilience in the face of global challenges like climate change and biodiversity loss. A circular economy is intrinsically linked to tourism's mission towards net positive, nature positive, net zero and many other movements that have catalyzed transformations in the tourism model.

Embracing the circular economy on a global scale yields multifaceted benefits critical to addressing pressing challenges. Concerning climate change, circularity substantially diminishes carbon emissions by minimizing resource extraction, reducing energy-intensive production and curbing waste generation. By preserving biodiversity, circular practices mitigate habitat destruction, pollution and overexploitation, safeguarding ecosystems and promoting long-term ecological equilibrium. Furthermore, the equitable distribution of resources and opportunities intrinsic to circular systems helps bridge socio-economic disparities, fostering inclusive growth and social resilience.

In addition to our work on single-use plastics, sending no waste to landfill and decarbonization, we define our approach to a circular economy as the regenerative and restorative sourcing, use and end use of the water, energy (or carbon footprint) and products in our built environment. This definition broadens our philosophy to include the concept of regeneration in ecosystem services and the destinations at the core of our tourism product. This is achieved through three strategic areas:

- Evolving operations toward circularity
- Contributing to regenerative destinations
- Driving partnership through the value chain

Evolving operations towards circularity

Iberostar has demonstrated that empowered and value-aligned procurement and operations teams can leverage global change in products, services and processes to achieve a circular economy. Building off this work, we further evolve our own strategic objectives to emphasize targets specific to its water, goods and services footprint.

CARBON FOOTPRINT

SCOPE 1 KILOWATT HOUR REDUCTION IN 2023

Addressing and mitigating the environmental impact of energy consumption is a pivotal goal for Iberostar. The reduction of Scope 1 kWh, which represents direct emissions from sources owned or controlled by the company, is a crucial aspect of the sustainability efforts. Globally, the overall energy consumption baseline in 2023 was 328,523,456 kWh with savings of 21,237,060 kWh, a 6.49% reduction relative to the 2019 baseline.

This outcome was attained through various measures, including staff training, operational changes in equipment and machinery usage, and the implementation of impactful investments in energy efficiency. Additionally, 2023 saw widespread adoption of the energy baselines methodology, effectively normalizing climatology and hotel occupancy to accurately calculate energy savings.

The Iberostar staff serve as our most valuable asset, not only in delivering exceptional customer experiences but also in achieving our energy efficiency objectives. Building upon the Best Energy practices campaign launched in 2022, we continued to promote these practices across all hotel areas in 2023, with a focus on enhancing monitoring mechanisms to ensure compliance. While behavioral changes play a crucial role in reducing energy consumption, we complemented these efforts in 2023 with a significant number of strategic investments aimed at further reducing our energy usage, which is outlined later in the report.

AME	Consumption baseline (kWh)	Real Consumption	kWh saved - 2023 VS 2019	Saved VS 2019[1]
Mexico	87,523,134	82,954,839	4,568,295	5.22%
Brazil	22,665,581	21,650,281	1,015,300	4.48%
Dominican Republic	47,303,906	44,135,328	3,168,578	6.70%
Jamaica	21,703,503	19,037,525	2,665,978	12.28%
Total	**179,196,124**	**167,777,973**	**11,418,151**	**6.37%**

EMEA	Consumption baseline (kWh)	Real Consumption	kWh saved - 2023 VS 2019	Saved VS 2019[2]
Andalucia	11,397,883	10,508,753	889,130	7.80%
Balearic Islands	32,645,331	30,973,078	1,672,252	5.12%
Canary Islands	66,402,350	60,968,122	5,434,228	8.18%
Peninsula	5,111,948	4,746,333	365,615	7.15%
Morocco	7,618,045	6,782,219	835,826	10.97%
Montenegro	8,523,655	7,439,474	1,084,180	12.72%
Tunisia	17,628,120	18,000,443	-372,323	-2.11%
Total	**149,327,332**	**139,418,423**	**9,908,909**	**6.64%**
Global	328,523,456	307,196,396	21,327,060	6.49%[3]

NUMBER AND NAMES OF HOTELS RUNNING ON 100% RENEWABLE ELECTRICITY

Electrification is another cornerstone of Iberostar's carbon neutral strategy since it contributes to both operational decarbonization and energy efficiency due to the superior efficiency of heat pumps compared to boilers. As of 2023, all our hotels in Montenegro and one hotel in Spain are fully electric. In 2024, Iberostar plans to have one hotel in AME and another in EMEA 100% electrified. Additionally, in 2023, as an intermediate step toward full electrification, we have partially electrified (i.e. for heat production and hot water) eight more hotels within our global portfolio.

[1] This metric correspond to the period up to December 2023 and covers 23 hotels across AME.
[2] This metric correspond to the period up to December 2023 and covers 50 hotels across EMEA.
[3] This metric correspond to the period up to December 2023 and covers 73 hotels across AME and EMEA.

PEOPLE

EVOLUTION OF 3RS TEAMS AT IBEROSTAR

Our 3Rs department plays a crucial role in our commitment to sustainability, guided by the principles of the circular economy: Reduce, Reuse, and Recycle. This dedicated department is tasked with segregating, weighing, and analyzing waste, aligning with our ambitious goal of becoming waste-free by 2025. The establishment of 3Rs teams in each of our hotels and resorts signifies a strategic move towards centralized waste management, bringing together diverse areas under a specialized team.

Our 3Rs teams, operating in both the EMEA and AME regions, collectively consist of 251.9 dedicated workers (for reporting, employees who work less than 40 hours a week in the department are used in fractions). In the AME region, 142 individuals contribute to the success of our waste management initiatives, while the EMEA region boasts a workforce of 109.9. These teams play a pivotal role in collecting, measuring, and comprehending waste, providing valuable insights to identify and implement gradual changes that contribute to our overarching objective of waste reduction. As we empower our 3Rs teams, we strengthen our commitment to responsible waste management and sustainable practices across all our properties.

GOODS & SERVICES

IBEROSTAR GLOBAL WASTE OVERVIEW 2023

Iberostar's waste management data for stays in 2023 reveals progress towards reducing waste generation across regions. Within the EMEA region, which encompasses 16 hotels in the Balearic Islands, 11 hotels in the Canary Islands, and 10 hotels in the Peninsula and Portugal, the waste rate averaged 1.36 kg/stay. This showcased effective waste reduction efforts, an improvement from 1.64 kg/stay in 2022.

Meanwhile, in the AME region, comprising Mexico, Brazil, the Dominican Republic, and Jamaica, waste generation varied, with Brazil reporting a higher waste rate of 4.34 kg/stay compared to other countries, while Mexico demonstrated a lower waste rate of 1.97 kg/stay. Overall, our global waste rate averaged 2.02 kg/stay in 2023, showcasing an improvement from 2022's number of 2.16 kg/stay, in large part due to the improved systems put in place and motivated personnel dedicated to improving our waste management system and work towards Iberostar's goal of becoming waste-free.

2022	Iberostar stays	Total waste (kg)	Waste in kg/stay[4]
EMEA	5,155,285	8,448,000	1.64
AME	5,561,127	14,719,000	2.65
Global	**10,716,412**	**23,167,000**	**2.16**

2023	Iberostar stays	Total waste (kg)	Waste in kg/stay[5]
EMEA	5,632,377	7,636,300	1.36
AME	5,557,473	14,959,000	2.69
Global	**11,189,850**	**22,595,300**	**2.02**

[4] This metric correspond to the period up to December 2023 and covers 60 hotels across EMEA and AME.
[5] This metric correspond to the period up to December 2023 and covers 61 hotels across EMEA and AME.

AME Region 2022	Total waste (kg)	Waste in kg/stay
México - 11 hotels	4,640,000	1.86
Brazil - 3 hotels	2,970,000	3.81
Dominican Republic - 7 hotels	5,793,000	3.34
Jamaica - 3 hotels	1,317,000	2.49
Total (kg)	**14,720,000**	**2.65**

AME Region 2023	Total waste (kg)	Waste in kg/stay
Mexico - 11 hotels	4,980,000	1.97
Brazil - 3 hotels	3,295,000	4.34
Dominican Republic - 7 hotels	5,659,000	2.23
Jamaica - 3 hotels	1,025,000	1.78
Total (kg)	**14,959,000**	**2.69**

EMEA Region 2022	Total waste (kg)	Waste in kg/stay
Balearic Islands - 16 hotels	3,185,000	1.39
Canary Islands - 11 hotels	3,935,000	1.77
Peninsula + Portugal - 9 hotels	1,328,000	1.38
Total (kg)	**8,448,000**	**1.64**

EMEA Region 2023	Total waste (kg)	Waste in kg/stay
Balearic Islands - 16 hotels	2,752,500	1.39
Canary Islands - 11 hotels	3,674,600	1.59
Peninsula + Portugal - 10 hotels	1,209,200	0.92
Total (kg)	**7,636,300**	**1.36**

WASTE SENT TO LANDFILL

In 2023, we surpassed our global waste sent to landfill per stay targets for the year. Globally, we aimed for a target of 0.71 kg/stay, and impressively, our actual waste sent to landfill per stay was even lower at 0.69 kg/stay. This achievement underscores our unwavering commitment to exceeding sustainability goals, demonstrating our dedication to making a positive environmental impact.

Within the EMEA region, where our target was 0.71 kg/stay, finished the year with a waste per stay rate of 0.69 kg/stay. This reflects successful implementation of waste reduction strategies and ongoing commitment to sustainability. In the Balearic Islands and the Peninsula, we set goals for 2023 of 0.19 kg/stay and 0.61 kg/stay, achieving waste per stay rates of 0.20 kg/stay and 0.33 kg/stay, respectively.

In AME, we exceeded our 2023 goal. The global target for AME was 0.92 kg/stay, and we achieved a remarkable waste sent to landfill per stay rate of 0.81 kg/stay. In Jamaica and the Dominican Republic we passed our target while there is still continued work needed in Brazil and Mexico.

Iberostar waste sent to landfill rate (kg/stay)[6]

Iberostar global baseline (2021) waste per stay (kg/stay)	Iberostar 2022 global rate waste per stay (kg/stay)	Iberostar 2023 global rate waste per stay (kg/stay)	2023 Global target
1.64	**1.13**	**0.69**	**0.71**
EMEA baseline waste per stay (kg/stay)	**EMEA 2022 waste per stay (kg/stay)**	**EMEA 2023 waste per stay (kg/stay)**	**2023 EMEA target**
1.22	**1.13**	**0.69**	**0.71**
Balearic Islands (16 hotels)	0.28	0.20	0.19
Peninsula (10 hotels)	0.91	0.33	0.61
Canary Islands (11 hotels)	1.11	1.03	0.74
AME baseline waste per stay (kg/stay)	**AME 2022 waste per stay (kg/stay)**	**AME 2023 waste per stay (kg/stay)**	**2023 AME target**
2.31	**1.51**	**0.81**	**0.92**
Brazil (3 hotels)	2.61	1.51	1.27
Jamaica (3 hotels)	0.75	0.39	0.51
Mexico (11 hotels)	0.96	0.64	0.60
Dominican Republic (7 hotels)	2.04	0.9	1.37

[6] This metric correspond to the period up to December 2023 and covers 61 hotels across EMEA and AME.

DIFFERENT TYPES OF WASTE REMOVED IN 2023

In our ongoing commitment to sustainable practices, Iberostar has delved into a comprehensive analysis of waste management, extending beyond the overall waste metrics. We have meticulously categorized and examined specific types of waste generated within our operations, providing a nuanced perspective of our impact. This breakdown enables us to identify key areas for improvement and implement targeted strategies aligned with our waste reduction goals. By focusing on the intricate details of waste composition, we continue working towards a circular economy.

Waste going to landfill 2023

	Waste going to landfill (kg)	Waste going to landfill (kg/stay)	Waste going to landfill percentage
EMEA	3,195,800	0.57	41.90%
AME	4,513,000	0.81	30%
Global	**7,708,800**	**0.69**	**34.12%**

	Waste (kg)	Waste rate (kg/stay)	Waste percentage	Organic (kg)	Organic rate (kg/stay)	Organic percentage	Packaging (kg)	Packaging rate (kg/stay)	Packaging percentage	Paper /cardboard (kg)	Paper/cardboard rate (kg/stay)	Paper/coardboard percentage
EMEA	905,100	0.16	28.3	2,283,300	0.41	71.4	6,400	0.0011	0.20%	1,000	0.0002	0.03%
AME	2,717,000	0.49	60%	1,796,000	0.32	40						
Global	3,622,100	0.32	16.03	4,079,300	0.36	18.05	6,400	0.00	0.03	1,000	0.00	0.00 [7]

Organic waste 2023

	Organic waste (kg)	Organic waste rate (kg/stay)	Organic waste rate percentage
EMEA	2,123,800	0.38	27.80%
AME	6,450,000	1.16	43.00%
Global	**8,573,800**	**0.77**	**37.95**

[7] These metrics correspond to the period up to December 2023 and covers 61 hotels across EMEA and AME.

	Total compost (kg)	Compost rate (kg/stay)	Compost percentage	Total farm (kg)	Farm rate (kg/stay)	Farm percentage	Total biofuels (kg)	Biofuels rate (kg/stay)	Biofuels percentage
EMEA	2,064,170	0.37	97.19%				59,630	0.01	2.81%
AME	1,458,000	0.26	23%	4,992,000	0.9	77%			
Global	**3,522,170**	**314.66**	**15,588.06**	**4,992,000**	**445.97**	**22,093.09**	59,630	5.33	263.90[8]

Recyclables 2023

	Recyclables (kg)	Recyclables rate (kg/stay)	Recyclable percentage
EMEA	2,316,700	0.41	30.30%
AME	3,459,000	0.62	23%
Global	**5,775,700**	**0.52**	**25.56%**

	Packaging (kg)	Packaging rate (kg/stay)	Packaging percentage	Glass (kg)	Glass rate (kg/stay)	Glass perceentage	Paper /cardboard (kg)	Paper/cardboard rate (kg/stay)	Paper/cardboard percentage	Othe waste (kg)	Other waste rate kg/stay	Other waste percentage
EMEA	556,900	0.10	24.00%	998,800	0.18	43.10%	761,000	0.14	32.80%			
AME	370,000	0.49	11%	2,028,000	2.67	59%	499,000	0.66	14%	562,000	0.74	15,76%%
Global	926,900	0.08	4.10	3,026,800	0.27	13.40	1260,000	0.11	5.58	562,000	0.04	2.48%[9]

Special waste 2023[10]

	Special waste (kg)	Special waste percentage
EMEA	N/A	N/A
AME	537,000	4%
Global	537,000	2.38%

[8/9/10] These metrics correspond to the period up to December 2023 and covers 61 hotels across EMEA and AME.

FOOD WASTE

Eliminating food waste is a critical component of Iberostar's strategy as we strive towards waste-free operations in our hotels. As of December 2023, Winnow food systems have been integrated into the operations of 44 hotels across AME (17) and EMEA (27). In these 44 locations, we successfully saved 921,824 kg of organic food waste compared to the same period in 2022, reflecting an impressive reduction of 11.79%. Moving forward, Iberostar remains committed to further reducing food waste across all properties as part of our ongoing efforts towards achieving waste-free operations.

Regenerative destinations

Iberostar has set corporate objectives at an ambition level that requires collective action and successful partnerships with governments, NGOs and communities in its destinations. Focusing on regenerative destinations allows us to develop in a way that adds value to its destinations by minimizing impact and risk, safeguarding ecosystem services and evolving with the destination.

SAFEGUARD ECOSYSTEM SERVICES

IBEROSTAR'S PROGRESS TOWARDS NATURE-BASED SOLUTIONS

Iberostar has made an important investment in nature-based solutions for risk mitigation, planting mangroves, engaging in dune restoration and continuing the work of coral restoration. This, however, has been a difficult year for corals with an estimated loss of 54% of coral cover in the Caribbean.

We engaged in a spearheading initiative of dune restoration in Quintana Roo with the Secretary of Tourism, Secretary of Environment, International Cooperation Agency GIZ, Sustentur, under the umbrella of TASCO, The Nature Conservancy, and about 20 hotel companies that are interested in developing (or are already developing) coastal dune restoration strategies. This landscape approach can support restoration at a destination level creating a dune corridor.

MANGROVE RESTORATION

The reinitiation of Iberostar's mangrove restoration program started in Jan 26, 2021 with a donation of 2,500 mangroves of which 2,000 were red mangroves and 500 were button mangroves.

Since then, the program has seen significant success and has resulted in an acquisition of knowledge that has been shared to guests, students and partner institutions.

Mangroves planted as of November 20, 2023		
Bavaro	12,484	3 species (red, white and button)
Hacienda	64	Red
Costa Dorada	3,568	Red and white
Total	**16,116**	

3,500 other mangroves have been donated to the Seibo Resiliente project led by the GIZ and the Ministry of Environment.

IBEROSTAR'S CONTINUED WORK WITH LIFTING UP LOCAL

Under our Lifting Up Local initiative, Iberostar collaborates with Aliança Kirimurê, a collective of fishers and shellfish gatherers in Brazil's Baía Todos os Santos region. Aliança Kirimurê focuses on enhancing the quality and sustainability of seafood production, supporting 200 families engaged in responsible fishing and related activities. Notably, 75% of participants are women. This partnership promotes social, human, and environmental development. Iberostar's engagement has led to tangible improvements in processing facilities and distribution channels, fostering a sustainable fishing industry and stimulating demand for responsible seafood. The Lifting Up Local initiative plays a crucial role in empowering local communities and supporting these impactful collaborations.

WHERE ARE WE WORKING TO LIFT UP LOCAL FISHERIES

- Aliança Kirimurê in Brazil
- Mahi-mahi pole and line fishery in Brazil
- Lobster fishery in Jamaica
- Artisanal fisheries in the Canary Islands
- Almadraba tuna artisanal fishery in Spain

DESTINATION DEVELOPMENT

SOLUTIONS DEVELOPED FOR WASTE IN THE DESTINATIONS WHERE WE OPERATE

In Brazil, the absence of alternative options for organic waste disposal necessitates a pragmatic approach. Currently, we are incurring expenses comparable to the cost of proper organic waste treatment, emphasizing the financial feasibility of utilizing a more advanced and industrialized waste management facility. This facility boasts a higher degree of professionalism, enhanced machinery, expanded infrastructure, and increased capacity. Importantly, it operates on a broader scale, serving multiple entities beyond our specific needs.

The overarching strategy involves replicating such advanced waste treatment plants across various regions, collaborating with external companies both within and outside our complexes. This approach aligns with our vision to establish sustainable waste management practices systematically, fostering efficiency and environmentally responsible solutions across diverse operational areas.

WORK TOWARDS ELECTRIFICATION

Throughout 2023, Iberostar achieved significant milestones in its electrification initiatives, contributing to our commitment to sustainable energy solutions. The complete electrification of Iberostar Cristina, encompassing kitchen, buffet, laundry, and hot water production, marked a notable accomplishment during the year. Additionally, we initiated the comprehensive electrification of Grand Paraiso, a ambitious project that is set to conclude in the first half of 2024.

RENEWABLE ENERGY WORK

In our pursuit of sustainable energy solutions, significant progress was made in 2023 through our renewable energy initiatives. A pivotal accomplishment was the establishment of a Renewable Power Purchase Agreement (PPA), securing a green electricity supply for all our hotels in Spain, besides OTT, and our headquarters. This PPA represents a total electricity volume of 82.5 GWh.

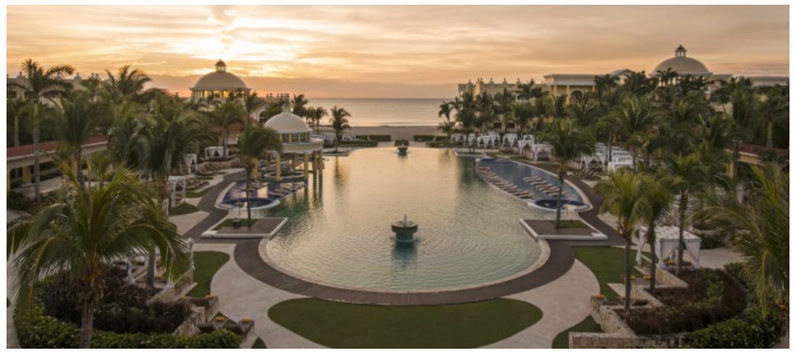
Furthermore, our dedication to renewable energy was evident in the construction of a 1.2 MWp Photovoltaic Plant at Rose Hall Resort in Jamaica, contributing to clean energy production. Additionally, we initiated soil conditioning for two Photovoltaic Plants in the Dominican Republic, laying the groundwork for expanded renewable energy capacity in the region.

PROJECTS IN THE PIPELINE

In the upcoming year, Iberostar is set to embark on several electrification projects, marking a pivotal step in our commitment to sustainable energy practices. Playa de Palma is slated for full electrification, with the project expected to be completed by April. Simultaneously, the finalization of the full electrification of Grand Paraiso, as mentioned earlier, is anticipated to conclude by September, demonstrating our ongoing dedication to transitioning to cleaner energy sources.

Additionally, Gaviotas Park is in line for full electrification, with a targeted completion date set for August. Lanzarote Park will witness partial electrification by the same month, showcasing our strategic efforts to implement electrification initiatives across various locations. Furthermore, our headquarters is on track for full electrification, scheduled to be accomplished by September, aligning with our broader vision of sustainable energy use.

Looking beyond geographical boundaries, our commitment extends to the Americas, where we plan to initiate progressive electrification for hot water production in numerous hotels.



Towards partnership in the value chain

Iberostar has always valued strong relationships with our value chain, providing goods and services to our operations. Transformations in the value chain have allowed us to remove single-use plastics from its operations, source sustainable seafood, revalue waste at the end of its use, and so much more. Yet the transformation required for service providers such as hospitality to truly create impact requires a deeper transformation in its value chain. Focusing on driving partnerships, standardizing measurement that drives accountability and action, and fostering innovation and pre-competitive collaboration to drive solutions is a critical step in our evolution.

DRIVING VALUE THROUGH PARTNERSHIP

2023 responsible seafood breakdown

Country	Not responsible (kg)	Responsible (kg)	Total (kg)	2023 percentage of responsible seafood[11]
Brazil	133,694.45	134,566.78	268,261.23	50%
Spain	52,492.04	894,056.73	946,548.77	94%
Jamaica	70,423.62	116,933.35	187,356.97	62%
Morocco	64,576.15	98,770.39	163,346.54	60%
Mexico	0	458,878.53	458,878.53	100%
Montenegro	9,740.33	4,179.36	13,919.69	30%
Portugal	6,907.43	15,446.78	22,354.21	69%
Dominican Republic	105,637.34	479,688.37	585,325.71	82%
Total	**443,471.36**	**2,202,520.28**	**2,645,991.64**	**83%**

[11] These metrics correspond to the period up to December 2023 and covers 65 hotels across EMEA and AME.

JOURNEY TOWARDS BLUE FOODS

At Iberostar, our commitment to Blue Foods goes beyond traditional seafood discussions, symbolizing a shift in perspective that recognizes the profound connection between our actions and the health of our oceans. Our dedication to Blue Foods isn't just about sustainable sourcing; it's a pledge to redefine our connection with the seas. We recognize the value of exploring the diverse offerings of Blue Foods, which extend beyond seafood to include algae, aquatic plants, and various underutilized and undervalued marine resources. This exploration is key to developing sustainable global food systems, demonstrating our dedication to respecting coastal ecosystems, uplifting local communities, and contributing to a narrative of responsible coexistence with our oceans.

Our commitment echoes the findings of the Blue Food Assessment, a comprehensive initiative involving over 100 scholars examining the roles of Blue Foods in current and future global food systems. It sheds light on the significance of Blue Foods as sources of critical nutrients, healthy alternatives, and environmentally friendly options. Blue Foods are integral to cultures, diets, economies, and livelihoods globally, playing a crucial role in export revenue and supporting millions of livelihoods.

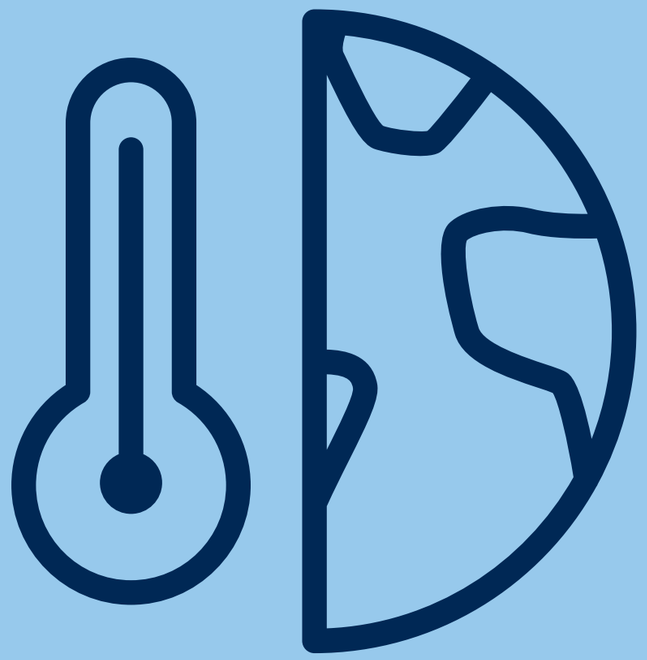
HOW WE PLAN TO EVOLVE RELATIONSHIPS WITH PROVIDERS TO HELP WORK TOWARDS OUR GOALS

As Iberostar, we acknowledge that a significant portion of our environmental and climate impact stems from the supply chain that shapes the Iberostar experience. Embracing a circular economy necessitates a comprehensive examination of the entire value chain, from upstream design to re-valuing products at the end of their use. Collaborating across the value chain becomes crucial for swift change.

Our pride lies in the strong relationships we've cultivated with our network of suppliers, whether they are small businesses or large global retailers. These relationships enabled Iberostar to make substantial changes, such as eliminating all single-use plastics and making swift progress in responsibly sourcing seafood. However, we also understand that our influence on the value chain should be guided by values, inspiration, and a collaborative partnership mentality.

That's why we initiated our Circular Economy roadmap with a focus on building value in the supply chain through partnership. Instead of imposing complex surveys and sustainability requirements that only serve our needs, we aim to align ourselves with measurement standards while fostering innovation and enhancing capacity among our providers. Our goal is to inspire them to embark on their sustainable journeys toward the future.

Climate Action



DECARBONIZATION PATHWAYS

2023 SCOPE 1 & 2 EMISSIONS BY COUNTRY RELATIVE TO 2019 BASELINE

Our organization's ambitious decarbonization target, achieving an emissions intensity of zero 20 years before the global target, is continued to be shown in our work on our Scope 1 & 2 emissions. The latest data reveals a noteworthy reduction globally, with emissions lowered by 12% relative to our 2019 baseline. Specifically, our efforts have led to a 6% reduction in the AME region and an impressive 32% reduction in the EMEA region.

	Country	2019 (tons CO2 eq)[12]		2023 (tons CO2 eq)		Total Reduction Percentage
		Scope 1	Scope 2	Scope 1	Scope 2	
AME	**Brazil**	5,844	2,652	6,690	9	**21%**
	Cuba	13,000	35,978	13,436	35,233	**1%**
	Dominican Republic	11,113	24,731	10,601	31,649	**-18%**
	Jamaica	4,858	12,578	7,407	11,550	**-9%**
	Mexico	18,700	40,455	13,916	29,699	**26%**
	USA	0	583	0	76	**87%**
	Total AME	**53,514**	**116,977**	**52,050**	**108,216**	
	Total AME Scope 1 & 2	**170,491**		**160,266**		**6%**
EMEA	**Cabo Verde**	457	1,604	160	732	**57%**
	Greece	137	2,709	97	2,564	**7%**
	Montenegro	347	3,353	149	2,638	**25%**
	Morocco	2,752	4,846	1,013	4,757	**24%**
	Portugal	486	1,018	430	680	**26%**
	Spain	9,964	10,784	6,776	472	**65%**
	Tunisia	5,678	6,753	6,371	7,653	**-13%**
	Total EMEA	**19,821**	**31,068**	**14,997**	**19,495**	
	Total EMEA Scope 1 & 2	**50,889**		**34,492**		**32%**
	Total Global	**73,335**	**148,044**	**67,046**	**127,711**	
	Total Global Scope 1 & 2	**221,380**		**194,758**		**12.0%**

[12] The 2019 metric corresponds to 82 Iberostar hotels across EMEA and AME, while the 2023 metric covers 90 Iberostar hotels across EMEA and AME.

F-GASSES

In 2023, Iberostar took substantial strides in addressing fluorinated gases (F-gases) as part of its commitment to environmental sustainability. The company initiated a major campaign aimed at modernizing cold-generating equipment across key locations in Mexico, the Dominican Republic, Jamaica, and Brazil.

Additionally, Iberostar implemented a strategic move by centralizing industrial cold production in Andalucía Playa and Playa de Palma. This centralization approach not only streamlines operational efficiency but also contributes to minimizing the overall carbon footprint associated with cold production processes.

In tandem with these operational enhancements, Iberostar introduced a protocol designed to control and minimize the usage of F-gases. This proactive step aligns with the company's broader sustainability objectives, emphasizing responsible practices in managing refrigerants.

ELECTRIFICATION

Adding on to the work towards electrification highlighted earlier, there's more work that was done this past year. 2023 witnessed partial electrification efforts at Albufera Resort, specifically targeting the buffet of Albufera Park and hot water production for the entire resort. Our global strategy also involved the progressive substitution of gas boilers with heat pumps across various locations in Mexico, contributing to the reduction of our carbon footprint. While not directly related to electrification, the implementation of the Trigeneration & Photovoltaic Plant in Jamaica in 2023 is a noteworthy achievement, poised to significantly reduce emissions in the country.

GREEN HYDROGEN

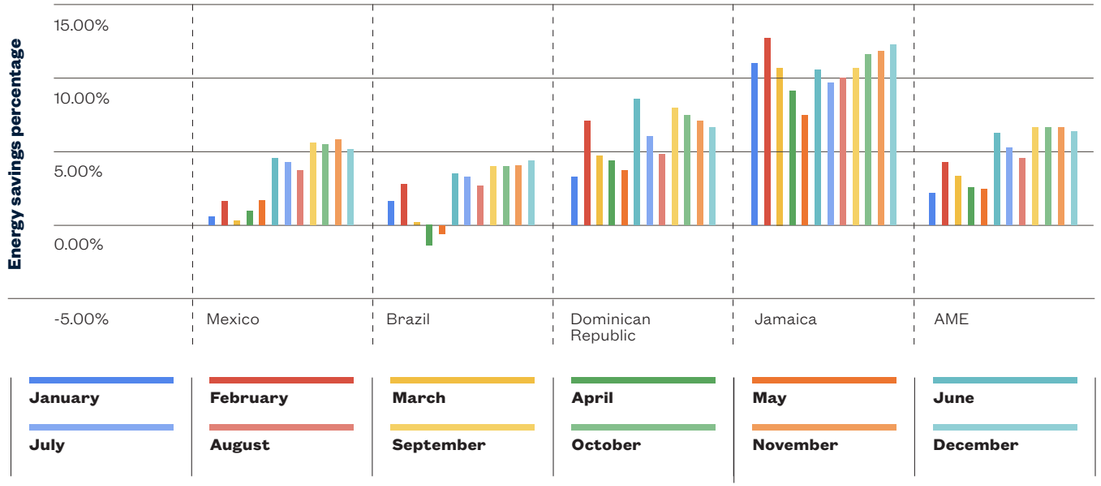
Similar to renewable electricity, green or renewable hydrogen serves as a vital component in decarbonization efforts. In 2023, we finalized an agreement with Redexis for the installation and commissioning of a fuel cell system. This system will be powered by green hydrogen generated through solar PV in Majorca. Currently, construction is underway to integrate the fuel cell, which, once completed, will supply at least 70% of the hotel's thermal energy needs and 20-30% of its electrical requirements. This initiative represents a significant step towards decarbonizing the Iberostar Bahía de Palma hotel in Majorca, marking a substantial commitment to sustainability. Additionally, we anticipate that this project will yield valuable insights that can be applied in similar endeavors in the future.

ENERGY SAVINGS

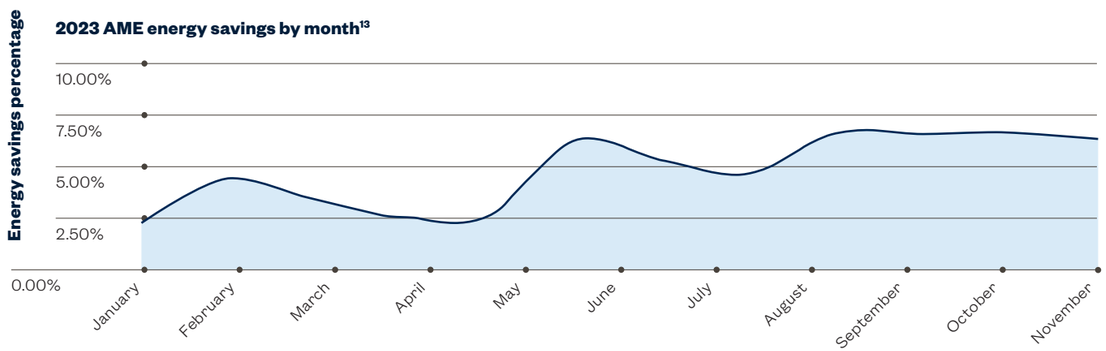
This section delves into a detailed breakdown of our energy savings, offering a month-by-month analysis of the detailed kWh data provided earlier in the report. By utilizing the monthly data, we work to gain deeper insights into the nuances and fluctuations in our energy consumption patterns.

Highlighting our cumulative achievements, this detailed breakdown not only quantifies our energy savings but also showcases the impact of specific initiatives and interventions over the course of the year. From targeted efforts to reduce consumption to the implementation of energy-efficient technologies, each month's data reflects the effectiveness of our strategies.

Cumulative energy savings 2023 (AME) **2023**



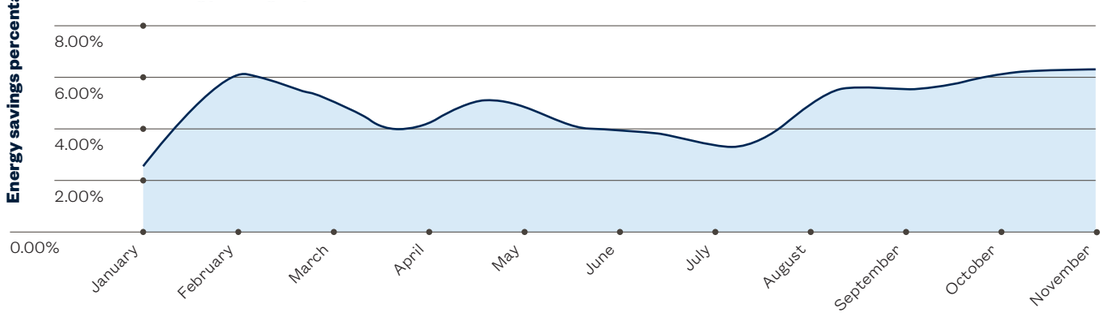
2023 AME energy savings by month[13]



[13] These metrics correspond to the period up to December 2023 and covers 23 hotels across AME.

Cumulative energy savings 2023 (EMEA) **2023**

2023 EMEA energy savings by month[14]



WORKING WITH SUPPLIERS TOWARDS SCOPE 3

At Iberostar Hotels & Resorts, a memorable hotel stay is only made possible through the thousands of decisions of sourcing in our value chain that make up the excursions, entertainment, food, built environment and so much more of the hospitality experience. Thus it is impossible for Iberostar to deliver on its sustainability commitments without also doing so in partnership with its value chain. This is one of the reasons Iberostar launched the Circular Economy Roadmap in 2023 which details a strategy to work towards partnership in the value chain through driving partnership, respecting standardization and interoperability in measurement, and promoting innovation and collaboration to drive solutions.

Iberostar has demonstrated that a majority of its carbon footprint is due to the activities of its value chain. However, decarbonizing Scope 3 remains one of the most challenging activities for business as it requires extensive collaboration across diverse businesses and is limited by how much influence a "client" has towards the business for whom it is purchasing its services. Since the decisions to decarbonize in the value chain lie outside of the accountability of Iberostar decision makers, it is fully recognized that successful decarbonization in Scope 3 must focus on partnership and strategic utilization of limited resources in order to drive the most impact. Iberostar will continue to work on its objective to cut Scope 3 emissions in half by partnering with its value chain. This includes ensuring they are not overburdening value chain companies with excess reporting, but aligning with standards in measurement of embodied carbon that promote interoperability. Iberostar will also work on building relationships that foster partnerships with key providers that provide tangible leaps of progress rather than attempting to dilute smaller actions across its entire value chain. Finally, Iberostar will focus on innovation and clear success examples that inspire further partnership as well as destination-scale solutions.

[14] These metrics correspond to the period up to December 2023 and covers 50 hotels across EMEA.

Destination Stewardship

HOW ARE WE WORKING TOWARDS DESTINATION STEWARDSHIP IN OUR BUSINESS?

OVERVIEW

Destination Stewards (DS) play a crucial role in fostering effective communication between Iberostar and key stakeholders in sustainable development within tourism destinations. DS engage in ongoing dialogue to ensure that the community's voice is heard and understood by Iberostar, while also conveying Iberostar's perspective to the community. They actively promote pre-competitive collaboration to support the achievement of Iberostar's Agenda 2030 objectives that rely on destination-specific efforts.

MATERIALITY ASSESSMENTS

A materiality assessment is a structured process involving interviews, surveys, and roundtables designed to actively involve external stakeholders in understanding the significance of sustainability issues to them.

Iberostar has initiated materiality assessments in five of our destinations (Tunisia, Aruba, Quintana Roo in Mexico, the Canary Islands in Spain, and the Dominican Republic) with the expertise provided by the Travel Foundation. We find it crucial to gather insights from our stakeholders regarding local sustainability priorities, as this input significantly influences our destination stewardship strategy.

BUSINESS PARTNERSHIPS

Recognizing the complexity of sustainability challenges, we emphasize the importance of partnerships, particularly with other hotels facing similar issues. Collaboration, rather than competition, is key to addressing sustainability concerns. For instance, initiatives like beach conservation require involving neighboring entities for an ecosystem-based approach. Similarly, in the realm of compost production, collaboration becomes essential when individual hotels face challenges in achieving zero waste to landfill.

In Tunisia, we have facilitated the establishment of a Collège d'Hotels, together with local government and the international NGO Bmed, where hotels come together to exchange best practices. Two working groups have been formed—one focusing on solutions for single-use plastic elimination and the other dedicated to finding ways to add value to organic waste—based on the shared needs of participating hotels.

WHERE ARE WE WORKING?

Locations where we will have destination stewards:

Tunisia	Canary Islands (Spain)
Mexico	Dominican Republic (searching)
Aruba	

OUTLOOK FOR THE FUTURE

We eagerly anticipate collaborating with local partners to enhance decision-making processes and achieve objectives that may be beyond our reach as an individual entity.

Internally, our goal is to establish close coordination with operations and other sustainability areas. This coordination aims to build a bridge between Iberostar and local communities, fostering stronger connections and meaningful engagement.

Interview

Interview with *Alicia Fajardo*, The Travel Foundation

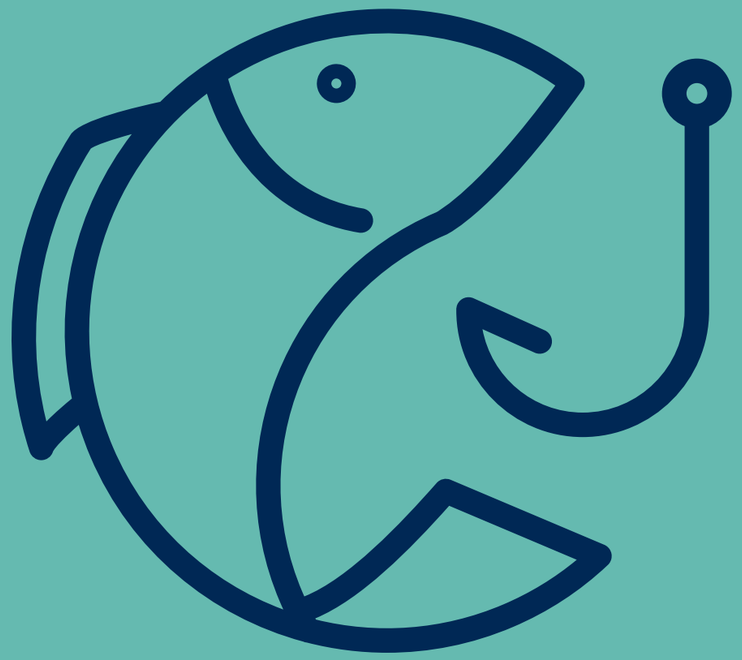
ALICIA FAJARDO, SUSTAINABLE TOURISM SPECIALIST, THE TRAVEL FOUNDATION

What is the importance of performing assessments at the destination level?
Whilst destinations face many common challenges, from climate impacts to overcrowding, every place is different and there is no one-size-fits-all solution for better stewardship. Each destination will require different priorities for action based on risks and opportunities across environmental, societal and economic parameters. For example, for some destinations, a priority may be to protect freshwater sources, for others to improve economic benefits for small businesses, or to manage overcrowding and degradation at a cultural heritage site. Important variables include the policy and regulatory environment of the destination, plus the needs of stakeholders, including residents, and crucially what these stakeholders want tourism to deliver. For this project, the Travel Foundation's research will establish a detailed understanding of the particular characteristics and the impacts of tourism activity, both positive and negative on five different destinations, The Canary Islands, Quintana Roo, Dominican Republic, Aruba and Tunisia. This includes consultation with a broad range of key stakeholders within each destination.

What would you say are the most important factors to consider when trying to improve the destinations where you operate?
A good starting point is to recognise that tourism involves the destination as a whole, its communities, ecosystems, natural resources, cultural assets, traditions and infrastructure, so putting the destination, its people and places, at the centre of any plans is vital. Another important principle is collaboration. Many of the challenges facing destinations cannot be solved by one organisation alone. Working together with tourism businesses, local communities, government bodies and more is vital to understanding the impacts of tourism and finding solutions. Destinations are everyone's business and we all need to work together to share a vision for tourism that brings the greatest possible value to the place.

How has the process of working with Iberostar been to evaluate destinations?
This project has been a valuable opportunity for the Travel Foundation to work with a company that is pushing sustainability and regeneration within the destinations in which it operates and doing so in a collaborative and holistic way. The focus placed on understanding the particular context in which tourism operates in each destination is proof of a commitment to better destination stewardship and to promoting a positive impact of tourism.

Blue Foods

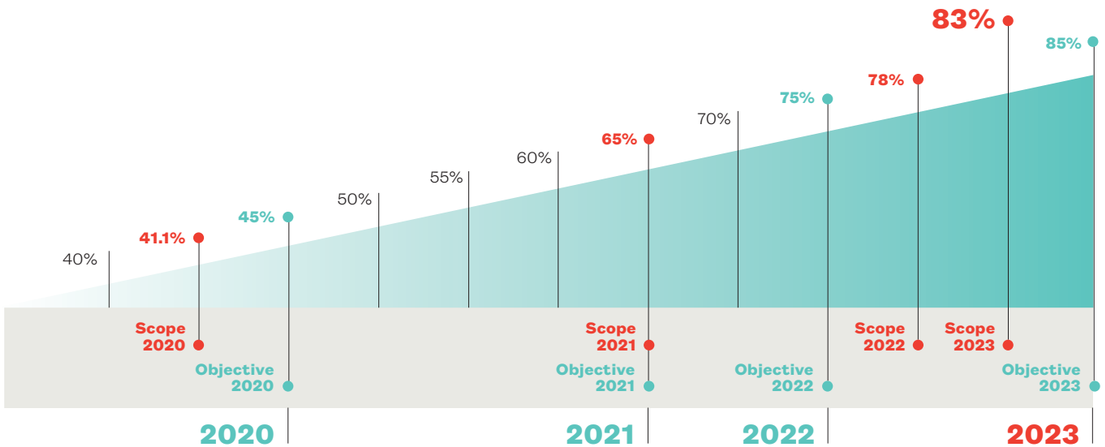


RESPONSIBLE SEAFOOD BREAKDOWN

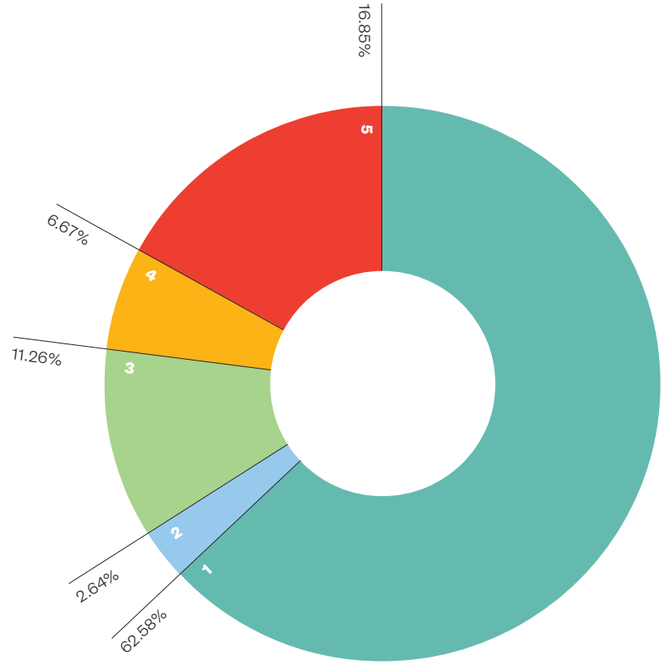
In 2023, Iberostar made significant strides in advancing responsible seafood practices across various countries, resulting in an overall responsible seafood percentage of 83%, a notable increase from the previous year's 78%. Brazil demonstrated a balanced commitment, achieving a 50% responsible seafood percentage with 134,566.8 kg sourced responsibly. Spain stood out, achieving a 94% responsible seafood percentage by sourcing 894,056.7 kg responsibly out of a total of 946,548.8 kg. Mexico continued to source 100% responsible seafood as we worked to ensure that number would not drop from last year.

These achievements underscore Iberostar's dedication to fostering sustainable and ethical seafood sourcing practices, contributing to the broader goal of promoting environmental stewardship in the seafood industry. By actively engaging in responsible seafood initiatives, we continue to play a leading role in the global movement towards sustainable practices.

Country	Not responsible (kg)	Responsible (kg)	Total (kg)	2023 percentage of responsible seafood[11]
Brazil	133,694.5	134,566.8	268,261.2	50%
Spain	52,492	894,056.7	946,548.8	94%
Jamaica	70,423.6	116,933.3	187,356.9	62%
Morocco	64,576.1	98,770.4	163,346.5	60%
Mexico		458,878.5	458,878.5	100%
Montenegro	9,740.3	4,179.4	13,919.7	30%
Portugal	6,907.4	15,446.8	22,354.2	69%
Dominican Republic	105,637.3	479,688.4	585,325.7	82%
Total	**443,471.3**	**2,202,520.3**	**2,645,991.6**	**83%[15]**



[15] These metrics correspond to the period up to December 2023 and covers 65 hotels across EMEA and AME.



Categories of responsible seafood and percentages[16]

1	2	3	4	5
GSSI Benchmarked Cert: 62.58%	**Lifting up local:** 2.64%	**FIP:** 11.26%	**SFW:** 6.67%	**Not responsible:** 16.85%

TRAINING WITH FISHWISE TO BUILD PROTOCOL FOR SEAFOOD EVALUATION

FishWise's collaboration with Iberostar is crucial for the company's dedication to sustainable and responsible seafood sourcing. The training programs, rooted in due diligence principles and global standards, equip Iberostar's operations to navigate and implement our responsible seafood sourcing policy, mitigate risks in our seafood sourcing habits, and enhance overall due diligence practices. This tailored approach ensures alignment with international frameworks, such as the UN Guiding Principles and the OECD Due Diligence Guidance, positioning Iberostar as an industry leader.

The expected outcomes are significant. We anticipate improved traceability capabilities for accurate tracking and evaluation of our seafood products. The emphasis on data-driven decision-making enables effective data collection, fostering transparency and informed choices that expand beyond creating internal capacities to positively influencing the habits of other relevant stakeholders in our seafood supply chains. The training aims to fortify the resilience of our seafood supply chain, aligning with sustainability goals. By showcasing a tangible commitment to sustainability, Iberostar seeks to influence industry-wide improvements, setting a benchmark for ethical business conduct. In essence, FishWise's collaboration drives us toward a future where responsible seafood sourcing is a dynamic reality in the tourism sector. All-in-all, 29 Iberostar employees participated in the seafood training to build protocol for seafood evaluation.

[16] These metrics correspond to the period up to December 2023 and covers 65 hotels across EMEA and AME.

NAVIGATING RESPONSIBLE SEAFOOD SOURCING

Our commitment to delivering top-notch, sustainable seafood is underscored by certifications from the Marine Stewardship Council (MSC) for wild-caught seafood and the Aquaculture Stewardship Council (ASC) for farmed seafood. These certifications ensure the highest sustainability standards across the majority of our seafood offerings.

As we reflect on our journey toward responsible sourcing, we've learned a crucial lesson — the importance of recognizing the unique realities and contexts of the diverse countries in which we operate. We acknowledge the significance of regions where small-scale fisheries are integral, and certified seafood may be limited. In our ongoing efforts to uphold responsible sourcing commitments, we prioritize these specific geographies.

Our mission surpasses mere certifications; it involves active engagement and support for the artisanal fisheries sector. In our pursuit to conserve marine ecosystems, ensure the well-being of local communities, and provide you with the finest locally sourced seafood, our responsible seafood sourcing strategy revolves around fostering robust relationships with artisanal fisheries.

Drawing from past lessons, acknowledging the unique realities of the countries we operate in, and recognizing the pressing need to support and engage with local fisheries and small-scale fisheries (SSF), we are compelled to transcend traditional approaches. This journey involves moving beyond reliance on certified fisheries to become catalysts for the transformation of fisheries toward sustainability.

Our commitment extends to providing guests with not only more nutritious and culturally rich products but also those that sustain local livelihoods with minimal environmental impact. While we value certifications such as MSC/ASC and recognize their role, particularly in large-scale fisheries, we are cognizant that these market-driven conservation tools may not be universally effective in the small-scale fisheries sector. In response, we are dedicated to exploring alternatives. Our approach involves incentivizing improvements through closer and more relational commercial relationships with our local vendors and fishing communities, a cornerstone of our Lifting Up Local initiative.

TRANSFORMING HOW THE TOURISM INDUSTRY WORKS WITH FISHERS

Transforming the relationship between the tourism industry and fishers is a dynamic process that holds immense potential for sustainability, economic growth, and community resilience. By cultivating a demand for sustainable products, especially in coastal communities where small-scale fisheries are vital, tourism businesses can stimulate the adoption of responsible practices. Operating in these regions allows the industry to establish direct connections and trust with local fishermen and seafood suppliers, streamlining complex supply chains and fostering fairer negotiations, resulting in better economic outcomes for fishermen. These economic incentives strategically drive the widespread adoption of responsible practices in collaboration with various stakeholders.

The tourism industry, acting as an educational platform, integrates information about local fisheries and sustainable seafood into tourism materials. This not only provides tourists with insights into the interconnectedness of responsible seafood, marine ecosystem health, and local prosperity but also allows the industry to champion innovative gastronomic experiences. By featuring undervalued marine resources, blue foods from regenerative aquaculture, and other low-impact options, the tourism sector contributes to the diversification of fishing efforts and opens new markets. This, in turn, supports community resilience to climate change and encourages sustainable practices.

Moreover, the tourism industry plays a pivotal role in providing economic alternatives for fishing communities. Through activities like guided fishing tours, culinary experiences highlighting responsible practices, and the creation of a market for innovative fishery-related products (such as seaweed-based soaps or jewelry crafted from fish scales), the industry adds value to local responsible fishing initiatives. These economic diversifications strengthen the resilience of fishing communities, offering them viable alternatives in the face of climate change and market fluctuations.

In essence, the tourism industry's ability to innovate, provide new gastronomic experiences, and support economic alternatives contributes significantly to the overall well-being of fishing communities, fostering sustainable practices and enhancing resilience to environmental challenges. The success of these efforts hinges on establishing honest and close relationships with local communities, ensuring unforgettable experiences for both tourists and the communities engaged.

WHY ARE WE TALKING ABOUT BLUE FOODS? NUTRITION

At Iberostar, our commitment to Blue Foods goes beyond traditional seafood discussions, symbolizing a shift in perspective that recognizes the profound connection between our actions and the health of our oceans. Our dedication to Blue Foods isn't just about sustainable sourcing; it's a pledge to redefine our connection with the seas. We recognize the value of exploring the diverse offerings of Blue Foods, which extend beyond seafood to include algae, aquatic plants, and various underutilized and undervalued marine resources. This exploration is key to developing sustainable global food systems, demonstrating our dedication to respecting coastal ecosystems, uplifting local communities, and contributing to a narrative of responsible coexistence with our oceans.

Our commitment echoes the findings of the Blue Food Assessment, a comprehensive initiative involving over 100 scholars examining the roles of blue foods in current and future global food systems. It sheds light on the significance of Blue Foods as sources of critical nutrients, healthy alternatives, and environmentally friendly options. Blue Foods are integral to cultures, diets, economies, and livelihoods globally, playing a crucial role in export revenue and supporting millions of livelihoods.

While we acknowledge the crucial role of Blue Foods in achieving sustainable food systems, we are mindful of the potential impacts of Climate Change on Blue Foods production. Our commitment includes a proactive stance towards the development of such food systems, considering the potential effects of climate change. As a tourism business committed to sustainable operations and advocating for ocean conservation, our Blue Foods strategy will incorporate actions that contribute to increasing the resilience of fishing communities and the overall blue foods sector to climate change. A few examples of these actions include diversifying our species portfolio in favor of low-impact blue foods, promoting undervalued and underutilized fishery resources, and providing a market for alternative fishery-related products. This holistic approach aligns with our commitment to supporting diverse functions in human health, nutrition, jobs, and culture while considering the environmental impact.

In the midst of this evolving food landscape, Iberostar's focus on Blue Foods isn't merely a commitment; it's a thoughtful narrative of transformation, showcasing the potential of responsible business practices and a sincere commitment to our oceans, communities, and the global food system.

Nature Based Solutions

ADDRESSING CLIMATE CHALLENGES THROUGH CARBON SEQUESTRATION INITIATIVES

Recognizing climate change as a primary operational risk, Iberostar is unwavering in its commitment to mitigating impact and adapting to new conditions through proprietary actions. While substantial investments are made in decarbonization, risk reduction, and comprehensive climate strategies, our focus on high-quality carbon sequestration projects is central to achieving carbon neutrality by 2030. Iberostar aims to offset the remaining 15% of emissions unattainable through decarbonization in scopes 1 and 2, along with 50% of scope 3 emissions.

Our commitment extends to the development and investment in high-quality carbon sequestration projects, with a primary emphasis on blue carbon initiatives. These projects not only maximize CO2 capture but also prioritize biodiversity conservation, sustainable ecosystem management, and community inclusion for their economic benefit. Blue carbon, stored in coastal and marine ecosystems, including mangroves, seagrasses, and salt marshes, offers a unique opportunity to capture CO2 while addressing critical services like food provision, coastal protection, and biodiversity conservation.

In our pursuit of scalable and replicable projects within the tourism sector, extensive research over the past two years has led us to explore diverse options, ranging from payment for environmental services (PSE) to co-management of protected areas and partnerships with like-minded investors.

In Quintana Roo, a destination under significant pressure from tourism development, a study commissioned in collaboration with Amigos de Sian Kaan and Mexico Co2 explores the implementation of PES or payment by results, providing insights, challenges, and a roadmap for future discussions on a tourism fund for carbon sequestration PSEs.

Collaborating with Mexico Co2 and UNDP, the community of Dziuché has embraced a mixed strategy covering over 8000 hectares under a “payment by results” scheme. This initiative involves acquiring materials and tools for restoration and maintenance work, with wages for the workforce covered. Project activities encompass improved forest management, afforestation, reforestation of degraded areas, carbon capture in mangroves and wetlands, and soil carbon sequestration through enhanced cattle ranching practices. Additional regenerative activities, including beekeeping and sustainable agriculture, are estimated to produce over 12,000 carbon credits annually.

In Nayarit, Mexico, collaboration with the Community of Higuera Blanca focuses on regenerative livestock farming strategies, aiming to improve grazing areas, reduce hectares needing grazing, and enhance profitability for ranchers. Anticipated outcomes include reduced carbon emissions, increased plant coverage, and an estimated annual production of over 8,000 credits across 2,200 hectares.

On the west coast of Mexico, collaboration with Mexico Co2 and the Ejido de Puerto Vallarta in Jalisco involves a 5,000-hectare forest under threat from tourism encroachment and wildfires. The Improved Forest Management scheme includes fire control, restoration of degraded areas, and an increase in forest vegetation cover. The Ejido will be supported with a “payment by results” scheme, generating over 12,000 carbon credits annually.

In Spain, a multiyear collaborative agreement with Navantia, CEPSA, Metro de Málaga, and Grupo Eulen focuses on the restoration of the Marismas in Cadiz. In collaboration with the Junta de Andalucía, the project aims to re-establish tidal water flow and restore local vegetation over 200 hectares of currently dried tidal marshland in the Parque Natural Bahía de Cádiz, estimated to generate 32,052 metric tons of CO2 eq. over 50 years. The project will adhere to the Verified Carbon Standard (VCS).

Restoring ecosystem services for risk reduction

CORAL NURSERIES UPDATE 2023

Building on our work over the previous years, we continued to work with eight coral nurseries in 2023. The nurseries are located in the Dominican Republic, Mexico and Jamaica.

Coral nurseries in the Dominican Republic

Location	N° Nurseries	N° Nursery Structures
Bayahibe	1	21
Puerto Plata	1	6
Bávaro	2	2
Total	**4**	**29**

Number of species and different genotypes currently under propagation in DR nurseries:

Acropora cervicornis - (8+) -

Acropora palmata: 3 genotypes (Bayahíbe, Puerto Plata and Bávaro).

Orbicella annularis: 2 genotypes (Bayahíbe and Puerto Plata)

Orbicella faveolata: 2 genotypes (Bayahíbe and Puerto Plata)

Porites astreoides: 3 genotypes (Bayahíbe, Puerto Plata and Bávaro)

Montastraea cavernosa: 2 genotypes (Bayahíbe and Puerto Plata)

Diploria labyrinthiformis: 1 genotype (Puerto Plata)

Pseudodiploria strigosa: 2 genotypes (Bayahibe and Puerto Plata)

Coral nurseries and outplanting sites in Mexico

Location	N° Nurseries	N° Nursery Structures
Riviera Maya	2	17
Cozumel	1	22
Total	**3**	**39**

Number of species and different genotypes currently under propagation in Mexico nurseries:

Acropora cervicornis: 8 genotypes (Cozumel & Riviera Maya)

Acropora palmata: 9 genotypes (Cozumel & Riviera Maya)

Orbicella annularis: 30 parent colonies - 1 rescued colony (Riviera Maya)

Orbicella faveolata: 30 parent colonies - 4 rescued colonies (Riviera Maya)

Porites astreoides: 30 parent colonies - 12 rescued colonies (Riviera Maya)

Montastraea cavernosa: 30 parent colonies - 6 rescued colonies (Riviera Maya & Cozumel)

Diploria labyrinthiformis: 2 rescued colonies (Riviera Maya & Cozumel)

Pseudodiploria strigosa: 3 rescued colonies (Cozumel & Riviera Maya)

Porites porites: >100 rescued colonies (Riviera Maya & Cozumel)

Eusmillia fastigiata: 5 rescued colonies (Cozumel & Riviera Maya)

Agaricia spp.: >100 rescued colonies (Riviera Maya & Cozumel)

Isophilastrea rigida: 2 rescued colonies (Riviera Maya & Cozumel)

Siderastrea siderea: 5 rescued colonies (Riviera Maya & Cozumel)

CORAL NURSERIES MAP

Country	Dominican Republic	Mexico	Jamaica
Coordinates	**Bayahibe** **Coco Reef:** 18° 36’ 090’’ N 68° 84’ 515’’ W **Puerto Plata:** Pueblito Somero 19° 46.753’ N 70° 38.828’ W **Bávaro:** Vivero Somero 18° 43’ 05’’ N 68° 26’ 47’’ W Coral Garden: 18° 43’ 14’’ N 68° 26’ 33’’ W	**Riviera Maya** **Manchoncitos I:** 20° 44’ 27” N 86° 57‘ 30” W **Manchoncitos II:** 20° 45’ 34”N 86° 57‘ 00” W **Cozumel** **La Francesita:** 20° 21’ 47” N 87° 01‘ 36” W	**Grange Pen** **Fish Sanctuary** 18.519785 77.764838

1 / Riviera Maya
2 / Cozumel
3 / Grange Pen
4 / Bayahibe

CORAL LAB UPDATE 2023

Coral lab data points	
Coral fragments in propagation	264
Number of genets	77
Number of coral species	10

Iberostar established the Coral Lab in the Dominican Republic in 2019. Since then, we have continued to make significant progress towards studying the impacts of bleaching on coral. In 2023, we continue to see growth in our fragments and larger colonies. Figure 1 shows the transition of some of our fragments from July 7 to October 16. Some of our corals have also begun to grow over the edge of their existing bases (Fig. 2). To accommodate individuals who have run out of room to grow, we have used our new 3D printer to create larger structures in which they can continue to grow.

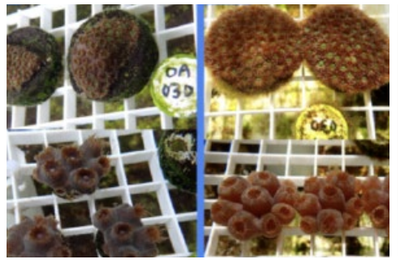


Figure 1

Figure 2

Figure 1. Growth in Orbicella faveolata (top) and Montastraea cavernosa (bottom) in the laboratory from July 7 to October 16, 2023

Figure 2. Growth of one of our corals downward from the base to which the microfragment was attached.

Figure 3. 3D printer for the creation of desired structures to accommodate our overgrown microfragments.

Figure 4. Silicone mold that will allow us to create concrete structures.

Figure 5. Example of one of our new cement structures that will allow us to grow corals.

We spent time figuring out how to design these structures and then print them using organic PLA material on our Prusa 3D printer (Fig. 3). We then used silicone to create a mold of our 3D printed designs (Fig. 4). This mold can then be filled with concrete to create the structures to which we can then attach multiple microfragment plugs for further growth (Fig. 5). We now have the capability to design and create any iteration that we choose. These different structures will help aid in the outplanting of our propagated coral colonies.

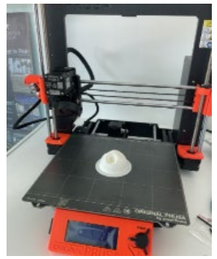


Figure 3

Figure 4

Figure 5

CLIENTS VISITS IN 2023

In 2022, we reached a total of 1,963 clients who came to visit the Coral Lab. In 2023, our staff has already reached 5,266 clients through November 2023. Each of these clients choose to come to the lab during their vacation to learn about corals and the mission of the organization.

COASTAL DUNE RESTORATION

ELEVATING COASTAL RESILIENCE THROUGH DUNE ECOSYSTEMS

Coastal dunes, dynamic ecosystems that act as nature's frontline guardians between land and sea, assume a pivotal ecological role. These distinctive habitats not only foster a rich biodiversity, accommodating plants and animals specially adapted to the challenges of shifting sands and salt spray, but also serve as a crucial defense against climate-related hazards. Beyond their intrinsic ecological value, coastal dunes function as a protective buffer for communities and infrastructure, acting as the first line of defense against storm surges and erosion.

Recognizing the profound impact of these ecosystems, Iberostar hotels, strategically positioned along coastlines worldwide, are dedicated to the preservation and enhancement of coastal dunes. Actively engaged in recovery and monitoring programs, we embrace our responsibility to boost the resilience of these ecosystems. Through targeted dune restoration initiatives, we not only safeguard delicate ecosystems, but also champions sustainable practices that seamlessly align with their world-class hospitality. This commitment reflects our unwavering dedication to responsible tourism and the enduring well-being of coastal environments.

Throughout this year, Iberostar has implemented several impactful initiatives to contribute to coastal ecosystem restoration:

Iberostar Cozumel: The hotel has established an internal nursery garden dedicated to the production of coastal dune plants. The nursery garden provides plants for the hotel itself and for other hotels in the area.

Plant	Quantity produced during 2023
Sea grapes	480
Spider lily	1250
Beach Morning Glory	2150
Balsam Apple	100

Iberostar Selection Cancun: A significant effort has been invested in the recovery of beach areas and gardens. The transformation involves replacing traditional grass and ornamental plants with local and endemic species native to coastal dunes.

Iberostar Playa Paraiso: Some areas of coastal dune were previously recovered in 2022 and ongoing maintenance activities have been undertaken throughout 2023. Additionally, a comprehensive plan has been devised to fully restore the entire beach length in 2024.

Iberostar Bahía and Praia do Forte: An evaluation of the current status of coastal dune and resting in the area has been undertaken to develop a coastal dune restoration plan.

COLLABORATIVE COMMITMENT FOR COASTAL DUNE RESTORATION

Iberostar Group has joined forces with the Tourism Secretariat, the Ecology and Environment Secretariat of Quintana Roo, SUSTENTUR, the German Cooperation Agency (GIZ), and The Nature Conservancy in a shared commitment to implement nature-based solutions for coastal ecosystems, with a primary focus on Coastal Dunes.

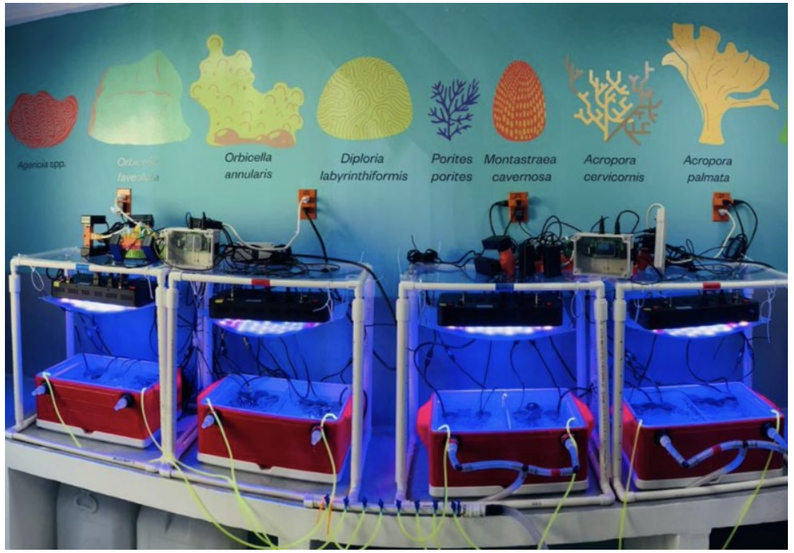
This collective commitment took a significant step forward with the signing of an agreement, involving all stakeholders and local companies in the area, during the Second Edition of the Climate Action Forum in the Mexican Caribbean. The forum, held on September 28 and 29, 2023, at the Iberostar Selection Cancun Hotel, served as a platform aligned with key legislations and agreements. It brought together experts and leaders from the Caribbean and Central American region to address climate change, focusing on its impacts on coastal health, sargassum, and the restoration of coastal ecosystems.

The pivotal moment marked a collaborative effort to address the global phenomenon of climate change regionally. Over 20 hotel companies, already investing resources in coastal dune restoration on their respective beaches, expressed keen interest in joining this initiative. Their commitment signifies a shared dedication to applying lessons learned during this undertaking. This unified front represents a substantial stride for Iberostar, positioning it as a leader in the battle against climate change and its regional impacts. The focus on restoration and nature-based solutions aims to forge a more sustainable and resilient future for the Mexican Caribbean.

Scientific advancements

SELECTING AND FINDING THERMOTOLERANT COLONIES IN JAMAICA, MEXICO, DR

Successful reef restoration in the Caribbean faces barriers that include those of an environmental nature, such as bleaching events that put the resilience of reefs at risk, as well as others of a logistical and economic nature. The tourism sector has the potential to enhance and scale restoration efforts in the Caribbean, beyond financial contributions. That is why Iberostar has developed a restoration program across the Caribbean which includes a scientific team that incorporates science-based solutions into resort operations to promote reef resilience in the face of climate change. Strategies of the scientific program include the search for the most thermotolerant corals in each location where it operates to include them in restoration efforts. From observations in nature and laboratory experiments, we know that there is heterogeneity in the response to bleaching. This heterogeneity occurs at different scales from regions, reefs, or even colonies of the same species and reef. These differences will favor the persistence of some species and individuals over others, thus shaping the future composition of the reefs, and in turn the associated functions and services. The objective of this research is to identify bleaching thresholds of different species in different locations in the Caribbean, as well as to identify individuals tolerant to increased temperatures for each species and location. These individuals identified as potentially more tolerant to increased temperatures are then selected for reef restoration in the face of climate change. Across the three countries, the science team has identified the bleaching threshold for 9 different species and has selected the potentially most thermotolerant colonies across 239 individual coral colonies. This research has been conducted using the Coral Lab research facility in the DR, as well as the portable research station using the Coral Bleaching Automated Stress System (CBASS) in México and Jamaica.



CORAL BLEACHING AND RESTORATION EFFORTS IN THE CARIBBEAN 2023

This year has witnessed unprecedented climatic conditions, marked by record-high temperatures in both the atmosphere and oceans. From the onset of summer until now, extreme and unparalleled figures have been recorded. In June 2023, average sea surface temperatures across the North Atlantic were notably the highest on record for this time of year, surpassing the average by 0.91°C. The consequence of this extraordinary heatwave is a widespread coral bleaching event, a phenomenon that has been alarmingly recorded as a level 2 alert in over 80% of the Caribbean Basin, a level not seen since 2016.

In the three countries where our active restoration programs are in place, the impact has been significant. In September, we reported staggering percentages of bleaching in Montego Bay (95%), Riviera Maya (92%), and Bayahibe (40%). While corals possess the ability to recover when water temperatures decrease and their symbionts return, the recovered corals often display alterations and deterioration in growth and reproduction. Moreover, they become more susceptible to disease for a period of two to four years post-recovery.

Considering the prolonged exposure of corals to Degree Heating Weeks, there is a looming possibility of reporting high mortality rates in December, January, and February. In response to this critical situation, we have implemented comprehensive pre, during, and post-bleaching management strategies in Jamaica, Mexico, and the Dominican Republic. These strategic interventions aim to address the visible consequences of climate change on coral health and ensure the resilience of these vital ecosystems.

PARTICIPATION IN CONFERENCES

The Coastal Health team played an active role in the 40th Association of Marine Labs of the Caribbean (AMLC) meeting held in May on the picturesque island of Saint Kitts. Aligned with the conference's mission to connect marine and coastal ecosystems through science and collaboration, our team made significant contributions.

Kicking off the conference, Erika Harms, our Coastal Health Strategy Director, delivered a compelling presentation on addressing risk mitigation in the tourism sector. Victor Galván, our Coastal Health Manager, showcased the success of building partnerships between the tourism sector and local communities for implementing regenerative and restorative activities to benefit coral reefs. Macarena Blanco, our Science Coordinator, illuminated coral thermotolerance research through a comparative analysis spanning the Dominican Republic, Jamaica, and Mexico.

Dr. Johanna Calle, our Science Coordinator, inspired the audience with insights into rebuilding coral reefs across multiple locations in the Caribbean, delving into our impactful work in Jamaica. Dr. Federico Cardona, EMEA Coastal Health Manager, exemplified the effective use of citizen science in anticipating climate change-associated risks to inform adaptation and mitigation actions. Concluding our participation in AMLC, Gregory Pelose, our Coral Lab Coordinator, shared his passion for coral husbandry through an engaging poster about light adjustments to ensure the thriving of our corals.

Continuing our commitment, the Coastal Health team also took part in the Second Forum of Climate Action of the Mexican Caribbean, organized in collaboration with Iberostar Group, Sustentur, and the Government of Quintana Roo. During this event, participants from diverse sectors convened to synergize efforts towards a sustainable tourism model. Erika Harms and Lyn Santos, our Coastal Health Manager, presented our coastal dune restoration program in a workshop.

As the year of conferences progresses, it will culminate with Macarena Blanco's participation in AcroporaNet'23. This conference, focusing on the functioning of marine ecosystems like coral reefs, seagrass beds, mangroves, and tropical tidal areas, is organized by the University of Amsterdam and Carmabi. Macarena will share her work on the grafting method protocol during the event in Amsterdam in December.

TRANSLOCATION OF *ACROPORA PALMATA* FROM COZUMEL TO RIVIERA MAYA

Through a collaborative agreement with the Laboratory of Ecology of Coral Reef Ecosystems CINVESTAV, we executed a vital project involving the rescue and relocation of 15 fragments of Acropora palmata discovered at the API-La Caletita dock after the Cristobal storm in 2020. These fragments, now housed in our nursery at La Francesita Reef in Cozumel, underwent stabilization, genotyping using the SNP method, and an extensive monitoring period lasting two years and eight months. It's noteworthy that during this period, the average temperature recorded in our hobos in Cozumel was 0.9 °C higher than in Riviera Maya.

The primary objective behind translocating these colonies was to cultivate A. palmata specimens adapted to elevated temperatures, thereby enhancing the genetic diversity present at the site. This particular location boasts a small wild colony and 20 mini fragments (of two different genotypes sourced from Limones and Cuevones), transplanted as a pilot test within our collaboration agreement with UNAM.

Following the bleaching event of 2023, we observed an impressive 97.5% survival rate among the translocated A. palmata colonies. This outcome stands as a promising indicator of the effectiveness of our climate change adaptation strategy, demonstrating the resilience and adaptability of the translocated colonies to the challenging conditions.

RELEASE OF KING CRAB IN PLAYA PARAISO

As part of our collaborative agreement with INAPESCA (National Fisheries Institute) within the "Rehabilitation and restoration of reefs affected by the impact of hurricanes in 2020 in the coastal zone of the Mexican Caribbean Biosphere Reserve (SEMA-Zone 4)" project, we marked a significant milestone in May 2023. A donation of 56 Caribbean King Crabs (Mithrax spinosissimus) was received and released at one of our outplanting sites in Manchoncitos II Reef in Riviera Maya. This strategic move is integral to our comprehensive restoration program, aiming to introduce herbivores into the ecosystem and support ecological succession processes, herbivory dynamics, and food webs.

Following their release, these crabs underwent meticulous monitoring at intervals of seven days, two weeks, and subsequently on a monthly basis for the past seven months. This ongoing observation allows us to gain insights into their behavior and contribute to a deeper understanding of their herbivory processes within our outplanting sites.

Looking ahead, we anticipate the arrival of another set of crabs in 2024, providing an opportunity for further in-depth studies on their behavior and the documentation of their herbivory contributions to our outplanting sites. This initiative aligns with our commitment to advancing ecosystem restoration through thoughtful and strategic interventions. You could see videos here

PROTOCOL FOR ESTIMATING GENOTYPIC DIVERSITY FOR *ACROPORA CERVICORNIS*

The grafting method stands as a pioneering approach in coral restoration, involving the growth of coral fragments in proximity to assess the acceptance or rejection responses of their tissues. Built on the principle of histocompatibility, corals of the same genotype (sharing the same DNA) fuse their tissues upon contact, while those of different genotypes exhibit rejection responses like fission and overgrowth. This field-based, cost-effective, and scalable method has emerged as a valuable tool for estimating genotypic diversity, distinguishing between clones and genetically unique individuals of the same species.

Developed and validated by the Iberostar science team in collaboration with esteemed coral researchers from the University of Southern California, Texas A&M University at Galveston, and the Helmholtz Institute for Functional Marine Biodiversity (HIFMB) in Germany, the grafting method has been recently validated through modern molecular genotyping methods (refer to the published papers section).

While not intended to replace molecular genotyping methods, the grafting method serves as an additional tool, especially useful in restoration programs facing economic or logistical constraints for laboratory genotypic analysis. Its application holds significant implications for reef restoration, as the genetic information gathered aids in making informed decisions to enhance genetic diversity, a critical factor for reef resilience. Estimating genotypic diversity enables the monitoring of specific genotypes that excel in crucial resilience traits, such as resistance to bleaching or diseases.

During the validation process, the Iberostar science team developed a protocol for implementing the grafting method in underwater nurseries specifically tailored for the species Acropora cervicornis. This protocol is now available as an open-access resource, benefiting restoration practitioners and scientists worldwide here.

1 GRAFTING TEST ASSEMBLY

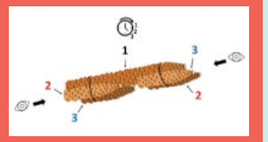
Plan all **possible pairwise** combinations between **ramets of interest**

Collect necessary tissue

Arrange combinations in **5-fragment bundle tests:** larger fragment (± 10 cm) + 4 smaller fragments (± 5 cm) zip tied to the larger piece

Fragments arranged in **clockwise fashion** starting from larger fragment

Number of test bundles will depend on **#ramets** and **#replicates** per combination

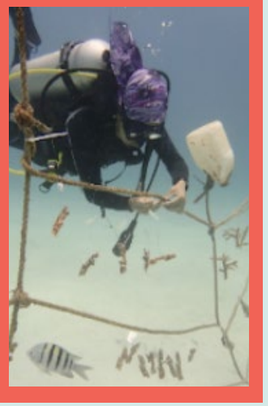


2 GROWTH MONITORING

Hang test and let grow for at least **10 weeks**, monitoring **tissue responses**

Clean structure and bundles if required

Retrieve and transport test to microscope station

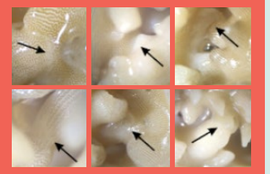


3 CONTACT RESPONSES EVALUATION

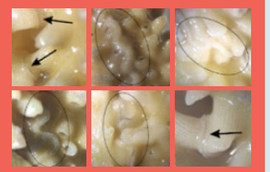
Evaluate **tissue contact repsonses** under stereoscopic **microscope**

Acceptance: Smooth fusion of skeletal components + soft tissue

Rejection (weak): Certain fusion of skeletal components, not smooth. White area: lack of symbiont colonization



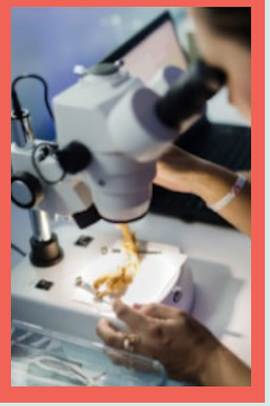
Rejection (strong): Suture line between tissues, devoid of connecting soft tissue. Overgrowth, bleaching, anomalous growth, soft tissue death...



4 GENOTYPIC DIVERSITY ESTIMATION

Constant acceptance across specific replicated pairwise combination >> **Same genotype**

Constant rejection >> diferent genotype (more or less related depending on the **strenght of rejection response**)

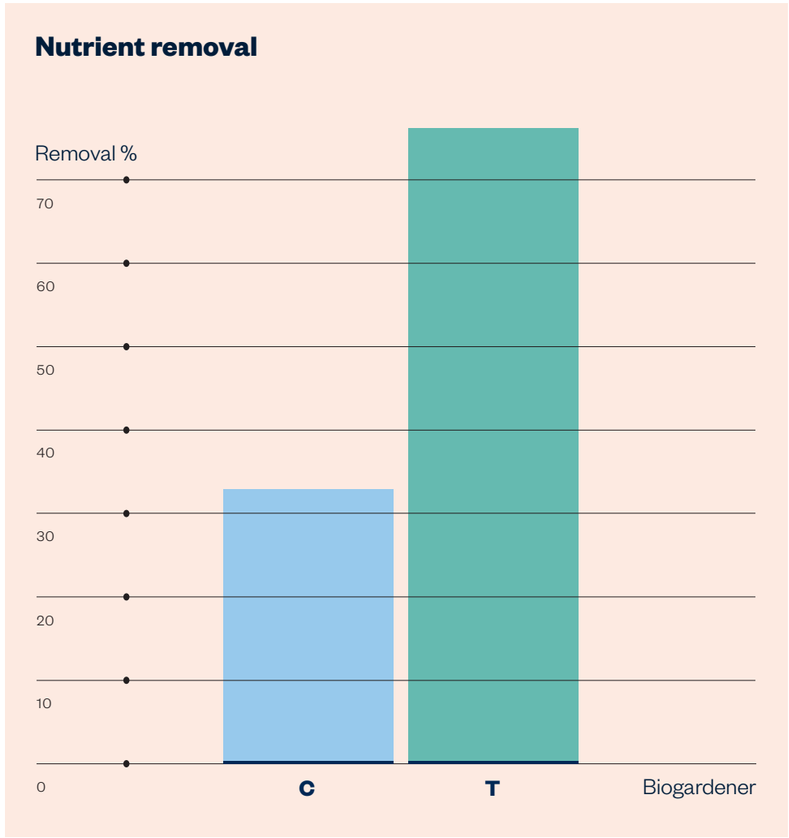


EXPERIMENTAL DESIGN OF NUTRIENT FILTRATION

NATURE-BASED SOLUTIONS (NBS): BÁVARO CASE STUDY "NUTRIENT FILTRATION WITH JACINTO DE AGUA (*EICHHORNIA CRASSIPES*)"

This study aimed to assess the efficiency of Eichhornia crassipes in treating water supplemented with nutrients, specifically focusing on the removal of total nitrogen, nitrate, nitrate nitrogen, total phosphorus, phosphate, and ammonium nitrogen. Three biogardens (B2, B3, and B4) were planted with *Eichhornia crassipes*, while a control without the plant (B1) was established.

Across all bio gardens, a notable decrease in phosphate, total phosphorus, nitrate nitrogen, and total nitrogen was observed, showcasing a high percentage of nutrient removal.



The outcomes of this experiment affirm that *Eichhornia crassipes* is proficient in filtering and removing substantial percentages of nutrients from polluted water. The feasibility of biological treatment using water hyacinth for phyto-purification of wastewater and polluted water is evident. Implementation of such biological systems in rural or urban areas ensures an enhancement in the treated water's quality, with this aquatic plant playing a pivotal role in effectively removing pollutants from effluent. See complete information here.

PUBLISHED PAPERS

The year 2023 began with the recent publication on the worrying coral disease "Stony Coral Tissue Lost Disease" (SCTLD) that threatens Caribbean reefs, in collaboration with researchers and restoration practitioners from the Dominican Republic [1].

The work titled "Overcoming barriers to reef restoration: field-based method for approximate genotyping of Acropora cervicornis" was accepted for publication in the journal Restoration Ecology [2]. This study aimed to demonstrate the viability of the grafting method as a potential tool to approximate the genotypic diversity (i.e. identify the number of individuals of unique DNA) of the coral species Acropora cervicornis. The successful validation of this field-based method through molecular genotyping techniques implies a great advance in the application of genetic information into restoration practices, as it reduces methodological and economic bottlenecks that advanced molecular genotyping methods bring to some restoration programs. The information obtained can be applied to increase the genetic diversity of restoration programs, as well as to facilitate monitoring specific genotypes that stand out in important resilience traits implying progress towards reef resilience in the face of climate change.

Three other research studies have been submitted for peer-review publications this year: "Rebuilding Coral Reefs: How tourism can be a driver behind solutions in a changing ocean" [3], "Optimizing Fish Conservation in a Multiuse Marine Protected Area with Functional Ecology" [4] and "Gene expression patterns as a tool to select genotypes resistant to environmental variation for use in coral reefs restoration programs" [5]. The first study [3] provides a guide of how to invest and apply innovative solutions and immediate action strategies from the tourism-hotel sector in alliance with academia and key stakeholders, through the development and implementation of a multi-species restoration program at two sites in the Mexican Caribbean: Manchoncitos Reef, Riviera Maya and La Francesita Reef, Cozumel. In this study, the authors present the identification of effective propagation and outplanting techniques for key critically endangered species, as well as genotypes resistant to temperature stress and Stony Coral Tissue Loss Disease (SCTLD). Also, they include a comparative analysis over time (2020-2022) showing positive ecological processes and recovery of ecological functions reflected in increased coral cover, structural complexity and fish biomass. These and other results presented in the study improve the understanding of the use of restoration as a tool for climate change adaptation led by the private sector. The second study [4] explores the fundamental role of reef fish as bioindicators for assessing the impact of human activities on coral reefs and for maintaining their intricate structure and ecosystem functions, with a special focus on Marine Protected Areas (MPAs). In this study, the authors prove that monitoring functional diversity indices in reef fish communities, particularly within Marine Protected Areas, proves invaluable for deciphering complex ecosystem changes and for guiding long-term management strategies in coral conservation programs. In the third study [3] the authors present the results obtained from the evaluation of the expression of the heat shock protein 70 (HSP70) in Montastraea cavernosa corals and their symbionts, which play a key role in coral thermotolerance. Detection of organisms that are genetically fitter and most resistant to environmental stressors can increase the efficiency of coral reef restoration programs by reducing coral bleaching and mortality and promoting the fixation of adaptive genes through generations.

[1] Croquer, A., S. Zambrano, S. King, A. Reyes, R. Sellares-Blanco, A. Valdez Trinidad, M. Villalpando, Y. Rodriguez-Jerez, E. Vargas, C. Cortes-Useche, M. Blanco-Pimentel, J. Calle-Triviño, R. García-Camps, A. Hernández-Orquet, R. Torres, I. Irazabal, L. Díaz, Y. Evangelista and E. Miyazawa. 2022. Stony Coral Tissue Loss Disease and Other Diseases Affect Adults and Recruits of Major Reef Builders at Different Spatial Scales in the Dominican Republic. Gulf and Caribbean Research 33 (1): GCFI1-GCFI13.

DOI: https://doi.org/10.18785/gcr.3301.03

[2] Blanco-Pimentel, M., Kenkel, C. D., Kitchen, S. A., Calle-Triviño, J., Baums, I. B., Cortés-Useche, C. and Morikawa, M. K. 2023. Overcoming barriers to reef restoration: field-based method for approximate genotyping of Acropora cervicornis. Restoration Ecology (In Production). DOI: 10.1111/rec.14073

[3] Calle-Triviño, J., Rojas-Cano, D., Niño-Torres, L. A., Colín-García, N., Hernández-Landa, R., Blanco-Pimentel, M., Arias-González, J. E. Cortés-Useche, C. and Rioja-Nieto, R. 2023. Rebuilding Coral Reefs: How tourism can be a driver behind solutions in a changing ocean. Frontiers in Marine Science (submitted).

[4] Nuñez-Inzunza, R. A. Calle-Triviño, J., Cortés-Useche, C., Arias-González, J. E. 2023. Optimizing Fish Conservation in a Multiuse Marine Protected Area with Functional Ecology. PloS One (submitted).

[5] Colín-García, N., Chiappa-Carrara, F. X., Rioja-Nieto, R., Arena-Ortiz, M. L., Cortés-Useche, C., Alvarado-Recillas, N., Campos-Contreras, J. E. and Calle-Triviño, J. 2023. Gene expression patterns as a tool to select genotypes resistant to environmental variation for use in coral reef restoration programs. PloS One (submitted).

Enhancing green spaces for well-being

MANAGING PLANT DIVERSITY

Throughout 2022, our hotels conducted an inventory of their existing plants, which underwent evaluation by external partners such as botanical gardens or academia. This process led to establishing a comprehensive database containing the taxonomy of plants found in the gardens of most Iberostar-managed hotels, categorized according to various parameters. Additionally, the database includes a list of emblematic species endemic to some of our destinations and proposes replacement elements for invasive plants that need removal.

Plants have been categorized as follows: Invasive species, which develop outside their natural distribution area and can disrupt biodiversity; non-native species with invasive potential, which are targeted for removal from hotel gardens; and non-native species without invasive potential, which can continue to be used if they offer similar benefits to native plants. Lastly, native or autochthonous species, which naturally occur in a territory, are encouraged for use in hotel gardens as they promote biodiversity and sustainability. Our goal by 2030 is to ensure that no Iberostar hotel harbors invasive plant species in its gardens, aligning with our commitment to environmental stewardship.

MANGROVE RESTORATION

The reinitiation of Iberostar's mangrove restoration program started in January 26, 2021 with a donation of 2,500 mangroves, of which 2,000 were red mangroves and 500 were button mangroves.

Since then, the program has seen significant success and has resulted in an acquisition of knowledge that has been shared to guests, students and partner institutions.

To date (Nov 20, 2023) mangroves planted		
Bavaro	12,484	3 species (red, white and button mangroves)
Hacienda	64	Red mangroves
Costa Dorada	3,568	Red and white mangroves
Total	**16,116**	Mangroves planted within Iberostar

3,500 other mangroves have been donated to the Seibo Resiliente project led by the GIZ and the Ministry of Environment.

Mangroves:

Overall mortality has been stable at 8.36% mortality. This mortality was mainly due to improper transportation from the ministry's nursery and prolonged stays at the Iberostar nursery. This was resolved by contracting two mangrove gardeners.

46% of the mortality occurred within the first two months of the restart of the program and 83% of the mortality occurred within the first year. This mortality mainly happened in three punctual events.

Mortality within planted mangroves has been insignificant with only a handful of mangroves dying once planted; most mortality occurred in Bayahibe.

Mangroves planted within the Bavaro complex reached their reproductive stage within two years. This allowed the harvesting and replanting of second generation mangroves

Improving water and beach quality around our operations

WORKSHOP ON SARGASSUM AND AGREEMENT SIGNED

In 2023, the Environmental Secretariat of the state of Quintana Roo unveiled the Comprehensive Strategy for the Management and Utilization of Sargassum. The primary goal is to address the environmental, social, and economic impact of sargassum in the region, aiming for the well-being of both the environment and the residents.

Developed by multidisciplinary working groups, this strategy offers a comprehensive analysis and tailored solutions for each stage of the sargassum management process. It spans from prevention and coastal management to disposal, utilization, and final use. In conjunction with the strategy's publication, a Solidarity Agreement was signed to actively implement it in Quintana Roo (EIMAS). This agreement stems from the New Agreement for the Well-being and Development of Quintana Roo, championed by Governor Mara Lezama Espinosa. The Solidarity Agreement formalizes the continuous involvement of Working Group members, various stakeholders, including Grupo Iberostar, and collaboration with the State Government and relevant agencies.

By committing to collaborate in finding solutions to the sargassum issue, Grupo Iberostar strengthens its bonds with the public, academic, and private sectors. This reflects the company's steadfast dedication to the sustainable and responsible management of the areas where it operates.

Investing in blue carbon to reach carbon neutrality

JAMAICAN CARBON PROJECTS

In 2024, our focus in Jamaica centers around the East End Morrant project in St. Thomas. With a commitment to achieve 8,000 tons of CO2 through mangrove conservation and reforestation, a preliminary report for the site has already been prepared. We are in the process of finalizing a Memorandum of Understanding (MOU) with the University of West Indies, establishing collaboration activities related to mangrove conservation, reforestation, and carbon sequestration. Additionally, a contract has been signed for the implementation of the Environmental Impact Study, to be conducted by Discovery Bay Marine Laboratory at the University of West Indies, with a preliminary field visit scheduled for November 23-28, 2023. Furthermore, we have received a letter of commitment from the landowner, solidifying our progress.

In El Cupey, Puerto Plata, our focus is on converting a 150-300-hectare plot of land from cattle use to reforestation. Following a preliminary meeting with the private landowner, we anticipate further discussions in the upcoming week, marking the initial stages of development for this promising project.

ADDITIONAL COLLABORATION

In Mexico, we initiated three carbon projects in 2023 in collaboration with Mexico, with two of them showing potential for a Blue Carbon component:

***Ejido Dziuché, Quintana Roo*: This ejido features a freshwater lagoon called Chichancanab, housing mangroves and a population of Stromatolites—a layered sedimentary formation created by photosynthetic microorganisms like cyanobacteria, sulfate-reducing bacteria, and Pseudomonadota. Stromatolites, being among the oldest life forms on Earth, possess a high potential for carbon capture.**

***Comunidad Highera Blanca*, Nayarit: In this community, a wetland with mangroves is present, and Mexico2 is currently conducting an analysis to calculate the carbon capture potential in this area. If confirmed, this finding would enable Iberostar to restore and enhance the ecological resilience of this ecosystem.**

Enabling coastal and island communities

For the proposed Grange Pen Fish Sanctuary, covering approximately 335 hectares, significant strides are being made under the stewardship of the Grange Pen Sanctuary Association, a joint effort involving 4 board members from the Grange Pen Fishers Association and 4 from Iberostar. The association, currently in the process of legalization, has already formulated a comprehensive management plan. Job descriptions for Park Guards and the Sanctuary Manager are well-drafted, aligning with the commitment from Iberostar to fund the sanctuary for the next 5 years. As part of the sanctuary's development, demarcation buoys are in the planning stage, awaiting the final signature from the Minister of Agriculture and Fisheries.

The proposed sanctuary has not only been a focal point for management efforts but has also seen crucial actions undertaken. Baselines have been established for seagrass (including characterization, area mapping), mangroves (carbon baseline, characterization, localization, and area), and beach profiles (initiating the second year of monitoring). Photomosaics for the coral reef area have been created in collaboration with the Perry Institute. Additionally, comprehensive monitoring programs covering water quality, coral and macroalgae cover, coral restoration, and surveys of the barrier reef through AGRRA and Reef Check have been implemented.

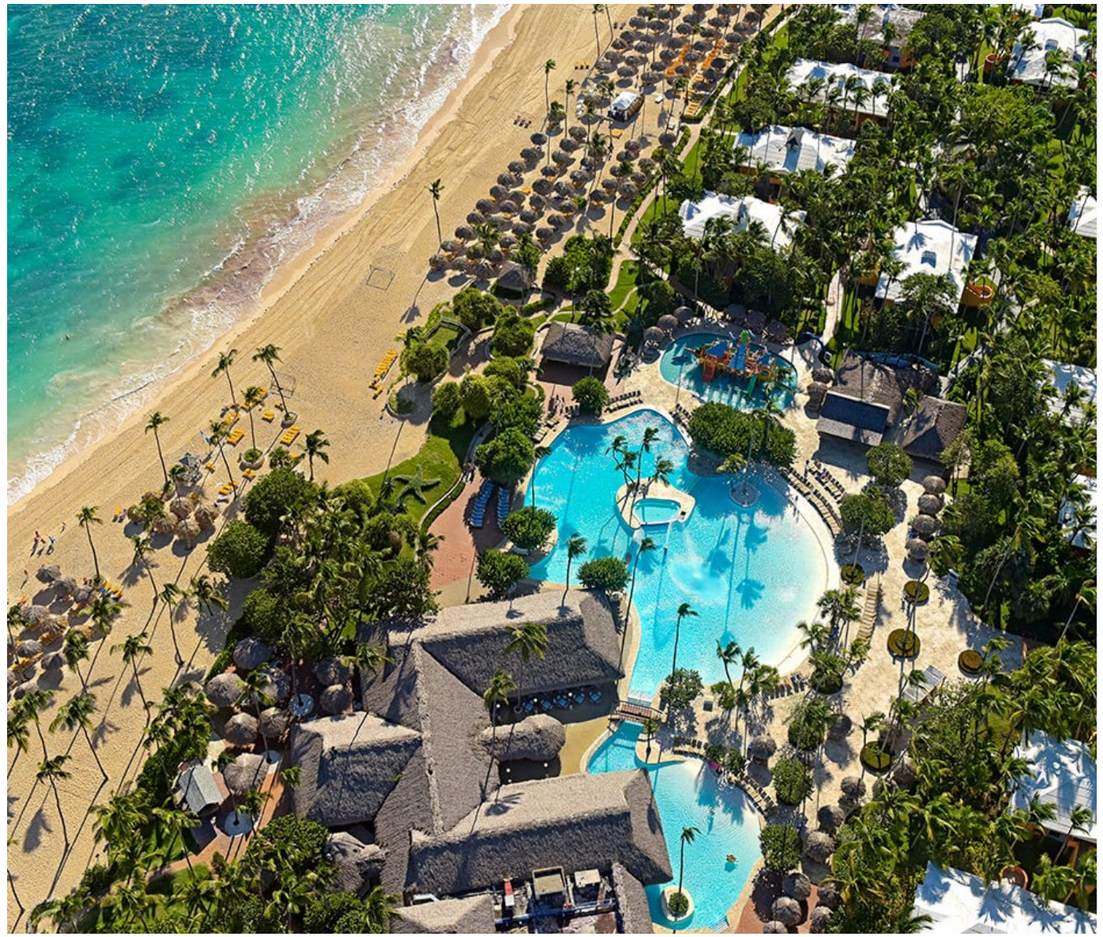
Coral restoration efforts have been particularly noteworthy, with over 4,000 Acropora palmata nubbins outplanted in the last 12 months. However, the project is facing challenges, with an expected mortality rate of over 50% due to unusually elevated sea surface temperatures and a disease outbreak. Two local fishermen are actively engaged in coral restoration efforts, dedicating 2-3 days a week to the cause. Collaborations with the Perry Institute for AGRRA surveys and the identification and collection of donor colonies for thermotolerance testing with the CBASS are pivotal in the sanctuary's endeavors.

To enhance coral propagation, adaptations are being made to in-situ coral growth platforms for multispecies propagation. Abigail Richards has been appointed as the Coastal Health Projects Coordinator to oversee these critical coral restoration initiatives. Looking ahead, the sanctuary is taking proactive steps, having prepared and submitted a Tourism Enhancement Fund (TEF) proposal for startup funds. In collaboration with Obras, a design for a new coral lab in Jamaica has been drafted.

EDUCATION WEEK: SEPT 18-22, 2023

LOCATION: IBEROSTAR BÁVARO COMPLEX, DOMINICAN REPUBLIC

During the last several scientific conferences we have observed a very low level of participation from the Dominican Republic with only a handful of participants from 2-3 institutions. This indicates that the newest or most recent information is not making it back to the Dominican Republic. As a result and within the framework of the Developpp project, Iberostar and the German Development Agency (GIZ) decided to bring regional presenters to share their work with local institutions. An estimated total of 47 people participated in the week-long event.



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GROUP