



# ATLAS AQUATICA

EMPOWERING SCUBA DIVING INDUSTRY  
FOR MARINE CONSERVATION AND THE BLUE ECONOMY

A UNESCO DECADE ACTION



2021 United Nations Decade  
2030 of Ocean Science  
for Sustainable Development



## PREFACE

Endorsed as a UNESCO Decade of Ocean Science for Sustainable Development project on October 6th, 2021 (ID# 203), Atlas Aquatica envisions a future of fully protected marine ecosystems, underpinned by robust economic sectors compatible with the blue economy principles. Our mission embodies the fusion of scientific insights with efforts to inspire and mobilize these sectors towards marine conservation.

This endeavor seeks to recalibrate existing power dynamics and transform the dominant narrative of the ocean's value being exclusively tied to extractive activities into a new one where creative and innovative strategies challenge traditional mindsets. We envision a world where sustainable, non-extractive economic models flourish and capitalize on our oceans' true bounty.

Atlas Aquatica aspires to link two global objectives functioning at varying scales: the 30x30 agenda and the blue economy. By fostering local economies that prioritize environmental sustainability and ocean conservation, we can effectively meet the goal of safeguarding 30% of the world's oceans by 2030. However, we must develop convincing narratives and pilot experiments that demonstrate how ocean protection yields higher economic returns than extractive activities.

Since 2018, we have focused our attention on the Scuba diving and snorkeling industry, showing that by enhancing organization and empowerment within this sector, we can successfully fulfill both global targets. Although there remains a significant amount of work ahead, the scientific evidence presented in this booklet shows promising results. In the ensuing years, we will work to validate our hypothesis and hopefully help catalyze a shift in the narrative surrounding ocean conservation and spark a change in the power dynamics that precipitated the decline of global marine life.

Confident in our vision, we remain unwavering in our mission to promote a healthier, more sustainable future for our oceans.

**OCTAVIO ABURTO-OROPEZA**  
Professor  
Scripps Institution of Oceanography

### AUTHORS

Fabio Favoretto  
Octavio Aburto-Oropeza

### DESIGN:

dataMares

### FUNDING ACQUISITION AND PROJECT ADMINISTRATION:

Scripps Institution of Oceanography  
Centro para la Biodiversidad Marina y la Conservación A.C.

### HOW TO CITE:

Favoretto, F. and Aburto-Oropeza, O. 2023. Atlas Aquatica: Empowering Scuba Diving Ecotourism for Marine Conservation and the Blue Economy. UNESCO Report pp 18.

### PARTNERS:





## EXECUTIVE SUMMARY

Healthy oceans are essential for life, but a mere 2.9% are fully protected<sup>1</sup>. The question then arises - why is ocean protection so challenging? Among the many reasons is the economic allure of extractive activities which poses a barrier to alleviating human pressure on ocean areas. Marine protected areas (MPAs), primarily designed to preserve biodiversity, are often rationalized through a business lens and are expected to yield revenue by increasing tourists' willingness to pay. However, MPAs are not business entities and require a set of enabling conditions to successfully reach their goals.

In a successful marine protected area, a unit increase in natural capital results in a rise in tourist revenue. We developed a bioeconomic model to show how fully protecting diving sites can significantly enhance nature's recovery and lead to larger revenues for the scuba diving industry. In Mexico, scuba diving generates as much revenue as the fishing industry, yet only 7% of the country's diving sites are fully protected. Globally, the scuba diving industry generates up to \$20 billion dollars per year, even though about half of the diving sites worldwide lack protection.

Using global experiences, we designed a five-step bottom-up approach that scuba diving operators can use to amplify marine protection. This approach could catalyze the creation of stricter or new fully-protected areas designed to incorporate existing businesses - a significant departure from the traditional business framework. The Atlas Aquatica initiative advocates for a significant shift in narrative to stimulate broader acceptance of marine protection worldwide. We aim to contribute to a sustainable blue economic growth and the 30x30 conservation target by promoting the protection of diving sites globally.



## INDEX

### 1. PREFACE

### 2. HOW CAN WE PROTECT THE OCEANS?

### 3. AN EXAMPLE OF SUCCESS

### 4. ENHANCING MARINE CONSERVATION EFFORTS THROUGH DIVING ECOTOURISM

### 5. MEXICO'S SCUBA DIVING INDUSTRY

### 6. GLOBAL VALUE OF THE SCUBA DIVING INDUSTRY

### 7. WHAT WOULD HAPPEN IF ALL DIVING SITES WERE FULLY PROTECTED?

### 8. WHAT DOES IT TAKE TO PROTECT DIVING SITES?

### 9. HOW TO ALIGN SUSTAINABLE BLUE ECONOMY WITH THE 30X30 TARGET?

### 10. CONCLUSION



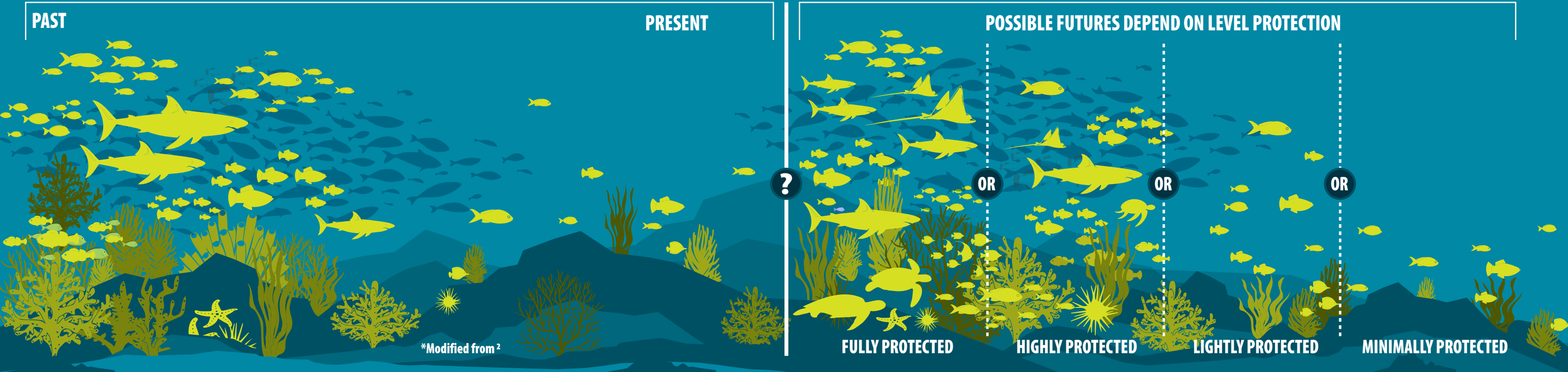
4



5







## HOW CAN WE PROTECT THE OCEANS?

The oceans maintain livelihoods and provide habitat to a wide diversity of marine species and are crucial to Earth's climate. Their health is threatened by human activity, the impacts of climate change and pollution so it is imperative we act to restore and protect them. Marine Protected Areas (MPAs), especially 'no-take' reserves where extraction is prohibited, help recover marine communities by acting as sanctuaries and increase the ecosystem's resilience<sup>2,3</sup>.

Worldwide, countries have agreed to protect 30% of Earth's land and 30% of their oceans by 2030<sup>4</sup>. Known as the 30x30 target, it was launched by the High Ambition Coalition for Nature and People in 2020 and became a target of the Kunming-Montreal Global Biodiversity Framework during the COP15 meeting of the Convention on Biological Diversity<sup>5</sup>.

Atlas Aquatica is an initiative that seeks to estimate the economic value of the scuba diving and ecotourism industry to create opportunities for this sector to design and implement conservation strategies that contribute to the 30x30 goal. By leveraging ecotourism's economic potential, our goal is to help the industry become a leader in conservation and ultimately transform the concept of Blue Economy.

Atlas Aquatica is a multifaceted initiative with the potential to transform the scuba diving industry into a force that drives positive change among marine enthusiasts, businesses, government and private citizens. Atlas Aquatica's sources of inspiration are the success stories fully protected areas around the world provide, proving that recovery is possible and worth the effort, and not only aims to help the agenda 30x30, also looks to trigger a framework to implement the Blue Economy concept.



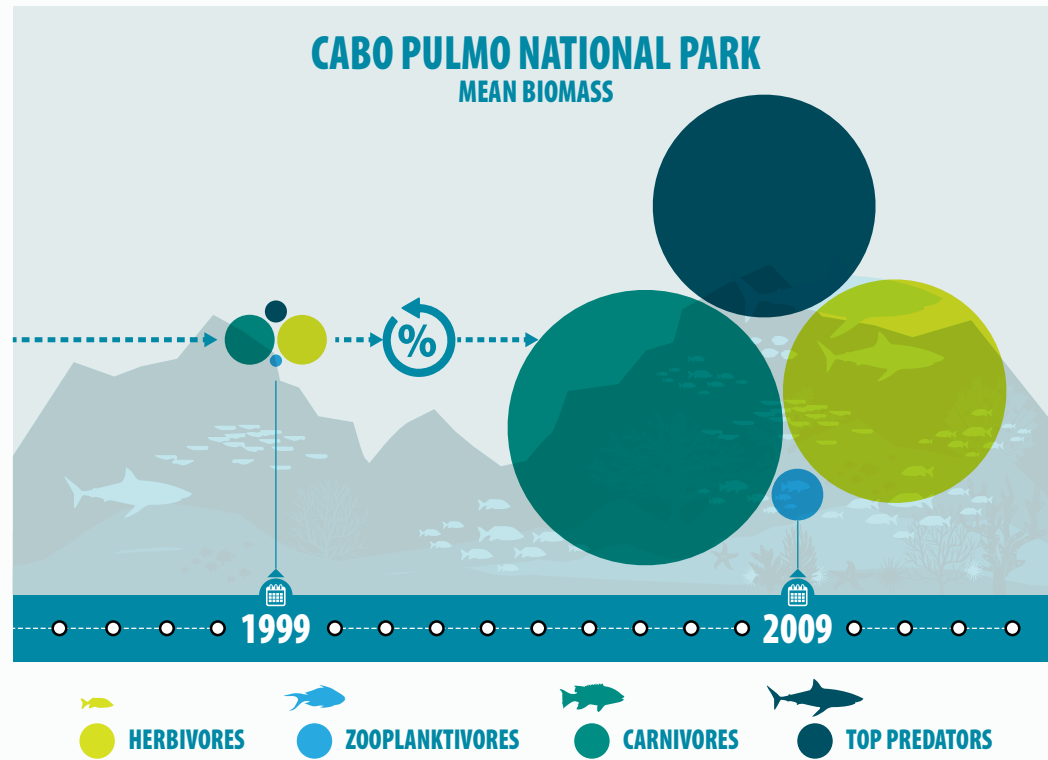
## SUSTAINABLE BLUE ECONOMY

This economic framework aims to promote and secure the sustainable health and productivity of oceanic and coastal ecosystems, while simultaneously supporting economic growth and social well-being<sup>6</sup>.



It emphasizes the careful utilization of marine resources, encompassing various industries such as fisheries, renewable energy, tourism, and transportation.

The framework recognizes diving as a crucial activity for its contribution through tourism to local economies, and its instrumental role in marine research, conservation efforts, and its potential for promoting awareness about the importance of healthy marine ecosystems.



## AN EXAMPLE OF SUCCESS

Fully protected areas play a crucial role in restoring and maintaining ecological balance. Studies have revealed the interconnectedness of species within ecosystems and the cascading effects that the recovery of top predator populations can have on entire habitats. The revival of fish populations and the subsequent recovery of entire reef communities underline the importance of fully protected areas as a conservation strategy.

IN THE SPAN OF 10 YEARS



**460%**  
RECOVERY OF FISH BIOMASS<sup>7</sup>



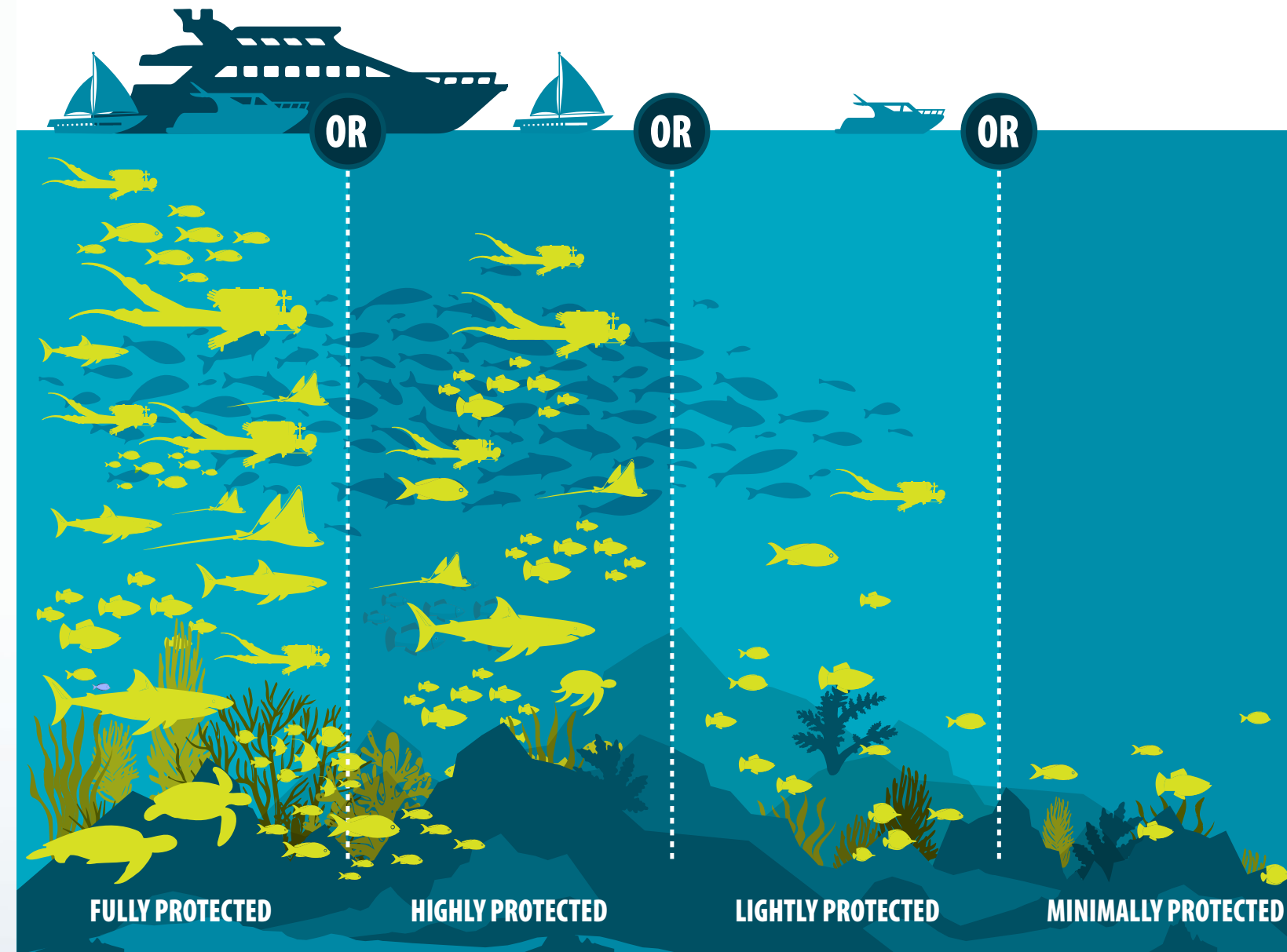
**30,000**  
TOURISTS  
VISITING ON AVERAGE EACH YEAR



**\$3.73**  
MILLION DOLLARS  
IN DIRECT BENEFITS<sup>8</sup>.

Mexico's Cabo Pulmo is an incredible reference. Located on the eastern coast of the Baja California Peninsula, Mexico, Cabo Pulmo has experienced a remarkable recovery thanks to a visionary community-led conservation initiative. In 1995, this small fishing village collectively decided to protect its coral reefs from fishing and transitioned from an extractive-based economy to one based on ecotourism and conservation<sup>9</sup>. As fish biomass increased, tourists from all over the world have been visiting this marine reserve eagerly looking forward to diving among sharks, groupers, jacks, snappers and even sea lions<sup>10</sup>.

## POSSIBLE FUTURES IN DIVING ECOTOURISM DEPEND ON LEVEL PROTECTION



## ENHANCING MARINE CONSERVATION EFFORTS THROUGH DIVING ECOTOURISM

Ecotourism, rooted in the allure of thriving marine habitats, fuels regional economic growth. By combining full protection and sustainable tourism practices, Cabo Pulmo is demonstrating that it is possible to have economic development while preserving the environment. The surge of visitors keen to experience the revitalized marine wonderland, not only boosts the local economy but also promotes marine conservation.



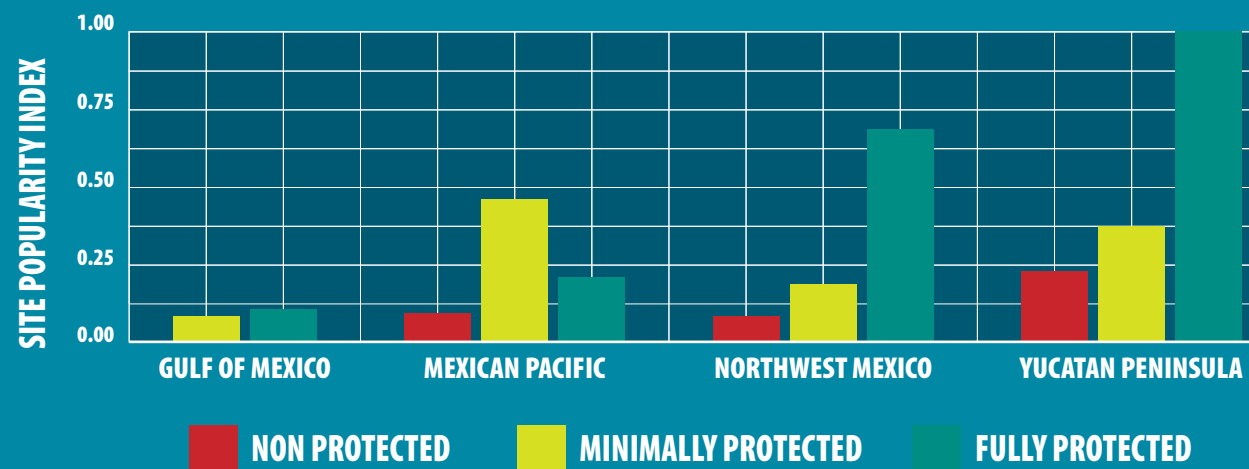
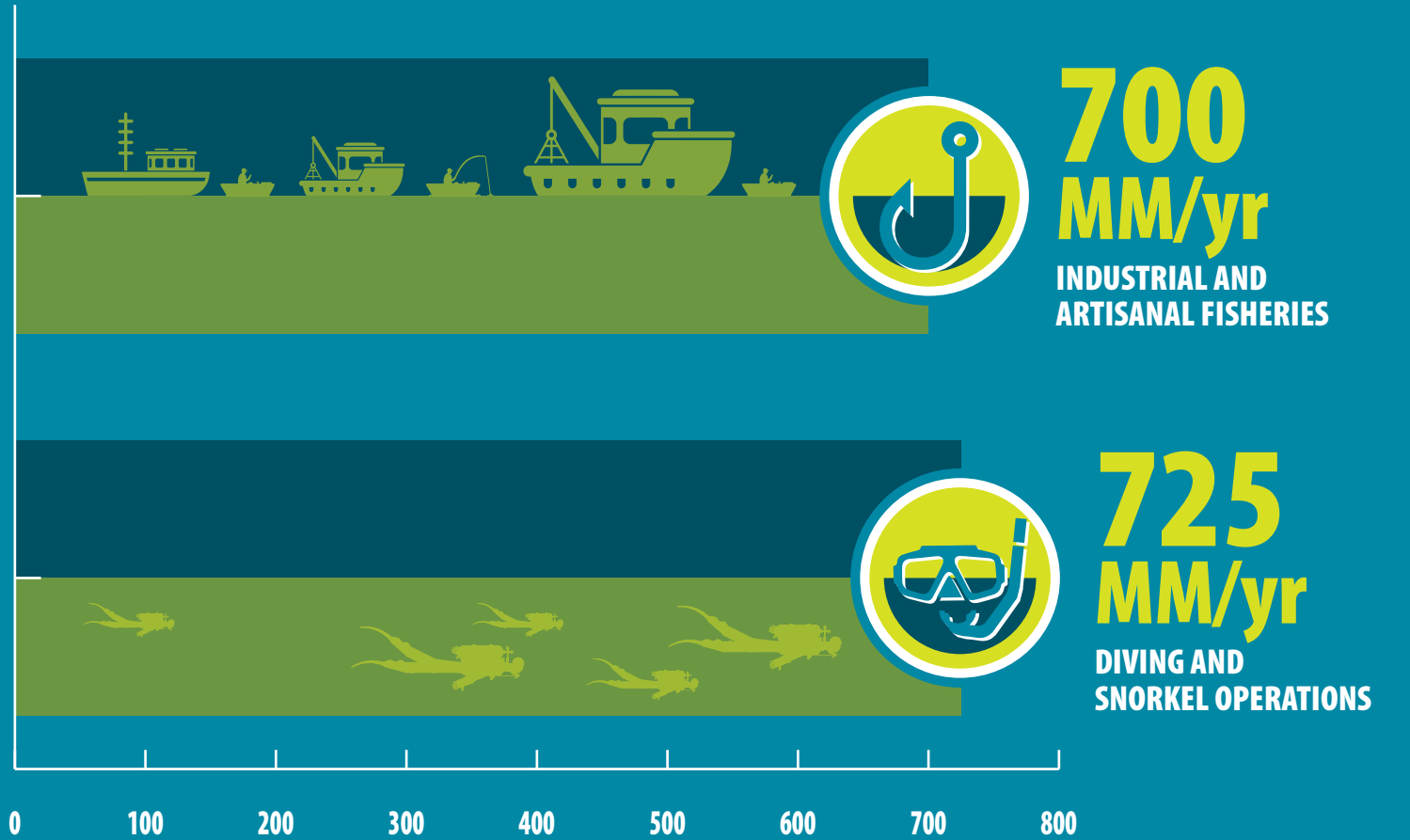
# MEXICO'S SCUBA DIVING INDUSTRY



A detailed study on Mexico's scuba diving industry estimated the economic contribution and its impact on other sectors like accommodation, transportation, as well as other local businesses, and found that it surpassed the one-time benefits generated by the fishing sector from resource extraction<sup>11</sup>.



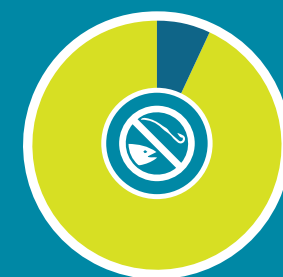
The comparison between the economic contributions of these two industries highlighted a need to shift the paradigm in how we view and value marine resources. While fisheries have traditionally been regarded as the primary economic driver in coastal regions, the study highlights the potential of sustainable scuba diving ecotourism to surpass the economic gains derived from fishing. The economic value generated by the scuba diving industry reflects a growing trend in consumer preferences as travelers are increasingly seeking experiences that align with their values, including sustainable and nature-based activities.



As it focuses on conserving marine ecosystems, the scuba diving industry has tapped into the growing demand for sustainable destinations and is emerging as an economic powerhouse. Mexico has 860 diving sites, but only 7% are within fully protected areas and yet, the diving industry in this country is strong. This type of analysis was the first of its kind, and, to improve our understanding the role this industry plays in economic terms, the team of scientists is now focusing on estimating how much the diving industry is generating globally.

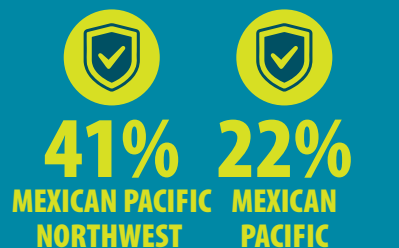


**51%**  
OF THE 860 SITES  
ARE INSIDE A MPA



**7%**  
OF THE 860 SITES  
ARE WITHIN  
NO-TAKE ZONES<sup>11</sup>

REGIONS WITH LESS THAN 50% OF SITES WITHIN AN MPA:



# GLOBAL VALUE OF THE SCUBA DIVING INDUSTRY



Atlas Aquatica is estimating the value of scuba diving ecotourism at a global scale<sup>12</sup>. This comprehensive study builds on the work from Mexico and explores the industry's impact on job creation, national economies and ecosystem benefits associated to site protection.

## THE INDUSTRY GENERATES:



**BILLIONS OF DOLLARS ANNUALLY**



**SUPPORTS MILLIONS OF JOBS WORLDWIDE**



**BENEFITING LOCAL ECONOMIES AND EMPOWERS COASTAL COMMUNITIES**



**HIGHLIGHT THE POSITIVE ECOLOGICAL OUTCOMES OF PROTECTED DIVE SITES**



**ENHANCED BIODIVERSITY**



**HABITAT PRESERVATION**

## THE GLOBAL ANALYSIS FOUND THERE ARE AN ESTIMATED:



**11,500 SCUBA DIVE OPERATORS**



**170 COUNTRIES**

**<40%**

**OF DIVING SITES LACK FORMAL PROTECTION**



This new data should motivate governments, policymakers, and stakeholders alike to consider the scuba diving and ecotourism industry as a potential leader in marine conservation and a catalyst of a much-needed change in the world's blue economy system.

PROTECTION LEVEL ACCORDING TO THE MPA GUIDE



● SCUBA DIVING OPERATORS ● DIVING SITES

## THESE DIVING SITES



GENERATE BETWEEN **\$0.9 TO 3.2 BILLION USD** IN DIRECT DIVING EXPENDITURE



ATTRACT **8.9 TO 13.6 MILLION DIVERS**



**\$8.2 TO 20.4 BILLION USD** IN INDIRECT EXPENDITURE

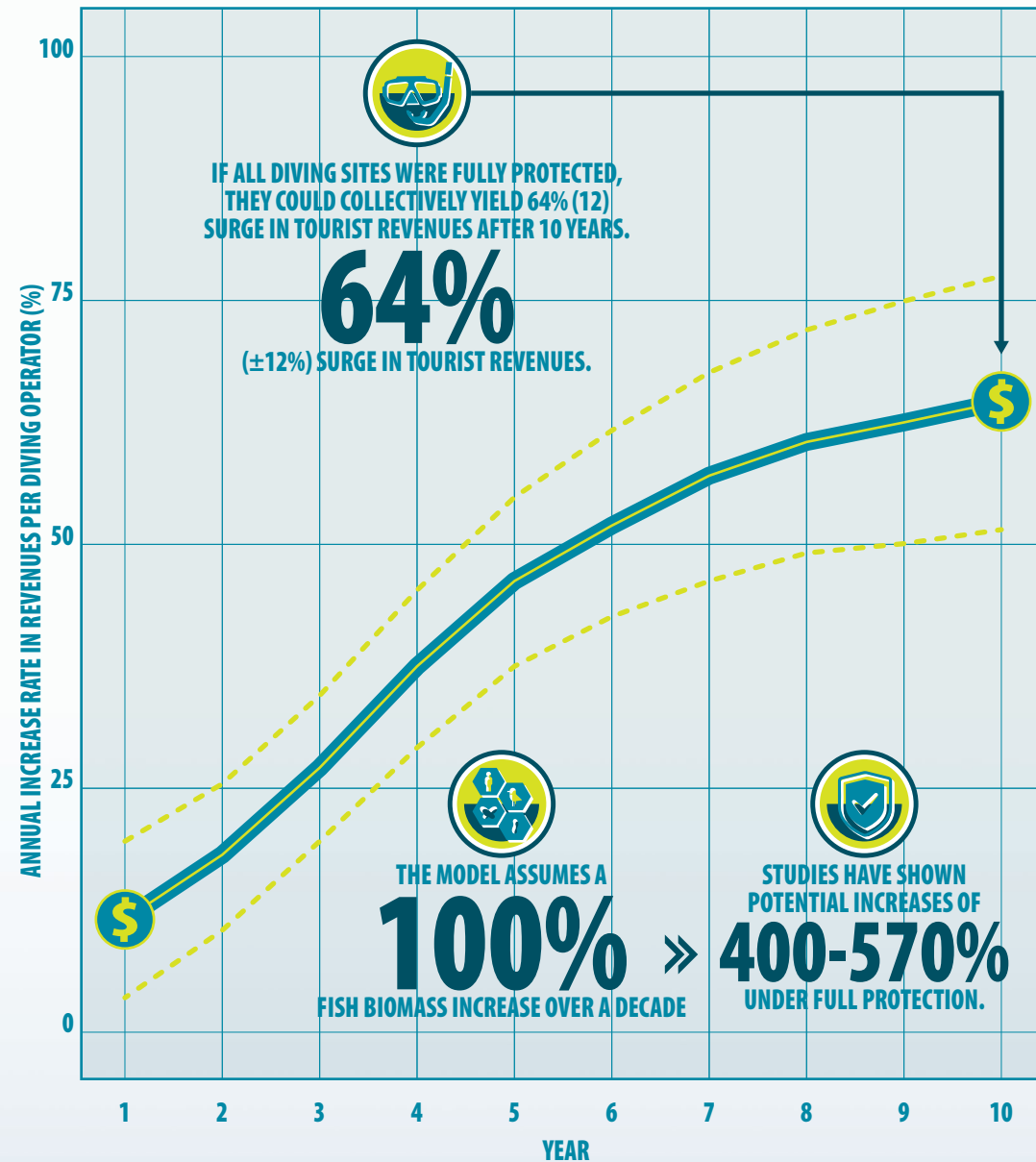


CREATE **124,000 JOBS**





## WHAT WOULD HAPPEN IF ALL DIVING SITES WERE FULLY PROTECTED?



Our bioeconomic model can estimate potential revenue growth from enhanced global marine conservation. These projections emphasize the importance of prioritizing complete protection for diving sites and show how the economic gains can benefit long-term sustainability. An influx of funds from diving ecotourism can catalyze a transformation in marine landscapes while improving the conservation narrative.



## WHAT DOES IT TAKE TO PROTECT DIVING SITES<sup>13</sup>?

Building an equitable Blue Economy requires re-imagining how we use marine resources. Diving enables citizens to actively participate in the Blue Economy and help to achieve the United Nations Sustainable Development Goal 14, "Life Below Water". This is an expanding industry and, although the diving sector has helped transition to sustainable economic activities in some communities, it remains underrepresented within marine conservation efforts.



WELL-STRUCTURED ORGANIZATIONS ENGENDER TRUST AND UNLOCK POTENTIAL FOR POLITICAL RECOGNITION

A UNITED DIVING SECTOR CAN EXERT RIGHTS TO MANAGE ASSETS AND ACCESS FINANCING

EMPOWERING YOUTH, WOMEN, AND INDIGENOUS PEOPLES WILL FOSTER COMMUNITY, INCLUSIVITY AND LONGEVITY

This sector is uniquely poised to help address conservation goals and sustainable development. Based on experiences from all over the world, we designed a 5-step strategy to help the diving community to become a conservation leader locally and globally through bottom-up approaches by enhancing bottom-up approaches.





## HOW TO ALIGN SUSTAINABLE BLUE ECONOMY WITH THE 30X30 TARGET?

The paths to boosting tourism so that it benefits local economies and marine conservation should be strategically guided by understanding where and how to invest first. We have identified an economic model that can create positive feedbacks for marine conservation through three types of capital:



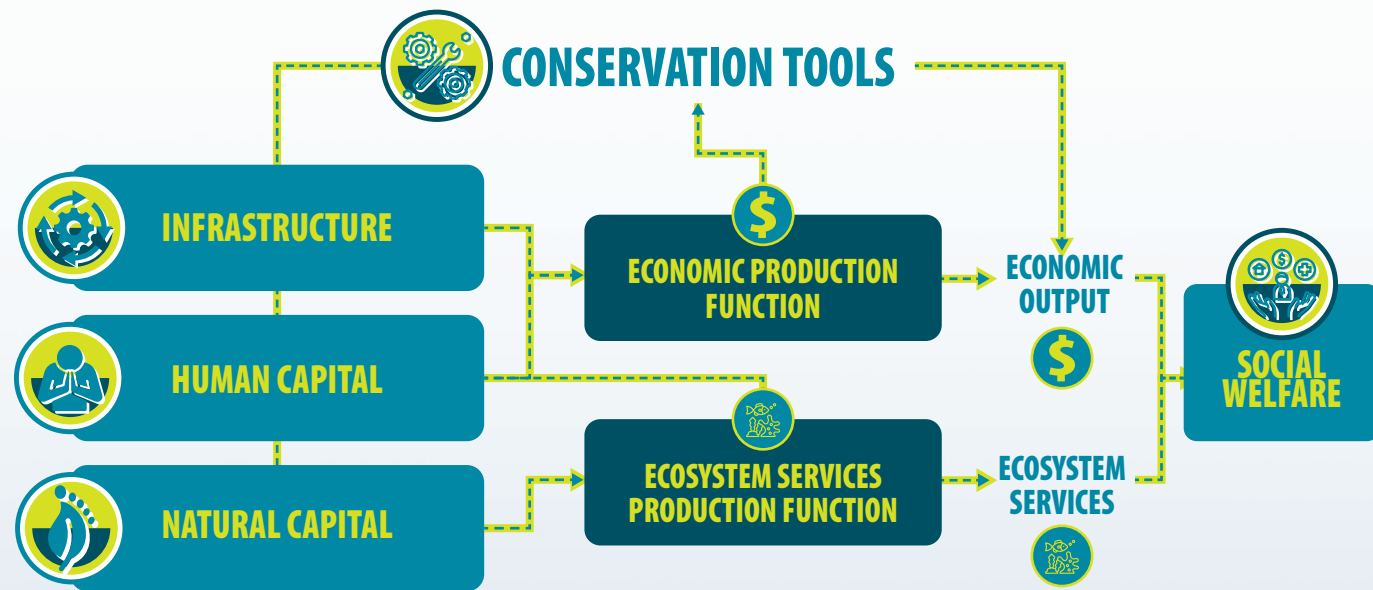
**1) HUMAN CAPITAL:** The capacity of the human community to create a sustainable business, in this case scuba diving, which needs training and expertise.



**2) NATURAL CAPITAL:** Includes the flora and fauna as well as the ecosystem services nature provides when protected and healthy.

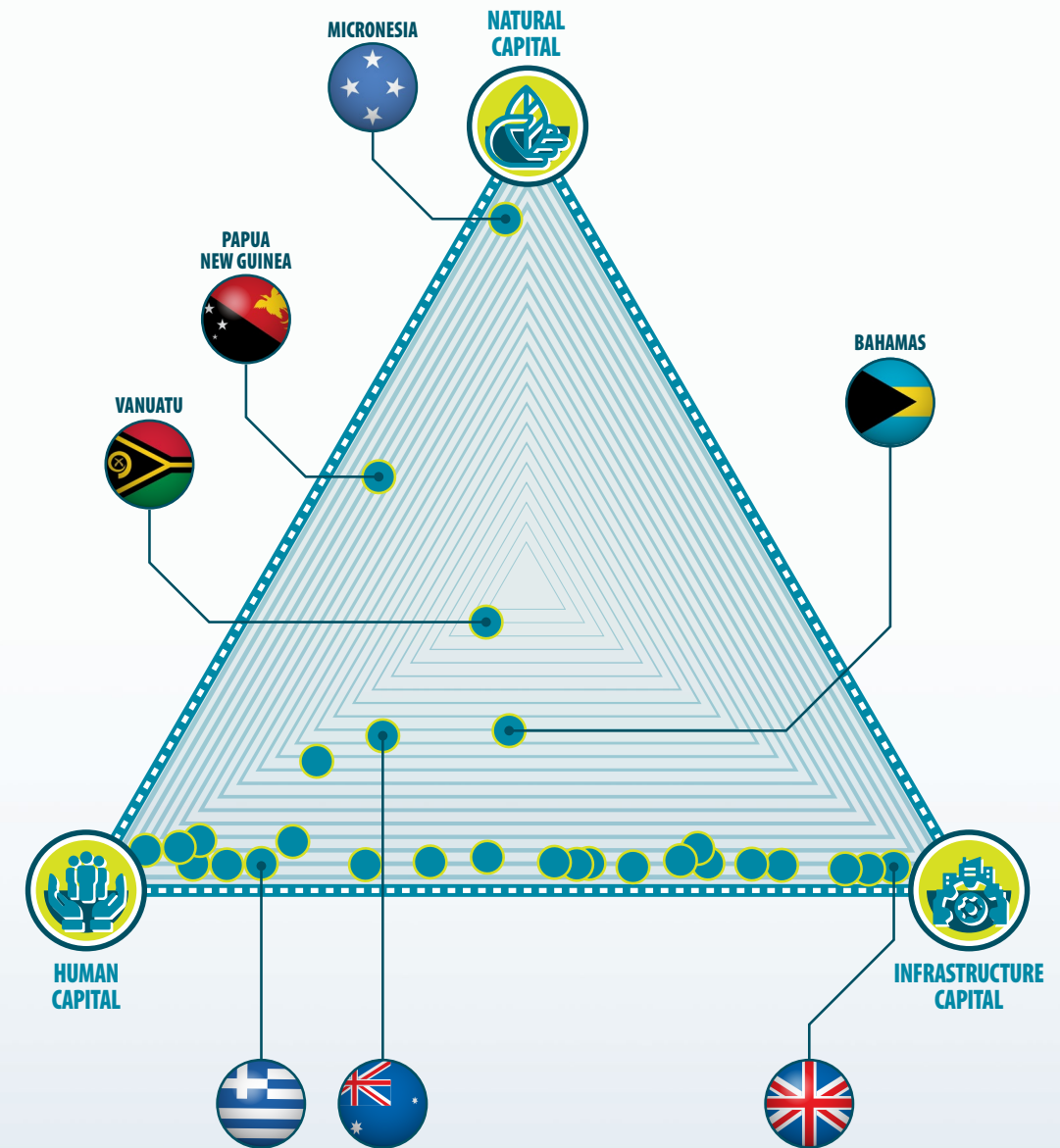


**3) INFRASTRUCTURE CAPITAL:** Represent an area's physical capacity to host a sustainable business; for example, having compressors, equipment or other infrastructure needed to cater properly to tourism.



These three elements require balance; focusing on human or infrastructure capital alone can negatively affect natural capital. However, natural capital cannot be sustainably exploited without human capital and would limit benefits to locals. Disproportionate preferences for infrastructure and human capital have led to unsustainable resource use, so a balanced strategy growth in tourism should aim for all three components to contribute equally as best possible.

INFRASTRUCTURE, NATURAL AND HUMAN CAPITALS ARE NOT ISOLATED AND CONSTANTLY INTERACT WITHIN EACH COUNTRY. A COUNTRY LOCATED ON THE LEFT SIDE OF THE GRAPH, FOR EXAMPLE SPAIN OR FRANCE, NEEDS TO INVEST IN NATURAL CAPITAL TO CREATE SUSTAINABLE BLUE ECONOMIES.





## CONCLUSION

In the rapidly evolving landscape of marine conservation studies, a pressing narrative is emerging that underscores the paramount importance of emphasizing business models decoupled from the depletion of natural resources. Within this framework, the tourism sector, and more specifically the realm of scuba diving, presents itself as a compelling case study. Recent empirical evidence suggests that by strategically expanding marine protected areas, we not only further the cause of biodiversity conservation but also tap into potential tourism-driven economic benefits.

The five-step strategy we propose is grounded in rigorous empirical analyses and thorough fieldwork and offers a blueprint for maximizing gains in natural capital. This can lead to a substantial augmentation in economic yield, especially when considering the latent potential of the scuba diving industry. With only a fraction of dive sites currently protected, the revenue they generate serves as a testament to their untapped potential and the broader possibilities within non-extractive models.

The Atlas Aquatica initiative is a proactive endeavor to merge scientific evidence with industry insights. By empowering scuba diving communities and delivering meticulously researched data to policymakers, we aim to shift the paradigm—advocating for the multifaceted benefits of non-extractive activities and their sustainable profitability.

Our commitment remains unwavering and clear-cut. By championing the comprehensive protection of diving sites on a global scale, we advocate for a future where the oceans' intrinsic and extrinsic values are both celebrated and safeguarded, ensuring a sustainable equilibrium between human prosperity and marine ecosystem vitality.



## REFERENCES

1. UNEP-WCMC & IUCN. (2023). *Protected Planet: The World Database on Protected Areas (WDPA)*. UNEP-WCMC & IUCN. Retrieved from [www.protectedplanet.net](http://www.protectedplanet.net).
2. Grorud-Colvert, K., et al. (2021). The MPA guide: A framework to achieve global goals for the ocean. *Science*, 373(6560), eabf0861.
3. Dinerstein, E., et al. (2019). A Global Deal for Nature: Guiding principles, milestones, and targets. *Science Advances*, 5(4), eaaw2869. <https://doi.org/10.1126/sciadv.aaw2869>
4. Convention on Biological Diversity. (2020). *Preparations for the Post-2020 Biodiversity Framework*. Retrieved from <https://www.cbd.int/conferences/post2020>
5. Briggs, H. (2022). COP15: Nations reach 'historic' deal to protect nature. *BBC News*. Retrieved from <https://www.bbc.com/news/science-environment-64019324>
6. Bennett, N. J., et al. (2019). Towards a sustainable and equitable blue economy. *Nature Sustainability*, 2(11), 991-993.
7. Aburto-Oropeza, O., et al. (2011). Large recovery of fish biomass in a no-take marine reserve. *PLoS ONE*, 6(8), e23601. <https://doi.org/10.1371/journal.pone.0023601>
8. CONANP-GIZ. (2017). *Valoración de los Servicios Ecosistémicos del Parque Nacional Cabo Pulmo. Ciudad de México: Proyecto de Valoración de Servicios Ecosistémicos de Áreas Naturales Protegidas Federales de México: una herramienta innovadora para el financiamiento de biodiversidad y cambio climático (EcoValor MX)*.
9. Havard, L., et al. (2015). Stakeholder participation in decision-making processes for marine and coastal protected areas: Case studies of the south-western Gulf of California, Mexico. *Ocean & Coastal Management*, 116, 116-131.
10. Pasos-Acuña, C., et al. (2020). Economic valuation of diving with bull sharks in natural conditions: a recent activity in Cabo Pulmo National Park, Gulf of California, Mexico. In *Socio-ecological Studies in Natural Protected Areas: Linking Community Development and Conservation in Mexico* (pp. 485-509).
11. Arcos-Aguilar, R., et al. (2021). Diving tourism in Mexico – Economic and conservation importance. *Marine Policy*, 126, 104410. <https://doi.org/10.1016/j.marpol.2021.104410>
12. Schuhbauer, A., Favoretto, F., Wang, T., et al. (2023). Global economic impact of scuba dive tourism. [Preprint]. *Research Square*. <https://doi.org/10.21203/rs.3.rs-2609621/v1>
13. Forrest, M.J., Favoretto, F., Nisa, Z.A., & Aburto-Oropeza, O. (2023). A deeper dive into the blue economy: The role of the diving sector in conservation and sustainable development goals. *Frontiers in Marine Sciences*. [DOI when available]







A UNESCO DECADE ACTION



**2021** United Nations Decade  
**2030** of Ocean Science  
for Sustainable Development