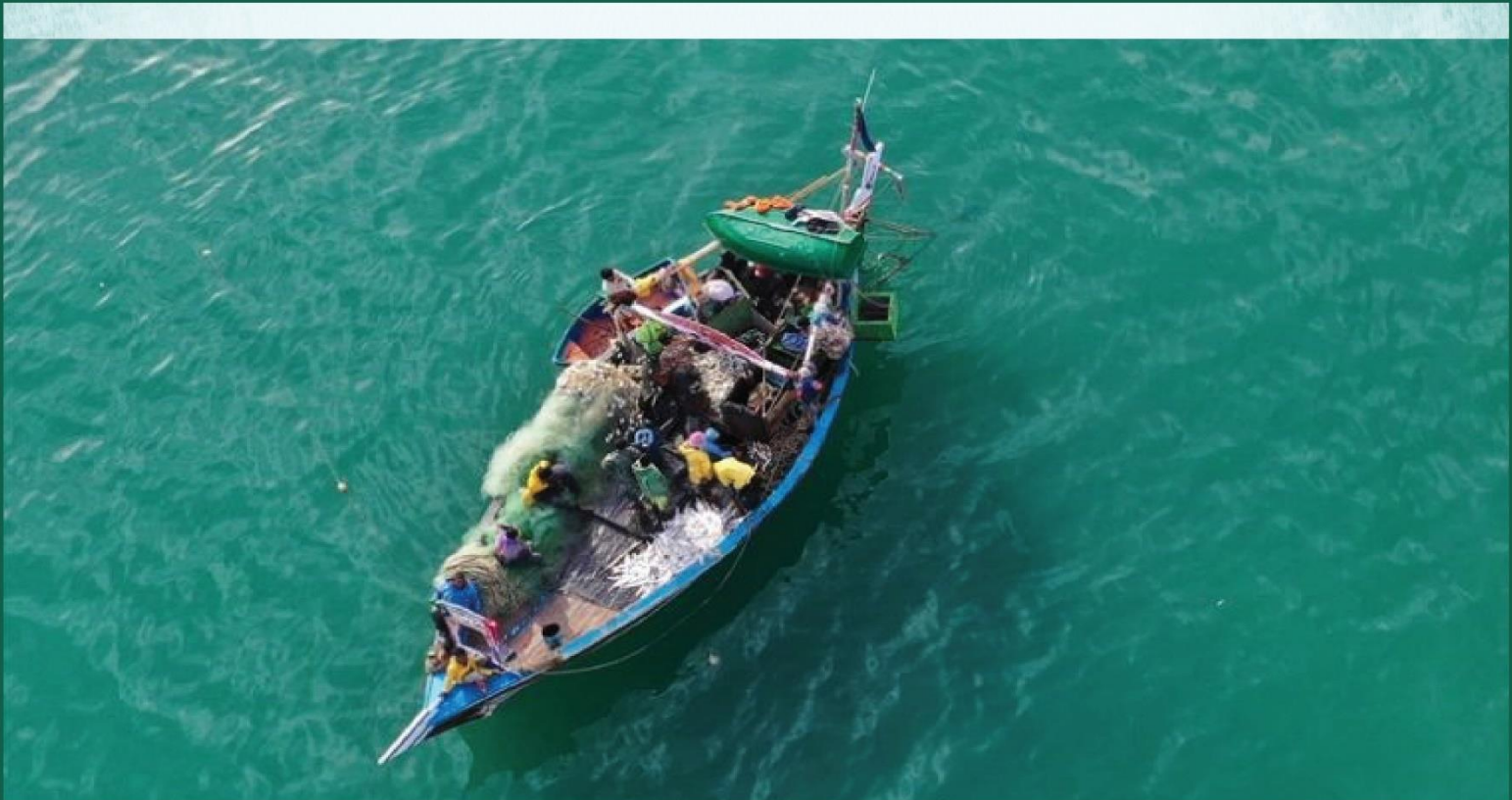




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Navigating Pakistan's Fishing Vessels Towards a Sustainable Horizon



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Introduction

At the heart of Pakistan's agricultural industry lies a vital sub-sector: fisheries. The sector, constituting an integral part of the nation's economic fabric, plays a crucial role in sustaining livelihoods and fostering economic growth, particularly in the coastal regions. Despite representing a modest share of just 0.32% in the Gross Domestic Product (GDP),¹ the fishing sector punches above its weight in terms of socio-economic impact. Its resilience and contribution to the economy are increasingly recognized, especially considering its role as a primary income source for numerous coastal communities.

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The fishing sector has witnessed a notable upswing in recent years, marking a significant growth of 1.44% in 2023.² This positive trajectory signifies a commendable improvement from the 0.35% growth recorded in the previous year, reflecting the sector's potential for expansion and development.

At the center of Pakistan's fishing activities are over 20,000 fossil fuel-operated vessels actively navigating the vast seas.³ These vessels serve as the lifeline of the fishing industry, facilitating the exploration of abundant marine resources and supporting the livelihoods of countless individuals along the coastal belt. Pakistan's coastline, stretching just over 1,000 km, is a treasure trove of natural resources and economic opportunities. Divided between Sindh and Balochistan, with respective coastal lengths of 313 km and 746 km, this expansive coastal line harbors bustling communities whose lives are intricately intertwined with fishing activities.⁴



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Beyond the shoreline, Pakistan's Exclusive Economic Zone (EEZ) extends over 240,000 square km, offering a vast expanse for economic activities such as fishing, shipping, and exploration of marine resources. The maritime jurisdiction, encompassing the continental shelf up to 350 nautical miles, further underscores the nation's maritime significance and potential for sustainable development.⁵

From the bustling ports of Karachi and Gwadar to the serene coastal towns of Pasni and Ormara, Pakistan's coastal landscape is dotted with vibrant communities that rely on fishing for sustenance and commerce. These towns serve as hubs of activity, where age-old fishing traditions blend with modern economic endeavors, creating a rich tapestry of culture and livelihood.

Challenges Faced by Fishing Community

While Pakistan's fishing sector thrives as a cornerstone of coastal livelihoods and economic activity, it faces a myriad of challenges that threaten its sustainability and the well-being of coastal communities.

¹ Economic Survey of Pakistan, 2023, Islamabad, accessed February 18, 2024.

² Ibid.

³ "Protection of Own Fishermen," Pakistan Maritime Security Agency, accessed February 18, 2024, <https://pmsa.gov.pk/operations/protection-of-own-fishermen>.

⁴ "A Handbook on Pakistan's Coastal and Marine Resources," Mangroves for the Future, Pakistan, 2016.

⁵ "Area of Responsibility," Pakistan Maritime Security Agency, February 18, 2024. <https://pmsa.gov.pk/area-of-responsibility>.

The scourge of water pollution looms large over Pakistan's coastal waters, endangering marine life and jeopardizing the very foundation of fishing activities. As industrialization and urbanization continue unabated, pollutants such as chemicals, plastics, and untreated sewage find their way into the ocean, disrupting delicate ecosystems and diminishing fish stocks.

The fishing sector faces a myriad of challenges such as water pollution, oil spills, dwindling mangrove forests, occupational and health hazards, and inadequate electricity supply.

The specter of oil spills casts a dark shadow over the pristine waters, posing a grave threat to marine biodiversity and the livelihoods of fishermen. Accidental spills from ships navigating along the coast not only contaminate the marine environment but also disrupt fishing operations, dealing a severe blow to the fishing sector's sustainability and economic viability.

The dwindling expanse of mangrove forests along Pakistan's coastal areas spells trouble for marine biodiversity and fishing communities. These vital ecosystems serve as breeding grounds for fish and provide critical habitat for numerous species. However, rampant deforestation and habitat degradation are diminishing the mangrove cover, exacerbating the challenges faced by the fishing sector.

Amidst the daily grind of fishing activities, fishermen contend with a silent yet pervasive threat to their health and well-being. Prolonged exposure to smoke from generators on fishing vessels takes a toll on their respiratory systems, leading to a myriad of health issues. From chronic respiratory ailments to



cardiovascular problems, the toll of occupational hazards weighs heavily on the shoulders of those who brave the seas.

Fishermen are confronted with a stark reality: the absence of adequate cold storage facilities for their bountiful catches.

Without proper infrastructure to preserve their haul, post-harvest losses mount, and opportunities for market access dwindle. This glaring deficiency undermines the economic potential of the fishing sector and stifles the aspirations of coastal communities.

Pioneering Initiatives in Sustainable Fishing Vessels

The fishing industry is undergoing a transformative journey toward sustainability in the ever-evolving landscape of environmental consciousness and technological innovation. Two notable initiatives, one from Indonesia and another from India, are leading the charge with their pioneering efforts in solar-powered fishing vessels.

Indonesia, renowned for its breathtaking landscapes and vibrant culture, is also making waves in sustainable fishing practices, particularly in the picturesque region of Bali. Here, a social enterprise⁶ has spearheaded a movement towards greener alternatives to traditional fossil fuel-powered vessels.⁷ Its flagship product stands as a testament to this commitment. Equipped with an electric propulsion

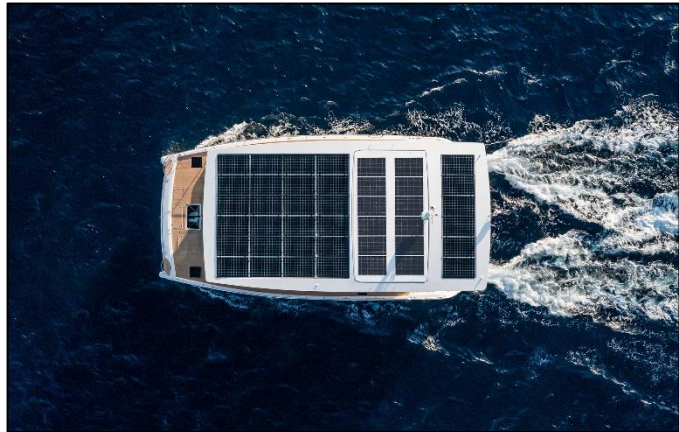
⁶ Azura Indonesia's flagship product, the Manta One, is an electric propulsion engine that replaces conventional 4-stroke petrol engines that are commonly used with long tail boats, <https://azuraindonesia.id/>.

⁷ Aurelia Gracia, "In Bali, Fishers Shift to Solar-Powered Boats, but Challenges Remain," *Magdalene*, December 2, 2022, accessed February 18, 2024, <https://magdalene.co/story/in-bali-fishers-shift-to-solar-powered-boats-but-challenges-remain/>.

engine fueled by lithium-ion batteries, charged through solar panels, it offers fishermen a cleaner, more sustainable way to navigate the seas. Beyond its eco-friendly design, the vessel boasts significant environmental benefits, aiming to reduce carbon emissions by an impressive 298,000 tonnes annually. The product, tailored to meet the needs of fishermen, has emerged as a beacon of hope for sustainable fishing practices in Indonesia.

Meanwhile, on the shores of India, another innovative startup is making waves with its solar-powered fishing vessel.⁸ The boat offers small fishers a cost-effective and environmentally friendly alternative to conventional fuel-powered boats.⁹ The vessel, designed to accommodate up to six fishermen, boasts a monthly operating cost of approximately ₹10,000, a stark contrast to the hefty expenses associated with fuel-powered vessels, which can soar up to ₹0.3 million per month. Beyond the economic advantages, the boat promises substantial environmental benefits, with the potential to reduce CO² emissions by an estimated 560,000 tonnes. Moreover, transitioning to solar-powered e-boats has led to an impressive 84% increase in earnings for fisherfolk, underscoring the positive socio-economic impact of sustainable fishing practices.

As we sail towards a brighter, more sustainable future, such initiatives serve as beacons of hope, illuminating the path towards environmentally responsible fishing practices. Through innovation, collaboration, and a shared commitment to preserving our oceans, these solar-powered vessels pave the way for a thriving fishing industry that not only sustains livelihoods but also safeguards our planet for generations to come.



Solar-powered vessels can pave the way for a thriving fishing industry that sustains livelihoods and safeguards our planet.

Illuminating Opportunities for Pakistan's Fisheries

In the azure waters off the coast of Pakistan, a silent revolution is underway – one powered by the boundless energy of the sun. As the global call for sustainability grows louder, Pakistan's fishery sector stands a chance to embrace a greener, more environmentally friendly future by adopting solar-powered fishing vessels. Let's explore the myriad opportunities that await this transformative shift.

- **Environmental Friendliness:** Solar-powered fishing vessels offer a beacon of hope for Pakistan's marine environment. By eliminating the risk of oil spillage, these vessels ensure cleaner seas and promote environmental sustainability – a crucial step towards preserving the rich biodiversity of our oceans for generations to come.
- **Reduced Operational Costs:** In the realm of economics, sunshine reigns supreme. Solar energy presents a cost-effective alternative to traditional fossil fuels, offering reduced operational expenses for fishermen. With lower fuel costs and minimal maintenance requirements, solar-powered vessels pave the way for increased profitability and financial stability in the fishing industry.
- **On-board Cold Storage Facilities:** Imagine a vessel equipped not only with sails but also with state-of-the-art cold storage facilities. Solar-powered fishing vessels can integrate on-board cold storage, allowing fishermen to preserve their catch efficiently and maintain its freshness.

⁸ The solar-powered fishing vessel, the Srav, developed by NavAlt, offers small fishers a cost-effective and environmentally friendly alternative to conventional fuel-powered boats, <https://navaltboats.com/>.

⁹ "World's first solar fishing vessel made in India wins international award," India Narrative, November 23, 2022, accessed February 18, 2024, <https://www.indianarrative.com/culture-news/worlds-first-solar-fishing-vessel-made-in-india-wins-international-award-75152.html>.

This opens doors to better market opportunities and increased profits, empowering fishermen to thrive in a competitive market.

- **Increased Income:** Transitioning to solar-powered fishing vessels is not just about sustainability – it is about prosperity. By reducing operating expenses, boosting productivity, and improving the quality of the catch, these vessels have the potential to significantly increase income for fishermen. With access to new markets and enhanced preservation capabilities, the possibilities for economic growth are limitless.
- **Government Support:** The winds of change are blowing in favor of solar energy, and the Pakistani government can be at the helm. Through incentives, subsidies, and policy frameworks, the government can pave the way for the widespread adoption of solar-powered solutions in the fishery sector. This support will not only foster sustainable development but will also fuel economic growth and will help in creating new opportunities for innovation.
- **Abundant Sunlight:** Pakistan's geographical location is a veritable goldmine for solar energy as it remains bathed in sunlight throughout the year. With ample sunlight at our disposal, the transition to solar-powered fishing vessels is not just feasible – it is inevitable. The sun, our most abundant resource, holds the key to unlocking a brighter future for Pakistan's fishing industry.
- **Health Benefits:** Beyond economics and ecology, solar-powered vessels offer tangible health benefits for fishermen. By eliminating exposure to harmful fumes from fuel-powered engines, these vessels safeguard the health and well-being of fishermen, reducing respiratory ailments and related health risks – a priceless gift for those who brave the seas.
- **Innovation and Technology Transfer:** Embracing solar technology in the fishing industry is not just about harnessing energy – it is about fostering innovation and technology transfer. By stimulating local expertise and job creation in the renewable energy sector, adopting solar-powered solutions promises to propel Pakistan towards a brighter, more sustainable future.

Conclusion

As we navigate the vast seas of change, it is evident that Pakistan's fishing industry holds immense potential for transformation through the adoption of solar-powered solutions. From reducing environmental impact to enhancing economic prosperity and safeguarding the health of fishermen, the



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benefits are as plentiful as the sun's rays. With solar-powered initiatives leading the charge globally, Pakistan stands on the brink of a new era in sustainable fishing practices. Through government support, innovation, and a collective commitment to harnessing the power of the sun, we have the opportunity to revolutionize the way we fish and ensure a brighter, more prosperous future for generations to come.

As the sun rises on the horizon, casting its golden light upon the shimmering seas, let us seize the moment and embark on this journey towards sustainability. With the wind in our sails and the sun as our guide, we can navigate together toward a future where Pakistan's fisheries thrive in harmony with nature – a future powered by the boundless energy of the sun.

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