Title: Environmental Sustainability for a Strong Blue Economy

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Abstract: Oceans, which cover more than 70 percent of the Earth's surface, contribute vastly to regulating global climate, hosting biodiversity, and providing socio-economic benefits to over three billion people. However, oceans are endangered because the ever-increasing threats coming from climate change, pollution, and overexploitation tend to jeopardize the well-being of human civilization at a very critical level. The chapter commences with the compatibility of the blue economy with environmental sustainability within a framework that combines blue industries, smart technology, inclusive policy, and keeping marine ecosystems. The study arrives at a conclusion that MPAs and nature-based solutions are bringing biodiversity to its full capacity of functioning, and others like sustainable fisheries, ecotourism, offshore wind farms, and ocean superfoods can yield protection and prosperity at the same time. Digital technologies such as Ai, IoT, and blockchain forensics have improved monitoring, decision-making, and transparency, but they still need to be more widely used and accessible for the commercial blue economy to be sustainable, and it requires strong governance, global partnerships, inclusive communities, and new funding sources. The chapter argued that, rather than a compromise, blue economies are synergies among social justice, economic growth, and environmental sustainability. The future of the blue economy will need to bridge technology diffusion barriers, energize cross-sectoral policies, and localize and deepen constituencies in a bid to maintain the ocean as a sustainable source of global development within the SDGs framework. Coordination creates a strategic advantage for policymakers, entrepreneurs, and scholars in ocean prosperity and global health.

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