World Academy of Science, Engineering and Technology
International Journal of Marine and Environmental Sciences
Vol:17, No:07, 2023

Development of Sustainability Indicators for Marine Ecosystem Management: Initial Research Results in Vietnam

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Abstract : Among the 17 goals of the United Nations, 2030 Agenda for Sustainable Development, SDG 14.2 and SDG 14.4 under SDG 14 directly address the sustainable management, exploitation, and use of marine ecosystems. To achieve these goals, it is necessary to quantify the level of sustainable use of marine ecosystems, which have been paid attention for more than two decades in the direction of a quantitative approach by indicator and index development using methods of building and analyzing indicators and indices. With the employment of the above methods, over the past two decades, a number of marine ecosystems in Vietnam have been quantitatively evaluated for sustainable use for integrated coastal and marine management. Thirty indicators for sustainable use of marine ecosystems in the Northeast of Vietnam, together with indices, have been developed to assess mangrove, coral, and beach ecosystems. An assessment shows the following results. The mangrove ecosystem declined from sustainable to unsustainable uses in the period 1989-2007. The coral ecosystem in 2003 was at a sensitive point between sustainable and unsustainable uses. The beach ecosystem was evaluated with ten selected beaches in the period 2013-2018, showing that nine beaches are at a sustainable level, and one beach is at an unsustainable level. The Thua Thien-Hue coastal lagoon ecosystem assessed by 21 indicators of environmental vulnerability in 2014 showed less sustainability. The marine ecosystems around the offshore islands of Bach Long Vi, Con Co, and Tho Chu were tested to assess the level of sustainable use by the index of total economic value. The results show that these ecosystems are being used sustainably but are also at risk of falling to an unsustainable level (Tho Chu). The use of the environmental vulnerability index or economic value index to evaluate ecosystem sustainability only reflects parts of the function or value of the system but does not fully reflect the sustainability of the system.

Keywords : index, indicators, sustainability evaluation, Vietnam marine ecosystems
Conference Title : ICFMS 2023 : International Conference on Fisheries and Marine Sciences
Conference Location : Toronto, Canada
Conference Dates : July 10-11, 2023