

Ecological Policy Effectiveness and Citizen Participation as Determinants of Lake Eco-System Restoration Outcomes: A Quantitative Study of Lake Pandin Towards an Integrated Environmental Governance Framework

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Abstract

This study examined the effectiveness of ecological policies and citizen participation in the restoration of Lake Pandin, San Pablo City, Laguna, Philippines, and their influence on integrated environmental governance and ecosystem restoration outcomes. Grounded in Resilience Theory, Social Capital Theory, and Integrated Environmental Governance (IEG) Theory, the research aimed to assess policy effectiveness, the extent of citizen participation, restoration outcomes, and the relationships among these variables to develop a governance framework for sustainable lake management. A descriptive-correlational research design using a quantitative approach was employed. Data were collected from 150 purposively selected stakeholders. A structured survey questionnaire utilizing a 4-point Likert scale measured policy enforcement, financial support, regulatory compliance, citizen participation dimensions, restoration outcomes, and governance effectiveness. Descriptive statistics, correlation, and regression analyses were used to analyze the data. Findings revealed that policy effectiveness, citizen participation, restoration outcomes, and integrated environmental governance were all rated very effective. Citizen participation significantly influenced integrated environmental governance, while policy effectiveness alone was not a significant predictor. Community-based restoration activities and multi-stakeholder collaboration emerged as the strongest drivers of governance effectiveness and restoration success. Significant positive relationships were found among policy effectiveness, citizen participation, governance mechanisms, and ecosystem restoration outcomes. The study concludes that sustainable lake restoration requires participatory, collaborative, and integrated governance rather than policy implementation alone. An Integrated Environmental Governance Framework, together with a Unified Lake Management Plan, was proposed to strengthen coordination, stakeholder engagement, adaptive management, and long-term ecosystem resilience, offering a replicable model for freshwater ecosystem restoration.

Keywords: Ecological restoration, policy effectiveness, citizen participation, lake ecosystem, water quality, habitat rehabilitation, Integrated Environmental Governance, Lake Pandin, sustainability