



**Institute of Biodiversity and Environmental Conservation**

**Assessment of Environmental Policy Instruments along with Information Systems for Biodiversity Conservation in Bangladesh: A Case Study on Lawachara National Park**

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**Doctor of Philosophy  
2018**

Assessment of Environmental Policy Instruments along with Information Systems  
for Biodiversity Conservation in Bangladesh: A Case Study on Lawachara National  
Park

Md. Rahimullah Miah

A thesis submitted

In fulfilment of the requirements for the degree of Doctor of Philosophy

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Institute of Biodiversity and Environmental Conservation  
UNIVERSITI MALAYSIA SARAWAK  
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## **DEDICATION**

This dissertation is dedicated to my beloved wife, Advocate Motia Begum and daughters, Jorin Tasnim Parisha and Zarin Zahra Torsa, who were deprived of my presence during this research but remained my primary source of motivation and consistent moral supports throughout my higher study.

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## **ABSTRACT**

Biodiversity is in the core field of environmental issues. The problem of loss of biodiversity has been raised as a very important global issue for several years due to the lack of dynamic policies, technological application, institutional support and stakeholder engagement. This study aimed to assess the environmental policy instruments including legal, *in-situ* and informational instruments for conserving of biodiversity through primary and secondary data analysis at Lawachara National Park (LNP) in Bangladesh, as a test site. Quantitative and qualitative related conservation data were obtained through field observation, interviews, field surveys, focus group discussions and informal discussion while secondary data were obtained from diverse sources. Key conservation instruments provided at the LNP and its challenges with gaps in policies for national park management are highlighted. The study shows that biodiversity-related legislations amended was highest in Bangladesh for the period of 2010 to 2016 with policy weight scoring 96% of LNP. The growth of National Parks maximized at but in low digital conservation services within the same period. This study represents the impact of sensor networks on wildlife to be compared to larger and smaller animals in a bright and dark environment, facilitating the design and use of modular tags. These results reflect the importance of conservation of biodiversity that the State provides. A scalable, modular and adaptable solution has been proposed with limited peripheral network systems for biodiversity protection. The study assessed that the existing conservation policy instrument is inadequate for national park biodiversity protection in Bangladesh. In addition, the study identified issues that should be the main priorities for policy integration, implementation and improvement with technological array in order to foster LNP's management objectives for ensuring the sustainability of biodiversity conservation systems. The improvement of environmental policy instrument assessment has been sluggish, compared with several other conservation tools, and various performances

are still below par. Scientific knowledge is indispensable in national park biodiversity management but such knowledge is poorly identified. The input uniqueness of research findings of them should influence the assessment of the conservation policy instruments used to deal with them. If assessment of such instruments is allowed without due to reflection of information implicated, there is a huge jeopardy of recognizing only trifling impacts and near to the ground effectiveness. However, careful assessments can facilitate future research to make better conservation decision-making in the creation of environmentally fundamental and innovative instruments. Lastly, the study suggests future research trajectories of a new collaborative alternative approach to drive the methodological agenda and recommendations on ways to further incorporate the demanding bio-environmental conservation policy instruments towards national park biodiversity management.

**Keywords:** Biodiversity, Policy Instruments, Information Systems, Lawachara National Park, Bangladesh.

*Penilaian Polisi Instrumen Alam Sekitar dengan Sistem Maklumat Pemuliharaan Biodiversiti di Bangladesh: Kajian Kes di Taman Negara Lawachara*

**ABSTRAK**

*Biodiversiti adalah bidang teras dalam isu-isu alam sekitar. Masalah kehilangan biodiversiti telah dibangkitkan sebagai isu global yang sangat penting selama beberapa tahun disebabkan oleh kekurangan dasar dinamik, penerapan teknologi, sokongan institusi dan penglibatan pihak berkepentingan. Kajian ini menilai instrumen dasar alam sekitar termasuk instrumen undang-undang, in-situ dan maklumat untuk memulihara biodiversiti melalui analisis data primer dan sekunder di Taman Negara Lawachara (TNL), Bangladesh, sebagai tapak ujikaji. Data pemuliharaan kuantitatif dan kualitatif kajian ini diperolehi melalui pemerhatian lapangan, temubual, tinjauan lapangan, perbincangan kumpulan fokus dan perbincangan tidak formal, sementara data sekunder diperolehi daripada pelbagai sumber. Instrumen pemuliharaan utama yang disediakan di TNL dan cabaran yang dialami dalam dasar pengurusan Taman Negara telah diserlahkan. Kajian ini menunjukkan bahawa pindaan di Bangladesh untuk undang-undang berkaitan biodiversiti adalah tertinggi dalam tempoh 2010 hingga 2016 dengan penelitian dasar mendapat 96% TNL. Pertumbuhan Taman Negara pulapada tahap maksimum tetapi kurang dalam perkhidmatan pemuliharaan digital pada tempoh yang sama. Kajian ini mewakili kesan rangkaian sensor pada hidupan liar untuk dibandingkan dengan haiwan yang lebih besar dan kecil dalam persekitaran yang terang dan gelap, yang memudahkan rekabentuk dan penggunaan tag modular. Hasil Kajian ini mencerminkan kepentingan menyelaraskan pelan pemuliharaan biodiversiti yang disediakan oleh Bangladesh. Penyelesaian berskala, bermodul dan yang bersesuaian telah dicadangkan dengan sistem rangkaian periferi terhad bagi perlindungan biodiversiti. Penilaian kajian menunjukkan bahawa instrumen dasar pemuliharaan yang ada tidak mencukupi bagi perlindungan biodiversiti Taman Negara di Bangladesh. Di samping itu, kajian ini mengenalpasti isu-isu yang harus menjadi keutamaan bagi integrasi, pelaksanaan dan penambahbaikan dengan pelbagai teknologi untuk memupuk objektif pengurusan TNL*

*bagi memastikan kelestarian sistem pemuliharaan biodiversiti. Peningkatan penilaian instrumen dasar alam sekitar agak lembap, berbanding dengan beberapa alat pemuliharaan lain, dan pelbagai prestasi masih tidak boleh dipercayai. Pengetahuan saintifik tidak boleh diketepikan dalam pengurusan biodiversiti Taman Negara namun pendedahan terhadap pengetahuan saintifik tersebut sangat kurang. Keistimewaan input kedua-dua masalah dan penemuan penyelidikan ini mempengaruhi penilaian instrumen dasar pemuliharaan yang digunakan untuk menanganinya. Sekiranya penilaian terhadap instrumen tersebut dibenarkan tanpa gambaran informasi, maka risiko untuk mengenalpasti kesan-kesan akan meningkat ke tahap merbahaya. Dalam pada itu, penilaian yang dilakukan dengan teliti dapat memudahkan penyelidikan masa hadapan untuk membuat keputusan pemuliharaan yang lebih baik dalam penjanaan instrumen dasar alam sekitar dan inovatif. Akhir sekali, kajian itu mencadangkan trajektori penyelidikan masa hadapan dengan pendekatan alternatif kolaboratif baharu untuk memacu agenda metodologi dan cadangan tentang cara untuk terus menggabungkan instrumen dasar pemuliharaan biodiversiti yang menuntut ke arah pengurusan biodiversiti Taman Negara.*

**Kata kunci:** *Biodiversiti, Polisi Instrumen, Sistem maklumat, Taman Negara Lawachara, Bangladesh.*

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