1. PREFACE

The management of garbage arises as a key concern as we approach a new era characterised by growing urbanisation and technological innovation, especially in rural areas where resources and infrastructure are sometimes scarce. This thesis aims to investigate and suggest novel approaches for improving waste management techniques in rural areas, with a particular emphasis on Kurukali Village. The impetus behind this project is the obvious problem of careless waste disposal in Kurukali Village, where a lack of public trash cans has resulted in an unattractive build-up of waste in public areas and the environmentally dangerous habit of burning refuse. Our project aims to transform waste management in the hamlet by utilising GIS technology, in recognition of the pressing need for intervention. We go into great depth about our GIS-based approach in these pages, including our methodology and study outcomes. By using weighed overlay techniques and the Analytical Hierarchy Process (AHP), we carefully evaluated and determined the best places for garbage bins to ensure efficiency and maximum coverage. Additionally, our analysis helped us identify highly suitable areas for waste sites that were positioned to minimise dangers to the local population's health and environment. As a part of our ongoing quest for innovation, we also looked at performing route analysis using open-source tools to make sure that waste was collected in the village efficiently and effectively. This thesis is the result of months of intensive investigation and analysis, and it also serves as evidence of our steadfast dedication to building resilient and sustainable communities. We sincerely hope that the information and suggestions provided here will act as a beacon of hope for communities, stakeholders, and legislators as we work together to create a more environmentally friendly and greener environment for Kurukali Village as well as beyond.