



The Proceedings of 2nd Environmental Management Undergraduate Research Symposium

"Staging Young Researchers for Environmental
Management"



EMURS 2022

25th November 2022

Department of Environmental Management
Faculty of Social Sciences & Humanities
Rajarata University of Sri Lanka

Second Undergraduate Research Symposium
Department of Environmental Management
Faculty of Social Sciences and Humanities
Rajarata University of Sri Lanka

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ISSN 2550-2646

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Cover design by: Ms. ALWM Perera

Page layout by: Ms. ALWM Perera

Published by: Department of Environmental Management, Faculty of Social Sciences and Humanities, Rajarata University of Sri Lanka, Mihintale, Sri Lanka.

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Message of the Vice Chancellor

Rajarata University of Sri Lanka



As the vice-chancellor of the Rajarata University of Sri Lanka, I am pleased to convey this message for the second undergraduate research symposium of the Department of Environmental Management, Faculty of Social Sciences & Humanities, Rajarata University of Sri Lanka - EMURS RUSL 2022.

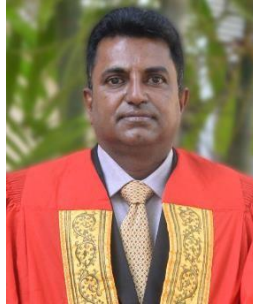
I would like to congratulate the Department of Environmental Management of the Faculty of Social Sciences & Humanities, the Rajarata University of Sri Lanka, for their dedication and incredible determination in putting this symposium together staging young researchers in the field of Environmental Management to share the research findings simultaneously providing the necessary inputs for a better world. I would also like to thank all who have contributed to EMURS RUSL 2022 with their research findings and all members of the organizing committee, academic staff members, and the students for their contribution to the success of this event.

Professor (Mrs.) GAS Ginigaddara
Vice – Chancellor
Rajarata University of Sri Lanka

Message of the Dean

Faculty of Social Sciences and Humanities

Rajarata University of Sri Lanka



It is with great pleasure I send this message for the proceedings of the Second Undergraduate Research Symposium of the Department of Environmental Management, Faculty of Social Sciences & Humanities, Rajarata University of Sri Lanka - EMURS RUSL 2022. I think the symposium will be supportive to enhance the research culture among the undergraduate of the Faculty of Social Sciences & Humanities.

In addition, organizing the symposium will help students deal with the world more brightly and develop their soft skills. I hope this Environmental Management Undergraduate Research Symposium will generate timely, valuable new ideas and concepts for various issues in the field of Environmental Management.

Last but not least, I would like to thank all who have contributed to EMURS RUSL 2022 and wish the Second Undergraduate Research Symposium - Department of Environmental Management every success.

Professor D.T. Mendis
Dean – Faculty of Social Sciences and Humanities
Rajarata University of Sri Lanka

Message of the Symposium Chair

**The 2nd Environmental Management Undergraduate Research Symposium
Department of Environmental Management**



As the Head, Symposium Chair - EMURS RUSL 2022, it gives me great pleasure to convey this message for the proceedings of the Second Undergraduate Research Symposium of the Department of Environmental Management, Faculty of Social Sciences & Humanities, Rajarata University of Sri Lanka - EMURS RUSL 2022.

Research can be defined as the systematic activity combined with basic and applied sciences, aiming to discover solutions or create new knowledge for society. Regarding this aspect, universities play a key role in training young undergraduates to conduct research effectively. Under this aim, the Department of Environmental Management organized its Second Undergraduate Research Symposium to develop the research culture among the undergraduates and organized the research symposium to develop the soft skills of the undergraduates in the Department of Environmental Management, Faculty of Social Sciences & Humanities, Rajarata University of Sri Lanka.

I hope this symposium will open a new way in the Department where young researchers can improve their research and soft skills. I take this opportunity to thank all members of the symposium organizing committee for their great effort to succeed in this event. I hope this attempt will gain more energy and continue in the following years.

Professor Manjula Rangalage
Head, Symposium Chair - EMURS RUSL 2022

Keynote Speech

The 2nd Environmental Management Undergraduate Research Symposium
Department of Environmental Management



Dr. Sisira Withanachchi

**Chair - Water Quality Task Force
International Water Resource Association**

**Lead Facilitator SDG 6: Water &
Sanitation UNLEASH India 2022**

To be a new-born researcher in the environmental management and governance spectrum

“...successful research doesn't depend on mathematical skill or even the deep understanding of theory. It depends to a large degree on choosing an important problem and finding a way to solve it, even if imperfectly at first”

— **Edward O. Wilson, Letters to a Young Scientist**

Everybody starts as an amateur. People are not born as experts. – Prof. Dr. Ranjan Parekh

As you all are looking forward to entering the scientific world as a researcher in the field of environmental management and governance, you have to have a mission and a vision. The mission is to produce new knowledge and discover new horizons in the subject fields. The vision is to protect the environment and lead to a sustainable world. Some of you have this misperception that researchers can work or must work at a university. Such perception will lead to elude most of your future ambition. Another hindrance in Sri Lanka is that after your undergraduate, there are few options or interests to continue with a postgraduate degree. Another problem encounters in the final year thesis. If you do not have a chance to conduct at least small/micro-level research in your subjects, you have a limited chance to learn fundamental tools and approaches, simply an enthusiasm, for doing big research at the end of your degree.

In the field of environmental management and governance, there are plenty of research thematic areas, questions, and problems. Those are updated regularly. The research can be expanded from your doorstep to the global level. It can be in the library and beyond your comfort area. To find a research theme, you must do some prework. It is reading..... reading.... reading. You need to read books, journal articles, newspapers, and columns. I highly recommend reading this literature from different languages, English is a must. With that, you are able to read a lot of journals and books and will you reach to vast knowledge.

Where do you have to start? - As an undergraduate, the basic task that you are given for an assignment would be the ideal start. You can read and do a small research to get more insight about the area. But always, think beyond what the text said to you. By developing critical thinking, your ability to question the context will increase the potentiality for discovering more facts, perspectives, and undercover areas.

Few principles/areas that you need to follow.

- Participation and work with the team
- Eager to learn
- Interest in Improving skills in reading, scanning, analyzing, and summarizing
- Habit to write
- Thinking beyond the out of the box
- Connecting factors
- Catalyzing factors
- Learning the science of the science
- Combining the different subjects' areas and being able to think across

There are few or no options as you an armature to publish your paper or your text. Do not worry. You can use it as the first step, writing a book or journal article review. Many national and international journals welcome your review. This is a good starting point. To write a critical review, important to read the book or the journal article thoroughly and with endurance. You must not hurry concluded. After writing the review, please share it with your colleagues and staff members. Ask for their critique for this critique.

Another responsibility is going to you as a young researcher as well as the teaching staff at your university. There should be a research paper-based examination system with some of the traditional writing examinations. This allows you to SOL – Self Organized Learning System. Universities in Sri Lanka needs to increase this possibility for undergraduate as well. With that, you can take part in group work, learn yourself, organize your theme, and do research. Of course, you need to have knowledge of the fundamental theories of your subject area, this is part of your teaching modules.

After your graduation, I highly recommend joining some research work and institutes and even doing postgraduate in Sri Lanka or another country. This will give your more chance to engage with the latest knowledge. In this technical era, things for research are at your doorstep. Google..... Yes. The Internet is good. This makes life easy. However, do not trap it. Before you use such a platform, it is important to use traditional libraries and do fundamental field research. There, Internet will be a useful tool. “Copy and Paste” and Plagiarism – must be forbidden words and actions to you. Do not copy and paste without acknowledging the previous work. Respect others who did the work first. You need to learn about citation systems as well.

Great.... You are ready to go

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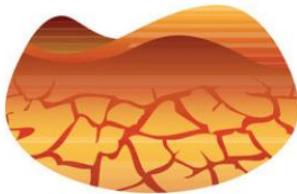
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DISASTER MANAGEMENT



LANDSLIDE MANAGEMENT AS AN ENVIRONMENTAL HAZARD: A CASE STUDY IN WALAPANE DIVISIONAL SECRETARIAT OF NUWARAELIYA DISTRICT, SRI LANKA

L.G.N.P. Kumari

Abstract

A landslide hazard is a geological phenomenon. It affects for natural and human environment directly. Therefore, landslide hazard zone identification is essential to manage the impacts of landslides. The research is very important to find the solutions for landslides using GIS. The general objective of the study was to assess strategies for managing the impacts of landslides in the Walapane Divisional Secretariat area. The specific objectives were developing the landslide risk map, identifying the impacts of landslides, and proposing suitable landslide management strategies for the study area. The primary and secondary data were used to achieve the objectives. 50 families were used as the sample. Qualitative and quantitative data analysis methods were used to analyze the data. The Pairwise Matrix method and Overlay method of GIS data were used to create the landslide susceptibility map based on the four causative factors for a landslide. According to the results of the study, the landslide susceptibility map classifies the area into three classes of landslide susceptibility zones such as moderate, high, and very high risk. The impacts landslides are affected by three main sectors environment, society and economy. These impacts are increased with unawareness of landslides. It is 76 percent level. Therefore, the human death rate is about 4-10 levels per year in some GNs. The economic impact of landslides is changed with the monthly income of families. Therefore, sustainable structural and non-structural landslide mitigation strategies are very important to manage the environmental and socioeconomic impacts of landslides. The GIS is the main guide to locating these sustainable strategies in suitable locations. And, the concepts of Sustainable Attitude Improvement and Environmental Literacy are better ways to achieve a Win-Win situation in managing future environmental hazards.

Keywords: Landslide, Hazard, GIS, Sustainable Strategies, Management

AN ANALYSIS OF SOCIOECONOMIC ENVIRONMENTAL IMPACTS OF LANDSLIDES: A CASE STUDY IN NUWARA - ELIYA DISTRICT OF SRI LANKA

M.S. Sandeepani

Abstract

At present, landslide hazard management has been given an important role. Many approaches have been used to study landslides. Kothmale area is frequently prone to landslides. Therefore, the major objective of this research was to find appropriate landslide management strategies in the Kothmale area. The specific objectives of this research were to identify the risks of landslides, analyze the socioeconomic and environmental impacts of landslides, and find appropriate landslides mitigation strategies. Questionnaires, field observation, and interviews were used to collect primary data. Journal articles, Books, and Magazines were used to collect secondary data. Data were analyzed using mix method. The results highlighted that landslides are frequently occurring in the Kothmale area. 40% of the female population and 60% of the male population are vulnerable to landslides. 40% of the total land area is at a high risk of the landslide-prone area. There have been about 123 landslides in the last 10 years and 1153 families have been displaced. The main cause of the landslide is informal land use. Loss of life, injuries, loss of residential area and interruption of transportation, and decline of the economy were identified as socioeconomic impacts. Loss of natural and human habitats, destruction of the built landscape, and destruction of the river ecosystem were identified as environmental impacts. Most landslides occur during April, May, October, and November. According to the questionnaire given, the social impact was confirmed as 36% and the environmental impact as 64%. Thus, they have caused significant social and environmental impacts due to landslides in the Kothmale area. Thus, Disaster Management Cycle and its strategies can be used to reduce the socioeconomic and environmental impacts of landslides. Landslides mitigation strategies are landslides hazard mapping, installation of alarm systems, creating covered areas, installation of notification equipment, preparation of life support material, organizing and activating police and ambulance services, providing disaster victim needs, compensation for dead people or life insurance, compensation for injured people, etc.

Keywords: Landslide, Environmental Impacts, Mitigation Strategies, Disaster Management Cycle

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මුඛ්‍ය පද: උපද්‍රවය, ගංවතුර, බලපෑම, ගංගා ද්‍රෝණිය

FLOOD RISK MITIGATION STRATEGIES IN KALUTARA DISTRICT OF SRI LANKA

S.A.B.S. Sandeepanee

Abstract

Flood is one of the most frequent natural hazards in Sri Lanka. The seasonal flood hazard in Sri Lanka has become a calamitous event with items of impact population, property, and livelihoods. Kalutara district is one of the most flood-prone districts situated in the lowland wet zone area. Millaniya Divisional Secretariat is one of the most flood-prone Divisional Secretariats in the Kalutara district. This study aimed to find strategies that can be used to reduce the risk of flood in the Millaniya Divisional Secretariat area. Primary and Secondary data were used for this study. Questionnaires, field surveys, and key informant interviews were used to collect primary data. Research papers, published books, and various institutional data were used as secondary data. The sample was selected using a random sampling method. Data was analyzed using quantitative analysis methods. Study area was Millaniya Divisional Secretariat in Kalutara District. Kalutara district disaster map was used for flood occurrence analysis and shows the obtained results. There are a high probability of flooding in Galpatha west, Uduwara north, Uduwara west, Uduwara east, Uduwara south, Pathakada, Mahadurupitiya, Delgoda, Yatawara north, Yatawara south and Begamuwa Thaladhitiya Gramaniladari divisions in Millaniya Divisional Secretariat. The water level in the study area rises to 10 feet due to its low-lying location. Out of 55 houses selected in the study area, 29 houses are destroyed by flood. Apart from that, the damages are infectious diseases, crop damage, and damage to animal husbandry. Moreover, 75% suffered from infectious diseases. There are 49 families following flood preparedness steps. If living in a flood plain or other low-lying area near a body of water with a chance of flooding, it is vital for having a plan in case of emergency. Flooding preparedness is crucial not just in the event of a family evacuation, but to protect our valuables and minimize permanent water damage. We can take long-range planning and short-term action to be ready in case of disaster. According to the results, artificial levees can be built in areas more prone to floods. The “Kalu Ganga” as well as many other small canals flow in the study area. Small canals overflow even after a short rain. Therefore, successful results can be obtained by using this method. Also, flood control can be done by constructing such levees on both sides of the river for the places where it flows parallel to the Kalu River road. Sandbags can also be piled up to prevent flooding as well as to create a barrier to flood-prone areas. Building a flood-resistant plan in house construction, using the floodwall, and using temporary flood barriers are useful to the mitigation of flood damage in this area.

Keywords: Flood, Hazard, Mitigation, Impact, Result

ENVIRONMENTAL MANAGEMENT



AWARENESS AND KNOWLEDGE ON SUSTAINABLE DEVELOPMENT GOALS AMONG UNIVERSITY STUDENTS IN SRI LANKA

J.K.M.R. Jayasinghe

Abstract

The Sustainable Development Goals are a universal call with 17 goals. Assessing awareness and knowledge of the Sustainable Development Goals (SDGs) is critical to supporting any SDGs implementation process. University students should have a high level of awareness and knowledge as agents of change. The objective of this research is to assess the level of awareness and knowledge of university students (SDGs) in Sri Lanka. It also investigates the obstacles and problems affecting it and suggests solutions. In this research, 2 samples were selected. 150 students studying at five selected universities out of 17 universities in Sri Lanka have been considered as the first sample. 40 education experts were selected as the second sample but only 10 of them participated. Therefore, the second sample is considered to be 10 experts. A random sampling method was used to select both samples. The data were collected through a structured online questionnaire and analyzed quantitatively. According to the findings, 56% of the students had a low level of knowledge, but 64% were very aware of the SDGs. Furthermore, Correlation analysis revealed that faculty variables such as gender Participation in Organizations and Accessibility to information have influenced the student's level of knowledge. But, except for Faculty and accessibility of information, variables such as Gender Participation in organizations, have influenced the level of Awareness. The most important finding here is that female student (50% >) have a high level of knowledge and awareness. As 60% of experts agree, out-self issues such as traditional education systems, and lack of separate courses have a significant impact on low levels of knowledge. But the impact of social media has helped raise the level of awareness of SDGs. But, changes in the mental, attitudes of students as inner-self issues have affected the decrease in knowledge and awareness indirectly. Therefore, introducing the new scope at the university level, introducing a National Framework for providing quality education on SDGs, and social media platforms should be encouraged to increase the level of knowledge and awareness about the SDGs.

Keywords: Sustainable Development Goals, Knowledge, Awareness, Inner-self Issues, Out-self Issues

**ආර්ථික වශයෙන් හානි කරන රිලවුන් ශ්‍රී ලංකාවේ මිනිස් ජනාවාස වෙත
ආකර්ෂණය වීමට හේතු සහ එයට පිලියම් සාහිත්‍යය මූලාශ්‍ර ඇසුරෙන් විමර්ශනය**

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මානව පරිණාමයේ මුල් කාලයේ පටන් මිනිසා හා වනජීවීන් එකම භූමියක ජීවත්වීමේ දී එකිනෙකා අතර ගැටුම් ඇතිවිය. කොටියන්, වඳුරන්, අලියන් සහ වලසුන් ආදී වනජීවීන් හා මිනිසා අතර අන්‍යෝන්‍ය ගැටුම් ලෝකය පුරා සිදුවෙමින් පවතියි. ප්‍රමාදා විශේෂයට අයත් රිලවා හා මිනිසා අතර ද මෙරට මෙන් ම ගෝලීයව විවිධ ගැටුම් දක්නට ලැබේ. ඒ බැවින් මෙම අධ්‍යයනයේ ගැටලුව නම් ශ්‍රී ලංකාවේ රංචු වශයෙන් රිලවුන් මිනිස් ජනාවාස වෙත ආකර්ෂණය වී ඒවා කොල්ලකෑම, කෘෂිකාර්මික හානි දේපළ හානි සිදු කිරීම හා සපාකෑම පහරදීම් මගින් ජලහීනිකා වැනි වෛරස ලෙඩ රෝග මිනිසාට සම්ප්‍රේෂණය කිරීමයි. ලංකාවේ ශ්‍රී ආහාර සුරක්ෂිතතාවය හා රටේ ආර්ථිකයට හානිදායකව ඇති කාලීන කතිකාවට ලක්වන මෙම ගැටළුවේදී රිලවුන් මිනිස් ජනාවාස වෙත ආකර්ෂණය වීමට හේතු හඳුනාගැනීම මෙම විමර්ශනයේ අරමුණයි. ගැටළුව හා සම්බන්ධ තොරතුරු සපයාගත හැකි පෙර පර්යේෂණ පත්‍රිකා, ලිපි පෙළපොත් යන සාහිත්‍ය මූලාශ්‍ර වලින් ද්විතීක දත්ත ලබා ගනිමින් විමර්ශනය සිදු කරන ලදී. සෘතු වෙනස්වීම්, ජල මූලාශ්‍ර හා වනාන්තර හෙළිකොට මායිම් ආශ්‍රිතව මිනිසුන් නව ඉදිකිරීම් කර ජනාවාසකරනයෙන්ද, රිලවුන්ගේ වාසස්ථාන ආහාර හා ජලය අහිමිවීමත්, සර්වභක්ෂක රිලවුන්ගේ පුළුල් භෝජන රටාව පහසුවෙන් මිනිස් ජනාවාස ආශ්‍රිතව සපයා ගැනීමට හැකිවීමත්, පුළුල් ආහාර රටාව නිසා හොඳ පෝෂණයක් අත්කර ගන්නා සෞඛ්‍ය සම්පන්න මොවුන්ගේ ප්‍රජනනයෙන් වැඩිවෙන රිලා ගහනයට වනාන්තර ආශ්‍රිතව ආහාර හා ජීවත් වීමට ඉඩකඩ සීමා වූ විට මිනිස් ජනාවාස වෙත ආකර්ෂණය වන අතර සංචාරක ව්‍යාපාරයේ දියුණුව සමඟ ආහාර අපද්‍රව්‍ය නිසි ක්‍රමවේදයකින් තොරව බැහැර කිරීමත් මිනිසුන් නොදැනුවත්වම බොහෝ ආහාර අපද්‍රව්‍ය ගෙවත්තට දැමීමත් ආදී කරුණු විමර්ශනය කළින් හඳුනාගත් මිනිස් ජනාවාස වෙත රිලවුන් ආකර්ෂණය කරගන්නා හේතූන් ය. විමර්ශනයෙන් මිනිසාගේ දැනුවත් හා නොදැනුවත් ක්‍රියාකාරකම් හේතුවෙන් ආහාර සපයා ගැනීමට රිලවුන් ජනාවාස හා ගොවිබිම් වෙත ආකර්ෂණය වී කෘෂිකාර්මික හා දේපළ හානි සිදුකරන බව නිගමනය විය. වනජීවී වාසස්ථාන වලට හානිදායක ඉදිකිරීම් හා වනාන්තර හෙළි කිරීම් වළක්වාගෙන ගෘහාශ්‍රිතවත් හෝටල් හා සංචාරක කර්මාන්තය ආශ්‍රිතවත් ඉවත දමන ආහාර අපද්‍රව්‍ය නිසි ක්‍රමවේදයකට බැහැර කිරීමත්, ගැටලුවෙන් පීඩාවිදි ජනතාවට රිලවුන් ජනාවාස සහ ගොවිබිම් වෙත ආකර්ෂණය වීම වළක්වා ගැනීමට අවශ්‍ය දැනුවත්භාවයක් ලබා දීමෙනුත් කෘෂිකාර්මික හා ආර්ථිකව රිලවුන්ගෙන් වන හානි වලක්වා ගැනීමට ගත හැකි පිලියම් ලෙස පෙන්වා දිය හැක.

මූල්‍ය පද: රිලවා, ජනාවාස, ආකර්ෂණය, හානි, ආහාර

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**ශ්‍රී ලංකාවේ නූතන සත්ත්ව උද්‍යාන තුළ වනජීවී සංරක්ෂණය සහ කළමනාකරණයට තාක්ෂණය
භාවිතයෙන් ලබාගත හැකි ප්‍රතිලාභ සාහිත්‍යය මූලාශ්‍ර ඇසුරෙන් විමර්ශනය**

එස්.එච්.එස්. ඉන්දුමාල්

සංක්ෂිප්තය

සතුන් සඳහා ඔවුන්ගේ ස්වභාවික වාසස්ථානයට හැකි තරම් සමීප ලක්ෂණ නිර්මාණය කිරීම නූතන සත්ත්ව උද්‍යාන වල ප්‍රධාන ලක්ෂණයක් ලෙස හඳුනා ගැනිය. ඇමරිකාව, එක්සත් රාජධානිය, චීනය, බ්‍රසීලය වැනි රටවල මෙවැනි උද්‍යාන නිර්මාණය වී ඇති අතර එම සත්ත්ව උද්‍යානවල ඉලක්ක වන්නේ සතුන් ප්‍රදර්ශනය පමණක් නොව වර්ෂා රටාවන් විශ්ලේෂණය, සංරක්ෂණය හා ප්‍රජනනය සහ අධ්‍යයනය කිරීමයි. ශ්‍රී ලංකාවේදී ඒ ආකාරයේ ලක්ෂණ සහිතව නිර්මාණය වූ සත්ත්ව උද්‍යාන ලෙස රිදියගම සහ පින්තවල හඳුනා ගැනීමට පුළුවනි. වාසස්ථාන විනාශ කිරීම, නීති විරෝධී වනජීවී වෙළඳාම, ආක්‍රමණශීලී විශේෂ සහ රෝග පැතිරීම සහ වනජීවී වාසස්ථාන වල ස්වභාවය වෙනස් කරන පාරිච්ඡේද්‍ය දේශගුණයට මානව බලපෑම වැනි විවිධ ආකාරයේ මිනිස් ක්‍රියාකාරකම් වලින් වනජීවීන් තර්ජනයට ලක්වීම ගැටළු වේ. තාක්ෂණයේ දියුණුව, සතුන් ඔවුන්ගේ වාසස්ථාන සහ ඔවුන්ට මුහුණ දිය හැකි තර්ජන වඩා හොඳින් අවබෝධ කර ගැනීමට, සත්ව පරිසරයන් කළමනාකරණය සහ සංරක්ෂණය සඳහා තාක්ෂණය භාවිතා කිරීමේ ප්‍රතිලාභ පිළිබඳ විශ්ලේෂණයක් මෙම අධ්‍යයනයේ අරමුණු වේ. ගැටළුවට තොරතුරු ලබා ගැනීම සඟරා, පෙර පර්යේෂණ සටහන්, ලිපි පොත්, අන්තර්ජාල තොරතුරු වැනි සාහිත්‍යය මූලාශ්‍ර භාවිත කරමින් ද්විතීක දත්ත ලබාගනිමින් විමර්ශනය විය. වඳ වීමේ තර්ජනයට ලක්ව ඇති වන ජීවී විශේෂ සංරක්ෂණයට ප්‍රධාන ප්‍රවේශ දෙකකි. පළමු වැන්න ඔවුන්ගේ වාසභූමිය තුළ විශේෂ ආරක්ෂා කිරීම, දෙවනුව තනි තනි විශේෂයන් අභිජනනය කිරීම සහ රැකබලා ගැනීම වේ. තාක්ෂණික යෙදුම් භාවිතය යටතේ කැමරා උගුල්, චෝර්න තාක්ෂණය, ධූමි තාක්ෂණය, සතුන්ගේ සෞඛ්‍ය මට්ටම් හා වර්ෂාවන් විශ්ලේෂණය කළ හැකි නවීන තාක්ෂණික උපකරණත්, වන්දිකා ඡායාරූපකරණය සහ සහයක අභිජනන තාක්ෂණය භාවිතය. මෙහි ප්‍රතිලාභ කිහිපයක් ලෙස සතුන්ගේ සෞඛ්‍යය ගැටළු පහසුවෙන් හඳුනා ගැනීමට හැකිවීම, ඉරියව් හා හැසිරීම් අධ්‍යයනයන් සත්වයාගේ සාමාජීය භෞතික පරිසරය තේරුම් ගත හැකි වීම, කාලය ශ්‍රමය සහ පිරිවැය කාර්යක්ෂම බවින් වැඩි වීම පෙන්වා දිය හැකිය. ඉතිරි ගහනය අධ්‍යයනය කිරීම සඳහා ඒවායේ වටිනාකම උපරිම කිරීම සඳහා ස්ථානීය සහ බාහිර ප්‍රවේශයන් දෙකෙහිම කාර්යක්ෂමතාවය අවබෝධ කර ගැනීමේ බරපතල අවශ්‍යතාවයක් පවතී. එසේම සත්වෝද්‍යාන ඔවුන්ගේ අමුත්තන්ගේ සංරක්ෂණ ආචාර ධර්ම වැඩි කිරීම සඳහා අර්ථවත් මෙවලම් විය හැකි බවට නිගමනයට එළැඹිය හැකිය.

මූලාසනය: සත්ත්ව උද්‍යාන, තාක්ෂණය, සත්ත්ව සංරක්ෂණය, සත්ත්ව සුභසාධනය, වාසස්ථාන

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STUDY ON THE BARRIERS TO IMPLEMENTING SOLAR ENERGY SYSTEMS IN HOUSEHOLDS: THE SOCIAL PERCEPTION OF SOLAR ENERGY UTILITY IN KURUNEGALA DISTRICT

S.M.M.R.L.K. Bandara

Abstract

The world is currently experiencing a severe energy crisis. However, the amount using fossil fuel needed for energy generation is rapidly increasing. Burning fossil fuel causes a variety of environmental problems, including global warming. Now it's the time to move toward long-term solutions to reduce these environmental issues. Renewable energy consumption is the most effective solution to the energy issue. However recent interest in the area, solar energy is still not utilized in residential buildings. The barriers to implementing solar energy in residential buildings were identified in this research from the perspective of homeowners in the Northwestern province of Sri Lanka. This paper identified the barriers to implementing solar energy in household usage with the social perception of solar energy utilization followed by a ranking and factor analysis of data from a questionnaire survey. The collected data through a questionnaire survey were ranked using the Relative Important Index (RII). A hundred responses were gathered from residents in the Northwestern province of Sri Lanka. The results of the survey revealed that the most important barriers to solar system adoption are financial constraints, followed by a lack of solar suppliers in the region and a lack of government incentives. And a limited knowledge of how to use solar electricity. The findings of this study could be applied to support suppliers and industry stakeholders in identifying important barriers, as well as the government in developing legislation to promote solar power generation in residential buildings. I recommend that the government can give incentives to install solar panels and easy credit payments to encourage homeowners. Moreover, various awareness programs can be scheduled to give more details to the respective homeowners.

Keywords: Social Perception, Renewable Energy, Solar Energy, Household, Northwestern Province

PERCEPTION LEVEL AMONG THE YOUTH TOWARDS THE CHANGES IN TOP MANAGEMENT LEVEL DECISIONS ABOUT THE ENERGY CRISIS IN SRI LANKA

P.R.B.W. Dhananjaya, B.L.D.W.K. Martinus, and W.W.S.D. Fernando

Abstract

An energy crisis is one of the most significant problems all over the world. Rapid population growth and demands for resources are affected by the energy crisis. Sri Lanka is also affected by this energy crisis with inflation from 2022 February to the present day. The energy crisis has affected every sector in Sri Lanka. This study addresses the question: of how perception levels among the youth arose towards the changes that needed to happen in top management-level decisions about the energy crisis in Sri Lanka. Specific objectives of the study were to identify views about the improvement of the public transport system as perceived by the youth and to identify the awareness level of the youth about the information provided by top-level management in the Ministry of Power and Renewable Energy. The target population in the study was the youth in Sri Lanka from a general perspective and the sample size was 50 comprising youth participants from urban, semi-urban, and rural areas of the country. Data collection was conducted using a semi-structured questionnaire and in-depth interviews. Quantitative data were analyzed by descriptive analysis and qualitative data were analyzed by thematic analysis. The main findings of the study were: the majority of the youth community points out that the current energy crisis is due to the failure to introduce and properly promote renewable energy systems. 60.6% of the youth were moderately satisfied with public transportation. 84.8% of the youth claimed that the top-level management contribution is not enough for finding solutions to this energy crisis. From these findings, it is concluded that the existing natural resources of Sri Lanka and the prevailing climatic conditions in Sri Lanka should create new energy sources like biodiesel, solar energy, and electrical grids using the knowledge of youth and top management. As recommendations, it is better to create a healthy transport system and responsible authorities should take action to educate the people about energy conservation.

Keywords: Energy, Crisis, Youth, Perception, Management

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PROMOTION OF KITHUL TREE’S RELATED, ECO-FRIENDLY PRODUCTS AS A LOCAL NATURAL PRODUCT RESOURCE: A CASE STUDY IN KALAPITIYA GN DIVISION IN KOTHTMALE DS

M.W.J.N. Munasinghe

Abstract

Kithul (*Caryota urens*), is a local natural resource, which provides multidisciplinary benefits and it is a unique plant that can be contributed to the conservation of the environment in an eco-friendly manner. Lack of interest in sustainable non-food products is a major problem identified in the Kithul industry. The main objective of this study is to contribute to environmental conservation by promoting eco-friendly products associated with the Kithul tree, as a local natural resource. The study was conducted based on primary and secondary data sources such as a detailed literature review, informal interviews with individuals, field observations, and samples collected from Kithul plant materials. The study area was selected as the Kalapitiya Grama Niladhari Division of the Kotmale Divisional Secretariat, where the Kithul industry exists. The study was conducted using the Judgment Sampling Method under the Non-probability sampling method. This study mainly contributed to the introduction of new eco-friendly products (Garbage bins, Daranuwa, wall decoration). As a result of the study, it was identified that these eco-friendly products contribute to the sustainable reuse, reduction, and recycling of natural resources in environmental management and it can be encouraged as a sustainable solution to prevent environmental damage caused by plastics. The new generation should contribute to promoting the kithul-based eco-friendly products and a suitable market for eco-friendly value-added products in rural areas should be created as a priority and the need for such new research should be highlighted.

Keywords: Kithul, Eco-friendly Products, Sustainable, Environmental, Natural Resources

ENHANCING ECO-TOURISM: A CASE STUDY OF YATIMADURA IN WALAPNE

S.A.I. Nadeeshani

Abstract

The tourism industry is a big contributor to the eradication of poverty in rural development. Eco-tourism can make socio-economic development in rural while protecting the valuable natural environment and cultural heritage. Recognition of the important contribution that tourism could make toward socioeconomic development is especially poverty reduction and conservation of natural and cultural heritage. Moreover, rural tourism has an important development trend, and it is also an important engine to promote rural revitalization. The focus of rural eco-tourism is a resource point. The general objective of this research is to promote the sustainable development of the socio-economic sector in the Yatimadura area through eco-tourism. To develop Walapane as a famous tourist area, protect the natural environment through sustainability. Develop Ytimadura village as a self-sufficient area, promote villagers' production and give the necessary market for their product and reduce poverty among villagers of Ytimadura. Both primary and secondary data had been used for this study. Primary data collection was based on field observation and questionnaires using 20 people. For this, simple random sampling had been used. Secondary data consisted of information from reports, articles, and internet websites. This research will be very useful and important for this village as well as Sri Lanka, and also we can get real benefits by using this project. According to the study, there is a positive attitude among the people who live in Yatimadura village toward their economy. Eco-tourism has become a new trend in Sri Lanka. Sri Lanka has a higher eco-tourism potential.

Keywords: Eco-Tourism, Tourism, Poverty, Rural Development

STUDY ON THE ENVIRONMENTAL DEGRADATION CAUSED BY THE USE OF MODERN TECHNOLOGIES IN PADDY CULTIVATION: A CASE STUDY IN GALIGAMUWA DIVISIONAL SECRETARIAT

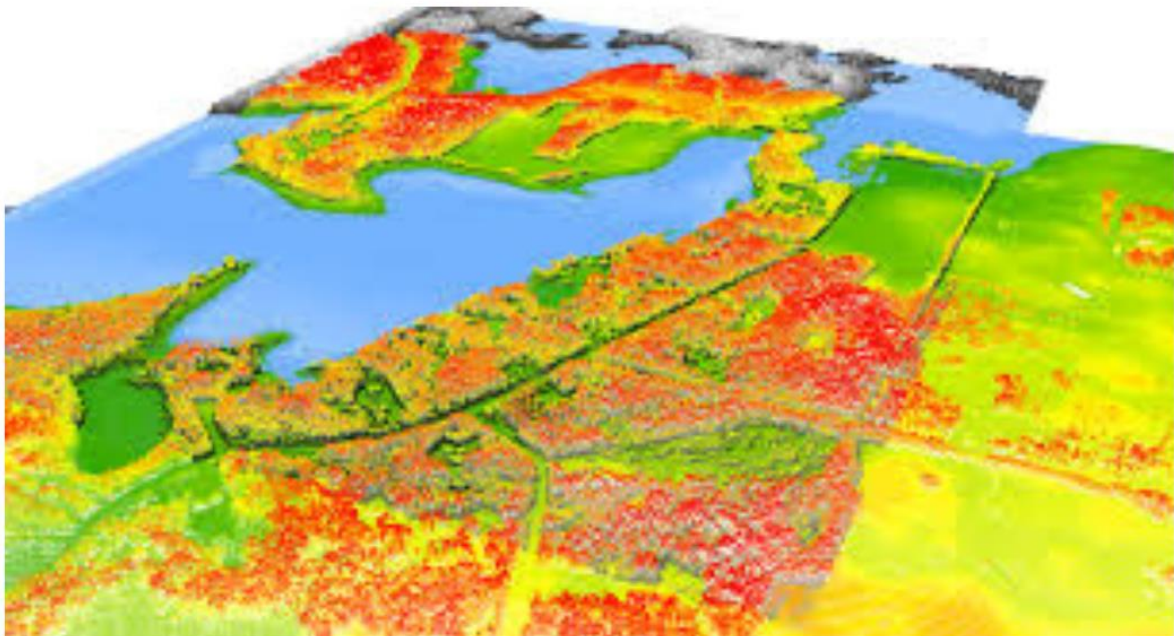
J.G.E.N. Piumali

Abstract

Though the traditional methods were used, most farmers today, use new methods to have a good yield and to save time and labor. As a result of using new technological methods in paddy cultivation in the world recently, the effect caused to the environment is massive. This research aims to provide a simple analysis of environmental damage, caused by the new methods in paddy cultivation. This research has been done by studying the new technological inputs that are used in paddy cultivation and measures that should be taken to minimize the effects of soil, water, people, and biodiversity has been done basically by using primary and secondary data. Random sampling was followed in the selection of farmers and 60 farmers in the considered Grama Niladhari Divisions areas were selected. The pH, potassium, phosphorous, organic matter, and conductivity of the soil samples were analyzed. The data was analyzed by Microsoft excel. They use techniques like machinery, new hybrid seeds, chemical fertilizers, pesticides, and herbicides in paddy cultivation. In this research, the result shows approximately the same results in Makuddala and Helamada GN divisions as 7.7pH, EC 0.16 ds/cm, P-22mg/g, K-200mg/g, and organic material 2.7%. In this area, the environment is degraded by increasing the salinity of water, growing algae in water resources, soil degradation, changing the PH value, decreasing carbonic elements in the soil, destruction of microbes and nonmicrobial, and extinction of environmentally friendly trees and animals. The research reveals that the environmental problems become worse due to the usage of new technological inputs, in Sri Lanka's paddy cultivation. In this study, the researcher suggests the use of organic fertilizers, local rice varieties, and traditional methods to reduce the environmental impact.

Keywords: Environmental, Degradation, Modern Technology, Paddy Cultivation, Traditional Methods

GEOGRAPHIC INFORMATION SYSTEMS & REMOTE SENSING FOR ENVIRONMENTAL MANAGEMENT



CHANGE OF SINHARAJA RAINFOREST COVER IN SRI LANKA FROM 2014 TO 2022

**L.M.K.G. Pitawala , J.P. Madanayaka, H.A.N.A. Jayalal, I.S.L. Jayaranga, M.D.M.C.K.
Amarasena, and V.P.A. Weerasinghe**

Abstract

Sinharaja Rainforest, located in the Southwest lowlands of Sri Lanka is a National Heritage Wilderness Area that is beset with critical conservational challenges such as deforestation. Hence, this study evaluates the changes in Sinharaja forest cover from 2014 to 2022 using remote sensing technology, to implement the finest conservational strategies. In executing the study, Landsat-8 images of the Sinharaja rainforest for February of the years 2014, 2016, 2018, 2019, and 2022 were obtained from Earth-Explorer of the United States Geological Survey, and each image was analyzed using ArcGIS software. Initially, Bands 1 to 7 were composited followed by the clipping of the resultant layer using the Sinharaja forest shapefile which was extracted from the forest map of Sri Lanka. Afterward, the ensuing layer was re-projected from the coordinates 'WGS 1984' to 'Kandawala Sri Lanka Grid'. Thereafter, Normalized Difference Vegetation Index was derived to determine the regions occupied by forest cover (0.2 to 1), bare-land (0 to 0.2), and clouds (-1 to 0). Subsequently, the areas (in km²) of forest cover, bare land, and clouds were calculated to determine their change from 2014 to 2022. Accordingly, the area of forest cover for the years 2014, 2016, 2018, 2019, and 2022 were 121.46 km², 121.35 km², 120.20 km², 121.47 km², and 121.49 km² respectively. Thus, from 2014 to 2018, the average forest cover loss is 0.21 km², while the average forest cover gain from 2018 to 2022 is 0.32 km². Furthermore, the study revealed that 0.0637 km² of bare-land was transformed into forest cover and 0.0298 km² of forest cover was transformed to bare-land from 2014 to 2022, while 0.0493 km² of bare-land and 121.322 km² of forest cover remained unchanged. Therefore, it is recommended to strengthen and effectively enforce the law to manage and conserve the Sinharaja rainforest.

Keywords: Sinharaja Rainforest, Remote Sensing, Normalized Difference Vegetation Index, Forest Cover, Bare Land

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LAND SUITABILITY ASSESSMENT FOR WIND POWER PLANTS THROUGH GIS IN MANNAR DISTRICT, SRI LANKA

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Abstract

Wind energy is an emerging renewable energy resource utilized in the present world. Excessive reliance on non-renewable energy resources has led Sri Lanka to a huge energy crisis. Therefore, attention should be paid to renewable energy sources to attain a sustainable future in Sri Lanka. This study mainly focused on finding suitable locations for wind power plants in the Mannar district, Sri Lanka, through Geographical Information Systems (GIS). The suitable locations for wind power plants were identified using seven suitability criteria. They are land use, nature reserves, rivers, roads, railways, towns, and wind speed. The wind data was collected using WINDY APP, and other criteria maps were collected from the Survey Department of Sri Lanka. First, the Mannar district map was created, and the land use, river, nature reserves, roads, towns, and railways were identified in the Mannar district map. Ten locations were selected randomly, representing the whole Mannar district to measure the wind speed. Measured wind speed data were added, and interpolation was done using IDW to create the wind speed map for the Mannar district. Then criteria maps were reclassified into four classes (not suitable, less suitable, moderately suitable, and highly suitable). Finally, a weighted overlay was done using ArcGIS 10.8 software to obtain the most suitable locations for wind power plants. The weights were given as land use (25%), towns (20%), roads (15%), railway (15%), rivers (10%), wind (10%), and nature reserves (5%). Results were shown that the suitable areas for establishing wind power plants are located in Erukkalampiddy-East, Erukkalampiddy-South, Erukkalampiddy-North, South Bar, Sinnakadai, Thullukudiyiruppu, Savatkaddu, Kaddukarankudiyiruppu, Kannady and Madhu Grama Niladhari Divisions. According to the results, the majority of the suitable locations are on Mannar Island and they account for an area of 78.47 km² (0.04%) as a suitable area to establish wind power plants.

Keywords: Renewable, Wind, GIS, Weighted Overlay, Mannar

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LAND SUITABILITY MAP FOR COCONUT (COCOS NUCIFERA L.) CULTIVATION IN TRINCOMALEE DISTRICT USING A GEOGRAPHIC INFORMATION SYSTEM-BASED MULTI-CRITERIA APPROACH

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Abstract

The production of coconut is one of the main export revenue sources of the Sri Lankan economy. At present, coconut cultivation and annual yield are declining in Sri Lanka due to various reasons such as prolonged drought, diseases, pests, conversion of coconut farms into lands with other profitable crops, urbanization, etc. The potential land suitability assessment for coconut cultivation is crucial in determining the environmental limits of sustainable coconut production. Various approaches for land suitability analysis have been developed. In contemporary, land use (40%), soil type (30%), elevation (5%), rainfall (20%), and temperature (5%) factors were assembled using a multi-criteria weighted overlay method to generate a potential land suitability map. The coconut suitability map is classified into three categories: most suitable, moderately suitable, and not suitable. Barelands with Reddishbrown earth, low humic clay soil, and regosol soil in areas below 750m elevation receiving annual rainfall 1200-1900mm and temperature 27°C-30°C are considered as the most suitable places. The suitable land areas for coconut cultivation are mainly distributed in Kantale, Tampalakamam, Trincomalee town, Morawewa, Padawi Sripura, and Gomarakandawala Divisional Secretariat Divisions (DSDS). The total available land area in the most suitable Grama Niladhari Division (GND)s are Jeyanthipura, Mihindapura, Varothayanagar, Selvanayagapuram, Gantalawa, Raja ela for coconut cultivation, land suitability assessment with multi-criteria analysis has received a renewed attention in the context of Geographical Information System (GIS) based decision-making. This case study aimed to assess the land suitability for coconut cultivation in the Trincomalee district of Sri Lanka. The suitable areas for coconut cultivation were identified using five criteria is 45.25 km². This result is significant in planning and managing coconut production in the Trincomalee district.

Keywords: Land Suitability Analysis, GIS, Weighted Overlay, Trincomalee, Coconut Cultivation

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A STUDY OF THE CHANGES IN THE QUALITY OF TEA BASED ON THE ELEVATION OF THE SEVEN TEA REGIONS OF SRI LANKA

J.M.S.S. Jayawardhana

Abstract

Tea cultivation is found over the world at various elevations. Tea in Sri Lanka is classified by elevation as low-grown, mid-grown, and high-grown tea. These zones are known as "Tea Regions". Under these three categories, there are seven tea regions named Nuwara-Eliya, Udapussellawa, Uva, Dimbula, Kandy, Sabaragamuwa, and Ruhuna. Each of these areas has unique quality features. The general objective of this research is to examine the effects of elevation on two quality characteristics (color and taste) of tea in seven tea regions. Literature survey, and topographical maps, provided substantial information to examine the linkage between elevation and tea quality in seven tea regions. Further, ArcGIS version 10.8: ESRI Redlands was used, to create the digital elevation maps. According to the analysis of this study, Nuwara-Eliya has the highest average elevation, and the infused leaf takes on a greenish-yellow hue and a delicate, fragrant flavor. Dimbula tea, grown at an elevation between 1,100m and 1,600m has a golden-orange hue in the cup and a refreshingly mellow flavor. Uda Pussellawa rises at a height of around 2000m. It is darker in the cup with a pinkish hue, stronger, and exquisitely tangy. With Kandy altitudes ranging from 650m to 1,300m, they are strong and intensely full-bodied. In the Uva region, tea estates are located at elevations ranging from 1000m to 1600m with a smooth distinct flavor. The Sabaragamuwa tea estates range in elevation from sea level to approximately 800m. The liquor is also dark yellow-brown with a reddish tint, similar to that of Ruhuna teas, and is exceptionally stylish. Ruhuna refers to the lowest elevation, reaching 600m above sea level. This tea's liquor is softer and lighter than that of other low-growing varieties. Accordingly, the study suggests that for value-added products and innovations made from tea, it would be appropriate to use appropriate teas from different regions.

Keywords: Elevation, Tea Regions, Tea Qualities, Color, Taste

SPATIOTEMPORAL ANALYSIS OF URBANIZATION PATTERNS AND THE RELEVANT ENVIRONMENTAL CONSEQUENCES: A CASE STUDY OF THE KANDY CITY, SRI LANKA

H.M.Y.L.P. Herath

Abstract

Urbanization is one of the most important indicators of development and is a rapidly growing dynamic process. Today, especially in the hilly cities of Sri Lanka, the negative effects of rapid urbanization can be seen due to their economic and social significance. This study aims to examine the spatiotemporal patterns of urbanization and the relevant environmental consequences in Kandy City, Sri Lanka from 1994 to 2021. Both primary and secondary data were used and analyzed using GIS techniques and Statistical Analysis Strategy. LULC classification was made by using a pixel-oriented supervised classification method which is applicable for 30 m resolution Landsat 5 and 8 data and examined the temporal pattern of urban land changes across two-time intervals (1994–2007, 2007–2021, and 1994–2021). Variations in urbanization patterns were analyzed from 250 to 250 m using a Multiple Ring Buffer. A ground-level study was conducted to verify the accuracy of the information obtained from the mapped data. The data were obtained using a questionnaire and interviews with a randomly selected 100 people living around the city of Kandy. The ‘Pearson Correlation Analysis method and Descriptive Statistic method’ were used to illustrate the relationship between the variables. The results showed that the area under Impervious Surface during the 27 years from 1994 to 2021 increased by 35.23 Km², while the forest cover decreased by 52.78 Km². The annual growth rate of the Impervious Surface can be identified as 1.30 km² per year from 1994 to 2021 and the forest cover has lost 1.95 km² per year. The findings also depict a positive correlation between urbanization and other variables, such as environmental pollution, climate change, waste disposal, and resource availability. Thus, the study identified a rapid increase in land area and a rapid decline in forest cover due to the growing informal urban pattern. Therefore, this research confirms the need to focus on sustainable urban development to cope with the current environmental, social and economic crisis.

Keywords: Kandy City, Lulc Changes, Multiple Ring Buffer, Sustainable Urban Development, Urbanization

A GEOSPATIAL ANALYSIS FOR IDENTIFYING THE POTENTIAL OF ECOTOURISM DEVELOPMENT IN SOUTHERN PROVINCE, SRI LANKA

S.A.P.T. Samaraweera, N.M.K.G. Ranasinghe, P.K. Athukorala, A.L.S. Heshani, and V.P.A. Weerasinghe

Abstract

Ecotourism is responsible for traveling to natural areas that conserve the environment and sustain the well-being of local people. Geographical Information Systems can be used to explore and analyze spatial data, and it helps users to identify potential sites for ecotourism development based on a set of criteria. Thus, this study was undertaken to identify suitable areas for ecotourism development in the Southern Province of Sri Lanka. The suitability model comprises six criteria: bare land, roads, protected areas, forests, water bodies, and coastal lines. Maps for each criterion were obtained from the Survey Department of Sri Lanka. The suitability of land use types was classified into two classes bare lands as highly suitable (grasslands, rocks, Chena cultivation) and all other land use types (waterbodies, protected areas, forests, etc.) as not suitable. Criterion proximity maps were classified into 03 classes roads proximity (0-500m; highly suitable, 500-2000 m; moderately suitable, >2000 m; not suitable), protected areas proximity (<5000 m; not suitable, 5000-10000 m; highly suitable, >10000 m; moderately suitable), proximity to forests (<2000 m; highly suitable, 2000-3000 m; moderately suitable, >3000 m; not suitable), proximity to water bodies and proximity to the coastline (300 m-2000 m; highly suitable, >2000 m; moderately suitable, <300 m; not suitable). Weighted overlaying was performed by assigning percentages of influence of 30% to bare lands and roads, while 10% of percentage influence was given to protected areas, forests, water bodies, and coastline layers by using ArcMap 10.8 for the suitability model. The areas that are found to be the most suitable for ecotourism development are Hambantota District and Matara District. And also, some places are found to be less suitable and not suitable for ecotourism development. According to the final results obtained, Galle District did not find a potential site for ecotourism development due to a lack of sufficient amount of bare land for ecotourism development. Overall land area extents of most suitable, moderately suitable, and not suitable for ecotourism development in Southern Province are 17.29 km², 75.33 km², and 5381.02 km², respectively.

Keywords: GIS, Suitability Analysis, Ecotourism, Weighted Overlay, Galle District

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INDIGENOUS KNOWLEDGE FOR ENVIRONMENTAL MANAGEMENT



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සංක්ෂිප්තය

පාරිසරික කළමනාකරණය මගින් පාරිසරික සමතුලිතතාව ගොඩනගමින් පරිසරයට ධනාත්මකව බලපෑම් කළ හැකි අතර පරිසර කළමනාකරණයෙහි මුඛ්‍ය අංගයක් ලෙස පාරිසරික සංරක්ෂණය හඳුනාගත හැකි ය. වර්තමානය වන විට පොදුවේ පාරිසරික කළමනාකරණයෙහි දැඩි අවශ්‍යතාවක් පවතී. එහිලා පාරිසරික සංරක්ෂණය අත්‍යවශ්‍ය වූවක් වී ඇත. එම අත්‍යවශ්‍යතාව පුරණයට පරමාදර්ශී පාරිසරික සංරක්ෂණ ක්‍රමවේදයන් බුදුදහමේ පාරිසරික දර්ශනයෙන් විද්‍යමානිත ය. වර්තමානයටත් අනාගතයටත් එක සේ වලංගු පාරිසරික දර්ශනයකින් උපයුක්ත බුදුදහමෙහි, සූත්‍ර පිටකාගත ඉගැන්වීම්වලින් පාරිසරික සංරක්ෂණ ක්‍රමවේදයන් ප්‍රකට වේ. නමුත් වර්තමානය වන විට බෞද්ධ පාරිසරික සංරක්ෂණ ක්‍රමවේදයන් පිළිබඳ සමාජගත කිරීමේ ප්‍රයත්නයන් හා පර්යේෂණාත්මක එළඹුම්වල අල්ප මට්ටමක් දැකගත හැකි ය. ඒ අනුව පර්යේෂණ ක්ෂේත්‍රයෙහි මෙවැනි පර්යේෂණ මාතෘකාවන් සම්බන්ධව අඩු අවධානයක් යොමුවීමත් සූත්‍ර දේශනාගත පාරිසරික සංරක්ෂණ ක්‍රමවේදයන්හි සර්වකාලීන වටිනාකමත් හේතුවෙන් මෙවන් පර්යේෂණ මාතෘකාවක් පිළිබඳ අධ්‍යයනය, කාලීන වශයෙන් වැදගත් මෙන් ම පර්යේෂණ ක්ෂේත්‍රයට ද නව්‍යත්වයක් එක් කරන්නකි. පාරිසරික කළමනාකරණයෙහි ලා ප්‍රමුඛ, පාරිසරික සංරක්ෂණය විෂයෙහි සූත්‍ර පිටකාගත බෞද්ධ පාරිසරික සංරක්ෂණ ක්‍රමවේදයන් හා ඒවායේ සර්වකාලීනත්වය ප්‍රකට කිරීමේ අරමුණින් මෙම පර්යේෂණය මෙහෙයවා ඇත. මෙහිදී බෞද්ධ පාරිසරික දර්ශනයෙහි, පාරිසරික සංරක්ෂණයට අදාළව සූත්‍ර පිටකයට සීමා වෙමින් ප්‍රාථමික මූලාශ්‍රය ලෙස සූත්‍ර පිටකයත් මේ සම්බන්ධව රචිත ශාස්ත්‍රීය ග්‍රන්ථ, ලිපි, සඟරා, විද්‍යුත් මූලාශ්‍රයන් ද්විතියික මූලාශ්‍රය ලෙසත් භාවිත කරමින් ගුණාත්මක ක්‍රමවේදයෙන් දත්ත රැස් කිරීම සිදු වේ. බෞද්ධ පාරිසරික සංරක්ෂණ ක්‍රමවේදයන්හි සර්වකාලීනත්වය පිළිබඳ ප්‍රාමාණික අවබෝධයක් ලබාගත හැකි මෙම සූත්‍ර පිටකාගත විමර්ශනයට අනුව, පාරිසරික සංරක්ෂණය විෂයෙහි අදාළ රුක් රෝපණය, වන වගාව, ජල සංරක්ෂණය, ශබ්ද දූෂණය පිටුදැකීම, මානසික සංවර්ධනයෙහි ලා ස්වාභාවික පරිසරයෙහි සෘජු බලපෑම, විෂමාකාර පුද්ගල මනෝභාවයන්ගෙන්, හේතුඵලවාදීව පරිසරය විනාශ වන බව, පාරිසරික සුරක්ෂිතතාව වෙනුවෙන් රාජ්‍ය නීති සම්පාදනය යනාදිය අවධාරණය කර තිබීම, අත්තුපනායික ධර්ම පර්යාය, අල්පේච්ඡතාව, මෙත්‍රිය වැනි ආකල්පයන් අවධාරණය කිරීම වැනි ක්‍රමවේදයන් රැසක් සූත්‍ර පිටකයෙහි අන්තර්ගත බවත් පාරිසරික සංරක්ෂණයට එම ක්‍රමවේදයන් සෘජුව අදාළ කරගත හැකි බවත් ඒවා වඩාත් පරමාදර්ශී, එමෙන් ම සර්වකාලීනත්වයෙන් ද සුපෝෂිත බවත් නිගමනය කළ හැකි ය. මෙම විමර්ශනාත්මක පර්යේෂණය මගින් පාරිසරික සංරක්ෂණයෙහි ලා සූත්‍ර පිටකයෙන් පැනෙන බෞද්ධ පාරිසරික සංරක්ෂණ ක්‍රමවේදයන්ගේ සර්වකාලීනත්වය ඉස්මතු කිරීමත් එම ක්‍රමවේදයන්ගෙන් සාර්ථක ප්‍රතිඵල ලද හැකි බව තහවුරු කිරීමත් සිදු වේ.

මුඛ්‍ය පද: කළමනාකරණය, පරිසරය, බුදුදහම, සංරක්ෂණය, සූත්‍ර පිටකය

පරාක්‍රම සමුද්‍රයේ ජල කළමනාකරණය තුළින් අනාවරණය කරගත හැකි තත්කාලීන සමාජයේ තිරසාරත්වය

ශ්‍රී. චතුරි ලක්හාරි

සංක්ෂිප්තය

අතීතයේ පැවති කෘෂිකර්මාන්තය මුල් කරගත් සමාජයන්හි තිරසාරත්වය උදෙසා ඊසාන දිග මෝසම් වැසි සක්‍රීයව පවතින කලාපයෙහි වැව් ඉවහල් වී තිබේ. ඒ අතරින් පරාක්‍රම සමුද්‍රය විශේෂිත වේ. පරාක්‍රම සමුද්‍රය මඟින් කෘෂිකර්මය මුල් කොටගත් තත්කාලීන සමාජයේ තිරසාරත්වයට සැපයූ දායකත්වය කෙසේද යන පර්යේෂණ ගැටලුව මුල් කරගෙන සිදු වූ මෙම පර්යේෂණයේ අරමුණ වූයේ කෘෂිකර්මය මුල් කොටගත් තත්කාලීන සමාජයේ තිරසාරත්වයට පරාක්‍රම සමුද්‍රය සමඟ බැඳුණු වාරි පද්ධතියේ දායකත්වය කෙබඳු දැයි නිර්ණය කිරීමයි. උක්ත පර්යේෂණයේ ක්‍රමවේදයේදී සාහිත්‍ය විමර්ශන යටතේ ශිලා ලේඛනත් තාක්ෂණිකාංග තොරතුරු හා අන්තර්ජාලයත් ජාතික භූ දත්ත කළමනාකරණය යටතේ ඇති Geo portal උපාංගයෙන් සිතියම් දත්තයන්ගත් ගන්නා ලදී. පරාක්‍රම සමුද්‍රයේ පවත්නා සුවිශේෂී ලක්ෂණ කිහිපයක් මඟින් තත්කාලීන සමාජ තිරසාරත්වය හඳුනාගත හැක. එහිදී තිරසාරත්වයට පදනමක් වූ වාරි තාක්ෂණිකාංගයන් ප්‍රධාන වේ. ඒ යටතේ අඛණ්ඩ ජල සැපයුමක් හරහා ඇලවේලි, අමුණු, කළුඟු බැම් යනාදිය හරහා තිරසර ජල සැපයුම රඳවා ගනිමින් කෘෂිකර්මාන්තයේ තිරසාරත්වය ලබා තිබේ. සමුද්‍රය වටා නිර්මාණය වී පවතින ජෛව පද්ධතිය ද තිරසාරත්වයට හේතුවක් වී තිබේ. එහිදී මිරිදිය ජෛව පද්ධතිය තුළ ලංකාවටම ආවේණික මත්ස්‍ය විශේෂයක් හඳුනාගත හැකි අතරම ධීවර කර්මාන්තයේ ස්වයංපෝෂිතත්වයට බලපා තිබේ. සාහිත්‍යමය හා අභිලේඛන මූලාශ්‍ර මඟින් අනාවරිත කරුණු මඟින් නිසි පරිපාලනමය තිරසාරත්වයක් පෙන්විය හැකි වේ. එපමණක් නොව 1930, 1948, 1979 යන විවිධ යුගයන්හි සිදු කරන ලද වාරි ප්‍රතිසංස්කරණයන් ද සමුද්‍රයේ තිරසාරත්වයට හේතුවක් වූ අතරම සමාජයේ තිරසාරත්වය ද සිදුවිය. තවද තිරසර ජල කළමනාකරණය සහ සංවෘත ආර්ථික රටාවන් යන ද්විත්ව අංශයන්හි සම්මිශ්‍රණය ද මීට බලපා තිබේ. මෙම පර්යේෂණයේ ප්‍රතිඵල ලෙස සමාජයේ ආර්ථික, පාරිසරික හා පරිපාලන තිරසාරත්වය පැවතුනු බැව් අනාවරණය විය. උක්ත කරුණු සියල්ලම විමසීමේ දී පෙනෙනුයේ පරාක්‍රම සමුද්‍රය මඟින් තත්කාලීන සමාජ තිරසාරත්වයට පදනමක් එක් කර ඇති බවත් මොරගහකන්ද වැනි නව වාරි ව්‍යාපෘති සඳහා අවශ්‍ය ගාමක බලවේගය වශයෙන් ක්‍රියාත්මකව ඇති බවත්ය.

මුඛ්‍ය පද: පරාක්‍රම සමුද්‍රය, කළමනාකරණය, සමාජය, තිරසාරත්වය, කෘෂිකර්මාන්තය

**පරිසර සංරක්ෂණ ප්‍රතිපත්තිය කෙරෙහි පැරැන්නන්ගේ සහානුභූති සංකල්පයේ
බලපෑම පිළිබඳ විමර්ශනාත්මක අධ්‍යයනයක්**

(ශිලා ලිපි හා ඓතිහාසික සාධක ඇසුරෙන්)

එච්.එම්.එන්.එම්. ඒකනායක

සංක්ෂිප්තය

පුරාතන ලංකාවේ මානව සමාජය තුළ සහකම්පනයෙන් යුතුව කටයුතු කළ අවස්ථා ගණනාවක් දක්නට ලැබේ. රජරට සහාත්වය වැජඹුණු අවධියේ දී පරිසර සංරක්ෂණ ප්‍රතිපත්තිය තුළ සහානුභූති සංකල්පයට හිමි වූ කාලීන වැදගත්කම හඳුනා ගැනීම මෙම පර්යේෂණයේ අරමුණ වේ. පරිසර සංරක්ෂණ ප්‍රතිපත්තිය කෙරෙහි සහානුභූති සංකල්පය මඟින් සිදු කළ බලපෑම කෙබඳු ද යන්න මෙම පර්යේෂණයේ ගැටලුව වේ. ප්‍රාථමික හා ද්විතියික මූලාශ්‍රය විශ්ලේෂණය අධ්‍යයන ක්‍රමවේදය වශයෙන් භාවිත කරන ලදී. පරිසරය දෙස සංවේදී වෙමින් පැරැන්නන් විසින් පරිසර සම්පත් භාවිතයේ දී එමඟින් උපරිම ඵල ලබමින් පරිසරය ආරක්ෂා කිරීමට කටයුතු කරන ලදී. එම ප්‍රතිපත්ති ක්‍රියාත්මක කළ බවට සාධක ශිලාලිපි තුළින් හඳුනා ගත හැකි ය. පරිසරයට වන හානි වැළැක්වීම පිළිබඳ වන 4වන කාශ්‍යප රජුගේ මොරගොඩ ලිපිය අනුව “මේ ආන්නෑ උලසන කළ කෙනෙක් ඇත්නම් කවුඩු බලු වෙත්වා” යනුවෙන් දක්වා තිබේ. වතු හා කුඩා වතු වල ගස් නොකැපිය යුතු බව මිහින්තලා පුවරු ලිපියේ සඳහන් වේ. පරිසර සංතුලනයට දායක වන සතුන් කෙරෙහි ද පැරැන්නන් සහකම්පනයෙන් යුතුව කටයුතු කරන ලදී. සතුන්ගේ ආරක්ෂාව සඳහා කටයුතු කළ බව නිශ්ශංකමල්ල රජුගේ ලිපියේත් සතුන් මැරීම තහනම් කිරීම පිළිබඳ දඹුලු ගිරි ලිපියේත් සඳහන් ය. ක්‍රි.ව 4 වන සියවස බුද්ධදාස රජු විසින් මිනිසුන්ට මෙන් ම සතුන් කෙරෙහි ද සානුකම්පිත වූ බව ඔහු විසින් නාගයෙකුට ප්‍රතිකාර කළ බවට වන වංශකතාගත කරුණු අනුව සනාථ වේ. තිරසර සංවර්ධනය අනුව යමින් පරිසරය සුරක්ෂිත කිරීමට පරිසර සංරක්ෂණ ප්‍රතිපත්ති පාලකයන් විසින් අනුගමනය කරන ලදී. මෙසේ රටවැසියා අතරත් ඉන් ඔබ්බට ගොස් අනන්‍යයන් කෙරෙහිත් සතුන් හා පරිසරය කෙරෙහිත් මානුෂිකත්වයෙන් හා සහකම්පනයෙන් යුතුව කටයුතු කිරීමට පෙළඹී ඇති බව හඳුනාගත හැකි ය. එම උතුම් ගුණාංගය සහානුභූති සංකල්පය හෙවත් සහකම්පනයයි. පැරණි රාජ්‍යය ප්‍රතිපත්ති තුළ භූමි පරිභෝග සැලසුම් ක්‍රියාත්මක කළේ ද පරිසරයට අනුගත වෙමිනි. මහාවංශයේ සඳහන් පණ්ඩුකාභය රජුගේ නගර සැලැස්ම මෙයට නිදසුන් වේ. ආගමික වශයෙන් ලෙන් ආශ්‍රිත ව ද පරිසරය සංරක්ෂණය වූ බව මිහින්තලේ රජගිරි කන්ද වැනි ආරාම තුළින් හඳුනාගත හැකිය. පරාක්‍රමබාහු රජුගේ ජල ප්‍රතිපත්තිය ද වෙස්සගිරි පුවරු ලිපියේ සඳහන් කුඹුරුවල ජල පාලනය ද ජල සංරක්ෂණය කළ බව තහවුරු කරයි. පැරැන්නන්ගේ අරමුණ වී ඇත්තේ පරිසරය කෙරෙහි සංවේදී වෙමින් පරිසර සම්පත් රැක ගැනීම හා ඒවා සංරක්ෂණය කිරීම ය. අභිලේඛනගත නීතිරීති මඟින් මෙන් ම පාලකයන්ගේ ප්‍රතිපත්ති මඟින් ද පරිසරය කෙරෙහි සහකම්පනයෙන් යුක්ත ව උපායමාර්ගිකව පරිසරය සංරක්ෂණය කළ බව මෙමඟින් හඳුනා ගත හැකි ය.

මුඛ්‍ය පද: තිරසර, පරිසරය, පැරැන්නන්, සංරක්ෂණය, සහානුභූතිය

රාජකීයයන්ගේ ප්‍රතිපත්ති එකල තිරස්චිත සත්ත්වයන්ගේ හිමිකම් සුරක්ෂාව කෙරෙහි ඇති කළ බලපෑම පිළිබඳ විමසුමක් (රජරට සහායක ඇසුරින්)

ඩබ්ලිව්.ඒ.ඩී. මධුසානි

සංක්ෂිප්තය

සමස්ථ ජෛව ගෝලයම සැකසී තිබෙන්නේ සත්ත්ව හා ශාක ප්‍රජාව සංයුක්ත වීමෙනි. සත්ත්ව යන්නෙහි අර්ථය ලෙස ගත හැක්කේ මිනිසා ඇතුළු අපා, දෙපා, සිව්පා, අෂ්ටපා, බහුපා ගණයට අයත් පණ ඇති සියලුම ජීවින් ලෙස හැඳින්විය හැකිය. රාජකීයයන්ගේ ප්‍රතිපත්ති එකල තිරස්චිත සත්ත්වයන්ගේ හිමිකම් සුරක්ෂාව කෙරෙහි ඇති කළ බලපෑම පිළිබඳ විමසුමක් මෙම අධ්‍යයනයේ සිදු කෙරේ. කුතන නීති ක්‍රමයන්ගේ අතීත භාවිතාව හා ඒවා රටේ සංවර්ධනයට යොදා ගත හැකි ආකාරය විමසා බැලීම මෙම පර්යේෂණයේ අරමුණ වේ. රජරට සහායක අවධියේ රාජකීයයන්ගේ ප්‍රතිපත්ති සම්පාදනය තිරස්චිත සත්ත්වයන්ගේ සුරක්ෂාව කෙරෙහි ඇති කළ බලපෑම කෙබඳු ද යන්න මෙහි පර්යේෂණ ගැටලුව වේ. මෙහිදී පර්යේෂණ ක්‍රමවේදය ලෙස ඓතිහාසික පර්යේෂණ ක්‍රමවේදය යොදා ගත් අතර සපයාගත් දත්ත සන්සන්දනාත්මකව හා විශ්ලේෂණාත්මකව අධ්‍යයනය කරමින් නිගමනවලට එළඹී තිබේ. තිරස්චිත සත්ත්වයන් ආරක්ෂා කර ගැනීම උදෙසා පාලකයන් විවිධ ප්‍රතිපත්තින් අනුගමනය කළ බව සාහිත්‍ය මෙන්ම අභිලේඛන මූලාශ්‍රයන් සාධක දරයි. වේවැල්කැටිය ශිලා ලිපියේ “මිවුන් ගෙරිගොන් එළවන් මැරුවන් මරා පට්ටනු කොට” ලෙස සඳහන් වීමෙන් පෙනී යන්නේ මී හරකුන්, ගවයන් වැනි පස්ගෝ රස ලබා දෙන සත්ත්වයන් ඝාතනය කිරීම තහනම් කර ඇත. නිශ්ශංකමල්ල රජුගේ අනුරාධපුර සෙල්ලිපියේ තිරස්චිත සත්ත්වයන්ට අහස දානය දුන් බව සඳහන්වේ. මැදිරිගිරිය පුවරු ලිපියෙහි “මළ එළ කුකුළන් වෙහෙර් වෙද්හල්ටි බහා ලනු කොට” ලෙස සඳහන්වීමෙන් පෙනී යන්නේ මැරුණු එළවන් කුකුළන් යන සතුන් මිය ගිය පසු වෙදහලට භාර දෙන ලෙසය. වෙස්සගිරිය පුවරු ලිපියේ උද්‍යාන තටාකයන්ට ජලය යැවූ බව සඳහන්වේ. “මෙසේ පවත්වන දිය රන්මසු උයන ඉසා කෙල ගෙය ඉසා උයන් තෙය ඉසා මහනෙල් තෙය ඇතුළුව...” ජලජ ජීවින්ගේ පැවැත්ම, ආහාර අවශ්‍යතාව සපුරාලීම උදෙසා පාලකයන් විසින් තම උද්‍යාන වල පිහිටි ජල තටාක උදෙසා නිසි ලෙසට ජලය නිකුත් කරන බව මෙමගින් පෙනේ. දේශපාලන වශයෙන් කෙතරම් අර්බුද පැවතිය ද අතීත පාලකයා සෑම තිරස්චිත සත්ත්වයෙකුගේම සුරක්ෂාව පෙර සිටි පාලකයන් ගෙනගිය අයුරින්ම ප්‍රතිපත්ති ඉදිරියට ගෙන යන ලදී. වර්තමානය තුළ සතුන්ගේ ආරක්ෂණය උදෙසා රාජ්‍ය මැදිහත් වීමේ අඩුවක් දැකගත හැකි අතර පාසල් පෙළපොත් තුළට තිරස්චිත සත්ත්ව ආරක්ෂණ නීති, ප්‍රතිපත්ති ඇතුළත් කළ යුතුය.

මුඛ්‍ය පද: අහස දානය, ජලජ ජීවින්, තිරස්චිත, රන්මසු උයන, රාජ්‍ය ප්‍රතිපත්තින්

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පෙරදිග දැනුම් පද්ධතිය සහ භාවිතයන් තුළින් “Wilderness” සංකල්පය හඳුනාගැනීම

කේ.ඒ. ජයසංඛ සඳුන් ජයසූරිය, ජේ.එම්.එස්.බී. ජයසුන්දර

සංක්ෂිප්තය

Wetland වර්තමානයේ ලෝක ප්‍රජාව පරිසර සාරධර්ම කෙරෙහි වැඩි උනන්දුවක් දක්වන අතර Wilderness සංකල්පය මේ අතරින් සුවිශේෂී වේ. නිසි, රෝල්ස්ටන් වැනි බටහිර න්‍යායවාදීන් විසින් ඉදිරිපත් කළ පරිසර සංකල්පයන් ආශ්‍රය කරගනිමින් මෙම සංකල්පය නිර්මාණය වී ඇති අතර Wilderness යනු මානව ක්‍රියාකාරකම් වලින් තොර, විවේකය සහිත, සොබා සුන්දරත්වයෙන් පිරිපුන් පරිසර පද්ධතියක් වන අතර එය තවදුරටත් ගොඩබිමට පමණක් සීමා නොවෙමින් මානව ක්‍රියාකාරකම් වලින් තොර නිදහස් සාගර කලාපයන් (marine wilderness) වශයෙන් ද පවතී. මානවයා හට ප්‍රතිමෝදන (Recreational), පරිණාමනීය හෙවත් පරිවර්තනමය (Transformational), සෞන්දර්යාත්මක (Aesthetic value) යන ප්‍රතිලාභයන් අත්කර ගැනීමට සහය දක්වන ස්වභාවික පරිසර පද්ධතියක් ආශ්‍රිතව ගොඩනැගෙන සංකල්පයක් වශයෙන් Wilderness සංකල්පය හඳුනාගත හැකි ය. මෙම සංකල්පය බටහිර පාරිසරික සාරධර්ම අධ්‍යයන පදනම් ව නිර්මාණය වී ඇති අතර පෙරදිග සාරධර්ම හා භාවිතයන් ප්‍රමාණවත් ලෙස සලකාබලා නොමැති බව පෙනී යයි. ශ්‍රී ලාංකීය දේශීය දැනුම, දේශීය භාවිතයන්, පුරාණ සාහිත්‍ය හා ආගමික දර්ශනයන් තුළ මෙම සංකල්පය කුමන ආකාරයකින් අර්ථ නිරූපනය වී ඇතිදැයි සොයා බැලීම මෙම අධ්‍යයනයේ අරමුණයි. දේශීය බෞද්ධ සාහිත්‍ය තුළ පවතින පන්සිය පනස් ජාතක පොත, විනය පිටකය, සුමංගල ශබ්දකෝශය ආදී ග්‍රන්ථයන් ප්‍රාථමික මූලාශ්‍ර වශයෙනුත්, පන්සිය පනස් ජාතක පොත් විවරණය, පාලි සිංහල ශබ්ද කෝෂය ආදී පාලි හා සිංහල මූලාශ්‍ර ද්විතීය මූලාශ්‍ර වශයෙනුත්, ශ්‍රී පාද වන්දනාව සඳහා සහභාගි වෙමින් සමනල අඩවියෙහි සහභාගිත්ව නිරීක්ෂණය තුළින් මෙන්ම අන්තර්ජාල තොරතුරු තුළින් ද මෙම අධ්‍යයනය සඳහා කරුණු ගොනු කරගන්නා ලදී. මේ අනුව Wilderness යන්න සිංහලෙන් අර්ථ පූර්ණ ලෙස දැක්වීම සඳහා ‘විජනපාත’ යන වචනය සිංහල ව්‍යවහාරයට ඇතුළත් කිරීමට සුදුසු යැයි ද මෙම පරිසර පද්ධතිය විජනපාත පරිසර පද්ධතිය ලෙස හැඳින්වීමට හැකි බව ද පෙනීයයි . එමෙන්ම ශ්‍රී ලංකාවේ සමනල විජනපාත අභයභූමිය නිදසුන් ලෙස දක්වමින් මෙම Wilderness පරිසර පද්ධතිය තුළින් ප්‍රතිලාභයක් ලෙස ආධ්‍යාත්මික සුවයද දායාද වන බවත් ඒ අනුව ප්‍රතිමෝදන (Recreational), පරිවර්තනීය (Transformational), හා සෞන්දර්යාත්මක (Aesthetic value) ප්‍රතිලාභයන්ට අමතරව ආධ්‍යාත්මික සුවය (Spiritual healing) ද මෙම සංකල්පය තුළට අන්තර්ගත විය යුතු බව අවසන් නිගමනය ලෙස පෙනීයයි.

මූලාශ්‍ර පද: විජනපාත, Wilderness, ආධ්‍යාත්මික සුවය, පෙරදිග දැනුම් පද්ධතිය, පාරිසරික

WASTE MANAGEMENT



INTRODUCTION OF MOBILE PHONE-ORIENTED FREE ELECTRONIC QUESTIONNAIRE-MAKING TOOLS WITH SPECIFIC FACILITIES AS AN EXCELLENT SOLUTION TO REDUCE PAPER WASTE AND ENERGY WASTE

K.A.L. Madhuwanthi

Abstract

A questionnaire is a research instrument consisting of a series of questions to gather information from respondents through a survey. Using online questionnaires can reduce paper waste, energy costs, and research costs generated by traditional paper questionnaires used by university students for research. Using this method can save money and do not have to allocate time and resources to enter the information into a database. Responses are processed automatically and the results are accessible at any time. Many universities do not provide undergraduate students with an institutionally supported and managed free e-questionnaire-making tool. In general, most undergraduate students do not have a computer. But they all have cell phones nearby. With this background, the study mainly aims at introducing mobile phone-oriented free electronic questionnaire-making tools with specific facilities as a good solution to reduce paper waste and energy waste generated by traditional paper questionnaires used by university students for research. The study also attempts to identify mobile phone-oriented free e-questionnaire-making tools with specific facilities among free e-questionnaire-making tools and to introduce those tools for undergraduate students to use to do their research without paper and energy waste without using a traditional paper questionnaire. The study was conducted based on primary data such as e-questionnaire, and telephone conversations and secondary data such as YouTube channel videos, Websites, Journal articles, and Magazines. Thirty undergraduate students from six faculties at the Rajarata University of Sri Lanka were selected as samples for this study. The descriptive method was followed in presenting the information. Data tables, graphs, images, and maps were used to represent data. Map Excel was used for data analysis. The study found that Google Forms and JotForm are mobile phone-oriented free online survey tools with specific facilities that can set up free e-questionnaire. Accordingly, the findings of the study recommend that for those with an above-midrange phone, the JotForm tool is ideal for creating a questionnaire. JotForm has more advantages and more features than google forms. For those who have a basic mobile phone, the study suggests that google forms are the best tool to create an e-questionnaire using the basic function. In conclusion, this study was very useful for university students in preparing questionnaires for their future research. It was also a good solution to reduce the waste of paper generated by the university.

Keywords: Traditional Questionnaire, Free Making E-questionnaire Tools, Mobile Phone-oriented, Specific Facilities, Reduce Paper & Energy Waste

IDENTIFY THE DISPOSAL PRACTICES OF DOMESTIC WASTEWATER AND ITS CONSEQUENCES: A CASE STUDY OF DOMPE DIVISIONAL SECRETARIAT AREA

W.D.S. Jayarathna

Abstract

Domestic wastewater is a big issue in many parts of the world. The disposal of domestic wastewater is one of the challenges facing areas in developing nations such as Sri Lanka. Urbanization and increasing population density are the major reasons for generating domestic wastewater. The generation of domestic wastewater impacts the natural environment and human beings. It imposes severe threats to living beings. People discharge their household wastewater into the environment using proper and improper ways. Most of the urban areas' households discharge their wastewater into the rivers without any treatment, due to this most of the time domestic wastewater affects the surface of the water bodies. And this leads to water pollution, odor, health issues stinking the environment, breeding of insects, effect on the groundwater quality, etc. Sewage is mainly biodegradable and most of them are broken down in the environment. Therefore, there is a need for a proper mechanism for discharging domestic wastewater into the environment. Thus arises the need for an effective way of disposing of domestic wastewater. The case study is to examine the various domestic wastewater disposal methods and their consequences in the Dompe Divisional Secretariat area. Hence, the study area is Dompe divisional secretariat, and the questioner from 60 selected households in the study area and the main 03 administrative institutions have been selected for this study by conducting the key informal interviews. Primary data and secondary data were collected. Data analysis was conducted using the qualitative method. This study found the various disposing practices of domestic wastewater such as people discharging their wastewater into the river through road drainage systems, discharging into streams, and pits in the study area and its consequences, and introduced the proper ways to dispose of domestic wastewater into the environment.

Keywords: Domestic Wastewater, Disposal, Environment, Management, Consequences

SUITABLE SITE SCREENING FOR TREATING OF DOMESTIC WASTEWATER USING GEO-INFORMATICS TECHNIQUES: A CASE STUDY OF MATALE MUNICIPAL COUNCIL AREA

S.N. Kuruvitage

Abstract

Geographic Information System (GIS) technologies have developed rapidly in recent years, and they have been widely used for location decision-making and have been applied in different kinds of study cases. Matale is a town located at the elevation of 500 -1200 meters from sea level, and “Sudu Ganga”, a tributary of the Mahaweli River flows in the northern direction the eastern boundary of the city. Domestic wastewater generated in the city is disposed into the street drains and drainage channels directed into a natural stream of “Sudu Ganga”. Wastewater derived from human activities in households such as baths, laundry, dishwashing, garbage disposal, toilets, etc. is called avoided Domestic Wastewater. The stream is heavily polluted with greywater. The town doesn't have an existing sewer network and Municipal Council provides the service for de-sludging of on-site sanitation systems operated in the city. According, the purpose of this study is to select optimal sites for a domestic wastewater treatment plant in Matale in a scientific way. In this study, based on GIS software and GIS-based multi-criteria analysis (MCA), methods have been built for optimal site selection for a sewage treatment plant. Data were collected through interviews and direct calls with the GIS unit, “Hector Kobbekaduwa Agrarian Research and Training Institute, Colombo”, following the Purposive Sampling method. Digital Elevation Model, several factor maps, and constraint maps were created for the analysis. Eighteen previous researches were used to apply the weights for each factor, to get the best result and find the optimal sites. In the end, four optimal sites have been selected in the ‘Moragahamada’, ‘Puwakpitiya’, ‘Hathamunagala’, and ‘Ankanda’ GN Divisions in the Northern part of the study area. There are still some limitations in different perspectives of the study. In the future, more precise data can be used in MCA studies.

Keywords: GIS-based Multi-criteria Analysis, Site Selection, Optimal Sites, Weights, Wastewater Treatment Plant

SRI LANKA CAN PROSPER BY CONVERTING THE WASTE-TO-ENERGY: WITH SPECIAL REFERENCE TO THE COLOMBO MUNICIPALITY

S.A. Batuwanthudawa

Abstract

Waste-to-Energy is one of the most popular approaches to reducing municipal solid waste in developed and developing countries in the world today. The Waste-to-Energy concept is the latest one that Sri Lanka is currently focusing on. Colombo Municipal Council views the concept of Waste-to-Energy through which Sri Lanka can prosper by generating energy sustainably from its waste while managing the same in an environmentally friendly manner. The general objective is to investigate how Sri Lanka can prosper by converting Waste-to-Energy based on the solid waste in the Colombo Municipal Council. Specific objectives of this study; a comprehensive understanding of existing solid waste management and energy generating in Sri Lanka and a study of its environmental, social, and economic impacts, including waste-to-energy cost-effectiveness studies. Both qualitative and quantitative data collection methods were used. Questionnaires, semi-structured interviews, and field observation were used to collect primary data. Secondary data was collected through various research articles & Journals, Public books & Text Book, government Annual reports &, etc. However, since qualitative and quantitative data are used for this research, different methods were used to analyze them. Thematic analysis was used for the analysis of qualitative data. Microsoft Excel 2016 was used to analyze the quantitative data. Although various measures have been taken for waste management, there are some drawbacks. The current solid waste management system of the Colombo Municipal Council is not fully systematic and still problematic. However, the waste-to-energy power plant, which was created as a first step based on the CMC, could be identified as an existing successful project. In view of the above, can be concluded from the special mention made in connection with CMC that Sri Lanka can prosper by converting the waste generated into Waste-to-Energy.

Keywords: Waste-to-energy, CMC, Renewable Energy, Solid Waste, Energy Demand

ORGANIC FERTILIZER PRODUCTION USING HOUSEHOLD AND LIVESTOCK WASTES AS SOLUTION FOR HOUSEHOLD WASTES: A CASE STUDY OF THALATHUOYA IN KANDY DISTRICT

P.G.S.S. Jayasena

Abstract

Household waste disposal has become a huge problem. Wastes can be used as a resource converting wastes into organic manure. The major objective of this research was to find whether household wastes can be converted into organic manure. The methodology of this study contains informal interviews, field observations, and sample collection. A literature review was also conducted for this study and analyzed the production of organic manure for domestic waste management and the study of new waste management methods. According to the study, it is possible to make organic and liquid fertilizers using household waste and cattle waste and to make new fertilizers from discarded banana peels, garlic, onion peels, tea powder, and egg shells. Fertilizers were applied using a chili nursery to study the progress of systematically formulated organic fertilizers and organic liquid fertilizers. The results of the study reveal that fertilizers can be successfully produced from household waste and applied to crops, can reduce insect damage, and plant growth, get a rich harvest, nourish the soil, and also can be used as an insect repellent. In conclusion, organic fertilizer production appeared to be a successful method for domestic waste management. It can be recommended that there are many benefits to turning waste into a resource.

Keywords: Waste Management, Organic Manure, Resource, Fertilizers, Household

Environmental Management Undergraduate Research Symposium

Department of Environmental Management



Organized by

**Department of Environmental Management
Faculty of Social Sciences & Humanities
Rajarata University of Sri Lanka**



ISSN - 2550 - 2646