

# IJES

## Indonesian Journal of Environmental Sustainability

Vol. 2 No. 2 (July - December 2024)



Published by :  
Center For Environmental Studies  
UIN Ar-Raniry Banda Aceh

## **IJES: Indonesian Journal of Environmental Sustainability**

ISSN : 3046-885X (online)

Volume 2, No. 2, (July - December 2024)

---

IJES : Indonesian Journal of Environmental Sustainability is an open access and peer-reviewed journal published by **Center For Environmental Studies Universitas Islam Negeri Ar-Raniry Banda Aceh, Indonesia**. The journal publishes research articles, conceptual articles, and book reviews of environmental studies and sustainability development issues (see Focus and Scope). This journal accept manuscript written in both Bahasa Indonesia and English (British or American Style but no a mixture of both styles). The articles of this journal are published 2 times a year; June and December.,

### **Editor In Chief**

Dr. Ir. Juliansyah Harahap, S.T., M.Sc., UIN Ar-Raniry Banda Aceh, Indonesia.

### **Managing Editor**

Dr. Khairun Nisah, S.T., M.Si., UIN Ar-Raniry Banda Aceh, Indonesia.

### **Editorial Boards**

Hendri Ahmadian, M.I.M., UIN Ar-Raniry Banda Aceh, Indonesia.

Syafrina Sari Lubis. M.Si., UIN Ar-Raniry Banda Aceh, Indonesia.

Ir. Bahagia, M.T., Universitas Serambi Mekkah, Indonesia

Teuku Muhammad Ashari, M.Sc., UIN Ar-Raniry Banda Aceh, Indonesia.

Cut Dian Fitri, S.E., M.Si., UIN Ar-Raniry Banda Aceh, Indonesia.

Firman Rija Arhas, M.Si., UIN Ar-Raniry Banda Aceh, Indonesia.

Ilham Zulfahmi, S.Kel., M.Si., Universitas Syiah Kuala, Banda Aceh, Indonesia.

Wirda Amalia, M.Kesos., UIN Ar-Raniry Banda Aceh, Indonesia.

Nanda Savira Ersa, S.T., M.T., Universitas Malikussaleh, Lhokseumawe, Indonesia

Dr. Zya Dyena Meutia, S.T., M.T., UIN Ar-Raniry Banda Aceh, Indonesia.

### **Layout Editor**

Rizqa Dhiyaul Aulia, S.T., UIN Ar-Raniry Banda Aceh, Indonesia.

### **OJS and Web Manager**

Saufia Lailatur Rahmah, S.Pd., UIN Ar-Raniry Banda Aceh, Indonesia.

### **Proofreader**

Rahmah Septiani, S.Pd., UIN Ar-Raniry Banda Aceh, Indonesia.

### **Reviewers**

Dr. Elida Novita, S.TP. M.T., Universitas Jember, Indonesia

Dr. Margaretha Widyastuti, M.T., Universitas Gadjah Mada, Yogyakarta, Indonesia

Dr. Abd. Mujahid Hamdan, M.Sc., UIN Ar-Raniry Banda Aceh, Indonesia

Dr. Miranti Ariani, S.P., M.Si., Indonesian Agricultural Environment Research Institute

Dr. Aldila Rahma, S.Si., M.I.L., Universitas Islam Nusantara, Bandung, Indonesia

Prof. Dr. phil. Saiful Akmal, S.Pd., M.A., UIN Ar-Raniry Banda Aceh, Indonesia  
Dr. Alfred Umbu Kuala Ngaji, S.P., M.Si., Politeknik Pertanian Negeri Kupang, Indonesia  
Anggita Rahmi Hafsari, M.Si., UIN Sunan Gunung Djati, Bandung, Indonesia  
Prof. Dr. Ichwana, S.T., M.P., Universitas Syiah Kuala, Banda Aceh, Indonesia  
Dr. Andri Gumilar S. T., M. T., Institut Teknologi Bandung, Bandung, Indonesia  
Anjar Purba Asmara, M.Sc., Ph.D., UIN Ar-Raniry Banda Aceh, Indonesia  
Dr. Eka Sulistiyowati, S.Si., M.A., UIN Sunan Kalijaga, Yogyakarta, Indonesia  
Dr. Irma Dewiyanti, S.Pi., M.Sc., Universitas Syiah Kuala, Banda Aceh, Indonesia  
Rizna Rahmi, S.Si., M.Sc., Monash University, Melbourne, Victoria, Australia  
Fathul Mahdariza, S.T., M.Sc., University of Kassel, Germany  
Rachmad Ardianto, S.T., M.T., Institut Teknologi PLN, Jakarta, Indonesia  
Dr. Eng. Nur Aida, M.Si., UIN Ar-Raniry Banda Aceh, Indonesia

## TABLE OF CONTENTS

THE INFLUENCE OF SOCIO-ECONOMIC FACTORS ON COMMUNITY PARTICIPATION IN THE IMPLEMENTATION OF THE REDUCE-REUSE-RECYCLE PRINCIPLE IN LHOKNGA DISTRICT, ACEH BESAR, ACEH PROVINCE   <i>Syarifah Seicha Fathma, Tafaul Rijal, Dewi Hawati, Adi Handarbeni, Danny Trisnadi, M. Yassar, Cut Dara</i> .....	59
UTILIZATION OF ARECA NUT ( <i>Areca catechu L.</i> ) SHELL WASTE FOR THE CHARACTERIZATION OF CELLULOSE ACETATE MEMBRANES   <i>Bhayu Gita Bhernama, Hulwah Nadhila, Jihan Amalia, Febrina Arfi, Muammar Yulian</i> .....	71
SPECIES DIVERSITY OF THE MORACEAE FAMILY IN THE SORAYA RESEARCH STATION, LEUSER ECOSYSTEM AREA, SULTAN DAULAT DISTRICT, SUBULUSSALAM, ACEH PROVINCE   <i>Muslich Hidayat, Rizky Ahadi, Masitah</i> .....	85
EXPLORING THE ROLE OF SPECTRAL INDICES ON IMPROVING LAND COVER CLASSIFICATION ACCURACY BASED ON SENTINEL-2 SATELLITE IMAGERY IN BANDA ACEH CITY, INDONESIA   <i>Mulka, Putra Rizkya, Nurul Aflah, Muchlis</i> .....	96
THE EFFECT OF DIFFERENT CONCENTRATIONS OF RICE WASHING WATER IN THE COMPOSTING PROCESS WITH THE MAC DONALD METHOD   <i>Cut Nina Latisa Maura, Husnawati Yahya, Arief Rahman</i> .....	108
ECOPOTENTIAL <i>Bacillus sp.</i> FROM KRUENG ACEH : BIOREMEDIATION AND ANTIMICROBIAL ACTIVITY   <i>Annisa Rahmah, Syafrina Sari Lubis</i> .....	116