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# PROGRAM BOOK

4th International Symposium of Earth, Energy, Environmental  
Science and Sustainable Development

**AUGUST 26-27, 2023**

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# **PROGRAM BOOK**

**4th International Symposium (Hybrid) of Earth,  
Energy, Environmental Science and Sustainable  
Development 2023**

**August 26<sup>th</sup> – 27<sup>th</sup>, 2023**

# 4<sup>th</sup> International Symposium (Hybrid) of Earth, Energy, Environmental Science and Sustainable Development 2023

26-27 AGUSTUS 2023

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## **FOREWORD:**

### **DIRECTOR**

## **School of Environmental Science Universitas Indonesia**

Greetings everyone,

As Director of School of Environmental Science, Universitas Indonesia, I'm honored that we are able to hold this symposium for the third time. The 4th International Symposium (Hybrid) of Earth, Energy, Environmental Science and Sustainable Development 2023, Universitas Indonesia. This year, we have the opportunity to hold a virtual symposium. Previously we arranged to make a hybrid symposium, however because of a pandemic we decided to hold virtually. We hope that our decision to hold a virtual event will help make the symposium more accessible without impacting the quality of the research that will be showcased in today's event.

Extreme Temperatures, Frequent Storms, Heavy Floods, all of these hazards, when traced back to their cause, are heavily linked to how humans interact and manage the environment around them. Through system dynamics, we begin to see a pattern on how a human factor plays into part on how the hazards interact and cause disruptions into our lives. Through the lens of environmental science, we have begun to see various natural hazards that are increasing in volume and frequency. These hazards, which ultimately create disasters, are a prominent threat to society's livelihood and should be mitigated as soon as possible as we cannot achieve world peace while knowing that the risk of disaster is still imminent, and the process of recovering from a disaster is still not efficient nor effective enough.

Many of our society's problems today can be traced back to how we manage the environment. For example, Deforestation has significantly contributed to many things, one of them is towards climate change. Due to unregulated and uncontrolled deforestation, many hydrometeorological hazards have been increasing in frequency. This in turn has significantly increased the frequency and the risk of disasters happening in both domestic and international level. If it goes unregulated, uncontrolled or does not decrease significantly, it could significantly increase the risks even further and may endanger the livelihood of every person on the planet.

We need a change for the better immediately. I believe in order to properly implement such changes, holding this symposium is a great way to contribute to that implementation. This is because we need to use an evidence-based approach as well as educating ourselves related to various environmental issues, especially deforestation. By learning, collecting data, and educating ourselves, we can create substantial arguments and initiatives that can aim to systematically reduce deforestation in the long run. Committing to a long-term education is also an appropriate way to learn from experts as well as develop ourselves to equip necessary knowledge in combating various environmental problems such as the aforementioned deforestation. It is also a viable solution in terms of sustainability.

The 4th International Symposium (Hybrid) of Earth, Energy, Environmental Science and Sustainable Development 2023 chooses the theme related to science, energy, and environmental science, with more specific topics on Cleaner Production, Environmental Management and Protection, Environment during Post Coronavirus Disease 2019 (Covid-19) era, and Community Empowerment in Environmental Sectors. There are 143 papers and have been rejected with 62 articles in this symposium from countries as diverse as Iraq, Malaysia, Indonesia, Sri Lanka,



Uzbekistan, Filipina, Jepang, Nigeria, China, Germany, Ukraina, Vietnam, Rusia. We will be happy to hear more about these articles which will be presented during the two-day period. We hope to be able to hear ideas that will serve as innovations that can change our communities and the world for the better.

In addition, I would like to take this opportunity to thank the sponsors for all their assistance and support in making the 4th International Symposium (Hybrid) of Earth, Energy, Environmental Science and Sustainable Development 2023 a success. While thanking PT Pertamina Persero, PT Riau Pulp and Paper (APRIL), BRI, PT Daya Padi Abadi, PT APP Sinar Mas, PT Petrokimia Gresik, PT Gunanusa Utama Fabrication , PT PII, BSI , PT Unilever Indonesia, Tbk., Paragharp Consulting, BRM that have contributed for this event.

Last but not least, allow me to express my gratitude to the organizing committee as well as our partners during the process in preparing this event. This Symposium would not have been possible without the help of the many individuals and organizations who contributed directly and indirectly to its success. In addition, I want to thank all the presenters, committees, and reviewers for contributing their ideas and effort to this Symposium. We have tried our best in organizing this event. However, please accept our heartfelt apologies on behalf of the School of Environmental Science, Universitas Indonesia, should there are any problems before, during, or after the event. Should you encounter any of these problems, please do not hesitate to report it to the committee.

I wish you all the best for the Symposium and look forward to engaging in insightful discussion as well as exchanging ideas with you. Together, we can look forward to a bright future filled with ground-breaking research, knowledge, and technology.

Jakarta, August 26<sup>th</sup>, 2023  
Director, School of Environmental Science  
Universitas Indonesia,

Tri Edhi Budhi Soesilo

## **FOREWORD:**

### **EDITOR-IN-CHIEF**

I am deeply honoured to have all of you in our fourth JESSD Symposium. The 4th International Symposium (Hybrid) of Earth, Energy, Environmental Science and Sustainable Development 2023 aims to be the leading annual conference in the research field related to science, energy, and environmental science, with more specific topics on Cleaner Production, Environmental Management and Protection, Environment during Post Coronavirus Disease 2019 (Covid-19) era, and Community Empowerment in Environmental Sectors. We are aware of our current situation. We also realize that a hybrid setup of the symposium will not provide the same experience as an on-site symposium. We decided to run this event both virtually and on-site to reduce waste and greenhouse emissions and break barriers in information sharing.

I would like to express my deep gratitude to all keynotes, committees, and reviewers for their time and hard work that have made this symposium a success, especially during this challenging time. I would like to take this opportunity to thank the sponsors for all their assistance and support in making the 4th International Symposium (Hybrid) of Earth, Energy, Environmental Science and Sustainable Development 2023 a success PT Pertamina Persero, PT Riau Pulp and Paper (APRIL), BRI, PT Daya Padi Abadi, PT APP Sinar Mas, PT Petrokimia Gresik, PT Gunanusa Utama Fabrication , PT PII, BSI , PT Unilever Indonesia, Tbk., Paragharp Consulting, BRM that have contributed for this event.

Jakarta, 26 August 2023  
Chief Editor,

Herdis Herdiansyah

## JESSD's PROFILE

Journal of Environmental Science and Sustainable Development (JESSD) is a biannually refereed journal that serves as a space for scholars and practitioners to reflect, explore, and exchange ideas on a broad range of issues relevant to environmental science and sustainable development. The aim of JESSD is to advance scientific knowledge and understanding of the theoretical, methodological, and practical aspects of environmental science and sustainable development. JESSD is managed as a free open access journal and published by the School of Environmental Science, Universitas Indonesia, Jakarta.

This year, JESSD is proud to hold its second virtual international symposium. The last two symposiums has been held in 2020 and 2022. The symposium was held with the support of 260 participants from 23 countries and 116 reviewers from 30 countries. The symposium accepted 260 papers, of which 97 short papers were successfully published in E3S and indexed in Scopus in December 2020; and 138 short papers were successfully published in IOP: Earth and Environmental Science and indexed in Scopus April 2021. In addition, 25 full papers are also published in journal regular issues.

The second International Symposium of Earth, Energy, Environmental Science, and Sustainable Development features world-class speakers and editors worldwide, such as from the United Kingdom, Malaysia, Japan, and Indonesia. This event covers numerous subjects ranging from broad earth science, energy, and environmental science, to more specific topics on Earth Science, Energy, Environmental Science, Sustainable Development Goals (SDGs): Environmental Protection, and Special Issues with Community Engagement, COVID-19 and Natural Disasterst. This symposium invites all interested national (approximately 50% or more from the total of participants) and international experts as well as enthusiasts from universities, institutions, organizations, businesses and related communities themselves. The third symposium was held on August 27th-28th, 2022, followed by a hundred participants with more than 230 articles from more than 18 countries. This year, JESSD is proud to hold the fourth hybrid international symposium in 2023 and will feature world-class speakers and editors worldwide, including the USA, Ukraine, Nigeria, United Kingdom, Japan, and Indonesia.

We gladly announce that our 4th International Symposium (Hybrid) of Earth, Energy, Environmental Science and Sustainable Development 2023, which will be held at the Central of the Capital City, Jakarta, on August 26th-27th, 2023 with more than 143 participants from all over the world. This year JESSD Symposium goals are stated as following:

1. Provide a key platform for the researchers' development with international and diverse knowledge and experiences in environmental science issues.
2. To promote the results of your research in the field of environmental science so that it can be knowledgeable and implemented by the wider community.
3. Enhance policymakers' quality decision-making and promote the highest utilization of research knowledge on environmental science.
4. Bridge the gap between research and application of environmental science on management and policy.
5. To connect fellow scholars, students, and stakeholders efficiently to share and discuss environmental science



# Symposium Rundown

# SYMPOSIUM RUNDOWN

Saturday, 26 August 2023 (Online)s

Link Zoom :

<https://us02web.zoom.us/j/82469333062?pwd=WS9iK3hVdldDQ3hsbGpmYWxRNlI0Zz09>

Meeting ID : 824 6933 3062

Passcode : jessd2023

Time (AM/GMT+7)	Event
07.30-08.00	Preparation
08.00-08.30	Opening and Anthem
08.30-09.00	Opening Ceremony with Director of School of Environmental Science, Universitas Indonesia
09.00-10.45	Keynote Speakers Presentation Session: 1. Prof. Dr.Arch. Iryna Bulakh. (Darmstadt, Hesse, Germany) 2. Mohamad Nor Azra, Ph.D. (Universiti Malaysia Terengganu, Malaysia) 3. Assoc. Prof. Hironori Himasaki. (Nagasaki University, Nagasaki, Japan)
10.45-10.55	Q&A
10.55-11.00	Closing of Keynote Speakers Presentation Session
11.00-11.15	Parallel Oral Presentation Sessions Preparation
11.15-13.35	Parallel Oral Presentation Sessions*
13.35-14.00	Break Sessions
14.00-15.30	Poster Sessions
15.30-16.00	Closing

*\*For registered participants only*

# SYMPOSIUM RUNDOWN

Sunday, 27 August 2023 (Hybrid)

Link Zoom :

<https://us02web.zoom.us/j/87353664472?pwd=M2JTemFREkZHdi9kMFpyWUFWbW5adz09>

Meeting ID : 873 5366 4472

Passcode : jessd2023

Time (AM/GMT+7)	Event
09.00-09.45	Preparation
09.45-10.00	Opening and Anthem (Indonesia Raya and Hymne UI)
10.00-10.45	Professional Talk Session:  1. Dr. Ir. Haruki Agustina, M.Env.Eng.Sc (Head of Subdivision for Carrying Capacity at Ministry of Environment and Forestry, Indonesia)  2. Dr. Yuki Mahardhito Adhitya Wardhana, S.Hut., M.Si (Senior Vice President at PT Penjaminan Infrastruktur Indonesia)
10.45-11.15	Q&A
11.15-11.30	Announcement: 1. Best Paper 2. Best Presenter 3. Best Poster
11.30-12.00	Closing of Symposium

*\*To be confirmed*

# Parallel Session Room

## Room 1: Earth, Disaster, and Disease

Session Chair: Yanu Ariani

Admin: Admin 1

Time (AM/GMT+7)	ID	Event
11.00-11.15		<b>Admin Preparation and Opening</b>
11.15-11.24	JESSD-7	<p><b>Earth Surface Temperature Variation at Sultan Idris Education University Campus, Malaysia</b></p> <p><b>Author</b> N Nayan<sup>1*</sup>, M Hashim<sup>1</sup>, Y Saleh<sup>1</sup>, H Mahat<sup>1</sup>, M H Luyan<sup>1</sup>, N Khotimah<sup>2</sup>, Tjaturahono Budi Sanjoto<sup>3</sup></p> <p><b>Affiliation</b> <sup>1</sup>Department of Geography and Environment, Faculty of Human Sciences, Sultan Idris Education University, 35900 Tanjong Malim, Perak/Malaysia <sup>2</sup>Department of Geography Education, Faculty of Social Sciences, Universitas NegeriYogyakarta, Kampus Karangmalang, 55281 Yogyakarta, Indonesia, <sup>3</sup>Department Department of Geography, Fakultas of Social Sciences, Universitas Negeri Semarang, Campus Sekaran Gunungpati, 50229 Semarang, Central Java, Indonesia</p>
11.24-11.27		<b>Q&amp;A</b>
11.27-11.36	JESSD-10	<p><b>Study of the Effect of Magnesium Sulfate and Ammonium Nitrate on the Chemical Activity of Solutions of Phosphoric Acid</b></p> <p><b>Author</b> Asadjon Kambarov<sup>1</sup>, Israiljon Shamshidinov<sup>2</sup>, Rixsitilla Najmiddinov<sup>2</sup>, Gulnoza Kodirova<sup>2</sup>, Ilkham Usmanov<sup>1</sup>, Diyorbek Absattorov<sup>1</sup>, Mohamed Rifky<sup>1,3</sup>, Bakhrum Ruzibayev<sup>4</sup>, Murodjon Samadiy<sup>1*</sup></p> <p><b>Affiliation</b> <sup>1</sup>Yangiyer branch of Tashkent Chemical Technological Institute, Yangiyer 121001, Uzbekistan. <sup>2</sup>Namangan Institute of Civil Engineering, Namangan,160103, Uzbekistan. <sup>3</sup>Eastern university, Sri Lanka, Chenkallady, 30350, Sri Lanka. <sup>4</sup>Tashkent Chemical Technological Institute, Tashkent, 100011, Uzbekistan.</p>
11.36-11.39		<b>Q&amp;A</b>
11.39-11.48	JESSD-27	<p><b>Land Cover Change and Fragmentation Analysis in Sintang Regency, West Kalimantan, Indonesia</b></p> <p><b>Author</b> M J Ardha<sup>1*</sup>, and M Karuniasa<sup>1</sup></p> <p><b>Affiliation</b> <sup>1</sup>University of Indonesia, School of Environmental Science, UI Salemba Campus, Gedung C (FKG) Lt. 5 dan 6, RW.5, Kenari, Kecamatan Senen, Kota Jakarta Pusat, Daerah Khusus Ibukota Jakarta 10430, Indonesia.</p>
11.48-11.51		<b>Q&amp;A</b>
11.51-12.00	JESSD-77	<b>Unravelling Groundwater Governance Complexity: Exploring the Utility of Assemblage Thinking</b>

Time (AM/GMT+7)	ID	Event
		<p><b>Author</b> Anindrya Nastiti<sup>1</sup>, Muhamad Burhanudin<sup>1</sup>, Arief Dhany Sutadian<sup>1</sup>, Nur Novilina Arifianingsih<sup>1</sup>, Sholihah R. Utami<sup>1</sup></p> <p><b>Affiliation</b> <sup>1</sup>Faculty of Civil and Environmental Engineering, Institut Teknologi Bandung, Bandung, 40132, Indonesia</p>
12.00-12.03		<b>Q&amp;A</b>
12.03-12.12	JESSD-88	<p><b>Impact of land-use change and land fragmentation on privately owned forests in rural areas of West Java, Indonesia</b></p> <p><b>Author</b> E Fauziah<sup>1*</sup>, SA Awang<sup>2</sup>, B Achmad<sup>3</sup> and P Suryanto<sup>4</sup></p> <p><b>Affiliation</b> <sup>1</sup>Research Center for Population, National Research and Innovation Agency (BRIN), Jl Gatot Subroto Kav 10 Jakarta, Indonesia <sup>2</sup>Department of Forest Management, Faculty of Forestry, Universitas Gadjah Mada, Jl. Agro Bulaksumur No.1 Yogyakarta, Indonesia <sup>3</sup>Department of Silviculture, Faculty of Forestry, Universitas Gadjah Mada, Yogyakarta, Jl. Agro Bulaksumur No.1 Yogyakarta, Indonesia <sup>4</sup>Research Center for Macro Economics and Finance, National Research and Innovation Agency (BRIN), Jl Gatot Subroto Kav 10 Jakarta, Indonesia</p>
12.12-12.15		<b>Q&amp;A</b>
12.15-12.24	JESSD-6	<p><b>Incidence Of Multiple Sclerosis In Kurdistan Region Of Iraq, A Case Study Of Sulaymaniyah Population</b></p> <p><b>Author</b> H. A. Hama<sup>1</sup>, S. J. Al-Bajalan<sup>2</sup>, H. Star<sup>3</sup>, M.D Abdulrahman<sup>1</sup></p> <p><b>Affiliation</b> <sup>1</sup> Biology Education Department, Faculty of Education, Tishk International University, Erbil, Kurdistan Region, Iraq <sup>2</sup>University of Sulaimani, School of Medicine, Iraq <sup>3</sup>Independent Researcher, Iraq</p>
12.24-12.27		<b>Q&amp;A</b>
12.27-12.36	JESSD-41	<p><b>Disaster Mitigation through Community Education: A Study of Evacuation Knowledge in Lapindo Mud Area</b></p> <p><b>Author</b> Mohamad Ferdaus Noor Aulady<sup>1</sup>, Rizqa Nurun Dina Andhima<sup>1</sup></p> <p><b>Affiliation</b> <sup>1</sup> Departemet of Civil Engineering, Faculty of Civil Engineering and Planning, Institut Teknologi Adhi Tama Surabaya, Surabaya, 60117, Indonesia</p>
12.36-12.39		<b>Q&amp;A</b>
12.39-12.48	JESSD-44	<p><b>Proanthocyanidins-rich Fraction of Tamarindus indica Maintained Redox Status of Environmental Toxicant-induced genotoxicity in Drosophila melanogaster</b></p> <p><b>Author</b> Jaafaru Sani Mohammed<sup>1</sup>, Jibril Habib Yusuf<sup>1</sup></p> <p><b>Affiliation</b></p>



Time (AM/GMT+7)	ID	Event
		<sup>1</sup> Medical Analysis Department, Faculty of Applied Science, Tishk International University-Erbil, Kurdistan Region, Iraq.
12.48-12.51		<b>Q&amp;A</b>
12.51-13.00	JESSD-48	<p><b>Genetic Selection Pressure on TLR9 Gene Increases Individual Susceptibility to Systemic Inflammatory Disease: A Case Study of Kano State Population</b></p> <p><b>Author</b> Yusuf Jibril Habib <sup>1*</sup>, and Mohammed Sani Jaafaru<sup>1</sup></p> <p><b>Affiliation</b> <sup>1</sup>Medical Analysis Department, Faculty of Applied Science, Tishk International University, Erbil, Kurdistan Region, Iraq.</p>
13.00-13.03		<b>Q&amp;A</b>
13.03-13.12	JESSD-71	<p><b>Unlocking soil carbon stock potential in conservation areas</b></p> <p><b>Author</b> Nurul Silva Lestari<sup>1*</sup>, Eka Susanti<sup>2</sup>, Anton Eko Satrio<sup>2</sup>, Galih Kartikasari<sup>3</sup>, Androw Mikhov Sion<sup>4</sup>, Nori Hariyen<sup>5</sup>, Sugianur<sup>6</sup></p> <p><b>Affiliation</b> <sup>1</sup> Research Center for Ecology and Ethnobiology, National Research and Innovation Agency, Cibinong, 16911, Indonesia. <sup>2</sup> Directorate Ecosystem Services of Conservation Area, Directorate General of Natural Resources and Ecosystem Conservation, Ministry of Environment and Forestry, Bogor, 16121, Indonesia <sup>3</sup> Center for Standardization of Disaster Resilience and Climate Change Instrument, Ministry of Environment and Forestry, Bogor, 16118, Indonesia. <sup>4</sup>Sebangau National Park, Palangkaraya, Central Kalimantan, 73111 Indonesia <sup>5</sup>Bukit Tiga Puluh National Park, Indragiri Hulu, Riau, 29355, Indonesia <sup>6</sup>Kutai National Park, Kutai Timur, East Kalimantan, 75553, Indonesia</p>
13.12-13.15		<b>Q&amp;A</b>
13.15-13.27		<b>Closing Remarks</b>

## Room 2: Energy and Environmental Assessment

Session Chair: Basri PhD

Admin: Admin 2

Time (AM/GMT+7)	ID	Event
11.00-11.15		<b>Admin Preparation and Opening</b>
11.15-11.24	JESSD-62	<p><b>Effect of permanent magnet structure on working characteristics of LSPMSM 3000 rpm</b></p> <p><b>Author</b> Trinh Bien Thuy<sup>1,4</sup>, Ngo Xuan Cuong<sup>2</sup>, Le Anh Tuan<sup>3</sup>, Do Nhu Y<sup>4*</sup></p> <p><b>Affiliation</b> <sup>1</sup>Vietnam-Korea College Quang Ninh, Quang Ninh, 200000, Viet Nam <sup>2</sup>School of Engineering and Technology, Hue University, Thua Thien Hue, 530000, Viet Nam <sup>3</sup>Hanoi University of Industry, Ha Noi, 100000, Viet Nam <sup>4</sup>Department of Electrification, Hanoi University of Mining and Geology, Ha Noi, 100000, Viet Nam</p>
11.24-11.27		<b>Q&amp;A</b>
11.27-11.36	JESSD-63	<p><b>Improving electricity efficiency by DC power transmission: A case study in Vietnamese mining</b></p> <p><b>Author</b> Nguyen Truong Giang<sup>1</sup>, Do Nhu Y<sup>1*</sup>, Tran Huu Phuc<sup>2</sup>, Ngo Xuan Cuong<sup>3</sup></p> <p><b>Affiliation</b> <sup>1</sup>Department of Electrification, Hanoi University of Mining and Geology, Ha Noi, 100000, Viet Nam <sup>2</sup>East Asia University of Technology, Bac Ninh, 220000, Viet Nam <sup>3</sup>School of Engineering and Technology, Hue University, Thua Thien Hue, 530000, Viet Nam</p>
11.36-11.39		<b>Q&amp;A</b>
11.39-11.48	JESSD-108	<p><b>The Effect of Shading Position on Thermal Comfort of Commercial Buildings Through Energy Retrofitting</b></p> <p><b>Author</b> Nur Laila Hamidah<sup>1</sup>, Hamzah Zulfan Prasetya<sup>1</sup> and Mohamad F. N. Aulady<sup>2*</sup></p> <p><b>Affiliation</b> <sup>1</sup> Department of Engineering Physics, Faculty of Industrial Technology and Systems Engineering, Sepuluh Nopember Institute of Technology, Surabaya, 60111, Indonesia <sup>2</sup> Department of Civil Engineering, Faculty of Civil Engineering and Planning, Institut Teknologi Adhi Tama Surabaya, Surabaya, 60117, Indonesia</p>
11.48-11.51		<b>Q&amp;A</b>
11.51-12.00	JESSD-130	<p><b>Resource Potential of Socio-Economic Development in the Regional Sustainability Context: the role of Energy Security and Environment</b></p> <p><b>Author</b> Andrey Zaytsev<sup>1*</sup>, Nikolay Dmitriev<sup>1</sup>, Sergey Barykin<sup>2</sup></p>

Time (AM/GMT+7)	ID	Event
		<p><b>Affiliation</b>  <sup>1</sup> Graduate School of Industrial Economics, Peter the Great St.Petersburg Polytechnic University, St.Petersburg, 195251, Russian Federation  <sup>2</sup>Graduate School of school of Service and Trade, Peter the Great St.Petersburg Polytechnic University, St.Petersburg, 195251, Russian Federation</p>
12.00-12.03		<b>Q&amp;A</b>
12.03-12.12	JESSD-2	<p><b>Water Quality Assessment of the Semantan River's Based on the Malaysian Water Quality Index</b></p> <p><b>Author</b>  M Hashim<sup>1</sup>, M I R Zunaidi<sup>2</sup>, N Nayan<sup>1</sup>, H Mahat<sup>1</sup>, Y Saleh<sup>1</sup>, M S Zahid<sup>3</sup> &amp; L C Koh<sup>4</sup></p> <p><b>Affiliation</b>  <sup>1</sup>Department of Geography &amp; Environment, Faculty of Human Sciences, Universiti Pendidikan Sultan Idris, 35900 Tanjong Malim, Perak, Malaysia  <sup>2</sup>SMK Pasir Besar, Jalan Utama Palong, 73420 Gemas, Negeri Sembilan, Malaysia  <sup>3</sup>Department of Biology, Faculty of Science &amp; Mathematics, Universiti Pendidikan Sultan Idris, 35900 Tanjong Malim, Perak, Malaysia  <sup>4</sup>SMK Mahsuri, Jalan Ayer Hangat, 07000 Langkawi, Kedah, Malaysia</p>
12.12-12.15		<b>Q&amp;A</b>
12.15-12.24	JESSD-8	<p><b>Assessment And Mapping Of Water Quality In Urban Communities: Insights For Sustainable Development</b></p> <p><b>Author</b>  Basri<sup>1</sup>, Andi Yulia Kasma<sup>1</sup>, Chitra Dewi<sup>1</sup>, Andi Tilka Muftiah Ridjal<sup>1</sup>, Indah Arifah Febriany<sup>2</sup></p> <p><b>Affiliation</b>  <sup>1</sup>Sekolah Tinggi Ilmu Kesehatan Makassar, Makassar, 90231, Indonesia  <sup>2</sup>Celebes Kearifan Madani Foundation, Makassar, 90245, Indonesia</p>
12.24-12.27		<b>Q&amp;A</b>
12.27-12.36	JESSD-26	<p><b>Navigating Clean Water Scarcity: Assessing Household Behaviour of Clean Water Treatment and Storage in Tallo, Makassar</b></p> <p><b>Author</b>  Andi Tilka Muftiah Ridjal <sup>1*</sup>, Chitra Dewi<sup>1</sup>, Indah Arifah Febriany<sup>2</sup> and Basri<sup>1</sup></p> <p><b>Affiliation</b>  <sup>1</sup>Department of Public Health, Sekolah Tinggi Ilmu Kesehatan Makassar, 90232, Indonesia  <sup>2</sup>Celebes Kearifan Madani Foundation, Makassar, 90222, Indonesia</p>
12.36-12.39		<b>Q&amp;A</b>
12.39-12.48	JESSD-69	<p><b>Assessment of Water Quality Changes Using Physical Parameter and Stable Isotope in Ciliwung River</b></p> <p><b>Author</b>  Iwan Juwana<sup>1</sup>, Rizka Maria<sup>2</sup>, Dyah Marganingrum<sup>3</sup>, Ratih Nurjayati<sup>3</sup>, Hidawati<sup>3</sup>, Heru Santoso<sup>4</sup>, Heri Nurohman<sup>1</sup>, and Rasi Prasetio<sup>5</sup></p> <p><b>Affiliation</b>  <sup>1</sup> Environmental Engineering Department, Institut Teknologi Nasional (Itenas), Bandung, 40134, Indonesia  <sup>2</sup> Research Centre for Geological Resources-BRIN, Bandung, 40134, Indonesia</p>

Time (AM/GMT+7)	ID	Event
		<sup>3</sup> Research Centre for Environmental and Clean Technology-BRIN, Bandung, 40134, Indonesia <sup>4</sup> Research Center for Climate and Atmosphere-BRIN, Bandung, 40134, Indonesia <sup>5</sup> Research Center for Radiation Process Technology-BRIN, Jakarta, 12440, Indonesia
12.48-12.51		<b>Q&amp;A</b>
12.51-13.00	JESSD-100	<b>Particulate metal contamination assessment in Surabaya Coast, East Java, Indonesia</b>  <b>Author</b> Edwards Taufiqurrahman <sup>1</sup> , Lestari <sup>1,2</sup> , Muhammad Taufik Kaysupi <sup>1</sup> , Harmesa <sup>1</sup>  <b>Affiliation</b> <sup>1</sup> Research Center for Oceanography, National Research and Innovation Agency, Jl. Pasir Putih 1 Ancol, Jakarta 14430 Indonesia <sup>2</sup> School of Environmental Science, Universitas Indonesia, Jakarta 10430 Indonesia
13.00-13.03		<b>Q&amp;A</b>
13.03-13.06		<b>Closing Remarks</b>

## Room 3: Environmental Engineering

Session Chair: Nova Amalia

Admin: Admin 3

Time (AM/GMT+7)	ID	Event
11.00-11.15		<b>Admin Preparation and Opening</b>
11.15-11.24	JESSD-9	<p><b>Technology Development to Measure Chemical and Oxidative Stability of Edible Oils Using Fourier Transform-Infrared Spectroscopy</b></p> <p><b>Author</b> K.D.K.K Dissanayake<sup>1</sup>, A.L. Mohamed Rifky<sup>2,3</sup>, A.B Mohamed Jesfar<sup>4</sup>, Jasur Makhmayorov<sup>3</sup>, Shokir Rakhimkulov<sup>3</sup>, and Murodjon Samadiy<sup>3</sup></p> <p><b>Affiliation</b> <sup>1</sup> Postgraduate Institute of Agriculture, University of Peradeniya, 20400, Sri Lanka. <sup>2</sup> Faculty of Technology, Eastern University, Sri Lanka, Chenkalady, 30350, Sri Lanka. <sup>3</sup> Yangiyer Branch of Tashkent Chemical Technological Institute, Yangiyer, 121001, Uzbekistan. <sup>4</sup> Sri Lanka Institute of Advance Technological Education, Ampara, 32000, Sri Lanka.</p>
11.24-11.27		<b>Q&amp;A</b>
11.27-11.36	JESSD-13	<p><b>Development of Technology to Incorporate Curry leaves (<i>Murraya Koenjii</i>) to Develop Functional Chicken Sausage and Evaluation of Chemical Properties</b></p> <p><b>Author</b> K.D.K.K Dissanayake<sup>1*</sup>, A.L. Mohamed Rifky<sup>2,3</sup>, A.B Mohamed Jesfar<sup>4</sup>, Jasur Makhmayorov<sup>3</sup>, Shokir Rakhimkulov<sup>3</sup>, Bakhodir Abdullayev<sup>3</sup>, and Murodjon Samadiy<sup>3</sup></p> <p><b>Affiliation</b> <sup>1</sup>Postgraduate Institute of Agriculture, University of Peradeniya, 20400, Sri Lanka <sup>2</sup>Faculty of Technology, Eastern University, Sri Lanka, Chenkalady, 30350, Sri Lanka <sup>3</sup>Yangiyer Branch of Tashkent Chemical Technological Institute, Yangiyer, 121001, Uzbekistan <sup>4</sup>Sri Lanka Institute of Advanced Technological Education, Ampara, 32000, Sri Lanka</p>
11.36-11.39		<b>Q&amp;A</b>
11.39-11.48	JESSD-105	<p><b>Relative and absolute sea level change variability in the Palabuhanratu Bay waters</b></p> <p><b>Author</b> Eva Novita<sup>1,4</sup>, Masita Dwi Mandini Manessa<sup>2*</sup> and Mufti Petala Patria<sup>3</sup></p> <p><b>Affiliation</b> <sup>1</sup> Master Program of Marine Science, Faculty of Mathematics and Natural Sciences, Universitas Indonesia, Depok, Indonesia <sup>2</sup> Department of Geography, Faculty of Mathematics and Natural Sciences, Universitas Indonesia, Depok, Indonesia</p>

Time (AM/GMT+7)	ID	Event
		<sup>3</sup> Department of Biology, Faculty of Mathematics and Natural Sciences, Universitas Indonesia, Depok, Indonesia <sup>4</sup> Geospatial Information Agency of Indonesia, Bogor, Indonesia
11.48-11.51		<b>Q&amp;A</b>
11.51-12.00	JESSD-30	<b>Characteristics and antioxidant activity of liquid smoke produced from gelam wood (<i>Melaleuca cajuputi</i>), alaban wood (<i>Vitex pubescens</i> Vahl), and coconut shells (<i>Cocos nucifera</i> L.)</b>  <b>Author</b> Ahmad Budi Junaidi <sup>1,2,*</sup> , Abdullah <sup>1</sup> , Utami Irawati <sup>1</sup> , Yuspihana Fitrial <sup>3</sup> , and Uripto Trisno Santoso <sup>1</sup>  <b>Affiliation</b> <sup>1</sup> Program Study of Chemistry, Faculty of Mathematic and Natural Science, Lambung ULM Jl. A. Yani km 36 Banjarbaru Kalimantan Selatan-Indonesia <sup>2</sup> Doctoral Program Study of Agriculture Science, Lambung Mangkurat University Jl. Ahmad Yani km 36 Banjarbaru Kalimantan Selatan-Indonesia <sup>3</sup> Program Study of Fishery Product Processing, Faculty of Fisheries and Marine, ULM Jl. A. Yani km 36 Banjarbaru Kal Sel-Indonesia
12.00-12.03		<b>Q&amp;A</b>
12.03-12.12	JESSD-70	<b>Methane Gas Management Policy Based on Emission Estimates at Gunung Kupang Final Processing Site Landfill</b>  <b>Author</b> Nurul Listiyani <sup>1*</sup> , Khenza Atthaya Namira Yulianto <sup>2</sup>  <b>Affiliation</b> <sup>1</sup> Legal Studies, Faculty of Law, Islamic University of Kalimantan MAB Banjarmasin, Banjarmasin, 70123, Indonesia <sup>2</sup> Environmental Engineering, Faculty of Engineering, Sepuluh Nopember Institute of Technology, Surabaya, 60111, Indonesia
12.12-12.15		<b>Q&amp;A</b>
12.15-12.24	JESSD-73	<b>Separation performance of lithium and calcium from synthetic geothermal brine using electric field-assisted membrane</b>  <b>Author</b> D P A Sudarmaja <sup>1</sup> , V S H Sujoto <sup>1</sup> , C E Suryanaga <sup>1</sup> , H T B M Petrus <sup>1*</sup> , Sutijan <sup>1</sup> and W Astuti <sup>2</sup>  <b>Affiliation</b> <sup>1</sup> Department of Chemical Engineering (Sustainable Mineral Processing Research Group), Faculty of Engineering, Universitas Gadjah Mada, Jalan Grafika No. 2 Kampus UGM Bulaksumur, D. I. Yogyakarta 55281, Indonesia <sup>2</sup> Research Unit for Mineral Technology, Indonesian Research and Innovation Agency (BRIN), Jl. Ir. Sutami Km. 15, Tanjung Bintang, Lampung Selatan, Lampung 35361, Indonesia
12.24-12.27		<b>Q&amp;A</b>
12.27-12.36	JESSD-74	<b>Biodegradable Food Container from Rice Straw and Sugarcane Bagasse with Orange Peel Addition</b>  <b>Author</b> E M S E Tibalia <sup>1</sup> , Joko Wintoko <sup>1</sup> , Chandra Wahyu Purnomo <sup>1</sup>



Time (AM/GMT+7)	ID	Event
		<p><b>Affiliation</b>  <sup>1</sup> Department of Chemical Engineering, Faculty of Engineering, Universitas Gadjah Mada, Jalan Grafika No. 2 Kampus UGM Bulaksumur, DIY 55281, Indonesia</p>
12.36-12.39		<b>Q&amp;A</b>
12.39-12.48	JESSD-94	<p><b>Bamboo Preservation Experiments as Encapsulation for Liquid-State PCM</b></p> <p><b>Author</b>  Ova Candra Dewi<sup>1*</sup>, Kartika Rahmasari<sup>1</sup>, Nandy Putra<sup>2</sup>, and Nisrina Dewi Salsabila<sup>1</sup>, Tika Hanjani<sup>3</sup></p> <p><b>Affiliation</b>  <sup>1</sup> Department of Architecture, Faculty of Engineering, Universitas Indonesia, Depok, 16424  <sup>2</sup> Applied Heat Transfer Research Group, Department of Mechanical Engineering, Universitas Indonesia, Kampus UI, Depok 16424, Indonesia  <sup>3</sup> Interior Design Department, School of Design, Bina Nusantara University, Jakarta 11480, Indonesia</p>
12.48-12.51		<b>Q&amp;A</b>
12.51-13.00	JESSD-98	<p><b>Simulation of Illumination and Wind Conditions for Green and Fed Cities Using CFD Software</b></p> <p><b>Author</b>  Tetiana Tkachenko<sup>1</sup>, Viktor Mileikovskiy<sup>2*</sup>, Maryna Kravchenko<sup>3</sup> and Viktoriia Konovaliuk<sup>4</sup></p> <p><b>Affiliation</b>  <sup>1</sup> Environmental Protection Technology and Labor Safety Department, Faculty of Engineering Systems and Ecology, Kyiv National University of Construction and Architecture, Kyiv, 01010, Ukraine  <sup>2</sup> Heat-Gas Supply and Ventilation Department, Faculty of Engineering Systems and Ecology, Kyiv National University of Construction and Architecture, Kyiv, 01010, Ukraine  <sup>3</sup> Environmental Protection Technology and Labor Safety Department, Faculty of Engineering Systems and Ecology, Kyiv National University of Construction and Architecture, Kyiv, 01010, Ukraine  <sup>4</sup> Heat-Gas Supply and Ventilation Department, Faculty of Engineering Systems and Ecology, Kyiv National University of Construction and Architecture, Kyiv, 01010, Ukraine</p>
13.00-13.03		<b>Q&amp;A</b>
13.03-13.12	JESSD-143	<p><b>Analyse Technology Acceptance Of Innovation Virtual Lab In Developing Village-Owned-Enterprises (BUMDES)</b></p> <p><b>Author</b>  Dediek Tri Kurniawan<sup>1</sup> Ely Siswanto<sup>1</sup> Yesiana Ihda Kusnayain<sup>1</sup></p> <p><b>Affiliation</b>  <sup>1</sup>The Department of Management, Universitas Negeri Malang, Jl Semarang No 5 Malang, East Java, Indonesia</p>
13.12-13.15		<b>Q&amp;A</b>
13.15-13.18		<b>Closing Remarks</b>

## Room 4: Sustainable Agriculture

Session Chair: Dian Charity

Admin: Admin 4

Time (AM/GMT+7)	ID	Event
11.00-11.15		<b>Admin Preparation and Opening</b>
11.15-11.24	JESSD-1	<p><b>Chemical Composition Of Syzygium Cumini (L.) Skeels From Northern Nigeria</b></p> <p><b>Author</b> Abdulrahman Mahmoud Dogara<sup>1*</sup></p> <p><b>Affiliation</b> <sup>1</sup> Biology Education Department, Faculty of Education, Tishk International University, Erbil, Kurdistan Region, Iraq, <a href="https://orcid.org/0000-0003-0944-7282">https://orcid.org/0000-0003-0944-7282</a></p>
11.24-11.27		<b>Q&amp;A</b>
11.27-11.36	JESSD-4	<p><b>Development of Encapsulated Nanocarotenoid from Melinjo Peel (Gnetum Gnemon L.) as an Alternative of Food Products Fortificants</b></p> <p><b>Author</b> H Harinata<sup>1</sup>, V Clarenia<sup>1</sup>, TS Bhakti<sup>1</sup>, Ata Aditya Wardana<sup>1*</sup>, R H B Setiarto<sup>2</sup></p> <p><b>Affiliation</b> <sup>1</sup> Food Technology Department, Faculty of Engineering, Bina Nusantara University, Jakarta, Indonesia, 11480 <sup>2</sup>Research Center for Applied Microbiology, National Research and Innovation Agency (BRIN), Jalan Raya Jakarta-Bogor Km 46, Cibinong Science Center, Cibinong, Bogor, 16911 West Java, Indonesia</p>
11.36-11.39		<b>Q&amp;A</b>
11.39-11.48	JESSD-17	<p><b>Determinants of mulching adoption among cacao farmers of Camiguin Province, Philippines</b></p> <p><b>Author</b> Regie Lloren<sup>1*</sup>, Johnril Jandag<sup>1</sup>, Vincent Quiblat<sup>1</sup></p> <p><b>Affiliation</b> <sup>1</sup>Institute of Agriculture, Camiguin Polytechnic State College, Catarman, Camiguin, 9104, Philippines</p>
11.48-11.51		<b>Q&amp;A</b>
11.51-12.00	JESSD-75	<p><b>Life Cycle Assessment of Rice Farming Practices in Indonesia</b></p> <p><b>Author</b> Kancitra Pharmawati<sup>1</sup>, Siti Wahyuningsih<sup>2*</sup> and Hermawati Cahyaningrum<sup>2</sup></p> <p><b>Affiliation</b> <sup>1</sup> Department Environmental Engineering , Institut Teknologi Nasional-Bandung 40124 , Indonesia <sup>2</sup> The National Research and Innovation Agency, KST Habibie Serpong-Banten, Postal Code 15310, Indonesia</p>

Time (AM/GMT+7)	ID	Event
		<sup>3</sup> The National Research and Innovation Agency, KST Soekarno Cibinong, Postal Code 16911, Indonesia
12.00-12.03		<b>Q&amp;A</b>
12.03-12.12	JESSD-61	<p><b>Lowland rice (<i>Oryza sativa</i> L.) farming performance in the rice production center of Central Java Province</b></p> <p><b>Author</b> Susi Wuri Ani<sup>1*</sup>, Dwidjono Hadi Darwanto<sup>2</sup> , Lestari Rahayu Waluyati<sup>2</sup> , and Mashyuri<sup>2</sup></p> <p><b>Affiliation</b> <sup>1</sup>Doctoral Study Program in Agricultural Sciences, Gadjah Mada University, Yogyakarta, 55281, Central Java, Indonesia <sup>2</sup>Department of Agricultural Socioeconomics, Gadjah Mada University, Yogyakarta, 55281, Central Java, Indonesia</p>
12.12-12.15		<b>Q&amp;A</b>
12.15-12.24	JESSD-93	<p><b>Survival strategies and profit-sharing system of working fishermen at South Coast of Java: A case study in Sadeng Beach</b></p> <p><b>Author</b> Ernoiz Antriyandarti<sup>1*</sup>, Alifa Putri Madina<sup>1</sup>, Adisti Regita Ramadani<sup>1</sup></p> <p><b>Affiliation</b> <sup>1</sup>Study Program of Agribusiness, Faculty of Agriculture, Universitas Sebelas Maret, Jl.Ir. Sutami 36A, Ketingan, Surakarta, Indonesia</p>
12.24-12.27		<b>Q&amp;A</b>
12.27-12.36	JESSD-95	<p><b>Physical Characteristics of Environmentally Friendly Goat Leather Using Powder of Merbau Tree as a Tanning Agent</b></p> <p><b>Author</b> Fiantoni Peter Lukas Mangiradja<sup>1</sup> and Ambar Pertiwiningrum<sup>2</sup></p> <p><b>Affiliation</b> <sup>1</sup> Faculty of Animal Science, Universitas Gadjah Mada, Sleman, 55281, Indonesia. <sup>2</sup> Faculty of Animal Science, Universitas Gadjah Mada, Sleman, 55281, Indonesia.</p>
12.36-12.39		<b>Q&amp;A</b>
12.39-12.48	JESSD-101	<p><b>Village Community Empowerment through Sustainable Food Program in Realizing Sustainable Agriculture</b></p> <p><b>Author</b> Deby Febriyan Eprilianto<sup>1</sup>, Yuyun Eka Kartika Sari<sup>2</sup>, Muhammad Farid Ma'ruf<sup>2</sup>, Lasmijan<sup>2</sup>, Eni Febrianti<sup>2</sup></p> <p><b>Affiliation</b> <sup>1</sup> Department of Public Administration, Faculty of Social Science and Law, State University of Surabaya, Surabaya, 60231, Indonesia <sup>2</sup> Department of Public Administration, Faculty of Social Science and Law, State University of Surabaya, Surabaya, 60231, Indonesia</p>
12.48-12.51		<b>Q&amp;A</b>
12.51-13.00	JESSD-113	<b>Driving Forces of Social Environmental Conflict in Indonesia's Oil Palm Expansion</b>

Time (AM/GMT+7)	ID	Event
		<p><b>Author</b> Mustarini Dessy Vitiara<sup>1*</sup> and Herdis Herdiansyah<sup>1</sup></p> <p><b>Affiliation</b> <sup>1</sup> School of Environmental Science, Universitas Indonesia, Indonesia</p>
13.00-13.03		<b>Q&amp;A</b>
13.03-13.12	JESSD-136	<p><b>Income distribution analysis of livestock farmer households in karst area of Girisubo sub-district, Gunungkidul district</b></p> <p><b>Author</b> Zaid Zamany Nurrachman <sup>1</sup> , Minar Ferichani <sup>1</sup> , Umi Barokah<sup>1</sup> and Ernoiz Antriyandarti <sup>1*</sup></p> <p><b>Affiliation</b> <sup>1</sup>Study Program of Agribusiness, Faculty of Agriculture, Universitas Sebelas Maret, Surakarta, 57126, Indonesia</p>
13.12-13.15		<b>Q&amp;A</b>
13.15-13.18		<b>Closing Remarks</b>

## Room 5: Sustainable Tourism and Conservation

Session Chair: Dr Ni Kadek Supri

Admin: Admin 5

Time (AM/GMT+7)	ID	Event
11.00-11.15		<b>Admin Preparation and Opening</b>
11.15-11.24	JESSD-32	<p><b>Land Consolidation Process Based on Environmental Conservation and Urban Spatial Law</b></p> <p><b>Author</b> I Wayan Wiryawan<sup>1</sup></p> <p><b>Affiliation</b> <sup>1</sup>Department Faculty of Social Sciences Education, IKIP Saraswati, Tabanan, Indonesia, 82113</p>
11.24-11.27		<b>Q&amp;A</b>
11.27-11.36	JESSD-111	<p><b>Integration of Local Capacity Building in Countering False Information about Disaster Into Community-based Disaster Risk Management</b></p> <p><b>Author</b> Donna Asteria<sup>1*</sup>, Ni Kadek Surpi<sup>2</sup>, Agus Brotosusilo<sup>3</sup>, Imam Sukwatus Suja<sup>4</sup></p> <p><b>Affiliation</b> <sup>1</sup> Department of Communication, Faculty of Social and Political Science, Universitas Indonesia, Depok, West Java 16424, Indonesia, <a href="https://orcid.org/0000-0002-0111-6377">https://orcid.org/0000-0002-0111-6377</a> <sup>2</sup> Universitas Hindu Negeri I Gusti Bagus Sugriwa Denpasar, Indonesia <sup>3</sup> Faculty of Law, Universitas Indonesia, Depok, West Java 16424, Indonesia <sup>4</sup> Department of Economics and Development Studies, Bhinneka PGRI University, Tulungagung, East Java, Indonesia</p>
11.36-11.39		<b>Q&amp;A</b>
11.39-11.48	JESSD-38	<p><b>Public Spaces in Historic Environment as Urban Fundamentals of Sustainable Development</b></p> <p><b>Author</b> Iryna Merylova<sup>1*</sup>, Vladyslav Smilka<sup>2</sup>, Gelena Kovalska<sup>2</sup></p> <p><b>Affiliation</b> <sup>1</sup>Department of Architectural and Urban Planning, Faculty of Architecture, Prydniprovsk State Academy of Civil Engineering and Architecture, Dnipro, 49000, Ukraine. <sup>2</sup>Department of Theories of Architecture, Faculty of Architecture, Kyiv National University of Construction and Architecture, Kyiv, 03037, Ukraine.</p>
11.48-11.51		<b>Q&amp;A</b>
11.51-12.00	JESSD-36	<p><b>Optimization of Public Green Open Spaces as an Effort to Preserve and planing conservation the Environment in Klungkung Regency, Bali</b></p> <p><b>Author</b> I wayan wiryawan<sup>1</sup></p> <p><b>Affiliation</b></p>

Time (AM/GMT+7)	ID	Event
		<sup>1</sup> Faculty of Social Sciences Education, IKIP Saraswati, Tabanan, Indonesia, 82113
12.00-12.03		<b>Q&amp;A</b>
12.03-12.12	JESSD-45	<p><b>Assessment Of Tourism Suitability Index And Carrying Capacity In The Pangadaran Beach (West Coast, East Coast and White Sand Coast)</b></p> <p><b>Author</b> Purna Hindayani<sup>1,*</sup>, Fitri Rahmafitria<sup>2</sup>, and Heri Puspito Diyah Setiyorini<sup>3</sup></p> <p><b>Affiliation</b> <sup>1</sup>Tourism Department, Faculty of Social Science Education, Universitas Pendidikan Indonesia, Bandung 40154, Indonesia. <sup>2</sup>Department of Resort and Leisure Management, Faculty of Social Science Education, Universitas Pendidikan Indonesia, Bandung 40154, Indonesia. <sup>3</sup>Department of Tourism Marketing Management, Faculty of Social Science Education, Universitas Pendidikan Indonesia, Bandung 40154, Indonesia.</p>
12.12-12.15		<b>Q&amp;A</b>
12.15-12.24	JESSD-135	<p><b>Trends and Mapping Areas of Sustainable Development Goals (SDGs) in Indonesia Bilbliometric Analysis Approach</b></p> <p><b>Author</b> Yuliarti<sup>1*</sup>, Hidayatul Fajri<sup>1</sup>, Pratiwi Nurhabibi<sup>1</sup>, and Iip Permana<sup>1</sup></p> <p><b>Affiliation</b> <sup>1</sup> Department of Public Administration, Faculty of Social Science, Universitas Negeri Padang, Jl Prof Dr Hamka Padang, 25132, Indonesia</p>
12.24-12.27		<b>Q&amp;A</b>
12.27-12.36	JESSD-90	<p><b>Rising From The Downturn Of The Covid-19 Pandemic: Tourism Village Development Strategies Through A Community-Based Tourism Approach</b></p> <p><b>Author</b> Revienda Anita Fitrie<sup>1*</sup>, M. Noer Falaq Al Amin<sup>1</sup>, Suci Megawati<sup>1</sup>, Kaheesha Zalfa Rohadatul 'Aisy<sup>1</sup></p> <p><b>Affiliation</b> <sup>1</sup>Department of Public Administration, Faculty of Social Sciences and Law, Universitas Negeri Surabaya, Surabaya, Indonesia 60231</p>
12.36-12.39		<b>Q&amp;A</b>
12.39-12.48	JESSD-91	<p><b>Potential Tourists Clusters of Community-based Rural Tourism and Their Online Behavior using Phyton</b></p> <p><b>Author</b> Hana Ulinnuha<sup>1*</sup>, Mukhlis Rasyidi<sup>2</sup></p> <p><b>Affiliation</b> <sup>1</sup>Tourism Department, Faculty of Digital Communication and Hotel &amp; Tourism, Bina Nusantara University, Jakarta, 11480, Indonesia <sup>2</sup>Independent Data Scientist, Jakarta, 12430</p>
12.48-12.51		<b>Q&amp;A</b>
12.51-13.00	JESSD-110	<p><b>The Development of an Edu-agrotourism Concept in the Buffer Zone of Conservation Area Based on Education and Local Community Empowerment</b></p> <p><b>Author</b></p>



Time (AM/GMT+7)	ID	Event
		<p>Sri Jumiyati<sup>1</sup> , Evi Frimawaty<sup>2*</sup></p> <p><b>Affiliation</b>  <sup>1</sup> Faculty of Agriculture, Muhammadiyah University Palu, Palu, Indonesia  <sup>2</sup> School of Environmental Science, Universitas Indonesia, Jakarta, Indonesia,</p>
13.00-13.03		<b>Q&amp;A</b>
13.03-13.12	JESSD-134	<p><b>Post COVID-19 Kayangan Api Geological Heritage Tourism Resilience Strategy in Bojonegoro Regency, Indonesia</b></p> <p><b>Author</b>  Suci Megawati<sup>1*</sup> , M. Noer Falaq Al Amin<sup>1</sup> , Melda Fadiyah Hidayat<sup>1</sup></p> <p><b>Affiliation</b>  <sup>1</sup>Public Administration, Faculty of Social Sciences and Law, Universitas Negeri Surabaya, Surabaya, Indonesia</p>
13.12-13.15		<b>Q&amp;A</b>
13.15-13.27		<b>Closing Remarks</b>

## Room 6: Waste Management

Session Chair: Dr. Ir. Yunita Ismail Masjud, M.Si.

Admin: Admin 6

Time (AM/GMT+7)	ID	Event
11.00-11.15		<b>Admin Preparation and Opening</b>
11.15-11.24	JESSD-29	<p><b>Utilization of paper waste in PT. Pertamina Kilang Internasional into seed envelopes</b></p> <p><b>Author</b> Mohammad Lutfi<sup>1*</sup>, Dela Amanda<sup>2</sup>, and Silvia Rahmi<sup>1</sup></p> <p><b>Affiliation</b> <sup>1</sup>Department of Petroleum Engineering, STT MIGAS, Balikpapan, 76127, Indonesia <sup>2</sup>Department of Instrumentation and Electronics, STT MIGAS, Balikpapan, 76127, Indonesia</p>
11.24-11.27		<b>Q&amp;A</b>
11.27-11.36	JESSD-40	<p><b>Brebes Shallot Skin Waste Feed Mixture As A Lowering Of Tegal Duck Cholesterol Levels</b></p> <p><b>Author</b> Yan El Rizal Unzilattirizqi D <sup>1*</sup>, Sri Mukodiningsih<sup>2</sup>, Bambang Cahyono<sup>3</sup>, Syahidah Mutmainah<sup>4</sup>, and Zidan Raafi Utama Putra<sup>5</sup></p> <p><b>Affiliation</b> <sup>1</sup> Post Graduate Student of Environmental Science, School of Postgraduate Studies, Diponegoro University, Semarang, 50241, Indonesia, <sup>2</sup>Department of Animal Nutrition, Faculty of Animal and Agriculture Science, Diponegoro University, Semarang, 50275, Indonesia <sup>3</sup>Department of Chemistry, Faculty of Sciences and Mathematics, Diponegoro University, Semarang, 50275, Indonesia <sup>4</sup>Department of Food Science and Technology, Faculty of Science and Technology, Muhadi Setiabudi University, Brebes, 52212, Indonesia <sup>5</sup>Department of Agribusiness, Faculty of Science and Technology, Muhadi Setiabudi University, Brebes, 52212, Indonesia.</p>
11.36-11.39		<b>Q&amp;A</b>
11.39-11.48	JESSD-42	<p><b>Enhancing the Quality of Irrigation Wastewater for Mung Bean Cultivation using IoT Technology</b></p> <p><b>Author</b> N Eko<sup>1</sup>, N M Soraya<sup>2</sup>, R Anita<sup>1</sup>, Novi S A<sup>3</sup>, Fiastara<sup>4</sup></p> <p><b>Affiliation</b> <sup>1</sup>Departement of Civil Engineering, Universitas Islam Malang, Malang, East Java, 65144, Indonesia. <sup>2</sup>Faculty of Applied Science and Technology, Universitas Negeri Malang, Malang, East Java, 65144, Indonesia <sup>3</sup>Faculty of Agriculture, Universitas Islam Malang, Malang, East Java, 65144, Indonesia <sup>4</sup>Faculty of Computer Science, Universitas Mercu buana, Jakarta Pusat, 10340, Indonesia</p>

Time (AM/GMT+7)	ID	Event
11.48-11.51		<b>Q&amp;A</b>
11.51-12.00	JESSD-57	<p><b>Performance Of Hybrid Mesh Filter Bioreactor For Textile Wastewater Treatment</b></p> <p><b>Author</b> Nindia Noor Indah<sup>1*</sup>, Wiratni Budhijanto<sup>1</sup>, Lisendra Marbelia<sup>1</sup>, Hanifah Susilaningtyas<sup>1</sup> and Asyhar Sururi Juniawan<sup>1</sup></p> <p><b>Affiliation</b> <sup>1</sup>Department of Chemical Engineering, Faculty of Engineering, Universitas Gadjah Mada, Yogyakarta, 55284, Indonesia</p>
12.00-12.03		<b>Q&amp;A</b>
12.03-12.12	JESSD-72	<p><b>Application of Attached Growth System for Laundry Wastewater Treatment</b></p> <p><b>Author</b> S R Solehudin<sup>1</sup>, A I Ardian<sup>1</sup>, R D Martina<sup>1</sup>, W Budhijanto<sup>1</sup> and L Marbelia<sup>1*</sup></p> <p><b>Affiliation</b> <sup>1</sup> Department of Chemical Engineering, Faculty of Engineering, Universitas Gadjah Mada, Yogyakarta, 55281, Indonesia.</p>
12.12-12.15		<b>Q&amp;A</b>
12.15-12.24	JESSD-83	<p><b>Collaborative Governance in Waste Management: A Study from Surabaya Smart City Programme</b></p> <p><b>Author</b> M. Noer Falaq Al Amin<sup>1*</sup>, Suci Megawati<sup>1</sup>, Revienda Anita Fitrie<sup>1</sup>, Adelia Safira<sup>1</sup></p> <p><b>Affiliation</b> <sup>1</sup>Public Administration, Faculty of Social Science and Law, Surabaya State University, Surabaya, 60231, Indonesia</p>
12.24-12.27		<b>Q&amp;A</b>
12.27-12.36	JESSD-84	<p><b>Efficient Solutions For Food Waste In Salatiga City</b></p> <p><b>Author</b> Damara Dinda Nirmalasari Zebua<sup>1</sup>, Irene V Meitiniarti<sup>2</sup>, Liska Simamora<sup>1*</sup></p> <p><b>Affiliation</b> <sup>1</sup>Department of Agribusiness, Faculty of Agriculture and Business, Satya Wacana Christian University, Salatiga, 50711, Indonesia <sup>2</sup>Department of Biology, Faculty of Biology, Satya Wacana Christian University, Salatiga, 50711, Indonesia</p>
12.36-12.39		<b>Q&amp;A</b>
12.39-12.48	JESSD-99	<p><b>Bibliometric Analysis Of Waste Management In Schools As Part Of Sustainable Development Using The Scopus Database (2010 - 2023)</b></p> <p><b>Author</b> Respita Haniva<sup>1*</sup>, Amir Machmud<sup>1</sup>, and Senita Butar Butar<sup>1</sup></p> <p><b>Affiliation</b> <sup>1</sup>Economics Education, Faculty of Economics and Business Education, Universitas Pendidikan Indonesia, Bandung, 40154, Indonesia</p>

Time (AM/GMT+7)	ID	Event
12.48-12.51		<b>Q&amp;A</b>
12.51-13.00	JESSD-138	<p><b>Study of the Implementation of Household Hazardous and Toxic Waste Management Policy in the Province of the Special Region of Yogyakarta</b></p> <p><b>Author</b> Raihan Chaerani Putri Budiman <sup>1*</sup></p> <p><b>Affiliation</b> <sup>1</sup>Public Administration Department, Faculty of Social and Political Sciences, Sebelas Maret University, Surakarta, 57126, Indonesia</p>
13.00-13.03		<b>Q&amp;A</b>
13.03-13.12	JESSD-43	<p><b>The Evaluation of Physical, Biological, and Chemical Treatments on Pig Wastewater: A study on pig farming in Sumogawe village, Semarang Regency, Central Java</b></p> <p><b>Author</b> Chairul Anwar <sup>1</sup>, Akbar Nugroho Confera<sup>1</sup>, Agustien Sri Noerwahju<sup>1</sup>, Widhi Handayani<sup>2</sup>, Yoga Aji Handoko<sup>3</sup></p> <p><b>Affiliation</b> <sup>1</sup>PT Nusa Alam Kreasindo, Jl. Permata Argosari 1&amp;3 Randuacir, Salatiga 50733, Central Java, Indonesia <sup>2</sup>Faculty of Environmental Science and Technology, Soegijapranata Catholic University, Jl. Pawiyatan Luhur IV/1 Bendan Dhuwur, Semarang 50234, Indonesia <sup>3</sup>Faculty of Agriculture and Business, Satya Wacana Christian University, Jl. Diponegoro 52-60 Salatiga 50711, Indonesia</p>
13.12-13.15		<b>Q&amp;A</b>
13.15-13.18		<b>Closing Remarks</b>

## Room 7: Economy, Finance, Policy, Governance

Session Chair: Dr. Imam Sukwatus Sujai

Admin: Admin 7

Time (AM/GMT+7)	ID	Event
11.00-11.15		<b>Admin Preparation and Opening</b>
11.15-11.24	JESSD-11	<p><b>Patriarchal Supremacy and Its Visual Expression in the Works of Afghan-American Writers</b></p> <p><b>Author</b> Shakhnoza Begimkulova<sup>1,2</sup>, Dilnoza Ruzmatova<sup>2</sup>, Farida Toshpulatova<sup>1</sup>, Muqaddas Ruziqulovna<sup>3</sup></p> <p><b>Affiliation</b> <sup>1</sup>Yangiyer branch of Tashkent Chemical Technological Institute, 121001 Yangiyer, Uzbekistan <sup>2</sup>Uzbekistan State World Languages University, 100000, Tashkent, Uzbekistan <sup>3</sup>International Innovation University, 100000, Tashkent, Uzbekistan</p>
11.24-11.27		<b>Q&amp;A</b>
11.27-11.36	JESSD-16	<p><b>Challenges Of Indonesian Employment Recovery Post COVID-19</b></p> <p><b>Author</b> Ngadi<sup>1</sup>, Zantermans Rajagukguk<sup>1</sup> and Devi Asiati<sup>1</sup></p> <p><b>Affiliation</b> <sup>1</sup>Research Center for Population, National Research and Innovation Agency, Jakarta, 12710, Indonesia</p>
11.36-11.39		<b>Q&amp;A</b>
11.39-11.48	JESSD-28	<p><b>Man, Woman And Water: Exploring Gender Dynamics In Urban Water Clean Access In Makassar City</b></p> <p><b>Author</b> Basri<sup>1*</sup>, Andi Yulia Kasma<sup>1</sup>, Chitra Dewi<sup>1</sup>, Andi Tilka Muftiah Ridjal<sup>1</sup>, Indah Arifah Febriany<sup>2</sup>, Nanang Rahmadani<sup>3</sup></p> <p><b>Affiliation</b> <sup>1</sup> University Sekolah Tinggi Ilmu Kesehatan Makassar, Makassar, 90231, Indonesia <sup>2</sup>Celebes Kearifan Madani Foundation, Makassar, 90245, Indonesia <sup>3</sup>Sekolah Tinggi Ilmu Kesehatan Amanah, Makassar, 90221, Indonesia</p>
11.48-11.51		<b>Q&amp;A</b>
11.51-12.00	JESSD-18	<p><b>The diversity and distribution of Gecarcinidae MacLeay, 1838 (Crustacea: Decapoda: Brachyura), a potential land crab as a valuable food resource, in Indonesia</b></p> <p>Dewi Muniarti<sup>1</sup></p> <p><sup>1</sup> Research Center for Biosystematics and Evolution, National Research and Innovation Agency (Badan Riset dan Inovasi Nasional-BRIN), Jl. Raya Jakarta Bogor Km 46, Cibinong, Bogor, Indonesia</p>
12.00-12.03		<b>Q&amp;A</b>

Time (AM/GMT+7)	ID	Event
12.03-12.12	JESSD-31	<p><b>Environmental Taxes' Impact on Nigerian Oil and Gas Companies' Disclosure of Environmental Accounting Information</b></p> <p><b>Author</b> Hussaini Bala<sup>1*</sup>, Murtala Abdullahi<sup>2</sup>, Abba Ya'u<sup>3</sup>, Umar Aliyu Mustapha<sup>4</sup>, Riffat Shaheen<sup>5</sup></p> <p><b>Affiliation</b> <sup>1</sup>Department of Accounting, Faculty of Administrative Sciences and Economics, Tishk International University, Erbil, Kurdistan Region, Iraq <sup>2</sup>Department of Accounting, Faculty of Management Science Kaduna State University, Nigeria <sup>3</sup>Department of Accounting, Finance, and Economics. Faculty of Business. Curtin University Malaysia <sup>4</sup>Faculty of Accountancy, Universiti Teknologi MARA (UiTM), 42300 Puncak Alam, Selangor, Malaysia <sup>5</sup>Department of Finance, Economics and Management School, Wuhan University, Wuhan, China</p>
12.12-12.15		<b>Q&amp;A</b>
12.15-12.24	JESSD-33	<p><b>The Effect of User Interface Design on Customer Satisfaction and Brand Trust in Indonesian Telemedicine Apps on the Android Store</b></p> <p><b>Author</b> Puti Chaerani Monica Handini<sup>1</sup>, Dr. Enggal Sriwardiningsih, S.E.,M.Si<sup>2</sup>, Nadila Setiabudiarto, S.E., M.Kom<sup>3</sup></p> <p><b>Affiliation</b> <sup>1</sup>Information System and Management, School of Information System, Bina Nusantara University Jakarta, Indonesia 11480 <sup>2</sup>Business Management Program, Management Department BINUS Business School Undergraduate Program, Bina Nusantara University Jakarta, Indonesia 11480 <sup>3</sup>Information System School of Information System, Bina Nusantara University Jakarta, Indonesia 11480</p>
12.24-12.27		<b>Q&amp;A</b>
12.27-12.36	JESSD-79	<p><b>Regulatory Model Of Food Banks In Indonesia</b></p> <p><b>Author</b> Fitra Arsil<sup>1*</sup>, Qurrata Ayuni<sup>1</sup>, Satrio Alif Febriyanto<sup>3</sup><sup>1</sup></p> <p><b>Affiliation</b> <sup>1</sup>Constitutional Law Department, Faculty of Law, University of Indonesia, Depok, 16424</p>
12.36-12.39		<b>Q&amp;A</b>
12.39-12.48	JESSD-85	<p><b>Systematic Literature Review of Audit Committee Role in ESG Disclosures</b></p> <p><b>Author</b> Tri Hapsari<sup>1</sup></p> <p><b>Affiliation</b> <sup>1</sup>Accounting Department, BINUS Online Learning, Bina Nusantara University, Jakarta, Indonesia 11480</p>

Time (AM/GMT+7)	ID	Event
12.48-12.51		<b>Q&amp;A</b>
12.51-13.00	JESSD-102	<p><b>Bibliometric Analysis Of Green Marketing And Intention To Purchase Research From 2006 To 2023</b></p> <p><b>Author</b> Nita Ambarita<sup>1*</sup>, Respita Haniva<sup>1</sup>, and Amir Machmud<sup>1</sup></p> <p><b>Affiliation</b> <sup>1</sup> Faculty of Business and Economic Education, Universitas Pendidikan Indonesia, Jl. Dr. Setiabudi, Bandung 40154, Indonesia</p>
13.00-13.03		<b>Q&amp;A</b>
13.03-13.12	JESSD-103	<p><b>Research Trends in Green Awareness and Green Product: A Bibliometric Review</b></p> <p><b>Author</b> Senita Butar Butar<sup>1*</sup>, Nita Ambarita<sup>1</sup>, and Amir Machmud<sup>1</sup></p> <p><b>Affiliation</b> <sup>1</sup> Business and Economics Education, Universitas Pendidikan Indonesia, Bandung, 40154, Indonesia</p>
13.12-13.15		<b>Q&amp;A</b>
13.15-13.27	JESSD-117	<p><b>Determination of BUN500 Program Recipient Locations and Development of a Participatory Rubber Intercropping Rejuvenation Model in West Kalimantan Province</b></p> <p><b>Author</b> Salma Mar'atus Sholihah<sup>1*</sup></p> <p><b>Affiliation</b> <sup>1</sup> Resource and Environmental Economics Department, IPB University</p>
13.27-13.30		<b>Q&amp;A</b>
13.30-13.33		<b>Closing Remarks</b>

## Room 8: Sustainable Cities and Communities

Session Chair: Dr. Yusuf Kristiadi

Admin: Admin 8

Time (AM/GMT+7)	ID	Event
11.00-11.15		<b>Admin Preparation and Opening</b>
11.15-11.24	JESSD-35	<p><b>Vectors Of Sustainability Of Modern Hospital Architecture (Case For Poland)</b></p> <p><b>Author</b> Iryna Bulakh<sup>1,2</sup></p> <p><b>Affiliation</b> <sup>1</sup>Department of Design and Urban Development, Faculty of Architecture, Technical University of Darmstadt, Darmstadt, 64287, Germany. <sup>2</sup>Department of Design Architectural Environment, Faculty of Architecture, Kyiv National University of Construction and Architecture, Kyiv, 03037, Ukraine</p>
11.24-11.27		<b>Q&amp;A</b>
11.27-11.36	JESSD-34	<p><b>The Architecture Of Medical Research Buildings And Complexes As The Basis Of Sustainable Development</b></p> <p><b>Author</b> Iryna Bulakh<sup>1,2</sup></p> <p><b>Affiliation</b> <sup>1</sup>Department of Design and Urban Development, Faculty of Architecture, Technical University of Darmstadt, Darmstadt, 64287, Germany. <sup>2</sup>Department of Design Architectural Environment, Faculty of Architecture, Kyiv National University of Construction and Architecture, Kyiv, 03037, Ukraine</p>
11.36-11.39		<b>Q&amp;A</b>
11.39-11.48	JESSD-141	<p><b>The Impact of Perceived Behavioral Control, Norms, and Individual Attitude on Decisions to Save Energy Toward Net Zero Emissions in Indonesia</b></p> <p><b>Author</b> Ahmad Fawaiq Suwanan <sup>1*</sup> , Hanna Rachmani Allya <sup>1</sup></p> <p><b>Affiliation</b> <sup>1</sup>Department of Development Economics, Universitas Negeri Malang, Indonesia</p>
11.48-11.51		<b>Q&amp;A</b>
11.51-12.00	JESSD-37	<p><b>Greener Communication, Green Environment, Happiness, and Sociality for Older Adults</b></p> <p><b>Author</b> Irwansyah<sup>1*</sup>, Niken Febrina Ernungtyas<sup>1</sup></p> <p><b>Affiliation</b> <sup>1</sup>Department of Communication, Faculty of Social and Political Science, Universitas Indonesia, Depok, 16422, Indonesia</p>
12.00-12.03		<b>Q&amp;A</b>
12.03-12.12	JESSD-104	<b>Symbolic convergence analysis of Aqua Lestari and Unilever Indonesia: exploring the rhetorical vision of eco-friendly brand activism</b>



Time (AM/GMT+7)	ID	Event
		<p><b>Author</b> A S Kirana<sup>1*</sup>, I Prawira<sup>1</sup></p> <p><b>Affiliation</b> <sup>1</sup> Mass Communication, Faculty of Digital Communication and Hotel and Tourism, Bina Nusantara University, Jakarta, 11530, Indonesia</p>
12.12-12.15		<b>Q&amp;A</b>
12.15-12.24	JESSD-106	<p><b>Excellence Service Management in Electronic Residency Card Management as an Effort to Support The Resilient Society in Sidoarjo Regency</b></p> <p><b>Author</b> Trenda A. Oktariyanda<sup>1*</sup> and Ngukup C. Achmadja<sup>1</sup></p> <p><b>Affiliation</b> <sup>1</sup> Department of Public Administration, Faculty of Social Science and Law, State University of Surabaya, Surabaya, 60231, Indonesia</p>
12.24-12.27		<b>Q&amp;A</b>
12.27-12.36	JESSD-107	<p><b>Towards Coastal Community Access To Clean Water: Waterfront Settlement, Bumi Waras District, Lampung</b></p> <p><b>Author</b> Husna Tiara Putri<sup>1,2</sup></p> <p><b>Affiliation</b> <sup>1</sup> Urban and Regional Planning, Department of Infrastructure and Regional Science, Institut Teknologi Sumatera, Lampung, 35365, Indonesia <sup>2</sup> School of Environmental Science, University of Indonesia, Jakarta, 10430, Indonesia</p>
12.36-12.39		<b>Q&amp;A</b>
12.39-12.48	JESSD-109	<p><b>Community Involvement to Create Safe Environment in Unintentional Child Injury Prevention: A Scoping Review</b></p> <p><b>Author</b> Devie Fitri Octaviani<sup>1</sup>, Fatma Lestari<sup>1*</sup> and Dadan Erwandi<sup>1</sup></p> <p><b>Affiliation</b> <sup>1</sup> Faculty of Public Health, Universitas Indonesia, Depok 16424, Indonesia</p>
12.48-12.51		<b>Q&amp;A</b>
12.51-13.00	JESSD-132	<p><b>Social Entrepreneurship in Sustainable Development: Bibliometric Analysis and Emerging Research Trend</b></p> <p><b>Author</b> Muhammad Iqbal Rezky<sup>1*</sup>, Rasto<sup>1</sup></p> <p><b>Affiliation</b> <sup>1</sup> Universitas Pendidikan Indonesia</p>
13.00-13.03		<b>Q&amp;A</b>
13.03-13.12	JESSD-133	<p><b>Sustainable Livelihoods Approach and Contemporary Research on Rural Social-Ecological Systems in Indonesia</b></p> <p><b>Author</b></p>

Time (AM/GMT+7)	ID	Event
		<p>Ardanawati Ayu Pitaloka<sup>1*</sup> and Ali Yansyah Abdurrahim <sup>1,2</sup></p> <p><b>Affiliation</b>  <sup>1</sup> Research Center for Population, National Research and Innovation Agency (BRIN), Jakarta 12710, Indonesia.  <sup>2</sup> Study Program of Rural Sociology, Graduated Program, IPB University, Bogor 16680, Indonesia.</p>
13.12-13.15		<b>Q&amp;A</b>
13.15-13.27	JESSD-139	<p><b>Dogs through the eyes of Indonesia's News Media</b></p> <p><b>Author</b> Audrey Gracia Muljono<sup>1*</sup></p> <p><b>Affiliation</b>  <sup>1</sup>School of Environmental Science, Universitas Indonesia, Central Jakarta 10430, Indonesia</p>
13.27-13.30		<b>Q&amp;A</b>
13.30-13.33		<b>Closing Remarks</b>



# *Abstract of Papers*

## Chemical Composition Of Syzygium Cumini (L.) Skeels From Northern Nigeria

Abdulrahman Mahmoud Dogara<sup>1\*</sup>

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**Abstract.** Throughout history, medicinal plants have been the primary source for preventing and treating infectious diseases and other health issues. To look for novel affordable and secure sources of antibiotics, antioxidants, and antidiabetic. The more effective the medicinal plant is, the higher its demand will be, and the likelihood of non-availability will rise. To accommodate the increased demand, different parts of the plant must be explored. The study examined the chemical composition based on the essential oil of *Syzygium cumini*. The most abundant compound was Bicyclo[3.1.1]hept-2-ene, 2,6-dimethyl-6-(4-methyl-3-pentenyl)- (27.5%). Hexadecanoic acid, methyl ester (9.89%), 1,2-Benzenedicarboxylic acid, butyl 2-methylpropyl ester (8.36%). The study includes a detailed analysis on the chemical makeup of the essential oil isolated from *Syzygium cumini* leaves. The study provides a foundation for future research on the plant in question.

\*The title on abstract of paper section is just temporary so the title can be changed

## Water Quality Assessment of the Semantan River's Based on the Malaysian Water Quality Index

M Hashim<sup>1</sup>, M I R Zunaidi<sup>2</sup>, N Nayan<sup>1</sup>, H Mahat<sup>1</sup>, Y Saleh<sup>1</sup>, M S Zahid<sup>3</sup> & L C Koh<sup>4</sup>

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**Abstract.** Semantan River is important for fish aquaculture industry in Malaysia. Therefore, the aimed of this article is to assess the water quality index (WQI) of the Semantan River, Pahang during the rainy season (February to April 2018). The Semantan River's WQI was monitored at three stations by assessing six water quality parameters, i.e., DO, BOD, COD, NH<sub>3</sub>-N, pH, and TSS. The Semantan River's WQI was assessed using the Malaysian Department of Environment's WQI classification. The results showed that three water quality parameters, namely DO (6.32 mg/l), COD (46.8 mg/l), and TSS (104.4 mg/l), exceeded the standard at certain stations and classified as Class IV. However, on average, all parameters showed Classes I to III for all stations, and WQI indicated the Semantan River was slightly polluted (WQI 78.2), and classified as Class II. Changes in land use in the Temerloh district for agricultural and urbanisation have exacerbated the Semantan River's WQI. Contradict to perception that the aquaculture is the main source of water pollution for the Semantan River. Consequently, the Semantan River's WQI must be monitored regularly, as the river is critical not only for domestic water supply but also for freshwater fish aquaculture and ecotourism

\*The title on abstract of paper section is just temporary so the title can be changed

## Development of Encapsulated Nanocarotenoid from Melinjo Peel (*Gnetum Gnemon* L.) as an Alternative of Food Products Fortificants

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**Abstract.** The trend of natural food products free from synthetic additives has been experiencing rapid and dynamic growth in the global food industry. Nanocarotenoid-encapsulated compounds have been developed to increase stability, solubility, and industrial applications, especially for the design of carotenoid delivery systems and increasing their bioavailability. This study aims to apply carotenoid nanoencapsulation technology from melinjo peel as an alternative food fortificant product. Nanoemulsion preparation was done by homogenization using ultraturrax (11,000 rpm) combined with ultrasonication (1-3 h) technique. The best nanoemulsion formulation was obtained from 1-hour sonication, showed by the smallest diameter of the nanoparticles ( $99.54 \pm 0.03$  nm) and low value of polydisperse index ( $0.37 \pm 0.03$ ). The color properties and encapsulation efficiency of maltodextrin were also characterized. The greater the concentration of maltodextrin encapsulating material added, the better the carotenoid nanostructure. The higher percentage of maltodextrin influenced the color parameter.

**Acknowledgement.** We thank the Ministry of Research, Technology Higher Education of the Republic of Indonesia which provide the funding of this research through the grant of Student Creativity Program - Research 2019.

\*The title on abstract of paper section is just temporary so the title can be changed

## Incidence Of Multiple Sclerosis In Kurdistan Region Of Iraq, A Case Study Of Sulaymaniyah Population

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**Abstract.** Multiple sclerosis (MS) is a long-term disease of the brain and spinal cord. MS is becoming more common and widespread in both developed and developing countries. For this reason, it's essential for MS researchers to gather information from all over the world to create a thorough picture of the disease's prevalence there. The study was conducted on a total of 464 MS patients who have visited Sulaymaniyah Teaching Hospital and Shar Hospital in Sulaymaniyah between 2007 to 2021. The collected data included age, gender, cases per year, and treatments which patient have taken. Among the patient, 70.6% were female and 29.4% were male with a female to male ratio of 2.4 with a mean of age 29.7. From 2007 to 2013, the population of Sulaymaniyah was 579,571 and during these years 131 MS patients were registered, thus MS occurrence was 22.6 per 100,000 population. Then, the ratio has dramatically increased after 2013. As from 2014 to 2021, the population of Sulaymaniyah was 694,875 and during these years 355 patients were registered, consequently, MS incidence was 51.088 per 100,000 population. In conclusion, the incidence and prevalence of MS are significantly increasing. Thus, it can be stated that Sulaymaniyah is now a medium- to-high risk area for MS.

\*The title on abstract of paper section is just temporary so the title can be changed

## Earth Surface Temperature Variation at Sultan Idris Education University Campus, Malaysia

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**Abstract.** Temperature changes are associated with changing the natural environment to a new landscape. Temperature changes are linked to climate change through the annual increase in the earth's temperature by a few degrees Celsius over the past few million years. This study aims to identify the earth's surface temperature in the Sultan Abdul Jalil Shah campus area, Universiti Pendidikan Sultan Idris (UPSI). Temperature data comes from fieldwork in the morning (10.30 AM), noon (2.30 PM), and evening (5.30 PM). The analysis tool used is a thermal anemometer. The result shows that the variety of surface temperatures for the morning is high (max=38.7°C, min=31.4°C) and low in the evening (max=31.6°C, min= 26.8°C). Areas on the campus experience high temperatures in the morning and decrease towards the evening. Tanjong Malim, close to the Titiwangsa Range, plays a role in moderating the temperature macro-wise. In conclusion, the micro-temperature also depends on the characteristics of a place, such as if the place is open without plants, for example, a football field, then the temperature will also rise and varies from the other Malaysia University Campus depend on the location and physical characteristic. This micro-temperature study can lead to planning to reduce the surface temperature by creating areas of vegetation in a smaller environment and then being able to micro-control the temperature.

### Acknowledgement

The authors would like to thank the Ministry of Education Malaysia (MOE), now the Ministry of Higher Learning (MOHE), Sultan Idris Education University through the Center for Management of Research and Innovation (RMIC), which provides the Fundamental Research Grant Scheme (FRGS) (research code: 2019-0023-106-02, with the title of "Model Rangkaian Neuro Taman Hijau Dalam Mengurangkan Suhu Bandar bagi Menangani Kejadian Pulau Haba Bandar Malaysia" for this publication.

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## Assessment And Mapping Of Water Quality In Urban Communities: Insights For Sustainable Development

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**Abstract.** Water quality is crucial for public health, ecosystem well-being, and sustainable development. However, ensuring access to safe and reliable water sources in urban communities is challenging. Assessing and mapping water quality in these communities is vital to understand the current state of water resources, identify potential contamination sources, and address health impacts. This study is descriptive and aims to assess and map water quality using parameters such as clarity, color, odor, taste, safety, stability, and convenience. Data were collected from eight sub-districts in Makassar City, South Sulawesi, and a questionnaire was administered through face-to-face interviews or electronic distribution. The study included 200 households selected through purposive sampling. The assessment revealed varying water quality among households, with the distribution as follows: good (46.0%), enough (29.0%), bad (19.0%), and poor (1.5%). Spatial mapping results indicated poor water quality in Lakkang and Rappokalling sub-districts, and bad water quality in Lembo, Tallo, and Buloa sub-districts. Conversely, Wala-walaya and Bunga Eja Beru sub-districts exhibited good and sufficient water quality. The research underscores the importance of prioritizing water resource management and implementing measures for sustainable development goals. By doing so, we can enhance public health and preserve valuable ecosystems.

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## Technology Development to Measure Chemical and Oxidative Stability of Edible Oils Using Fourier Transform-Infrared Spectroscopy

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**Abstract.** Polyunsaturated fatty acids are considered as a benefit for human consumption because they are available in edible oils and enhance their susceptibility to oxidation. Fourier Transform Infrared spectroscopy (FT-IR) method was applied to evaluate the oxidation in edible oils and the chemical changes. The oxidation of could be accelerated by the application of heat with air. Therefore, 5 types of oils such as soybean oil (SBO), sunflower oil (SFO), sesame oil (SEO), corn oil (CRO) and palm oil (PAO) were taken and heated at the temperature of  $85\pm 2^{\circ}\text{C}$  with aeration at the rate of 5 L/sec for 55 hours continuously. Thiobarbituric acid reactive substances (TBARS) were determined to compare the results. Comparing the spectra of exposed and unexposed, oils, PAO and CRO have undergone fewer changes than other oils, whereas more changes have occurred in SFO than other oils. Between the other two oils, SEO showed the highest level of oxidation followed by SBO. Results obtained in this study indicate that FT-IR is a useful rapid technique for measuring oxidation in edible oil.

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## Study of the Effect of Magnesium Sulfate and Ammonium Nitrate on the Chemical Activity of Solutions of Phosphoric Acid

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**Abstract.** The present study was aimed at studying the effect of magnesium sulfate and ammonium nitrate on the chemical activity of phosphoric acid solutions. The results of studies on increasing the chemical activity of extractive phosphoric acid from Central Kyzylkum and Karatau phosphorites due to the concentration of the first hydrogen ions and the pH of the medium are presented. It has been shown that the introduction of magnesium sulfate heptahydrate into the acid reduces the concentration of the first hydrogen ions, and the addition of an additional amount of ammonium nitrate increases the concentration of the first hydrogen ions even higher than in the acid without magnesium. It has been established that the solubility of magnesium hydrophosphate increases with an increase in the content of P<sub>2</sub>O<sub>5</sub> phosphoric acid, and dihydrogen phosphate decreases as a result of dissociation with the formation of a hydrophosphate ion, and phosphoric acid dissociates with the formation of a dehydrophosphate ion, which binds with hydrogen ions, forming a dehydrophosphate ion.

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## Patriarchal Supremacy and Its Visual Expression in the Works of Afghan-American Writers

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**Abstract.** The study aims to identify the role of women in the patriarchal family. Family value, which is considered an integral part of national value, and its types and forms are among the motives widely described in modern literature. In the Afghan-American literature that we analyzed, the concept of values is covered in a wide scope. Among the Afghan-American writers who are the object of our research are Farooka Gauhari (“Searching for Saleem: An Afghan Woman’s Odyssey”), Maryam Qudrat Aseel (“Torn Between Two Cultures: an Afghan-American Woman Speaks Out”) were analyzed literary-artistically based on national and universal values. In the works of these creators, the values are interpreted from human, national, and family perspectives, and they show the unique qualities, virtues, and wisdom of the Afghan nation, which is reflected in national pride. In other words, the nation’s culture, faith, national traditions, and aspects of national education are manifested in their unique values. Throughout the article, there is given themes related to Islamic culture and identity, such as gender roles, family dynamics, and the impact of political events on the Muslim community. Article emphasizes the importance of cultural understanding and empathy, both within the Muslim community and between different cultural groups.

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## Development of Technology to Incorporate Curry leaves (Murraya Koenjii) to Develop Functional Chicken Sausage and Evaluation of Chemical Properties

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**Abstract.** Curry leaves is famous in Asian countries, which is a cheap and underutilized resource available in the environment. The leaves of the tree also absorb iron with their abundance of acid present and health benefits Incorporating curry leaves into your daily diet can help you lose weight. The research was conducted to utilize the underutilized resources in the environment to add values. In addition to find out the best curry leave extract to incorporate into the sausage to improve the functionality with 14, 10, and 06 % (w/v) concentration and named T1, T2 and T3 and T0 as the control sample, which is the normal routine sausage production in the processing plant. It has been identified that the 14% sample T1 was accepted as the best sample and underwent further chemical analysis to evaluate the pH, Nutritional composition, water holding capacity (WHC), Thiobarbituric Acid (TBA) and microbiological analysis. Chemical analysis were done for 40 days with 10 days interval. It showed that pH and WHC, TBA were slightly changed but not significant. In addition, the fat level of T1 sausage sample was reduced significantly may be due to the bioactive substances present in the extract and microbiological analysis showed that there was no significant change during storage due to the curing agent (NaNO<sub>2</sub>) used and effect of curry leaves. In addition, to add value to the environmental underutilized resources to get profit and health benefits.

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## Challenges Of Indonesian Employment Recovery Post COVID-19

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**Abstract.** The Covid-19 pandemic in Indonesia had an impact on the employment sector, namely an increase in the unemployment rate reaching 7.07%. In 2022, economic in Indonesia begin to improve with economic growth of 5.72% in the third quarter of 2022. This economic growth is expected to restore employment conditions in Indonesia. This paper aims to analyze the employment recovery in Indonesia post covid-19. This research uses a quantitative approach. The data for analysis is time series data released by the Central Bureau of Statistics (BPS). Data were analyzed using descriptive analysis that was carried out using figures and graphics to explain the development of employment opportunities post-Covid 19. The results of the analysis show that post-Covid employment has improved but has not fully recovered. The main challenges in the employment sector are high underemployment, part-time workers, and informal sector workers. This condition shows that Covid 19 is still having an impact on the world of work in Indonesia, so there is a need for employment policies that focus on targeting the informal sector.

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## Determinants of mulching adoption among cacao farmers of Camiguin Province, Philippines

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**Abstract.** Mulching is considered as a sustainable farming practice that promotes environmental conservation and improves productivity. The study was carried out to evaluate the determinants of mulching adoption among cacao farmers in the province of Camiguin, Philippines. The study was administered to 87 out of 201 cacao farmers using stratified sampling technique in the entire province of Camiguin last March 2023. Data collected were subjected to probit regression analysis using free software RStudio and R 4.3.0, where the dependent variable was the adopters of mulching, and the independent variables were age, access to extension workers, experience in cacao farming in years, knowledge, and training of mulching. Results from the probit model revealed a positive and strong relationship between adoption and knowledge of mulching ( $p\text{-value}=0.01$ ) and training of mulching ( $p\text{-value}=0.01$ ). The current study provides empirical evidence that knowledge and training are two vital determinants of adoption on mulching among cacao farmers in Camiguin. Educating farmers about mulching improves their knowledge and skills and increases productivity on their farms to attain sustainable agricultural production. Further studies may be conducted to assess the economic impact of adoption on farmers' income and well-being.

### Acknowledgement

The authors are grateful for the support provided by Camiguin Polytechnic State College headed by Dr Macario B. Oclarit in the implementation of the research project. The authors are also grateful to the local government units of Camiguin and to the active participation of the cacao farmers in the municipalities of Mambajao, Catarman, Mahinog, Sagay and Guinsiliban.

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## The diversity and distribution of Gecarcinidae MacLeay, 1838 (Crustacea: Decapoda: Brachyura), a potential land crab as a valuable food resource, in Indonesia

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**Abstract.** Gecarcinidae is one of the land crabs that is commonly found in intertidal and coastal areas comprises of 28 species worldwide. On some regions, this crab has been known as one of food resources. However, Indonesians have no interest yet in consuming this potentially high-value species. The present study aims to reveal the diversity and distribution of Gecarcinidae in Indonesia and discuss its potencies. Specimens of Gecarcinidae deposited in Museum Zoologicum Bogoriense (MZB) were used for observation and their morphological differences were recorded. Their recorded localities were used to define the hypothetical distribution. Their economic potential assessments were based on some literatures. In total, there are five species recorded in Indonesia, i.e., *Cardisoma carnifex*, *Gecarcoidea humei*, *Gecarcoidea lalandii* Tuerkayana *hirtipes*, and *Tuerkayana magnum*. The widest-distributed species are *Cardisoma carnifex* and *Tuerkayana hirtipes*. Among these species, the two largest species are *Cardisoma carnifex* and *Tuerkayana magnum*. In Pacific regions, *Gecarcoidea* is harvested as one of food resources. Therefore, these five species have high potency to support food sustainability and revealing the potencies and chance for captivity could serve as a catalyst to elevate community welfare, especially in coastal areas. Conservation on the natural habitat is necessary to maintain the sustainable utilization

### Acknowledgement

I would like to thank one of my colleagues from BRIN for their assistances in the Laboratory i.e., Ujang Nurhaman from the Directorate of Scientific Collection Management, BRIN, Cibinong, Bogor. The present study was funded by the Indonesia Endowment Fund for Education (Lembaga Pengelola Dana Pendidikan-LPDP), Ministry of Finance of the Republic of Indonesia.

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## Navigating Clean Water Scarcity: Assessing Household Behaviour of Clean Water Treatment and Storage in Tallo, Makassar

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**Abstract.** Tallo is one of the sub-districts in Makassar that is experiencing water scarcity, leading the community to use the available water sources, such as dug wells and rainwater. This study aims to evaluate the behavior of people in Tallo who lack clean water access in terms of clean water treatment and storage after socialization, installation of Rainwater Harvesting (RWH), and subsidy of ceramic clay water filters. This was descriptive research with the number of samples was 98 beneficiaries selected by purposive sampling. The results revealed that the beneficiaries performed behavioral changes in water treatment and storage after the various interventions. It may encourage the government sectors to provide an appropriate water supply for Tallo and become a proper example that can be implemented in areas experiencing a clean water crisis.

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## Land Cover Change and Fragmentation Analysis in Sintang Regency, West Kalimantan, Indonesia

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**Abstract.** The increasing number of human populations and their needs has driven changes in forest cover to become infrastructure, and agricultural land and plantations. Sintang Regency has a natural forest structure which is the upstream of the Kapuas River and the Kayan River which are used by the local community for transportation and sources of livelihood. In this study we wanted to analyze the level of fragmentation in Sintang Regency. We used landcover data in the three mapping periods: 2010, 2015, and 2020 with MoEF classification. Fragmentation analysis using ArcGIS 10.6 and FRAGSTATS v4.2.1 software at class and patch levels analysis. The result showed a decrease of natural forest, while estate crop and mining increased. As an impact of decreasing forest area, it also reduced the total core area and connectivity, the intact forest > 50,000 ha was isolated in 2020. The fragmentation of forests will have an impact on reduced habitat for wildlife and loss of ecological function of the landscape.

### Acknowledgement

This paper is funded using Program Publikasi Terindeks Internasional (PUTI) Q4, Universitas Indonesia.

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## Man, Woman And Water: Exploring Gender Dynamics In Urban Water Clean Access In Makassar City

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**Abstract.** Gender dynamics play a significant role in shaping access to clean water in urban areas. This study examines the disparities in burdens between men and women and highlights the spectrum of gender dynamics related to clean water access. The research was conducted in the Tallo district of Makassar City, characterized by slums and low-income households. Data were collected through interviews with 200 heads of households using a self-administered questionnaire and combined with participatory observation. The study reveals that adult women (mothers, wives, aunts, sisters, and sisters-in-law) experience greater burdens in aspects of water collection, time poverty, health and safety risks, hygiene, and sanitation compared to adult men (fathers, husbands, uncles, and brothers). Regarding decision-making power in water access, heavy burdens are experienced by male children (sons and nephews) and female children (daughters and nieces). Women often face greater challenges in obtaining safe and affordable water access, both due to gender role demands in domestic tasks and limited water infrastructure affecting water distribution in the community. The study underscores the need for gender-focused interventions to promote equitable access to clean water in Makassar City and empowering women in water resource management and decision-making, improving water infrastructure.

### Acknowledgement

Sincere gratitude is extended to the Makassar City Government and Tallo District for generously granting permission to collect data at the research site. Special thanks are owed to Yayasan Anak Bangsa Bisa (YABB) for providing the necessary funding for conducting the research and facilitating the publication. Heartfelt appreciation is also expressed to Institute of Research and Community Service (LPPM) at Sekolah Tinggi Ilmu Kesehatan Makassar for their valuable support in providing enumerator assistance. Immense gratitude is conveyed to Celebes Green Project (CGP) for their efficient coordination of the data collection process, significantly contributing to the success of this study.

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## Utilization of paper waste in PT. Pertamina Kilang Internasional into seed envelopes

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**Abstract.** Paper waste sorting needs to be conducted to speed up the decomposition process. If separation is not carried out, the mixture of organic paper with inorganic waste will cause anaerobic decay and produce greenhouse gases. Therefore, PT. Pertamina Kilang Internasional carried out an activity titled Pertamina RU V Innovation Project Series 5R Business Idea in 2022 to deal with their paper waste. We processed the paper waste into microgreens seed envelopes that can be planted and grown into vegetables. The variables observed were the ratio of paper pulp to water, namely 1: 10, 3:10, 6: 10, and 9: 10. The results revealed that the best treatment in the paper soaking process was on the second day and the composition of 3 kg of paper and 10 L of water was the best treatment based on the level of saturation, the ease of removing from the mold, and the thickness of the paper. While the best treatment for the growth of microgreens was the composition of 9 kg of paper and 10 L of water. The production results revealed that the percentage of successful utilization of paper waste into seed envelopes was 75%.

### Acknowledgement

This research was supported by a grant from PT. Pertamina Kilang Internasional, with contract number SP/KPI480A0/2022-S0. The authors would like to thank for the support of LPPM STT Migas, Balikpapan.

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## Characteristics and antioxidant activity of liquid smoke produced from gelam wood (*Melaleuca cajuputi*), alaban wood (*Vitex pubescens Vahl*), and coconut shells (*Cocos nucifera L.*)

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**Abstract.** The antioxidant activity of liquid smoke is a major consideration in its use as a food preservative. Raw materials greatly determine the phenolic content in liquid smoke. The purpose of this study was to determine the physicochemical properties (phenolic & acid content, pH level, and chemical composition) and the antioxidant activity of liquid smoke made from gelam wood (*Melaleuca cajuputi*), alaban wood (*Vitex pubescens Vahl*), and coconut shells (*Cocos nucifera L.*). The phenolic content was determined by the Follin- Ciocalteau method, whereas the acid content was determined using the titration method. The antioxidant activity was evaluated using a spectrophotometric method with DPPH radical compounds. The average phenolic contents of LSGW, LSAW, and LSCS were 0.855; 0.885; and 1.957 (% g GAE/mL) respectively, and the average acid contents were 4.256; 2.776 and 11.873 (%g/mL), respectively. Compounds detected in liquid smoke consist of organic acids; phenolic compounds; carbonyls; alcohols; furans and esters. All three types of liquid smoke had high antioxidant activity, as indicated by their IC<sub>50</sub> values of 0.53% for LSGW, 0.70% for LSAW, and 0.75% for LSCS, respectively. The findings of this study implied that the antioxidant activity of liquid smoke is not always directly proportional to its total phenolic content.

### Acknowledgement

Author wishes to thank LPPM-ULM for funding this research through the PDWM Program 2023 Lambung Mangkurat University with ULM Rector's decree number 615/UN8/PG/2023.

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# Environmental Taxes' Impact on Nigerian Oil and Gas Companies' Disclosure of Environmental Accounting Information

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**Abstract.** There is currently a lack of information about the contemporary and potential effects of environmental taxes on environmental accounting disclosure. This study, therefore, explores environmental taxes' impact on Nigerian oil and gas companies' disclosure of environmental accounting information. The study used auxiliary data for generating information on the outcome variables and the explanatory variables from the "Organization for Economic Cooperation and Development" (OECD) and annual reports and accounts of the oil and gas corporations in Nigeria. The analysis included thirteen (13) companies as of December 31, 2021. Fixed-effects regression using Estimation using Driscoll and Kraay standard errors (DKSE) has been used in this study. The study revealed that an increase in total green taxes or transportation taxes will stimulate the disclosure of environmental accounting information by the oil and gas corporations in Nigeria. It is also documented that oil and gas companies that have high C2 intensity are less likely to disclose environmental accounting information. The study findings will be useful to the regulators and policymakers in Nigeria. This is because if the government enhances environmental taxes, it may inspire companies to enhance their environmental accounting procedures.

## Acknowledgement

Author wishes to thank LPPM-ULM for funding this research through the PDWM Program 2023 Lambung Mangkurat University with ULM Rector's decree number 615/UN8/PG/2023.

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## Land Consolidation Process Based on Environmental Conservation and Urban Spatial Law

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**Abstract.** This article explores the benefits and implications of implementing a land consolidation process centered around environmental conservation and urban spatial law. The research in this article will use normative legal research methods with an analytical and descriptive nature. This article concludes that the land consolidation process based on environmental conservation and urban spatial planning law offers a holistic approach to promoting sustainable development. By integrating conservation practices and adhering to urban spatial regulations, the process ensures the preservation of natural resources, controlled urban expansion, sustainable infrastructure development, efficient land utilization, and the conservation of cultural heritage. Collaborative efforts among government, communities, and the private sector are essential for successful implementation. Applying this approach contributes to the overall improvement and preservation of the environment, leading to a more sustainable future

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## The Effect of User Interface Design on Customer Satisfaction and Brand Trust in Indonesian Telemedicine Apps on the Android Store

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**Abstract.** Telemedicine gained popularity as a remote health solution during the COVID-19 pandemic. Telemedicine apps are popular among Android users in Indonesia. However, user comprehension of the user interface varies. To evaluate humanistic aspects of telemedicine user interfaces, this study combines brand trust, customer satisfaction, and the technology acceptance model (TAM). The study, which was validated with 300 Indonesian respondents, uses Multiple Linear Regression to assess the causal relationship of the proposed model hypotheses. The findings show a strong correlation between Customer Satisfaction and Brand Trust in Telemedicine APK on the Android Store. The proposed model fits the sample well, laying the theoretical groundwork for future research and providing practical insights for government healthcare departments and telemedicine facilities

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## The Architecture Of Medical Research Buildings And Complexes As The Basis Of Sustainable Development

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**Abstract.** The article deals with the features of the architectural design of buildings and complexes for medical research. The development of science is a priority for most countries, as it contributes to the overall progress and development of innovative solutions. However, in order to create a favorable atmosphere for it, several conditions must be met: the presence of professional and motivated scientists, special equipment, and, no less importantly, a building (or a complex) whose architecture inspires and promotes innovative scientific activities. The aim of the article is to analyze the progressive worldwide experience in the architectural design of medical research buildings and complexes and, on this basis, to formulate the appropriate design principles. Several methods were used for the research: analysis of scientific publications and conference proceedings, search and analysis of the architecture of medical research buildings and complexes, systematization and analysis of general and individual architectural solutions, identification of patterns and features, final analysis and formation of architectural principles for innovative solutions. The article proposes the main design principles recommended for architectural design, especially for medical research. The most important are the following principles: visual innovation, flexibility, openness of the design structure, maximum use of sunlight, and sustainable development.

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## Vectors Of Sustainability Of Modern Hospital Architecture (Case For Poland)

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**Abstract.** The relevance of studying sustainable development issues of Polish hospitals is related to their low scores compared to other European countries (23rd out of 30). From this point of view, the article considers sustainability as the ability of the hospital network to adapt to the changing and dynamic needs of people, as well as the ability to adapt to new challenges. The purpose of the article: based on the previous comprehensive research of the author of the article, to form and briefly describe the main vectors of transformation and innovation for the sustainable development of Modern Hospital Architecture (on the example of hospitals in Poland). The research was based on a systematic and comprehensive analysis, including a historical and functional approach. As a result, the article proposes a cluster approach, multifunctionality and accessibility, completeness, visual communication and "openness" of the building, a comfortable, friendly, and trusting atmosphere, landscaping, and "green" design. It is worth noting that such an architectural approach significantly increases the sustainability of hospitals, as it is associated with a qualitative increase in comfort for both visitors and patients, as well as for medical staff.

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## Optimization of Public Green Open Spaces as an Effort to Preserve and planing conservation the Environment in Klungkung Regency, Bali

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**Abstract.** This article aims to explore the Optimization of Public Green Open Spaces as an Effort to Preserve the Environment in Klungkung Regency, Bali. The research in this article will use normative legal research methods with an analytical and descriptive nature. This article conclude that Optimizing the amount of green open space is very important for the surrounding environment and public health. Several factors cause obstacles in arranging green open spaces in Klungkung City. One of them is the limited ability of the Klungkung City Government to obtain green available space land. In addition, limited funds are also a factor affecting the Klungkung City Government's ability to open green open spaces. In addition, the lack of comprehensive planning from the Klungkung City Government in managing the available land to be used as green open space is also an obstacle. Collaborative efforts among government, communities, and the private sector are essential for successful implementation. The application of this approach contributes to the overall improvement and preservation of the environment, leading to a more sustainable future.

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## Greener Communication, Green Environment, Happiness, and Sociality for Older Adults

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**Abstract.** The new environmental system for older adults becomes more important to give successful communication about the green environment. A green environment also has a strong relationship with happiness and sociality. The study proposes to correlate the Indonesian- Greener Communication Successful for Older Adults (IGCSOA) with a green environment. At the same time, this study proposes to reconfirm the relationship between a green environment and happiness and sociality. By surveying the assisted and specific living communities, this study investigates 63 respondents in Bali dan Bandung by interviewing them with resident enumerator assistance. The result shows a high level, higher reliability of IGCSOA, green environment, happiness, and sociality. The three accepted hypotheses indicate a strong correlation between IGCSOA, green environment, and happiness, and sociality. The study suggests exploring more detail on the subdimensions among the observed variables.

### Acknowledgement

This study was supported by PDKN DIKTI Grant No.NKB-875/UN2.RST/HKP.05.00/2023.

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## Public Spaces in Historic Environment as Urban Fundamentals of Sustainable Development

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**Abstract.** Dynamic sociopolitical processes in Ukraine affect public needs. Today, it is crucial to develop urban approaches and methods to create open spaces in human settlements in terms of sustainable development principles. The research is aimed at finding urban-planning approaches and methods of creating public space in the historic environment, which influence the preservation of historical and cultural legacy and cultural city potential, determining the role of public spaces in sustainable development of the settlement. The research design is based on the use of targeted approaches in the territories' management, based on system analysis and sociological research to ensure sustainable settlement development. Geoinformation technologies are used to account public zones in the settlement. The total number of public areas in settlements is one of the indicators that characterize the quality of life, according to ISO 37120: "Sustainable development of communities - Indicators for city services and quality of life". The originality of the research is in the synthesis of design and sociological methods for the formation of open public spaces in the urban environment. Open public spaces provide social and environmental aspects of sustainable development of the settlement by creating accessible places for cultural, creative and artistic events, free from development areas with landscaping.

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## Brebes Shallot Skin Waste Feed Mixture As A Lowering Of Tegal Duck Cholesterol Levels

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**Abstract.** Onion skin is one of the causes of waste in Brebes Regency. Handling shallot skins can be done by utilizing them as feed additive for ducks, which are also commonly encountered. Onion skin contains active compounds such as flavonoids, terpenoids, and phenols, which can act as an antibacterial and as an alternative herbal feed additive replacement for antibiotics. Shallot skin contains compounds that can reduce cholesterol levels. This study aims to analyze the addition of shallot skin waste flour in feed to see the level of cholesterol (LDL) reduction in the blood of Tegal ducks and their hemoglobin levels. The study was conducted using a completely randomized design with a single factor with three levels of treatment and repetition. The results of the addition of shallot skin waste flour showed a significant reduction in blood cholesterol levels in Tegal ducks. The results showed that the average cholesterol level for the first treatment was 9.8 mg/dl, the second treatment was 3.4 mg/dl, and the third treatment was 1.3 mg/dl. The lowest cholesterol content was found in ducks with the addition of 30% shallot skin flour feed.

### Acknowledgement

This research can be fully implemented with the help of several parties. Thank you to the Faculty of Science and Technology at Muhadi Setiabudi University for providing facilities and other assistance, as well as the Brebes Regency shallot farmer group for providing shallot skin waste for analysis. No potential conflict of interest was reported by the authors.

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## Disaster Mitigation through Community Education: A Study of Evacuation Knowledge in Lapindo Mud Area

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**Abstract.** The phenomenon of the Lapindo Mudflow that occurred on May 29 2006 in Sidoarjo, East Java Province has entered its 17th year after the disaster with a continuous overflow until now. One of disaster mitigation to handle the threat of wider mudflow to more densely populated areas is with the construction of embankments. Glagaharum Village on Porong is directly adjacent to the outer barrier with a distance of  $\pm 500$  meters, and between the village and the embankment is only a meter-wide tributary before reaches the village road. This research was arranged descriptively with a quantitative method. This method was used to find out the community's knowledge about evacuation routes and places through questionnaires. Researchers used the parameters of age, gender, and education as a binary logistic regression test. The binary logistic regression test showed that the education parameter had more influence on knowledge of evacuation locations; next was gender, and lastly was age. Education influences education level, literacy level, and critical thinking skills. Meanwhile, the female gender had difficulties regulating emotions when circumstances were urgent. So the importance of increasing literacy and adding special training for women was needed to increase equality in the knowledge of evacuation locations.

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## Enhancing the Quality of Irrigation Wastewater for Mung Bean Cultivation using IoT Technology

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**Abstract.** In Indonesia, farmers commonly irrigate agricultural fields for mung bean cultivation using irrigation channels. However, irrigation water in some areas is heavily contaminated and foul-smelling, which can hinder the growth of mung bean plants. Treating irrigation wastewater with methods tailored to the plants' needs can reduce the levels of contaminants present in the waste-laden irrigation water. This research uses three samples of water wastewater before, after, and PDAM water. The aim of this research is to process polluted irrigation water to produce clean water that meets the quality standards required for plant irrigation. This study employs anaerobic filter technology and IoT-based phytoremediation processes. The results obtained from the wastewater treatment research include adjusting the water pH to 7, reducing COD levels by 41.55%, BOD by 54.6%, phosphates by 23.13%, and nitrates by 90.22%. The comparison obtained from the experiment of watering the green bean plants using three water samples, namely irrigation wastewater before and after being treated, and PDAM water, showed that irrigation wastewater grew faster with a percentage of 65.33%, sewage irrigation water before being treated reached 49.33%, and PDAM water reached 53.33%. The treated water is then supplied to mung bean plants, promoting faster and healthier growth because the water nitrate, BOD, COD, and Phosphate decrease.

### Acknowledgement

This work is ostensibly supported by Universitas Islam Malang, The Ministry of Education, Culture, Research, and Technology and Ministry of Finance Republic Indonesia.

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## The Evaluation of Physical, Biological, and Chemical Treatments on Pig Wastewater: A study on pig farming in Sumogawe village, Semarang Regency, Central Java

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**Abstract.** Pig farming is one of the protein sources for Indonesian people, and Central Java is the highest fifth province that produce pigs for consumption. As pig waste contains high organic compounds, waste treatment is required to avoid pollution. Previous studies indicate that pig waste is usually processed into biogas or fertilizer, and usually treated by anaerobic-aerobic process. However, studies on pig wastewater treatment by aerobic process solely are very limited. This research aims to evaluate pig wastewater treatment performance by biological aerobic process using the application of Biogrow Media-2604 and Resin Seedling Bacteria-1103 produced by Nusa Alam Kreasindo company and chemical process. The wastewater was flown in the rate of 84.4 m<sup>3</sup>/d with 48 h retention time. Samples taken from inlet, sixth aeration tank, and outlet were analyzed to determine the pH, TSS, BOD<sub>5</sub>, COD, and N-NH<sub>3</sub>. The result indicates that biological aerobic process could reduce TSS to 64%, BOD<sub>5</sub> to 90.81%, and COD to 89.06%. However, the aerobic process could not reduce N-NH<sub>3</sub> which indicates the need of anaerobic process. The application of PAC coagulant could decrease all pollutants to fulfil the quality standard regulated by the government. This indicates that applying aerobic process solely is adequate to process pig wastewater.

### Acknowledgement

The authors would like to acknowledge the team of Nusa Alam Kreasindo company who involved in the research i.e. Makhfudhy as the drafter of the wastewater treatment plant, Suharno as the chief of the project, Jaka Setiyadi and Pargiyanto as instrument installers, Agustien Noerwahju, Eko Prihatin, Widiyat Tomo as process engineers, Indra Setyo Nugroho and Dwi Riyanto as foremen engineers Sutarto Widyantoro as sample collector

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## Proanthocyanidins-rich Fraction of *Tamarindus indica* Maintained Redox Status of Environmental Toxicant-induced genotoxicity in *Drosophila melanogaster*

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**Abstract.** Proanthocyanidin, a bioactive polyphenolic component of tamarin (*Tamarindus indica* L.), offers neuroprotective benefits with insufficient scientific evidence. This study evaluated the behavioural and molecular effect of proanthocyanidin-rich fraction on the gene expression level of antioxidant and aging enzymes in *Drosophila melanogaster*. The fruit flies were fed with the fraction at 1.5 and 2.5 mg/10g diet for seven days followed by exposure to 0.1 µg/g diet lead oxide for equivalent days. Negative geotaxis and survival assays were conducted on the flies. The expression level of phase II antioxidant enzymes and acetylcholinesterase were evaluated using rt-PCR to assess the protection level and mechanism of proanthocyanidin in Pb-induced neurotoxic *D. melanogaster*. The results show that the proanthocyanidins-rich fraction enhanced locomotor activity and the rate of emergence of flies even in the presence of eco-toxicant. The fraction also mitigated the harmful effect of Pb via the activity of catalase and superoxide dismutase, as evidenced by the increase in the expression levels of the catalase and SOD genes in the noxious environment. Thus, the study provides insights into understanding the neuroprotection mechanism of proanthocyanidins-rich fraction against lead-induced neurotoxicity in *D. melanogaster* which could be translated to humans when explored further.

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## Assessment Of Tourism Suitability Index And Carrying Capacity In The Pangadaran Beach (West Coast, East Coast and White Sand Coast)

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**Abstract.** Pangadaran Beach, a marine tourism destination located in Pangadaran, West Java, is stipulated as a priority tourism area and has three eminent locations, i.e., East Coast, West Coast, and White Sand Coast, all of which are famed for their natural appeals, bringing about a sharp increase in the number of visitors after the pandemic. This research explores the tourism suitability index and carrying capacity of Pangadaran Beach as a recreation tourism area. Data analysis method using the tourism suitability matrix for beach recreation and carrying capacity for tourism activities including beach recreation, swimming and sunbathing. The tourism suitability index demonstrated that West Coast belonged to the Very Suitable category, and East Coast and White Sand Coast belonged to the Suitable one. Furthermore, each tourism area's carrying capacity related to recreation activities at the beach, swimming, and sunbathing was 1,536 visitors per day. Policies applicable at Pangadaran Beach are also expected to cover the regulation concerning visitors' visits and tourism activities. Thus, it is necessary to manage a sustainable marine tourism development strategy and the development of various tourism activities by considering the carrying capacity so as not to damage the ecosystem.

### Acknowledgments

This research acts as part of KEMENDIKBUD's Fundamental Research in 2023. The authors express gratitude to the research team for conducting research and field surveys at the tourism area of Pangadaran Beach.

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## Genetic Selection Pressure on TLR9 Gene Increases Individual Susceptibility to Systemic Inflammatory Disease: A Case Study of Kano State Population

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**Abstract.** TLR9 may recognize and generate an immunological response to DNA double-strand; therefore, its link with experimental and serological lupus symptoms must be investigated. genetic data on the normal frequencies of the TLR9 (rs187084) polymorphism may make it difficult to choose an adequate sample size for case-control association studies. This study investigated how TLR9 (rs187084) polymorphism is typically distributed among the people living in Kano, Nigerians. TLR9 (rs187084) polymorphism was examined in a sample of 315 individuals using the PCR-RFLP method. The mutant allele was more common (67%) and gender-independent. The gradual incidence of changed alleles in both identities suggests the population was chosen to survive TB and malaria. Though increased TLR9 expression is protective against infections, it might likewise play a part in the development of inflammatory disorders. The high frequency of TLR9 (rs187084) overexpression in Kano State residents may be the result of genetic adaptation to the state's common infectious and parasitic diseases. This is thought to be the outcome of interactions among genetic factor and the terrain. Systemic lupus erythematosus (SLE) and other autoimmune disorders have been linked to this genetic plasticity. Sample sizes for future case-control studies can be determined using the current data.

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## Performance Of Hybrid Mesh Filter Bioreactor For Textile Wastewater Treatment

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**Abstract.** This study evaluates the performance of hybrid mesh filter bioreactor (MFBR) for textile wastewater treatment. The bioreactor was operated with nylon mesh filter having 37  $\mu\text{m}$  pore size under intermittent aeration with aeration on/off durations of 1/1 hour. Wastewater influent was degraded by microorganisms attached to biofilm carriers and further filtered by external filtration tank. The process performance was evaluated under varying concentrations of COD (600–1200 mg/L). Stable operation was achieved for around 60 days with 88.4-94.8% turbidity removal and flux value of  $102 \pm 15 \text{ L/m}^2 \cdot \text{hour}$ . Although high COD removal was observed (89.4-92.1%), only 14.3-25.2% colour removal was achieved in hybrid MFBR under hydraulic retention time (HRT) of 4-8 hours.

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## Lowland rice (*Oryza sativa* L.) farming performance in the rice production center of Central Java Province

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**Abstract.** Central Java is a province on Java Island located between the two largest riceproducing provinces: East Java and West Java. Central Java is one of the national food buffer provinces. This study used the survey method with interview measuring devices using a structured questionnaire. The research location was determined using a purposive method so that it was possible to determine the regency with the largest average harvested area and rice production over the last five years in Central Java, namely Grobogan, with 125 farmers as respondents. This research aims to analyze the performance of lowland rice farming in rice production centers in Central Java by analyzing the revenue and profit of rice farming. The study's results in 2023 show that with an average paddy rice planting area of 0.64 Ha, farmers will obtain 53.21 hectares of rice production and an average income of IDR 30,906,670.40. Paddy farmers allocate the cost of paddy rice farming for IDR 13,370,892.8 so that farmers get a profit of IDR 17,535,778.40. The analysis results show that the value of the benefit-cost ratio of farmers' lowland rice farming in Grobogan, Central Java is 1.31, which means that lowland rice farming is feasible to cultivate

### Acknowledgments

The authors gratefully acknowledge to Universitas Sebelas Maret Surakarta as the research funder.

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## Effect of permanent magnet structure on working characteristics of LSPMSM 3000 rpm

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**Abstract.** Reducing the cost of electricity to improve production efficiency is one of the urgent tasks. Nowadays, the rapid development of Neodymium rare earth (NdFeB) permanent magnet technology has promoted the creation of high efficiency motors to replace low efficiency induction motors with the aim of saving electricity. One of them is a line-start permanent magnet synchronous motor (LSPMSM). The permanent magnet configuration greatly affects the operating characteristics of the LSPMSM such as working current characteristics, pulsating torque, working efficiency, and starting speed. The content, the article focuses on researching and evaluating some permanent magnet configurations affecting the working characteristics of the LSPMSM. The research results are suggested for the design and manufacture of LSPMSM used in mining for the purpose of saving electricity.

### Acknowledgments

This paper is supported by research funding by Project number DT.CNKK.QG.012/21, the authors would like to thank

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## Improving electricity efficiency by DC power transmission: A case study in Vietnamese mining

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**Abstract.** The exploitation and use of fossil fuels, including coal, to promote socio-economic development is taking place strongly, including in Vietnam. Vietnam's mining industry is getting deeper and deeper, and the degree of mechanization is increasing, making electricity consumption even bigger. The efficient use of electricity to reduce the power consumption per ton of mined coal is of great significance in improving labor productivity, reducing environmental emissions, and moving towards sustainable socio-economic development. For mining in Vietnam today, electricity is still transmitted by AC, causing undesirable consequences that reduce the efficiency of electricity use. To overcome the above problems, it is possible to use DC power transmission. The content of the article analyzes the use of DC power transmission in mining in Vietnam to improve power efficiency, reduce environmental emissions, and move towards sustainable development.

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## Assessment of Water Quality Changes Using Physical Parameter and Stable Isotope in Ciliwung River

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**Abstract.** The Ciliwung River is the potential water source for the people of Jakarta and Bogor. Rapid urbanization and industrial development have sparked serious problems in the water resources of the Ciliwung River. The potential pollutants increase as the river flows through residential, business, and industrial areas, where drainage and sanitation infrastructure are worse. Water is naturally tagged with natural tracers, such as temperature, electrical conductivity, chemical constituents, and environmental water isotopes ( $\delta$  2H and  $\delta$  18O). These proved valuable tracers to identify the origin of the water. This research aims to trace the origin of the Ciliwung River water using a stable isotope approach and physical parameters. Research methods are field surveys, laboratory analysis and analytical studies—sampling at 12 points of river water for a physical parameter and 5 points for stable isotopes. The research results show that the water origin of Ciliwung's is rainwater. The stable isotopes in the upstream area are smaller than those in the upstream area experiencing enrichment. Factors leading to enrichment are inputs from anthropogenic activities to water bodies from household, agricultural and industrial pollution. The results of this research are useful for the government and academics to design Ciliwung River conservation policies.

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## Methane Gas Management Policy Based on Emission Estimates at Gunung Kupang Final Processing Site Landfill

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**Abstract.** Methane gas (CH<sub>4</sub>) is one of the main Greenhouse Gases (GHG), which contributes 14.5% to global warming. Gunung Kupang Final Processing Site is a Final Processing Site that serves the Banjarbaru City area in addition to the Banjarbakula Regional Final Processing Site, with waste coming in every day which continues to increase and has the potential to generate emissions. The purpose of this research is to analyze the characteristics in the form of waste generation and composition at the Gunung Kupang Final Processing Site and to analyze the estimation of methane gas from the Gunung Kupang Final Processing Site landfill activities using LandGEM methods. The methods used in this study are the Landfill Gas Emission Model (LandGEM). Total greenhouse gas emissions produced in the LandGEM method from 2014- 2020 were 3.96 Gg/year. It certainly need for local government participation in the form of waste management policies which has an impact on reducing methane gas.

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## Unlocking soil carbon stock potential in conservation areas

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**Abstract.** Indonesia's nationally determined contributions (NDC) outline ambitious emission reduction targets, with the forestry and other land use (FOLU) sector expected to play a significant role in achieving these goals. This study estimates soil carbon stock in conservation areas covering mineral and peat soils. A total of 72 sample plots in Bukit Tigapuluh National Park (NP), Kutai NP and Sebangau NP, were established for soil sample collections. This study found that the highest organic content in mineral soil is at 0-5 cm depth, accounting for 3.54% in Bukit Tigapuluh NP and 2.72% in Kutai NP. The carbon stocks of mineral soil in Bukit Tigapuluh NP and Kutai NP at 0-30 cm depth are 43.17 ton C ha<sup>-1</sup> and 56.77 ton C ha<sup>-1</sup>, respectively. Meanwhile, the carbon stock in peat soil in Sebangau NP at 400 m depth is 2,155.63 ton C ha<sup>-1</sup>, 43-fold larger than the carbon stock in mineral soil. This study underscores the significance of soil carbon in Indonesia's climate mitigation and highlights the opportunity to refine emission estimates from the FOLU sector by adding soil carbon pool to the calculation of the emission factor.

### Acknowledgments

We would like to thank the staff of Bukit Tigapuluh National Park, Kutai National Park and Sebangau National Park who helped data collection in the field

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## Application of Attached Growth System for Laundry Wastewater Treatment

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**Abstract.** Laundry wastewater is a type of wastewater that exists in cities and has the potential to harm the environment. A small-scale aerobic wastewater treatment (WWT) system utilizing a microbubble generator (MBG) was employed to address this issue. However, the removal of pollutants, specifically chemical oxygen demand (COD), is often low, especially under high wastewater load conditions. The incorporation of attachment media in the aeration tank facilitates the adherence and optimal proliferation of microorganisms, thus maintaining process stability. This study aims to compare the performance of a small-scale wastewater treatment system using both suspended and attached growth systems, primarily focusing on COD removal. The results indicate that the attached growth WWT system outperforms the suspended growth system. During a one-week batch operation with a temperature range of 26-28°C, a pH level of 6.3-7.1, and an initial influent containing COD at 377.5 mg/L, the suspended growth system achieved a COD removal rate of approximately 78%. In contrast, with the introduction of attachment media under similar batch operation conditions (temperature range: 26-28°C, pH level: 6.4-7.4, influent COD: 755.5 mg/L), the COD removal efficiency increased to 94%. The incorporation of attachment media led to a notably stable performance outcome.

### Acknowledgments

The authors would like to extend their appreciation for the laboratory facilities and the financial support from by Universitas Gadjah Mada.

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## Separation performance of lithium and calcium from synthetic geothermal brine using electric field-assisted membrane

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**Abstract.** Green low-carbon technology development has spurred an increased demand for lithium. Brine, including geothermal brine, is the world's largest source of lithium. However, the low lithium content in geothermal brine and the presence of other ions pose challenges in obtaining a high-concentration lithium concentrate. Electric field-assisted membrane effectively separating lithium from magnesium and strontium. This study was conducted to separate lithium and calcium from synthetic geothermal brine using an electric field-assisted membrane. The separation process is conducted for lithium (50 ppm) and calcium (300; 800; and 2,000 ppm) with variations in electrical voltage (0; 2; and 3V). The decrease in lithium rejection reaches up to 50% at an electrical voltage of 2V. Conversely, the increase in electrical voltage does not significantly impact calcium rejection (calcium rejection remains at 89% with an electrical voltage of 3V) and the permeate flux for lithium and calcium. The increasing calcium concentration affects permeate flux significantly but does not notably affect calcium rejection, with the rejection for calcium remaining above 85%, even across a wide concentration range. The findings suggest the feasibility of concentrating lithium through electric field application without compromising calcium rejection within a single salt solution system.

### Acknowledgments

The authors would like to extend their appreciation for the laboratory facilities generously provided by Universitas Gadjah Mada, the collaboration with Indonesian Research and Innovation Agency (BRIN), and the financial support from the Indonesia Endowment Fund for Education (LPDP).

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## Biodegradable Food Container from Rice Straw and Sugarcane Bagasse with Orange Peel Addition

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Email: esthermutiarasantallumekkelsiatibalia@mail.ugm.ac.id, jwintoko@ugm.ac.id, chandra.purnomo@ugm.ac.id Abstract.

**Abstract.** It is necessary to replace plastic-based food containers using natural materials that are biodegradable, abundantly available, and low cost. This study used rice straw and bagasse with the addition of orange peel to improve the mechanical properties. The orange peel addition is varied at 5% and 10% (w/w). Water absorption, tensile strength, and degradation time were measured to determine this natural container. In the water absorption test, the best value was obtained at 10.95% for bagasse containers without orange peel addition, while for rice straw containers the best water absorption was 11.02% added by orange peel at 10% (w/w). In the tensile strength test, the best value was obtained by the bagasse container at 164.8 N in due to its high cellulose content. The degradation test showed that this natural container can be degraded within 2 months inside natural soil

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## Life Cycle Assessment of Rice Farming Practices in Indonesia

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**Abstract.** Indonesian farmers have practised rice farming for centuries. However, chemical application and agricultural mechanization bring environmental consequences. This study compares the contribution of four rice farming practices, namely, conventional, organic, integrated crop management and rice intensification, to the environment. Secondary data was employed to calculate the environmental impacts of rice farming practices (ha/year), consisting of; seedlings requirements, seeding system, soil cultivation system consisting of fertilizer, pesticides, and herbicides application; irrigation system, harvesting system, and yield. Environmental impact assessment of rice farming using openLCA 1.11 software, and the calculation was based on the CML-IA baseline methodology. Machinery usage in rice farming contributes most to environmental quality degradation, mainly from water pump and tractor utilization. Conventional rice farming emits the highest pollutants compared to others. On the contrary, rice intensification generated the lowest pollutants. Pump-based irrigation systems resulted in inundated rice fields pollute the environment more than intermittent or alternate wetting and drying

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## Unravelling Groundwater Governance Complexity: Exploring the Utility of Assemblage Thinking

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**Abstract.** Groundwater, a crucial resource for human needs and ecosystems, faces challenges from overuse and exclusive access. Assemblage Thinking (AT), introduced by Deleuze and Guattari, offers a lens to unravel complex socio-ecological dynamics in groundwater governance. This paper recommends using AT to analyze the socio-ecological dynamics and conflicting interests of groundwater regimes. AT is suitable for hybrid governance frameworks, encompasses dynamic and evolving processes rather than static conditions, and recognizes the impact of material objects on governance, including technology, policy, strategies, geohydrological, and spatial factors on groundwater access. AT will examine how human agency, biophysical elements, and social dynamics affect groundwater access, distribution, and use. Despite several challenges, AT is a promising holistic framework for understanding groundwater sustainability in a changing climate.

### Acknowledgments

This research is funded by Riset and Inovasi Indonesia Maju (RIIM) Program, Badan Riset dan Inovasi Nasional (BRIN) 2023-2024. We are grateful for the administrative support provided by Ade Supriatin.

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## Regulatory Model Of Food Banks In Indonesia

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**Abstract.** This paper discusses the food bank regulatory model that is being initiated in Indonesia. Although not a mainstream issue, this idea is interesting in the scope of food sustainability. This paper uses the normative juridical method. First is the need for accuracy in drafting legislation not to impose excessive burdens on relevant stakeholders. Second, there is a need for harmonization with various related regulations. With the normative juridical method, this paper concludes the importance of building regulations related to food banks in the existing law with additional tax and other administrative incentives.

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## Collaborative Governance in Waste Management: A Study from Surabaya Smart City Programme

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**Abstract.** Urban areas face quite serious problems in the environmental sector where rapid population growth causes the amount of waste in urban areas to increase. As one of the metropolitan cities, Surabaya also experiences problems related to waste management where the amount of waste generated by Surabaya residents every day is 1,600 tons. This research uses the literature study method by using some of the existing literature as a source of data in this paper. The results of the research in this paper show that waste management in the city of Surabaya also involves the private sector from several companies and the active role of the community in managing waste around their living areas through waste banks.

### Acknowledgments

Authors wishing to acknowledge assistance or encouragement from colleagues, special work by technical staff or financial support from organizations should do so in an unnumbered Acknowledgments section immediately following the last numbered section of the paper.

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## Efficient Solutions For Food Waste In Salatiga City

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**Abstract.** This research aims to investigate and analyze the ideal food waste management strategies for Salatiga City. Qualitative research methods, both in-depth and semi-structured interviews, were employed to collect data from 21 people various stakeholders. The collected data were analyzed thematically and contextually to identify patterns, themes, and principal issues related to food waste management. The findings reveal challenges in food waste management due to inadequate waste reduction and sorting practices. Limited knowledge and factors like culture, personality, and economic conditions contribute to these challenges. The research suggests the potential of transforming food waste into valuable products like compost and maggot feed, thus offering economic and environmental benefits. Collaboration among government, institutions, and communities is essential for effective food waste management. This research highlights the importance of proper waste sorting, reducing waste generation, and community engagement. The results provide a foundation for decision-making in formulating effective policies, practices, and strategies for ideal food waste management in Salatiga City, contributing to developing sustainable and environmentally friendly urban areas.

### Acknowledgments

The authors thank the Indonesian Ministry of Education, Culture, Research, and Technology for supporting this research via the 2023 National Competitive Basic Research (PDKN) program.

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## Impact of land-use change and land fragmentation on privately owned forests in rural areas of West Java, Indonesia

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**Abstract.** This research was carried out in Ciamis Regency, West Java, Indonesia. The primary data collection was carried out by conducting structured interviews using questionnaires and in-depth interviews with POF farmers. Structured interviews were conducted on 170 simple random samples. In-depth interviews were conducted with public figures, clerks, the village apparatus, and the leader of the peasant group. The data obtained is processed by Simmons index calculation, tabulation, graphics, and descriptive analysis. The result shows that land-use change and land fragmentation are inevitable conditions, including on POF land. In the three places, land use changed from POF to paddy fields or another type due to economic reasons to increase yields and incomes and biophysical reasons due to the suitability of land and the availability of water. Land fragmentation often occurs in places where land ownership is above average, whereas in narrow lands, it is already at a point where it is no longer possible to break the land, so the level of fragmentation is low or there is no land fragmentation. The factors that cause land fragmentation are dominated by the process of land inheritance. For rural communities, land use or land fragmentation has a direct impact on the narrowing of land ownership; inefficient management, productivity, and low forest income of the people play a role, and jobs in the villages are getting less and less so that the farmers become other sectors.

### Acknowledgments

This study is part of the Degree by Research Program (DBR) of BRIN and Gadjah Mada University funded by the National Research and Innovation Agency (BRIN), Indonesia.

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## Rising From The Downturn Of The Covid-19 Pandemic: Tourism Village Development Strategies Through A Community-Based Tourism Approach

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**Abstract.** Village resilience is one of the concerns in reviving the economy, social, and culture due to the Covid-19 pandemic. Tourism is an aspect that plays an important role in this resilience. The application of development using the concept of a tourist village requires community participation whose development can be done with Community-Based Tourism (CBT). One of the villages that applies the CBT concept is Ketapanrame Village located in Mojokerto Regency, East Java. The researcher used analytical qualitative methods during data collection, capturing the essence of the research objectives through sources. The purpose of this study is to identify the strategies carried out by tourist villages with the application of Community Based Tourism to rise from the downturn of the Covid-19 pandemic in Ketapanrame Village, Mojokerto Regency. The results of this study indicate positive changes in terms of economic, social and cultural aspects of tourism development and innovation carried out by tourism awareness groups.

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## Potential Tourists Clusters of Community-based Rural Tourism and Their Online Behavior using Phyton

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**Abstract.** Community-based tourism (CBT) has developed tremendously recently, particularly in Indonesia. Tourism Village is one of the examples of community-based tourism in rural areas (rural tourism). The managers need to attract the key target market. The purpose of this study is to cluster the potential tourists of a rural tourism in Purwakarta, Indonesia based on their preferences of activities and explore their online behavior. An online survey was conducted on 183 potential tourists and the data set was analyzed using hierarchical clustering in Phyton. The study found three clusters which are: "Only Relax", "Relax & Shopping", and "Want Everything" groups and shows that the various rural well-being activity cluster differs in terms of sociodemographics as well as how they utilize the Internet before, during, and after taking a trip. All of these distinctions have managerial implications for designing tourism products and show the potential for activity segmentation in Community-based rural tourism.

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## Survival strategies and profit-sharing system of working fishermen at South Coast of Java: A case study in Sadeng Beach

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**Abstract.** The south coast of Java is famous for its high waves and many troughs, so it is dangerous for fishermen. Therefore, the fisheries sector on the southern coast of Java is less developed than those on the north coast of Java. One of the beaches on the south coast of Java with a harbor is Sadeng Beach. Many working fishermen catch fish with a profit-sharing system with fishermen who own boats due to limited capital. This study aims to determine the survival strategy and profit-sharing system for working fishermen in Sadeng Beach. The research method used is a case study. The results show that Sadeng fishermen have survival strategies such as diversification in fishing gear, optimizing weather technology, having side jobs, helping each other, and joining the fisherman group. To maintain business continuity, fishermen work with a profit-sharing system. The passion to live and work hard as a fisherman makes them strong and continues to be passionate until this day.

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## Bamboo Preservation Experiments as Encapsulation for Liquid-State PCM

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**Abstract.** Bamboo has been known for its sustainability and versatility, which presents a promising green alternative material from tropical countries. This paper explores bamboo's potential as an encapsulation material for liquid phase change material (PCM), addressing leakage and fungal growth. The experimental procedures involve treating two different types of bamboo (black and tropical green) to see their capability as an encapsulation for phase change material. In addition, three experiments were applied: waterproofing, varnish, and pre-treatment. Qualitative analysis is conducted over a consecutive fourteen-day period, evaluating all the twenty different samples with different treatments as they hold the liquid PCM. Several pre-treated bamboos show leakage. Consequently, varnishing and waterproofing treatments emerged as crucial in effectively addressing bamboo encapsulation. The findings demonstrate that tropical green bamboo, treated with waterproofing on both sides, exhibited impeccable leakage prevention and successfully removed fungal growth, even when exposed to extended periods of moisture.

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## Physical Characteristics of Environmentally Friendly Goat Leather Using Powder of Merbau Tree as a Tanning Agent

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**Abstract.** The leather industry in Indonesia still largely uses chemical substances such as chromium sulfate as the main agent in the tanning process. Tanning is one of the processes of converting raw animal hides into leather that can be used for various products such as bags, shoes, and clothes. Goat leather is one of the conventional leather preferences that has gained increasing consumer interest in recent years. The increasing awareness of the negative impact of chromium tanning agents on workers' health and environmental pollution has led some leather industries in Indonesia to shift towards vegetable tanning instead of chemical ones. This study examined the use of the merbau powder that from merbau wood as an environmentally friendly tanning agent. There are three treatments of goat leathers with three variations of merbau powder as a tanning agent. Treatment A (merbau powder with 1.5% tannin), treatment B (merbau powder with 2.5% tannin), and treatment C (merbau powder with 3.5% tannin). The quality of tanned goat leather was performed by the physical characteristics test: tensile strength, tear strength, and shrinkage temperature. The results show that leather goat leather with the addition of the merbau powder as a tanning agent has tensile strength and tear strength which meets the SNI requirement for footwear leather products. The shrinkage temperature test showed that merbau-tanned goat leather is not mature enough compared to the control.

### Acknowledgments

Authors wishing to acknowledge assistance or encouragement from RTA Program Universitas Gadjah Mada with the Grant Number 5075/UN1.P.II/Dit-Lit/PT.01.01/2023. Authors also thanks to all researchers involved in this research.

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# Simulation of Illumination and Wind Conditions for Green and Fed Cities Using CFD Software

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**Abstract.** To avoid ecological catastrophe, most cities are moving toward green building. The important component is greening – conventional and green structures. Urban agriculture is a very prospective direction. Green roofs, terraces, and rooftop greenhouses are the most promising places for growing. This solves multiple tasks: heat loss recovery for planting (for rooftop greenhouses), additional thermal insulation, optimized logistics, increasing pollinator populations, avoiding pests, etc. In different-height districts, there are problems with natural illumination and winds. No good urban wind theory has been developed. The winds can be simulated in CFD software using a 3D model of a district. Most of the software can simulate solar radiation for thermotechnical calculations only. It should be simulated in other special software. The approach to calculating solar radiation is proposed using CFD software without additional needs. The special material – "integrator" – should be added to the engineering database. Its thermotechnical properties can be set to obtain a temperature, numerically equal to the interesting parameter. Application is shown in an example of a different-height building with a green roof. The results show areas most favorable for growing photophilous and shadetolerant plants, and to place cleaning and phytoncidal plants for the maximum air quality in stagnation zones.

## Acknowledgments

The work is invested by state grant 0223U000498 "Creating perspective technologies of forming the safe building environment combining "green structures", phytodesign, and engineering systems". This work is supported by Erasmus Plus grant «Multilevel Local, Nation- and Regionwide Education and Training in Climate Services, Climate Change Adaptation and Mitigation – ClimEd», 619285-EPP-1-2020-1-FI-EPPKA2-CBHE-JP, 15.11.2020 – 14.11.2023.

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## **Bibliometric Analysis Of Waste Management In Schools As Part Of Sustainable Development Using The Scopus Database (2010 - 2023)**

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**Abstract.** Waste management in schools is part of sustainable development because education is the precursor of awareness and habituation in society. This study aims to capture the relevant previous research landscapes related to waste management in schools as part of sustainable development from 2010 to 2023, using bibliometric analysis. The year 2022 has the highest number of publications compared to the other years, namely 13 publications. The trend of citations related to waste management in schools occurred in 2021 with 57 citations. Indonesia is the most influential country in this field with 11 publications and 4 working links, the same as other countries. Of the 63 journals published, the highest distribution of journal rankings is in the Q1 rankings with 26 journals, followed by the Q2 rankings with 20 journals, with the remainder in Q3 and Q4, but there are still 9 journals that have no rank. The main focus of research related to waste management in schools as part of sustainable development is 1) waste management, students, and education; 2) waste, awareness, and teachers; 3) school and solid waste.

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## Particulate metal contamination assessment in Surabaya Coast, East Java, Indonesia

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**Abstract.** Surabaya coast is categorized as an active marine area with marine tourism, settlements, industry and shipping activities. These activities can significantly contribute to an increase in particulate metal contamination. However, data are scarce regarding suspended particulate matter (SPM) and particulate metals on the Surabaya Coast. The purpose of this study is to systematically evaluate the impact of trace metals on environmental conditions through particulate metal analysis. Sampling was carried out on May 2017 at 17 sites, followed by analysis using the acid digestion procedure and measured by ICP-MS. The results show that SPM levels range from 10.80 – 51.80 mg/L, while the concentrations of particulate metals are Nd – 2.78 mg/kg, 1.14 – 130.77 mg/kg, 3.43 – 60.19 mg/kg and 0.87 – 7.00 mg/kg dry weight for Cd, Cu, Pb, and As, respectively. The geographic location of the Surabaya coast might play a role in environmental conditions. The northern part of the Surabaya coast forms a closed bay, while the eastern part is an open coast facing Madura Strait. Based on the Geoaccumulation Index (Igeo) and Pollution Load Index (PLI), several sites on the Surabaya coast are in the polluted area although they are in low-level toxicity and no significant mortality. Therefore, the quality of Surabaya's coastal environment is in the safe category as a living habitat, although particulate metal concentrations are relatively high in several locations predicted to originate from the port, marine tourism, and anthropogenic activities.

### Acknowledgments

We would like to thank the Research Center for Oceanography under the scheme of LIPI's COREMAPCTI 2021–2022 (3/III/HK/2022) and DIPA in 2017 (B-254/IPK.2/SK/I/2017). Thanks also to Mr M. Taufik Kaysupi for their assistance in the laboratory work. All authors are the main contributors. L provide data and conceptualizes the research. H analyze chemical properties, conceptualizes the research and writes the paper. ET analyze physical operations and write the paper. H supervised and as an advisor the writing of ET.

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## Village Community Empowerment through Sustainable Food Program in Realizing Sustainable Agriculture

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**Abstract.** Food is currently a very important issue in rural communities. This is because the rapid development of technology and globalization has resulted in changes in people's lifestyles. The fulfillment of daily food in rural communities began to shift from utilizing the availability of food around them, to consumption such as fast food, itinerant vegetable vendors, and so on. This study aims to provide an in-depth analysis related to the empowerment of rural communities through sustainable food programs in Bojonegoro Regency, Indonesia to support sustainable agriculture. This research uses descriptive qualitative research methods through direct observation, documentation, and in-depth interviews. The results showed that the awareness stage was carried out through an intensive approach to the village community to be actively involved in implementing the program and do it happily. Furthermore, the capacity stage is carried out through training and assistance to village communities to be able to improve their abilities and skills in carrying out sustainable food programs, so that they can be independent for sustainability. The last stage is the empowerment stage through opportunities given to the community to be able to manage the sustainable food program independently, managed, and utilized from and by the community.

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## Bibliometric Analysis Of Green Marketing And Intention To Purchase Research From 2006 To 2023

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**Abstract.** The recent rise of environmental issues requires business units to prioritize sustainability in their systems and products, including for marketing. This study aims to determine the trend of previous research from 2006 to 2023 on how green marketing influences consumers' intention to purchase green products. The research method uses descriptive bibliometric analysis. Based on the results of the data search taken from the Scopus database, it was refined to 94 publications. The year 2022 has published the most articles compared to other years with 21 publications. The citation trend related to green marketing and purchase intention for green products occurred in 2016 with 1280 citations. China is the most influential country in this field with 20 publications and 11 links to cooperation with other countries. Of the 94 journals published, 37 have been published in Q1 journals. The focus of research on green marketing and purchase intention for green products are 1) marketing, consumption behavior, and sustainable development; 2) green economy, consumer behavior, and consumer attitude; 3) purchase intention and perception; 4) green marketing and green purchase intention

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## Research Trends in Green Awareness and Green Product: A Bibliometric Review

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**Abstract.** Environmental issues are an important problem facing the world today. Consumers are increasingly aware of the negative impact of their consumption behavior. With increasing green awareness, consumers are taking steps to support environmental sustainability, one way is by using green products. The purpose of this study is to see how research trends on how green awareness encourage consumer interest in buying and using green products. The research method used is descriptive bibliometric analysis. Scopus database was used to find data. After going through four steps of refinement, namely identification, screening, eligibility assessment, and inclusion, 102 publication data were obtained which will then be analyzed with the help of the VOSviewer application. 2022 has published 28 documents and became the year with the highest number of publications. Citation trends related to this topic occurred in 2016 with 456 citations. China with 29 publications and 14 links to cooperation with other countries is the most influential country in this field. The focus of research related to Green Awareness and Green Products is 1) consumption, green consumption, and manufacturer; 2) green purchase behavior, green purchase, and environmental knowledge; 3) policy maker, TPB, and perception.

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# Symbolic convergence analysis of Aqua Lestari and Unilever Indonesia: exploring the rhetorical vision of eco-friendly brand activism

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**Abstract.** In response to the growing environmental issues, brands take a stand on the matter by adapting environmental activism online to expand their pro-environmentalism messaging in the digital age. This paper explores into the field of brand activism using Bormann's symbolic convergence theory and fantasy theme analysis to explore the messaging patterns and themes through visual and textual narratives on the Instagram of Aqua Lestari @aqualestari and Unilever Indonesia @unileveridn. Using Braun and Clarke's thematic analysis method, this paper uncovers the fantasy themes, symbols, and rhetorical visions that contribute to the construction of the company's eco-friendly persona. We gathered 175 data samples of images posted from November 2022 to April 2023. Results indicate that both companies' social media messaging predominantly contributes to the rhetorical vision of their role as positive environmental catalysts, specifically as an environmental conserver and an active advocator of eco-living. This paper further sheds light on how ecological brand activism can foster brands to promote genuine environmental responsibility and encourage communities committed to responsible lifestyle through symbolism of online visual narratives. Limitations of this study and suggestions for future research are added.

## Acknowledgments

This study is independent and was not funded by any grants.

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## Relative and absolute sea level change variability in the Palabuhanratu Bay waters

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**Abstract.** SLR could affect the waters of Palabuhanratu Bay, which are exposed to the Indian Ocean. Sea levels are rising due to RSL and ASL changes. Based on tidal data for the 2013–2022 period, RSL has increased by 22.86 mm/year, while ASL has increased by 4.48 mm/year based on satellite altimetry data for the 1992–2022 period. According to earlier studies, dynamic change elements connected to alterations in the atmosphere and ocean circulation are typically considered when analyzing sea level variations. This work explores sea-level variations, including dynamic and static changes impacted by geological processes like deformation. Dynamic change factors, such as climate anomalies, ENSO, and IOD, affect these changes. Regarding RSL changes, ENSO has a more decisive influence than IOD, and vice versa for ASL changes. In the La Nina phenomenon and negative IOD phase, RSL and ASL trend changes are enhanced, whereas they are lowered in the El Nino and positive IOD phases. These waters' sealevel variations are only slightly impacted by local processes, such as VLM. It has a more decisive influence on RSL changes than ASL.

### Acknowledgments

This research was supported by the Geospatial Information Agency for providing data, and the National Research and Innovation Agency through the continuation scholarship program.

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## Excellence Service Management in Electronic Residency Card Management as an Effort to Support The Resilient Society in Sidoarjo Regency

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**Abstract.** The impact of the Covid-19 pandemic forced people to adapt more quickly and resiliently. A resilient community is a community's ability to adapt without compromising aspects of sustainable development, where one of the pillars is effective leadership and management. Effective management means Alsogive Maidnan is excellent. Excellent service management in managing electronic identity cards (KTP-EI) is one of the parts that can contribute to building a resilient community in Sidoarjo Regency. The concept of excellent service management refers to A3, namely attitude, attention and action (Daryanto and Setyobudi, 2014). This study uses a descriptive quantitative research model. Respondents were conducted from June to August to get 100 respondents from 18 sub-districts in Sidoarjo Regency. The results of this study show that the majority of respondents considered excellent service management in the management of electronic identity cards (KTP-EI) in the Sidoarjo Regency to be good. These promising results can support forming a resilient community in Sidarjo Regency because there is minimal friction or conflict between the community and public servants (government).

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## Towards Coastal Community Access To Clean Water: Waterfront Settlement, Bumi Waras District, Lampung

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**Abstract.** Urbanization in coastal cities is driving urban expansion towards coastal water areas. Most of these areas become inadequate settlements, slums, and vulnerable to various disaster risks. In the Bumi Waras sub-district of Bandar Lampung, coastal architecture is dominated by a fading community that forms slums, overcrowding, and unfit for habitation. As one of the basic needs, providing clean water at this location must be done to ensure a better quality of life for the community. Based on the survey in the study location, there were no problems related to clean water supply. Even though they live in a vulnerable and challenging location, the community has good access to clean water. The role of local government and informal actors in fulfilling the need for clean water in the Bumi Waras District of Bandar Lampung is significant in meeting the need for clean water.

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# The Effect of Shading Position on Thermal Comfort of Commercial Buildings Through Energy Retrofitting

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**Abstract.** The building sector in Surabaya is an important target for energy efficiency programs due to its large contribution to energy consumption. Commercial buildings with active occupants are often found to have a lot of glass for natural lighting but also increase the room temperature and cooling load, so it is very important to create thermal comfort in the building. Based on a survey conducted, energy use for air conditioning has a large consumption rate of up to 62%. To design thermal comfort and reduce electricity consumption, it is necessary to retrofit the building, especially for commercial buildings. In this study, retrofitting is done by applying shading on the outer side of the building glass which is expected to reduce solar heat gain so as to reduce the heat transfer that occurs in the glass envelope. This research uses 2 shading positions, namely horizontal and vertical, with each position having a certain opening angle and width variation. This research uses the Computational Fluid Dynamics method with the help of CFD software as a simulation tool, with variations of shading opening angles at 0°, 30°, and 45°, and shading widths of 20% and 60% of the window glass height. After conducting the simulation, it was found that the application of horizontal shading with a width of 60% of the glass height and an opening angle of 45° was able to reduce the temperature by 2.5278°C. Furthermore, a costbenefit analysis was conducted to find the difference in electricity consumption before and after retrofitting. From the analysis, it was found that the electricity consumption savings in the application of shading amounted to 7619.9 kWh, resulting in the best-case cost savings of Rp15,586,068 and the worst-case cost savings of Rp10,390,712, with payback periods of 1.57 and 2.52, respectively.

## Acknowledgments

The author extends heartfelt gratitude to all parties who contributed to the research process. Special thanks go to the Energy and Environmental Conditioning Laboratory for providing facilities and to the supervising professors who imparted knowledge, guided the author, and provided motivation to complete this research.

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# Community Involvement to Create Safe Environment in Unintentional Child Injury Prevention: A Scoping Review

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**Abstract.** Unintentional childhood injury is the leading cause of morbidity and mortality among children. Supervision by caregivers is the main factor in preventing injury to children. This study aims to map the existing childhood injury prevention programs described in the literature. This study is a scoping review that used Preferred Reporting Items for Systematic Reviews and MetaAnalysis (PRISMA) approach. Four databases were used in the article search. Four stages of filtering were applied to the articles: initial identification, screening, eligibility, and inclusion of articles. After the filtering process, six articles were identified to match the inclusion criteria. The programs described in the articles comply with the principles of childhood injury prevention, including good education to children and caregivers, implementing environment modification through childproofing, introducing safety equipment, and direct simulation for children. Diverse methods and community involvement will affect caregivers' perception of supervising children in implementing childhood injury prevention programs. These have been demonstrated to influence the lower risk of injury incidents strongly. A risk management system approach must be added to the prevention method to enable continuous improvement of the program.

## Acknowledgments

This study was funded by the Ministry of Education, Culture, Research and Technology under the grant number of [091/E5/PG.02.00.PT/2022 and 172./PKS/WRIII-DRP/UI/2022] and a grant number of [NKB-950/UN2.RST/HKP.05.00/2022], Research and Development (R&D), Universitas Indonesia

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## The Development of an Edu-agrotourism Concept in the Buffer Zone of Conservation Area Based on Education and Local Community Empowerment

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**Abstract.** The development of edu-agrotourism is the optimal utilization of biodiversity and increased global awareness of nature conservation, social, cultural and economic empowerment of local community and learning and education aspects. The study aims to collect potential resources that include landscapes, biological diversity, cultural heritage and local knowledge as a product of ecotourism and review the forms of business and markets will involve the community, next to determine the development strategy involving the community and in line with Tri Dharma Perguruan Tinggi. The method used is descriptive qualitative in a ways mapping and inventory interviews, observations and focus group discussions (FGD) and doing a SWOT analysis to determine the development strategy. Research results data of ecotourism products (landscape, biodiversity, cultural heritage and local knowledge) and forms of business and market opportunities and SO development strategy by leveraging the strength potential in the form of resources and community support to seize opportunities while minimizing the weaknesses that exist mainly infrastructure development and promotion. Thus can be concluded that the development of ecotourism in educational forest is multi-stakeholders activity influenced by various aspects (economic, social, cultural, environmental, human resource and infrastructure development) in order to create a high multiplier effect and benefit distribution for a local community welfare.

### Acknowledgments

This study was funded by the Ministry of Education, Culture, Research And Technology (KEMDIKBUDRISTEK) grant number [125/E5/PG.02.00.PT/2023 and 125./PKS/WRIIIDRP/UI/2023] and grant number [NKB-1168/UN2.RST/HKP.05.00/2023], Research and Development (Risbang), Universitas Indonesia

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# Integration of Local Capacity Building in Countering False Information about Disaster Into Community-based Disaster Risk Management

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**Abstract.** Efforts to prevent the spread of disaster false information through social media are very important to anticipate by stakeholders, especially in communities. The current climate change condition causes many disasters, so this effort is important so that holistic disaster management can be carried out. Although social media can support the acceleration of information about disasters, the spread of false information will cause anxiety, fear, and wrong decision-making to prepare and be resilient to disasters. The purpose of this study is to describe the integration of local capacity building in dealing with false information about disasters into community-based disaster risk management. The research uses a qualitative approach, by conducting secondary data analysis and integrative literature review. The findings from this study are the importance of increasing capacity building in the selection and preventing the spread of false information about disasters with local reinforcement. One way for capacity building that can be done is through digital literacy education. In the disaster preparation, and mitigation phase, digital literacy in the community is a priority in preparing the ability to deal with disaster risk. The contribution of this study can be an alternative for holistic disaster management efforts and disaster communication evaluation for coordination and partnership with other stakeholders.

## Acknowledgments

This research was funded by the Domestic Cooperation Research Grants (Penelitian Kerjasama Dalam Negeri) of the Ministry of Education, Culture, Research, and Technology-National Research and Innovation Agency with research title "Policy Models and Communication Patterns in Handling Increased Negative Content, Hoaxes, Hate Speech and Cyberbullying after the Covid-19 Pandemic" and with contract numbers grant number [125/E5/PG.02.00.PT/2023 and 125./PKS/WRIII-DRP/UI/2023] and grant number NKB-1094/UN2.RST/HKP.05.00/2023 ], Research and Development (Risbang), Universitas Indonesia

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## Driving Forces of Social Environmental Conflict in Indonesia's Oil Palm Expansion

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**Abstract.** The trend of global demand for palm oil that continues to increase and the price of palm oil, which continues to soar, are the main reasons for continued expansion. The impact of the expansion that emerged was very significant in environmental, economic, and social aspects. The negative impacts of these three factors that are not immediately resolved will lead to the emergence of social conflict. This research used bibliometric analysis with literature obtained through mapping from the Scopus electronic database from 2010-2023. Article selection was based on predetermined inclusion criteria. The investigation reveals that indigenous communities, local populations, and environmental concerns are significantly impacted by the expansion. The study also uncovers the role of economic disparities and social jealousy in driving conflicts. Additionally, the paper delves into the interconnectedness of economic and environmental consequences, such as diminished soil fertility and pollution, which exacerbate these conflicts. The research contributes valuable insights into the complex dynamics at play in Indonesia's oil palm sector, emphasizing the importance of addressing these driving forces for sustainable conflict resolution and development.

### Acknowledgments

This research was funded by the Ministry of Education, Culture, Research, and Technology-National Research and Innovation Agency with research scheme the Penelitian Kerjasama Dalam Negeri and with contract numbers grant number [125/E5/PG.02.00.PT/2023 and 125./PKS/WRIII-DRP/UI/2023] and grant number NKB-1170/UN2.RST/HKP.05.00/2023 ], Research and Development (Risbang), Universitas Indonesia

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## Determination of BUN500 Program Recipient Locations and Development of a Participatory Rubber Intercropping Rejuvenation Model in West Kalimantan Province

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**Abstract.** On June 18 2019, the Ministry of Agriculture through the Director General of Plantations launched the BUN500 Program, which is a free distribution program for 500 million plantation superior seeds for 2019-2024 to the community, especially smallholder plantations. The phenomenon of low rubber productivity occurs in West Kalimantan Province. West Kalimantan Province is an area with the superior commodity of rubber with total production reaching 268,962 kg in 2021, but its productivity is still low, namely an average of 459 kg/ha. Not only the issue of low productivity. The welfare of rubber farmers is also an important issue because almost all rubber plantations are small-scale plantations. Therefore, this Policy Brief was created with the intention of proposing the implementation of the BUN500 program and an appropriate rejuvenation model in West Kalimantan Province to increase the productivity of rubber plantations and the welfare of smallholder plantation farmers. From the explanation above, it can be concluded that: 1) the Director General of Plantations has not been right in determining the 3 districts receiving superior seeds in West Kalimantan Province, 2) The West Kalimantan Provincial Plantation Service has not distributed superior seeds from the BUN500 program to districts that have been determined by the Ministry of Agriculture, 3) Model Participatory intercropping replanting can provide additional income security for farmers during the rejuvenation period.

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## Resource Potential of Socio-Economic Development in the Regional Sustainability Context: the role of Energy Security and Environment

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**Abstract.** The processes of globalization and intensive urbanization of territories lead to the reformatting of resource potential (RP) at different levels of economic aggregation, which determines the resource opportunities for the implementation of socio-economic development strategies (SED). The current dynamics poses a number of primary tasks for society and the state, related both to the issues of accelerating economic growth and taking into account regional specifics in terms of increasing the requirements for ensuring the sustainability of SED. This requires ensuring the rational use of regional resources, including the need to maintain energy security of territories and environmental protection. This article studies the interrelationships between the regions' EP and the main factors of their sustainability: energy security and the state of the environment. From the position of the authors of the study, these aspects can be taken into account in regional strategies to ensure economic security. The purpose of the study is to analyze the impact of energy security and the state of the environment on the RP of the regions in the process of their SED, taking into account the state of sustainability in the strategic perspective. The methodological basis of the study is built on the basis of using the comparativist approach, which allowed us to consider the factor states of regional sustainability through comparative analysis in order to select common characteristics affecting the RP state. As a result, the authors have formed models aimed at determining the relationship between sustainability factors and the RP of the regions. Particular attention was paid to the innovation basis, which allows to form tools for optimizing the RP of regions to ensure their SED while respecting the principles of sustainable development in the context of new challenges to the global macroeconomic space

### Acknowledgments

The research was carried out at the Peter the Great St. Petersburg Polytechnic University with the support of the Russian Science Foundation (application No. 23-28-00574).

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## Social Entrepreneurship in Sustainable Development: Bibliometric Analysis and Emerging Research Trend

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**Abstract.** This research aims to explore trends in social entrepreneurship and sustainable development research, as well as the future direction of research, through bibliometric analysis. This study applies a bibliometric review, specifically a Systematic Literature Review (SLR), with a sample of 181 articles from the Scopus database (2015-2023) that discuss social entrepreneurship and sustainable development. Data analysis and visualization are conducted using Vos Viewer and Scopus Analyze Search. The findings highlight research trends year by year, influential research rankings and journals, top authors, countries, and institutions, as well as Co-Occurrence and CoCitation Network analysis of top authors, major journal rankings, and universities engaged in research in the field of social entrepreneurship and sustainable development. The research gap presents an opportunity to explore trends, themes, and research advancements in this specific field, providing valuable insights for academics, practitioners, and policymakers interested in social entrepreneurship and sustainable development. Through bibliometric analysis, this research provides a comprehensive and systematic overview of the field of social entrepreneurship and sustainable development research.

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## Sustainable Livelihoods Approach and Contemporary Research on Rural Social-Ecological Systems in Indonesia

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**Abstract.** Indonesia as the largest tropical archipelago country in Asia has a total of 84,096 villages. In the perspective of human ecology, a village or rural area is a social-ecological system. The sustainable livelihood approach was built by rural scholars and experts, development studies, and human ecology as a framework for looking at aspects of sustainable development in rural areas. This paper uses the literature review method on (1) the trajectory of sustainable livelihoods approach and (2) its use in contemporary research on rural social-ecological systems in Indonesia. The results of the analysis show that sustainable livelihoods approach continues to grow and evolve, including starting to use scientific principles of political ecology. In Indonesia, its use is also used for various research on rural social-ecological systems. This paper specifically shows the important results of six studies of rural social-ecological systems in West Java, South Sulawesi, North Sumatra, West Sumatra, West Kalimantan, and East Kalimantan (New Capital City of Indonesia/IKN) area. The six studies show that aspects of social systems and ecological systems are closely intertwined; and the sustainable livelihoods approach managed to peel it off.

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## Post COVID-19 Kayangan Api Geological Heritage Tourism Resilience Strategy in Bojonegoro Regency, Indonesia

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**Abstract.** The Covid-19 pandemic has not only hit Indonesian tourism but also globally. The government is making several efforts and strategies to support the rise of the tourism industry after being hit by the Covid-19 storm as well as the post-covid-19 heavenly heritage tourist object in Bojonegoro Regency. This study uses a qualitative approach. Data collection techniques through observation, interviews, and documentation, and data analysis techniques include data minimization, visualization, validation, and conclusions. The results of this study found that the post covid-19 Kayangan Api Geoherritage Tourism Resilience Strategy in Bojonegoro Regency was through: (1). attractions, in the form of Geological Heritage (Geoheritage) of eternal fire sources and Blekutuk wells as well as several traditional ceremonies and activities that can be carried out at Kayangan Api location; (2) amenities, namely small artificial temples, rides for children to play, such as rickshaws, mini toy trains, mini trains with lights, restaurants, adequate toilets, and places of worship. However, several culinary stalls around the tourist area need to be repaired because they are weathered; (3) accessibility, This tourist attraction can only be accessed using private vehicles and there is no special public transportation that can take tourists so this is important for the Tourism Office to provide.

### Acknowledgments

Thank you to the Institute for Research and Community Service, State University of Surabaya (LPPM UNESA) for supporting this research on a non-APBN competitive basic research scheme in 2023

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## Trends and Mapping Areas of Sustainable Development Goals (SDGs) in Indonesia Bilbliometric Analysis Approach

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**Abstract.** This research uses a quantitative approach with a bibliometric analysis method related to Sustainable Development Goals (SDGs) in Indonesia in an unconstrained period of time. The purpose of this study is to describe the current trends and topics that can be developed for future research. The frequency of publications related to SDGs in Indonesia since 2016-2023 continues to grow, with a fluctuating percentage. quite fluctuating. The publication database used is sourced from Scopus. Researchers used Vos Viewer to display similarity visualization. There are five clusters that explain the relationship between SDGs keywords and Indonesia. The latest keywords that appear are economic growth, urban area, alternative energy and carbon emission. The emergence of the keyword West Java, is also an interesting thing and shows that there are still few studies related to SDGs on a regional scale, even though research on a regional scale is needed to support the achievement of SDGs in Indonesia.

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## Income distribution analysis of livestock farmer households in karst area of Girisubo sub-district, Gunungkidul district

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**Abstract.** This study was conducted with the aim of analysing the distribution of household income of livestock farmers in Girisubo District, Gunungkidul Regency. The basic method of research is descriptive. The method of determining the location in the study was purposive method on the consideration that Girisubo District has a large number of cattle population with a small population compared to other districts. The data sample used was 100 respondents. The data analysis method used was Gini ratio and Lorenz curve. The characteristics of farmer-rancher households in Girisubo sub-district are majority male, with age < 30 to ≥ 60 years, have 3-4 household members, cultivate 4 agricultural commodities (rice, corn, beans, cassava), and have 1-5 livestock. The highest contribution of farm household income is in livestock income of 48.68%. The resulting Gini ratio value is 0.496 which means the level of inequality that occurs is moderate.

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# Study of the Implementation of Household Hazardous and Toxic Waste Management Policy in the Province of the Special Region of Yogyakarta

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**Abstract.** This study aims to analyze the application of hazardous and toxic waste management policies in the Special Province of Yogyakarta household sector. The research method used is a qualitative research method using library data analysis. Through this approach, the research gathers information from various sources of literature, policy documents, and the results of previous studies related to managing hazardous and toxic waste in the household sector. The results of this study indicate that although policies related to hazardous and toxic waste management already exist, their implementation still faces several obstacles. Factors such as the need for more public awareness about the types of hazardous and toxic waste in the household sector, the limited infrastructure for storage and processing, and the lack of coordination between various stakeholders are some factors that influence the implementation of this policy. Nonetheless, this study also identified positive efforts to encourage public awareness and the government's active role in strengthening better infrastructure. The results of this study are that the implementation of hazardous and toxic waste management policies in the household sector still needs to be entirely appropriately implemented in the Special Region of Yogyakarta. Still, there is potential for improvement through cross-sectoral collaboration and a more intensive educational

## Acknowledgments

Thanks to Sebelas Maret University for providing the necessary access and resources to carry out this research. Their support has been the foundation for the success of this research.

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## Dogs through the eyes of Indonesia's News Media

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**Abstract.** . For a long time, dogs have been a common topic of discussion in daily life, research, and news media. Canines have many meanings from both utilitarian and humanistic perspectives. The positive relationship between humans and dogs has been well established based on personal experiences and news media perceptions. News from western media about dogs tend to have a positive outlook and are perceived as fun, which increases reader's engagement. On the other hand, Indonesia's culture and history has a very complex relationship with dogs. This study aims to understand how two major Indonesian online news media (Kompas.com and Detik.com) present stories about dogs by counting and categorizing news article headlines. A total of 3,476 articles that met the study criteria were categorized into four categories: general news (48%), special news (30%), negative news (14%), and positive headlines (8%). Most negative news featured information about rabies, dog bites, and attacks, while the positive news mostly featured about the police dog unit or K9 services. Moreover, several reoccurring themes in special topics were dog meat debate, dog head terror, and community disrespect. In conclusion, Kompas provides a generalized view, while Detik tends to raise cases of conflict between humans and dogs.

### Acknowledgments

The researcher would like to thank Janice Jap and Nimas Ayu Arumbinang for their support and helpful comments during the writing of the manuscript.

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## The Impact of Perceived Behavioral Control, Norms, and Individual Attitude on Decisions to Save Energy Toward Net Zero Emissions in Indonesia

Ahmad Fawaiq Suwanan <sup>1\*</sup> , Hanna Rachmani Allya <sup>1</sup>

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**Abstract.** This study investigates to determine the impact of normative factors and perceptions of behavioral control on the availability of energy saving in Indonesia. This study used the Partial Least Square – Structural Equation Model (PLS-SEM). The model was tested empirically using a questionnaire survey collected from 356 respondents in Indonesia. The results of this study show that attitudes, subjective command norms, behavioral control, descriptive norms have a significant and positive effect on the intention to save energy. And behavioral control, descriptive norms, and command norms positively affect energy-saving attitudes.

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## Analyse Technology Acceptance Of Innovation Virtual Lab In Developing Village-Owned-Enterprises (BUMDES)

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**Abstract.** The establishment of the BUMDes institution or VillageOwned Enterprises is one of the efforts to optimize the village economy. However, the contribution of BUMDes has not yet provided optimal results. This condition is due to low motivation and innovation, so there is no diversification in the BUMDes business that can reduce business risk and limited mobility due to the COVID-19 pandemic. Therefore, the presence of an Innovation Lab is expected to increase business innovation for BUMDes personnel and become an e-learning-based platform suitable for rural communities and can be implemented into a business innovation in rural areas. In this study, researcher used TAM (Technology Acceptance Model) instrument model for quantitative study. In addition, this study further reviews the acceptance of technology by looking at the tendency to use (actual use) media or platforms. The result found that the intention to use relationship has a significant effect on actual use. The result also concluded that BUMDes actors could accept the Innovation Lab (IV-Lab) platform for business operational activities. Thus, the results state that Villager accepts using the technology to increase mobility and business activity. Finally, the innovation lab is feasible to be applied in rural areas and can reduce business risk.

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## Methane Gas Management Policy Based on Emission Estimation at Gunung Kupang Final Processing Site Landfill

To cite this article: Nurul Listiyani and Khenza Atthaya Namira Yulianto 2023 *IOP Conf. Ser.: Earth Environ. Sci.* **1275** 012010

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# Methane Gas Management Policy Based on Emission Estimation at Gunung Kupang Final Processing Site Landfill

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**Abstract.** The waste sector contributes 21 times more Greenhouse Gas (GHG) in the form of methane gas than carbon dioxide gas. The problem of waste management in Indonesia is caused by several factors, including the need for more strict regulations and a management system at the landfill. Gunung Kupang Final Processing Site is a landfill that serves the Banjarbaru City area, where the waste that enters every day continues to increase and can potentially cause emissions. The management system implemented is still limited, namely composting and recycling methods. The management of methane gas produced from waste generation has not been maximized because there has yet to be a comprehensive measurement of methane gas. This study aimed to analyze the characteristics of waste generation and composition and the estimation of methane gas from the Gunung Kupang Final Processing Site using the LandGEM method. The urgency of measuring methane gas in waste management at Gunung Kupang Final Processing Site is the focus of this research, which is projected to encourage local governments to formulate appropriate and targeted waste management policies.

## 1. Introduction

Global warming is an increase in the average temperature of the Earth's atmosphere, oceans, and land. Researchers at the Center for International Forestry Research explain that global warming is caused by long-wave sun rays trapped by greenhouse gases. The increasing temperature of the Earth, floods, and other natural disasters are caused by climate change. The causes of climate change are diverse, but greenhouse gases are the leading cause. Methane gas is a greenhouse gas produced by landfill waste and other factors. Methane is produced through waste biodegradation under anaerobic conditions with the help of microbes [1].

Waste generation can be interpreted as community activities that increase the amount of waste in volume units and per capita weight per day or expand roads and buildings [2]. The amount of waste generation has a different volume/weight for each source component due to differences in the level of community consumption, the size and rate of population growth, lifestyle, and how the population is handled [3]. Waste characteristics can be interpreted as biological, chemical, and physical properties, which are used to determine treatment facilities, plan final disposal facilities, and estimate the feasibility of waste reprocessing.

A place used as a final disposal site and can accommodate large amounts of waste from a temporary Final Processing Site is called a Final Processing Site. 90% of landfills in Indonesia still



use an open dumping system, which can cause water, water, and soil pollution [4]. Final Processing Site procedures are different from other procedures. One of these procedures is the location of the final Processing Site, which must be isolated, and the provision of complete facilities to not cause pollution to the final Processing Site environment and its surroundings [5].

Based on Law no. 18 of 2008, waste management is a systematic, comprehensive, and continuous activity which includes waste reduction and handling. The waste sector contributes 21 times more Greenhouse Gas (GHG) in the form of methane gas than carbon dioxide gas. This could lead to more severe global warming.[6].

Municipal waste management throughout Indonesia is an actual problem with the increasing amount of waste in Indonesia due to several factors, one of the most significant factors being the increase in population. On average, waste management problems in Indonesia are caused by several factors, namely the lack of a firm legal basis, the lack of effort in composting, inadequate landfills, and the lack of a management system at these landfills.[7]. It is stated that four aspects need to be considered in order to determine waste processing technology, namely social, economic, environmental, and technical aspects.

Most waste in Indonesia's Final Processing Sites is not processed first. It is directly dumped into the ground without adequate layers so that the materials contained in the waste can cause soil pollution and trigger environmental pollution.[8]. One example is the accumulation of organic waste, which can produce methane gas and cause global warming, which is already at an alarming stage [9]. In addition to global warming, the various impacts caused by methane gas cause the need for early detection of the amount of methane gas produced by several sectors, especially the landfill sector, which accommodates large amounts of waste [10]. China and America are even having difficulty managing methane gas in landfills, a challenge for all countries worldwide [11]. Landfills can produce methane gas emissions, estimated at 3-19 percent from anthropogenic sources worldwide.

Final Processing Site Gunung Kupang is a Final Processing Site in Banjarbaru City. Gunung Kupang Final Processing Site is divided into two cells, with the second cell still operating from 2021 until now. The process of methane gas at Gunung Kupang Final Processing Site is carried out by converting methane gas into biogas. There is no other method to treat methane gas. This is considered relatively ineffective because biogas production in Gunung Kupang is minimized. The landfill manager has never created a system for measuring the amount of methane gas in the Gunung Kupang landfill, so an appropriate management strategy has not been found.

In previous research conducted at the Gunung Kupang landfill in 2021, waste management through composting and recycling still produces gas emissions, although it is less than not processing it at all.[12].

The role of local governments in protecting and managing the environment through waste management policies must be seriously considered, bearing in mind the impact of methane gas produced from the final Processing Site has increased the Earth's temperature, which has an impact on climate change, the health of living matters, crop failures, and so on. The urgency of measuring methane gas in waste management at Gunung Kupang Final Processing Site is the focus of this research, which is projected to encourage local governments to formulate appropriate waste management policies.

## **2. Methods**

This type of research is qualitative-quantitative research. This research aims to calculate the production potential of methane gas emissions at the Gunung Kupang landfill using the LandGEM method and to determine the appropriate strategy for managing methane gas. Furthermore, through a sociological approach, waste management policies will be studied, becoming the legal umbrella for local governments to determine the appropriate strategy. Methane gas production is calculated using the LandGEM method using two parameters, namely CAA-Conventional and Inventory Default.



### 2.1. *Research time*

The research was conducted from January 2023 – June 2023.

### 2.2. *Research Equipment*

Research Equipment divided into laptops or printers for working on reports, stationery and Microsoft applications, software in the form of the LandGEM (Landfill Gas Emission Model), and equipment for sampling, including rubber gloves, hanging scales, bamboo baskets, 500-liter density box, sickles, stationery, masks, safety shoes/boots, etc.

### 2.3. *Data*

The primary data is the generation and existing conditions of the Gunung Kupang landfill waste processing. In contrast, the secondary data consists of the planned year of operation, the design capacity of the Gunung Kupang Banjarbaru landfill, the determination of the model parameters for the Gunung Kupang landfill, and the methane gas management method.

### 2.4. *Data Collection Techniques*

In this research, data collection techniques are divided into 5 data: observation or survey, interview, experiment, documentation, and literature study. Preliminary observations or surveys are carried out to determine preliminary data that needs to be obtained in the form of the latest conditions of the research site, in this case, the Gunung Kupang Final Processing Site. The interview is one of the processes in the preliminary survey conducted by interviewing the person in charge of the Gunung Kupang Landfill Final Processing Site. The experiment was conducted as field research with an eight-day sampling process to determine the amount and composition of waste generation at the Gunung Kupang Final Processing Site. Documentation of the course of the research process and results is carried out to support the validity of the data.

### 2.5. *Procedures*

The procedures that must be carried out to obtain research results can be explained as follows:

The first step is sampling waste generation and composition using the SNI method 19-3964-1994, namely conducting waste sampling for eight consecutive days with a density of 1 quintal per day. The next step is to calculate data on waste going to the Gunung Kupang Final Processing Site, population projections and landfill waste generation using arithmetic, geometry and least square methods are then selected based on the correlation factor ( $r$ ) closest to number 1, the estimated service life of the Final Processing Site landfill is based on the Murtudo formula of 1996, analysis of estimated methane gas production at Gunung Kupang landfill using the LandGEM method, determine the appropriate policy based on the results of an analysis of methane gas from the Gunung Kupang Final Processing Site are the last step.

## 3. **Results and Discussion**

### 3.1. *Measurement of Methane Gas Using the Land GEM Method*

The average waste generation will vary due to several factors, including population size and growth rate, season, lifestyle, population mobility, and food handling methods.[13]. This study uses primary data in the form of population data for Banjarbaru City and population projections from 2014-2024. The least-square method is used in calculating population projections with an amount of 0.9322 and has the highest value from other methods.

Gunung Kupang Final Processing Site waste processing data is the second primary data used for waste processing in the form of composting for kitchen waste and recycling for plastic waste. The amount of waste used as compost is 249.862 tons/year or 0.685 tons/day, while the recycled waste is 65.932 tons/year or 0.181 tons/day. The impact that arises from the absence of waste management is pollution, which can damage the balance of nature. It is not easy to handle and tends to be irreversible. Therefore, waste management is essential.

The required LandGEM data inputs are the year of opening and closing of the Gunung Kupang landfill, projected data for landfill waste generation, selection of default parameters, and determination of model parameters. The parameters used in the calculations using the LandGEM-v303 model are the CAA model parameters. This is because the default CAA parameter is a parameter that is more commonly used. After all, it suits any region and already uses specific values.

The Constant Value (K) used in the Conventional default CAA is 0.05 per year, while the default inventory is 0.04/year. The methane forming capacity (Lo) value at the default CAA Conventional is 170 m<sup>3</sup>/mg. Figures 1 shows LandGEM input parameters on first landfill.

Year	Input Units (Mg/year)	Calculated Units (short tons/year)
2014	29,838	32,822
2015	33,734	37,107
2016	37,824	41,606
2017	42,103	46,313
2018	46,584	51,242
2019	51,239	56,363
2020	49,399	54,339
2021		
2022		
2023		
2024		
2025		
2026		

**Figures 1.** First landfill LandGEM input parameters (Source: Research Data. 2023)

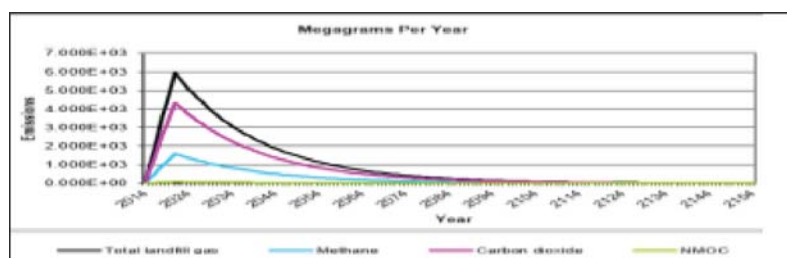
After data input, Table 1 shows the results that appear on the 'Result' tab and can be viewed along with the graph. The results of calculating the potential methane gas emission in the Gunung KupangFinal Processing Site landfill using LandGEM-v303 software for the default CAA parameter is 3.96 Gg/year. This means that methane's reserve or potential content in the Gunung Kupang Final Processing Site is 3.96 Gg/year.

**Table 1.** Input Projection of First Landfill Cell Waste Generation (2014-2020)

Year	Mg/Year	Gg/Year
2014	160	0.00
2015	166	0.17
2016	344	0.34
2017	537	0.54
2018	745	0.74
2019	967	0.97
2020	1.204	1.20
Total		3.96

(Source: Research Data. 2023)

Figures 2 shows the results graph of calculating methane gas in the first landfill cell at LandGEM is as follows:



**Figures 2.** First CAA-Conventional Landfill Cell Default LandGEM Results (Source: Research Data. 2023)

The second landfill of Gunung Kupang Final Processing Site is estimated to have an operational period from 2021-2024. Figures 3 shows the second landfill LandGEM input parameters and methane gas potential using conventional default CAA parameters on LandGEM-v303:

USER INPUTS Landfill Name or Identifier: TPA Gunung Kupang

1: PROVIDE LANDFILL CHARACTERISTICS

Landfill Open Year: 2021  
 Landfill Closure Year: 2024  
 Have Model Calculate Closure Year?  Yes  No  
 Waste Design Capacity: megagrams

2: DETERMINE MODEL PARAMETERS

Methane Generation Rate,  $k$  ( $\text{year}^{-1}$ ): CAA Conventional - 0.05  
 Potential Methane Generation Capacity,  $L_0$  ( $\text{m}^3/\text{Mg}$ ): CAA Conventional - 170  
 NMOC Concentration ( $\text{ppmv}$  as hexane): CAA - 4,000  
 Methane Content (% by volume): CAA - 50% by volume

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units (Mg/year)	Calculated Units (short tons/year)
2021	56,839	62,523
2022	61,523	67,675
2023	66,576	73,234
2024	70,056	77,062
2025		
2026		
2027		
2028		
2029		
2030		
2031		
2032		
2033		

Figures 3. Second landfill LandGEM input parameters (Source: Research Data. 2023)

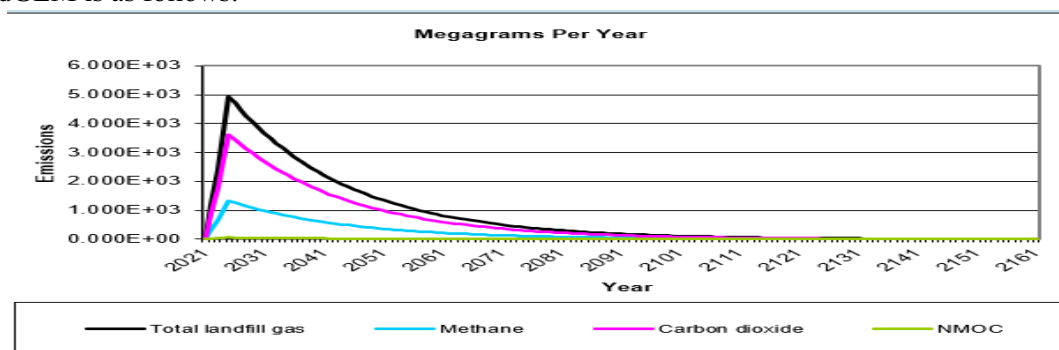
Table 2 shows the calculation result on the 'Result' sheet and shown along with the graph on the 'Graphs' sheet. The total results of calculating the potential emission of methane gas in the second landfill cell of the Gunung Kupang Final Processing Site for the conventional default CAA parameter is 1.935 Gg/year. The following is the complete calculation result for 2021-2024

Table 2. Input Projection of First Landfill Cell Waste Generation (2021-2024)

Year	Mg/Year	gg/Year
2021	0	0.0000
2022	315	0.3152
2023	641	0.6410
2024	979	0.9789
Total		1.9351

(Source: Research Data. 2023)

Figure 4 shows the graph of the results of calculating methane gas in the second landfill cell at LandGEM is as follows:



Figures 4. Second CAA-Conventional Landfill Cell Default LandGEM Results (Source: Research Data. 2023)

### 3.2. *Waste Management Policy*

Law number 18 of 2008 concerning Waste Management mandates the government and other related parties to be proactive and more responsive to waste management issues with strategic and participatory policies for the community. However, the reality that is currently happening shows a contradiction between the actions taken by the government and the spirit contained in the law. This is indicated by the low awareness of government officials and other stakeholders about their role in handling waste to realize good environmental quality and insight.

The increase in methane gas in the Gunung Kupang Landfill indicates an increase in the waste produced by the community. The current pattern of waste management still needs to be integrated between the community as a producer of waste and the government as a provider and manager of waste facilities. From the community's point of view, there is still a perception that waste is material that is no longer used, and it is the government's responsibility to manage it and clean it up. Efforts made by the government through the 3R program, namely Reduce, Reuse, and Recycle, are considered less successful in dealing with waste problems in Indonesia because implementing this program depends on community participation. Lack of awareness and community participation is the main problem in the failure of the 3R program.

Waste management is very complex and dynamic. It is complex because it involves many interested parties such as government, community, industry, traders and NGOs. It is dynamic because the volume of landfills will change over time. This fact means that waste management can only be carried out with a more technical approach (starting from the container, collection, and transportation to processing at the Final Processing Site) but must be carried out by involving the community as the primary source of waste generation.

The most significant change is the change in the paradigm of waste management policy, which refers to the transformation paradigm. Among them are related to policy ideology, policy orientation, and spirit, as well as the basic concept of waste management policy. Spirit in Law No. 18 of 2008 concerning Waste Management and Government Regulation No. 81 of 2012 indicates that waste management no longer requires one party's exclusivity of waste management policies. The general public and the business world are also positioned to have sovereignty, which is as essential as the government, so they must play a role and be responsible for waste management.

The effectiveness of waste management can only be achieved through 3 (three) pillars, namely the government, the wider community, and the business world, which work in an integral (integrated), comprehensive (overall), and mutualistic (mutually beneficial) manner. Implicitly, this concept carries the principle of cooperation in waste management as a strategic social capital.[14]

## 4. **Conclusion**

The results of the study carried out resulted in two conclusions. The first conclusion is based on the LandGEM method. In 2022, the second landfill cell at the Final Processing Site of Gunung Kupang will produce an estimated methane gas emission of 0.3152 Gg/year. The results of calculating total greenhouse gas emissions in the existing conditions from the latest landfill activities, namely in 2021 – 2024 Final Processing Site Gunung Kupang, is 1.935 Gg/year.

The second conclusion is that the effectiveness of waste management can only be achieved through 3 (three) pillars, namely the government, the wider community, and the business world, which work in an integral (integrated), comprehensive (overall), and mutualistic (mutually beneficial) manner. Changes in the paradigm of waste management policy refer to the transformation paradigm, including those concerning policy ideology, policy orientation, and spirit, as well as the basic concept of waste management policy.

The limitation of this research lies in the weak regulations governing waste management in Banjarbaru City, which procedurally forms the legal basis for determining management steps and strategies, one of which is the methane gas measurement strategy at Gunung Kupang Final Processing Site.

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