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**OFFICE OF  
POSTGRADUATE STUDIES**



**June 2023  
VOL.5 NO.3**

e-ISSN: 2710-7256

# Sustainable Finance and Agriculture Productivity: New Frontiers, Solutions, and Policy Directions for Agribusiness

*Dr Muhammad Ali is currently working at Graduate Business School, UCSI University Kuala Lumpur as an Assistant Professor of Finance. He is also the guest editor for the Journal of Agribusiness in Developing and Emerging Economies published by Emerald.*

*This article is from the editorial page of the Special Issue Call for Papers in the Journal of Agribusiness in Developing and Emerging Economies by Emerald.*

## Introduction

The process of taking environmental, social, and governance (ESG) factors into account when making investment decisions in the financial sector, which results in longer-term investments in sustainable economic activities and projects, is referred to as sustainable finance (World Bank, 2021). Environmental factors include pollution, water use, greenhouse gas emissions, and biodiversity loss. Additionally, labour relations, equality, human rights, worker safety, and health are social factors. Shareholder rights, corporate governance, transparency, management compensation, and board independence are the final governance components. Sustainable finance differs from conventional financing because of these ESG factors. Sustainable finance also offers significant economic and social benefits, which is why it keeps gaining acceptance.

In the twenty-first century, agriculture faces a number of challenges, including a growth in food demand caused by an expanding population and changing dietary habits, the depletion of natural resources and biodiversity, and a levelling off of crop yields. The effects of climate change also provide new difficulties for agriculture. While severe weather events linked to climate change can be catastrophic for farmers, crops, and lands, rapid climate change may cut food yields by more than 25%. It will take a significant rise in the amount of cash available for sustainable agricultural investments before the agricultural sector can be transformed and productivity can be raised. In order to address the current issues facing the agriculture sector, sustained finance is therefore very necessary.

In order to boost agricultural productivity, sustainable finance will be crucial. In order to maximise overall societal returns while taking into account financial and non-financial hazards, the concept of "sustainable finance" in agriculture seeks to provide financial tools and market mechanisms (Campos, 2021). Commercial and cooperative banks, credit guarantee organisations, credit unions, public banks, leasing companies, farm input suppliers and cooperatives, and microcredit organisations are the main principal providers of finance to the agricultural industry. The primary agricultural problems—food scarcity, crop collapse, a lack of agricultural reforms, shoddy irrigation systems, and climatic changes—highlight the need for better government efficiency, openness, regulations, and governance.

Sustainable finance will guarantee that agriculture provides more food to feed a growing global population, support international development, and end poverty in many developing countries. According to Khan et al. (2022), new green legislation, community-based green funds, green banks, green bonds, and Fintech are some of the ways that green initiatives can aid in the achievement of sustainable development goals.



*Assistant Professor  
Dr Muhammad Ali*

Additionally, according to Sachs et al. (2019), expanding finance can boost industry productivity while also having a positive impact on the environment. This type of financing is known as "green finance."

Sustainable finance includes green financing as a subset. The phrase "sustainable finance" best encompasses all funding initiatives that promote sustainability. Sustainable finance also includes social, environmental, and governance factors. On the other hand, green finance considers environmental financing but disregards social and economic factors (Brenya et al., 2022; Lee & Lee, 2022).

The relationship between green finance and economic growth, the environment, and energy efficiency has been the subject of numerous studies (Ma, 2022; Yin & Xu, 2022; Ning et al., 2022; Ngo et al., 2021); however, there is a dearth of empirical research that quantitatively examines this relationship (Tran, 2021; Zhou et al., 2020; Huang & Chen, 2022)

Therefore, this special issue welcomes research that expressly focuses on the most general term, namely sustainable finance, as well as the assessment of how sustainable finance might help increase agricultural output.

### Topics and themes

Areas of interest include, but are not limited to, the following topics:

- Sustainable finance fosters agricultural productivity.
- How do banking and financial products support sustainability in Agribusiness?
- How can better socio-economic factors improve agricultural productivity?
- What is the role of governance in the agricultural sector?
- Can sustainable financing work in agriculture?
- Sustainable financing and agricultural growth in emerging economies.
- Are emerging countries ready to embrace sustainable financing for better productivity?
- Key governance challenges for implementing the sustainable finance roadmap.
- Does the growing sustainable finance trend intensify the trade-off between environmental protection and economic development?

- How can environmental, social, and governance risks be minimized for better allocation of sustainable finance?
- How can farmers take maximum benefits from sustainable financing?
- Is sustainable finance the future of the agriculture sector?
- Increasing challenges in the agricultural sector can be tackled with the help of sustainable finance.

### Key dates

Opening date for manuscript submissions: 1 February 2023

Closing date for manuscript submissions: 1 July 2023

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# Art is Anything with Creativity, Passion, and Personality

*Assistant Professor Dr Perline Siek's research interests are visual communication and cultural design studies, she presented her creative outputs in national and international exhibitions and published research articles in journals and international conferences.*

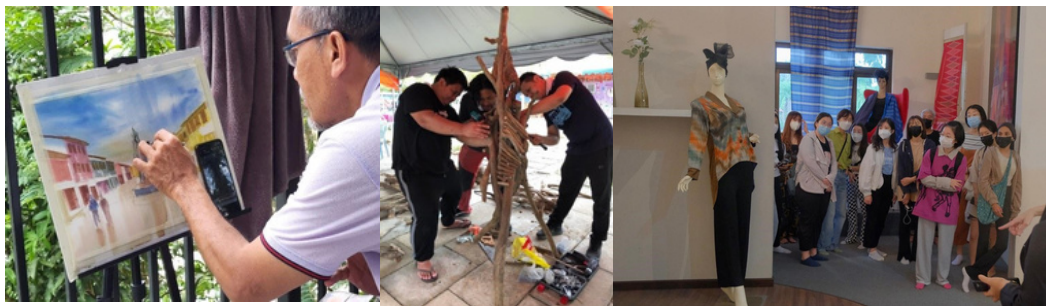
## Background

Dr Perline Siek Hwee Ling has been awarded another national grant awarded by the Ministry of Tourism, Arts, and Culture (MOTAC), KENAU+ISM in August 2022.

The purpose of this event is to promote the development of art in all genres, including rebranding and sustaining the existing artistic activities in Kuantan. She worked with Mr Sukairi bin Shahri, who is a sculptor and program director of various art camps. KENAU+ISM invited many illustrious Malaysian artists such as Dr. Zaimie Sahibil, Dr Rosli Zakaria, Liu Cheng Hua, Maxine Xie, and many more. Meanwhile, the camp also attracted foreign artists, such as Keiichiro Kimori from Japan, Nabeela from the Maldives, and Gulrez Ali from India.



*Assistant Professor  
Dr Perline Siek*



Almost a total of 60+ artists spent 3 days and 2 nights from 9 to 11 September 2022 in Sg Lembing, Kuantan together with our 28 international students.

As Dr. Perline believed that art needs to resonate with creators and audiences, Art is for everyone, it is about intention and communication, that is the reason why she also invited students from other non-art faculty as well, students represented diverse identities and impressive cultures from Bangladesh-Dhaka; China-Fujian, Guangdong, Hebei, Henan, Jiangsu, Liaoning, Shandong, Sichuan, and Zhejiang; Egypt-Cairo; Indonesia-Banten, Jawa Barat, and Sumatra Selatan; Maldives-Male; Mozambique- Maputo and Tanzania-Dar Es Salaam.



That is why, she had invited students from other non-art and design faculty as well, these students are from undergraduates to Postgraduates, they are from Animation, Architecture & Built Environment, Chemical Engineering, Fashion Design, Graphic Design, Psychology, Supply Chain Operations Management, MBA and Multimedia programmes.

The accommodation at Sungai Lembing's T-Box Resort, meals, and tours of the students was supported by the grant which she has been awarded.

In the meantime, she also pushed the international students to share this camp experience on their social media, to lead their hometown friends to learn about the art and culture of Malaysia.

During this trip, the students had the chance to visit the cultural centers of Kuantan Town, and with Malaysian artists who shared their knowledge and skills in different art mediums.

Serendipitously blessed by the moonlight of the Chinese Mooncake Festival on the second night of the visit, the artists and students gathered to light lanterns to celebrate their fraternity in art.

To cherish the valuable meetings of cultures in art and for art. These international students were invited to write short passages by Dr Perline, to express how they feel about the culture, the people, the art, and Kuantan in bilingual texts with English as one of the languages, the book titled: My Journey to Malaysia Arts, published under UCSI Press.



# Appreciating the Value of Bibliometric Data

*Dr Omkar Dastane is the Head of Program (MBAs) and an Assistant Professor in the Graduate Business School at UCSI University, Malaysia. Dr Omkar has published SEVEN journal articles based on bibliometric analysis (Scopus/WOS) so far in 2023 which are available at:*

*<https://scholar.google.com/citations?user=7ScOVFMAAA&hl=en&oi=ao>.*

*Dr Omkar was invited to conduct trainings on bibliometric and other techniques at several universities including Universiti Kebangsaan Malaysia, Asia e-University, Malaysia, and NEST Academy, UAE.*



*Assistant Professor  
Dr Omkar Dastane*

## Introduction

In recent years, bibliometric analysis has become incredibly popular in business research. In just one year in 2020, 1950 bibliometric analysis-based articles were indexed in the Scopus database.

Premier business journals listed by the Financial Times (2016; FT50) have also published bibliometric research, with Research Policy, the Journal of Business Ethics, the Academy of Management Journal, and the Strategic Management Journal publishing the highest numbers of articles among the journals in the list.

As a researcher, it is vital to appreciate the value of bibliometric data and utilise the same for enhancing the quality as well as quantity of research output. For a number of reasons, bibliometric analysis is essential to academic and research endeavors. A quantitative evaluation of the output, impact, and trends in research is provided through bibliometric analysis. It enables scientists, organisations, and funding bodies to assess the volume and caliber of scholarly output in a given field or by a single scientist. It assists in finding highly cited papers, and significant authors, and developing study fields that might help in decision-making.

To evaluate the research output of people, organisations, and nations, bibliometric metrics like citation counts, h-indexes, and journal impact factors are utilised. These measurements offer insights into productivity, influence, and collaboration patterns while evaluating and comparing the scientific output across various entities.

The bibliometric analysis aids in illustrating the evolution and organisation of a field's body of knowledge. Researchers can pinpoint the important concepts, significant authors, and collaborative relationships within a discipline by looking at citation networks, co-authorship patterns, and keyword co-occurrence.

It aids in locating unexplored areas of research, knowledge gaps, and prospective new areas to explore.

The bibliometric analysis aids in locating important works that have significantly advanced a topic. Researchers can identify key studies or important articles that have influenced the scientific landscape by looking at citation trends.

Evidence-based insights for decision-making and policy development are provided by bibliometric analysis. It aids in assessing the results of financing schemes, research regulations, and strategic plans.

Policymakers can allocate resources wisely, identify areas for investment, and determine research priorities by looking at publishing trends and collaborations.

Building networks and locating new research partners are both aided by bibliometric analysis. Researchers can find people or organisations with comparable research interests and expertise by looking at co-authorship trends and collaboration networks. This makes it easier to collaborate across disciplines, exchange knowledge, and develop research networks.

## MTE 2023- Gold Award Kenaf Active Double Emulsion

*TAward Category*

*Agriculture, Livestock & Horticulture, Aquacultures & Fisheries*

*Researcher (s):*

*Professor Dr Nyam Kar Lin (Faculty of Applied Sciences, UCSI University)*

*Ms Elaine (Faculty of Applied Sciences, UCSI University)*

*Professor Dr Tan Chin Ping (Faculty of Food Technology, UPM)*

*Dr Tan Tai Boon (Faculty of Food Technology, UPM)*

*Associate Professor Dr Pui Liew Phing (Faculty of Applied Sciences, UCSI University)*



*Professor Dr Nyam Kar Lin*

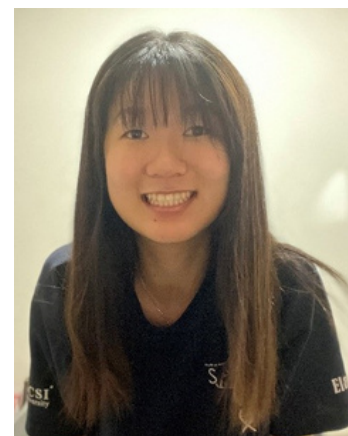
### Award synopsis

Sustainable development is a global priority, in which industrial waste management, by minimizing negative impact on environment and natural resources, is a key part of this effort.

Hibiscus cannabinus L. (kenaf) is one of industrial crops in Malaysia that mainly cultivated for the fibrous stems only. Meanwhile, the by-products such as leaves and seeds are often discarded. Leaves contain high phenolic compounds while seeds contain high proportion of unsaturated fatty acids.

Both could be valuable sources of nutrients and antioxidants.

To address the low stability of these valuable components, an encapsulation technology called "Kenaf Active Double Emulsion" has been innovated to expand possible applications of these by-products as sustainable ingredients for the food industry.



*Ms Elaine*



This is the first double emulsion carrier containing kenaf in Malaysia. Prof. Dr Nyam Kar Lin's research team has utilized nanotechnology to formulate a double nanoemulsion with enhanced antioxidative properties.

They have innovated physical stabilizers that are able to stabilize double emulsion that contains two different types of kenaf by-products.

The efficiency and safety of double emulsion technology have been experimentally proven to have a good physical stability, antioxidant properties, and be safe for normal healthy cells.

This technology could help to improve the sustainability of kenaf production and create new value-added products.



**Selling points**

1. Reduced-fat emulsion carrier
2. Physical stability during digestion
3. Fortifiable (water-soluble)
4. Double kenaf actives in a single carrier
5. Reduce kenaf by-product wastes

**Kenaf (*Hibiscus cannabinus* L.)**

**UCSI University**

**Kenaf Active Double Emulsion**

**Kenaf + Double Emulsion**

Contact: [nyamkl@ucsiuniversity.edu.my](mailto:nyamkl@ucsiuniversity.edu.my)

An infographic with a green and white color scheme. It features a list of five selling points on the left, a central circular logo with a kenaf plant and the text 'Kenaf Active DOUBLE EMULSION', and two small bottles of the product on the right. The UCSI University logo is at the top right. A decorative kenaf leaf branch curves around the central logo. At the bottom left, there is a circular diagram showing a cross-section of a cell with blue and yellow components. The text 'Kenaf + Double Emulsion' is at the bottom left.

# The Discovery of "Brine Prong" and "Oil Vortex" Effects: Unveiling the Gist of Smart Water Technology

*Dr Vahid Khosravi currently holds the position of Post-Doctoral Research Fellow at the chemical and petroleum department within the faculty of engineering, technology, and built environment at UCSI University. His research focuses on a wide range of topics, including wettability alteration, Smart Water technology, molecular dynamics simulation, surface complexity studies, predictive models, artificial intelligence and machine learning, smart materials, and low-carbon technology.*

*Dr Khosravi is actively involved in various professional organisations. He serves as a committee member of the UCSI-Cheras Low Carbon Innovation Hub Research Consortium. Furthermore, he is a member of the Malaysia Board of Technologists (MBOT) and the Institution of Engineering and Technology (IET) of UK.*

*In the recent years, Dr Khosravi has contributed significantly to the field through the publication of remarkable papers in prestigious peer-reviewed journals. His research primarily focuses on elucidating the wettability alteration mechanism and investigating surface complexity studies by employing various methods such as experimental activities and simulation tools.*



*Dr Vahid Khosravi*

## Background

As the driving force of primary depletion declines, the reservoir energy can be sustained with external inputs in form of water or gas injection [1], a process referred to as secondary recovery. Nonetheless, in the case of unfavorable reservoir conditions, the recovery performance can drop considerably to as low as 20% of Original Oil-In-Place (OOIP). This can be attributed to the reservoir heterogeneities including fractures, significant disparities in permeabilities across heterolithic strata or sections, poor wettability conditions, high capillary entrapment or poor sweep efficiency by the injected water or gas.

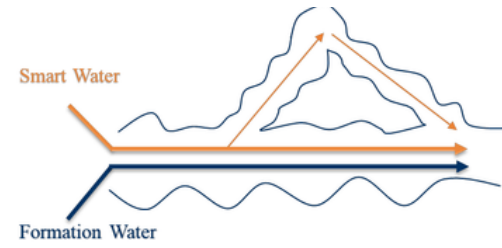
Thus, enhanced oil recovery (EOR) has become the more acknowledged term in scientific circles [2]. Based on specific driving mechanisms, EOR processes are frequently categorised into four different groups as the thermal methods, gas injection, chemical flooding and emerging processes [3].

These processes trigger chemical, physical and biological mechanisms in the reservoir to facilitate increment in oil recovery [4]. An EOR process entails injecting a fluid into a rock-oil reservoir system to increase oil mobility and production by lowering IFT, improving oil swelling, reducing oil viscosity and modifying wettability [2, 5]. Based on recent studies [6-8], an interesting approach to modifying rock wettability by simply altering the water composition was developed, referred to as "Smart Water" technology. The technique alters wettability without significantly reducing the existing capillary forces [9], with the ultimate objective of enhancing oil recovery.

Smart Water injection is cost-effective and highly profitable because it requires no addition of expensive chemicals and utilises processed formation water obtained by relatively simple filtration systems.

## The importance of conducting this research

In the recent decade, discussion have been continued on the cause of wettability alteration mechanism during Smart Water flooding. Also, determining the effective range of water ionic concentration resulting in altered wettability has erupted the argumentative debates. Along with this, there is still a requirement to identify the in-situ wettability change and optimum water concentration. The goal of this study is to decipher the reason behind wettability changes and determining the effective and optimum of brine ionic composition by introducing a novel approach involves both monovalent ( $\text{Na}^+$ ) and divalent ( $\text{Ca}^{2+}$ ) ions.



**Figure 1. Greater imbibition in increasing sweep efficiency by Smart Water adopted from [10].**

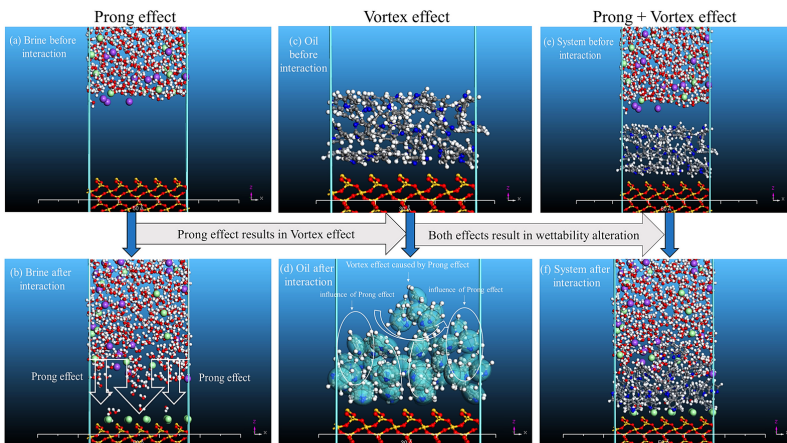
## Methodology

A systematic methodology was generated. Accordingly, a full set of contact angle and IFT measurements were conducted based on one-factor-at-a-time (OFAT) and design of experiments (DOE) methods. Besides, molecular dynamics simulation was employed as a practical tool to decode molecular interactions in the oil/brine/rock system and the documented mechanism. The study achieved its final goal by accomplishing force-displacement experiments on sandstone.

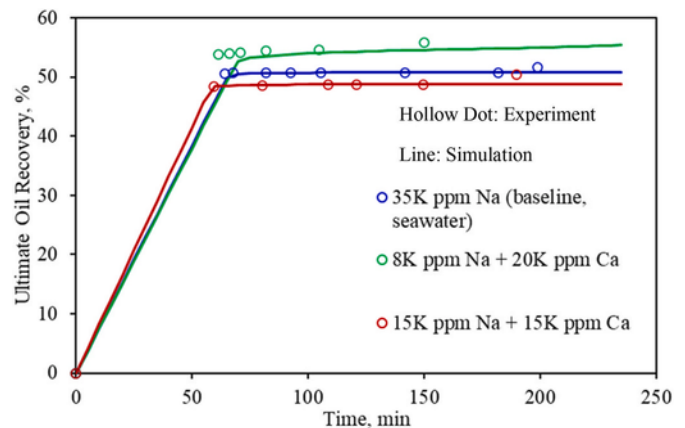
## Conclusion

This research was focused on sandstone and resulted in providing three new predictive models to estimate contact angle and IFT based on brine concentration or solvation free energies. Furthermore, using molecular dynamics modeling, the mechanisms involved in changing wettability namely “brine Prong” and “oil Vortex” effects were discovered where monovalent and divalent cations exist in the water chemistry structure. It showed the double activation of monovalent ions compared to divalent ions. The effective ranges of brine concentrations for changing sandstone wettability were determined to be 1-15 kppm for NaCl and 15-20 kppm for  $\text{CaCl}_2$ , while 8 kppm NaCl-20 kppm  $\text{CaCl}_2$  was the optimal mixture concentration of brine, which resulted in a 3.63% increase in ultimate oil recovery.

The outcome of this study was recently published in journal of Petroleum Science and Engineering (2022, <https://doi.org/10.1016/j.petrol.2022.110800>) and journal of Chemical Engineering Research and Design (2023, <https://doi.org/10.1016/j.cherd.2023.05.056>).



**Figure 2. “bring Prong” effect and “oil Vortex” effect result in wettability alteration, reproduced from [11].**



**Figure 3. Ultimate oil recovery percentage of experiments vs simulation.**

No.	Funding Scheme	Submission Closing Date
1	Selangor State Research Grant (GPNS) <a href="http://rmc.kuis.edu.my/web/">http://rmc.kuis.edu.my/web/</a>	14 Jun 2023
2	Green and Resilient Recovery Local Action Grant Project <a href="https://www.undp.org/malaysia/stories/grant-available-seeking-submissions-green-and-resilient-recovery-local-action-grant-project">https://www.undp.org/malaysia/stories/grant-available-seeking-submissions-green-and-resilient-recovery-local-action-grant-project</a>	23 Jun 2023
3	ORRAA UK Blue Planet Fund Call for Proposal <a href="https://oceanriskalliance.org/resource/orraa-uk-blue-planet-fund-call-for-proposals/">https://oceanriskalliance.org/resource/orraa-uk-blue-planet-fund-call-for-proposals/</a>	2 Jul 2023
4	Malaysia-UN SDG Trust Fund <a href="https://malaysia.un.org/en/232871-call-proposals-2023-malaysia-un-sdg-trust-fund">https://malaysia.un.org/en/232871-call-proposals-2023-malaysia-un-sdg-trust-fund</a>	14 Jul 2023
5	Global Centre on Biodiversity for Climate (GCBC) <a href="https://www.gcbc.org.uk/">https://www.gcbc.org.uk/</a>	20 Jul 2023
6	Franz Werfel Grant – Austria’s Agency for Education and Internationalization (OeAD) <a href="https://oead.at/en/news/article/2022/12/oead-incoming-scholarship-programmes-and-further-grants-for-2023-2024">https://oead.at/en/news/article/2022/12/oead-incoming-scholarship-programmes-and-further-grants-for-2023-2024</a>	15 Sep 2023
7	Global Funding for Rubber Innovation <a href="https://www.myrubbercouncil.com/globalrubberfund/index.php">https://www.myrubbercouncil.com/globalrubberfund/index.php</a>	Open throughout the year
8	National Conservation Trust Fund (NCTF) <a href="https://www.ketsa.gov.my/en-my/KetsaCore/Biodiversity/Pages/nctf.aspx">https://www.ketsa.gov.my/en-my/KetsaCore/Biodiversity/Pages/nctf.aspx</a>	Open throughout the year
No.	Exhibition(s)	Submission Closing Date
1	International Invention, Innovation & Technology Exhibition (ITEX 2023) URL link: <a href="https://itex.com.my/">https://itex.com.my/</a>	16 Jun 2023

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