#### **ISSUE 01**

**JULY - SEPTEMBER 2025** 

## **BIOPALM REVIEW** NEWS AND DEVELOPMENTS IN THE OILPALM INDUSTRY

INNOVATION

PERFORMANCE INSIGHTS

NEW DEVELOPMENTS

**IN-DEPTH REVIEW** 

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### SPECIAL ISSUE ON OILPALM BIOMASS







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# WELCOME MESSAGE

Welcome to the Inaugural Issue of BioPalm Review. We are pleased to present the first edition of BioPalm Review — a dedicated newsletter spotlighting the dynamic and fast-evolving landscape of the oil palm industry and its growing significance in the global bioeconomy. As the world shifts toward sustainability, circular economy practices, and renewable energy, oil palm is increasingly being recognized as a key contributor to green value chains.

This newsletter was conceived as a follow-up to the recent Oil Palm Biomass Conference, held on 14–15 April 2025 at Berjaya Hotel, Kuala Lumpur. In this inaugural issue, we are pleased to feature a special review on oil palm biomass, in line with the conference's objectives. All participants of the conference will receive this publication as part of our ongoing commitment to keeping you informed on major developments and opportunities in the oil palm biomass sector.



Each edition of BioPalm Review will deliver curated content, including:

- Policy developments and regulatory insights
- R&D breakthroughs and technology updates
- Market intelligence and emerging trends
- Project highlights and investment opportunities
- Stakeholder news with a strong focus on Malaysia, alongside global perspectives

Whether you are a policymaker, industry leader, researcher, entrepreneur, or simply someone passionate about the future of the oil palm sector, BioPalm Review aims to inform, inspire, and connect you with the ideas and individuals driving innovation and sustainability in this space.

We warmly invite your feedback, contributions, and collaboration as we grow this publication together.

In this issue, we are honoured to feature two thought-provoking articles by Dato' Dr. Ahmad Ibrahim, offering deep insights into key issues and opportunities in the oil palm biomass domain. His thought leadership serves as a valuable catalyst for continued dialogue and innovation.

Warm regards, Professor Dr Abdul Kabur Ibrahim President, Malaysian Export Academy

## RENEWABLE ELECTRICITY FROM BIOMASS NEEDS RETHINK

In transitioning to renewable electricity, apart from solar and mini hydro, biomass is a viable candidate. The country has abundant biomass, just waiting to be harnessed. The largest source is from the palm oil industry, empty fruit bunches, EFBs, from the the country's over 400 palm oil mills. The technology to convert EFBs to electricity is already well known. In fact palm oil mills have long been burning fibres and shells to generate high temperature steam to extract palm oil. Some of the steam are converted into electricity for their own mill use. Palm oil mills are selfsufficient in energy. But the EFBs are not commonly used to fire the boilers.



**Professor Dato Dr Ahmad Ibrahim** Tan Sri Omar Centre for STI Policy IISDS, UCSI University,

Associate Fellow UAC, University Malaya





The standard practice has been to dispose the EFBs to the environment. Most end up choking the landfills. Some plantation companies put back the EFBs on to the land for their fertiliser and mulching value. The negative side of such practice is the methane emitted from the decomposing EFBs. Methane is the more potent GHG. Their release exacerbates the company's ESG score. Not all mills have the luxury of spreading on land. The independent mills generally dispose their EFBs on to landfills, creating serious environmental concern.



Normally it does not make economic sense to burn EFBs for electricity. SEDA introduced the Feed-in-Tariff, FiT, scheme to incentivise the conversion. SEDA made available a limited quota for investors to bid and participate. Initially, the quota was bankable. This changed when banks consider them high risk. Many quota owners quit because the low FiT rate proved unprofitable. The uncertain supply of the raw material, the EFBs, is a major risk. As capacity utilisation droppes, profitability became almost non-existent except for the more efficient operators.



SEDA got wind of this and became concerned that their target MegaWatt will renewable fall short. Under the recently unveiled FiT 2.0, the tariff is increased albeit not much. Industry players rate feel the new is not competitive. Neighbouring Thailand offers a higher rate which explain why some of our EFBs have crossed borders. A check with SEDA says their renewable energy fund is running out. So a higher rate is out of the question.

Biomass-to-electricity projects in Malaysia have struggled to achieve due to success challenges. Biomass supply, such as the EFBs, is tied to harvesting seasons, leading to inconsistent feedstock. Transporting bulky biomass materials from plantations to power plants is often costly. Setting up biomass power plants involves significant capital expenditure. The cost of boilers, turbines, and processing systems is high.

feed-in tariffs The (FiT) for electricity under biomass Malaysia's Renewable Energy Act (2011)are often deemed insufficient to cover operational costs. Most plants are typically small-scale projects resulting in higher per-unit electricity costs. Regulatory frameworks and incentives not have been consistent enough to attract largescale private investment. Lengthy approval processes and unclear quidelines delay project implementation. Small-scale biomass power plants face challenges in connecting to the national grid due to technical and procedural hurdles.

#### Stay Ahead in the Biomass Sector



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technologies for biomass conversion, such as advanced Some gasification, are still underdeveloped. The variable quality and moisture content of biomass feedstock can cause operational inefficiencies and equipment wear. Biomass power plants often require more maintenance compared to fossil fuel plants due to the corrosive and abrasive nature of biomass ash. Improperly managed biomass power plants can lead to air pollution and ash disposal issues, raising societal stakeholders, including concerns. Many investors and local communities, are unaware of the benefits and opportunities associated with biomass energy. Malaysia's reliance on cheap coal and natural gas has made it difficult for biomass electricity to compete on cost.

Some recommendations to improve include increasing the feed-in tariffs to more reasonable levels. Tax incentives and grants for biomass projects have been suggested. Not to mention improving transportation and storage facilities. Many feel more R&D in biomass conversion efficiency. Collaboration technologies improve can between government, private sector, and research institutions to develop better technologies may be a good strategy. Stakeholders should be made aware about the economic and environmental benefits of biomass energy. Notwithstanding, biomass remains a promising renewable energy resource in Malaysia. Addressing the barriers could unlock its potential to contribute significantly to the country's energy mix, and deliver NetZero



## Feed-in Tariff (FiT) Scheme for Biomass to Energy Needs Resetting

ΒY

PROFESSOR DATO DR AHMAD IBRAHIM TAN SRI OMAR CENTRE FOR STI POLICY IISDS, UCSI UNIVERSITY

ASSOCIATE FELLOW UAC, UNIVERSITY MALAYA



As a trading nation, Malaysia is impacted by changes in international trade rules. As the world agressively pursues sustainability, rules on compliance with carbon emission have intruded into international trading. Businesses which do not meet the requirements may be denied access to markets. There is concern that much of the rulings are unilateral. The EU is especially active enforcing such rules. Energy choice has been singled out as a critical factor in achieving sustainability.

This explains why the global investment in renewable energy has been rising. These include solar, wind, hydro, and biomass, just to name some. Countries have established support schemes to accelerate the adoption of the renewable fuels. Not all such schemes have proven effective. The key success factors include business viability and technological improvements.



Over the years, solar has witnessed the greatest success in technological development and economic viability, reducing cost and increasing its uEFBssage worldwide. Wind is the other success sector. Biomass on the other hand still faces challenges. Malaysia's Feed-in Tariff (FiT) program, established under the Renewable Energy Act 2011 and administered by the Sustainable Energy Development Authority (SEDA), aims to accelerate renewable energy adoption. Biomass, particularly from palm oil waste, especially the EFBs, is a key focus due to Malaysia's robust palm oil sector. The objective is to diversify the country's energy mix, reduce reliance on fossil fuels, and achieve renewable targets as articulated under the NETR. The mechanism provides guaranteed grid access and fixed premium tariffs for 16-21 years, funded via a surcharge on electricity bills.



The biomass-specific FiT rates are adjusted periodically. As of 2021, biomass FiT rates ranged from RM 0.24-0.35/kWh, depending on capacity and technology. There is an annual 0.5% reduction to encourage cost efficiency. The Act provides for annual capacity quotas to manage growth. The eligibility is open to palm oil mills, independent power producers, and rural cooperatives meeting SEDA's technical and sustainability criteria. Benefits include waste utilization through conversion into energy, while at the same time reducing landfill use and methane emissions. Impact on the economy is positive.

It generates rural employment and additional revenue for palm oil mills. Not to mention energy security. It promotes the diversification of energy sources, supporting Malaysia's transition to a low-carbon economy. The environmental Impact is also positive. It reduces greenhouse gas emissions and promotes sustainable practices.

There are challenges though. One concerns the supply chain logistics. They incur high and inefficiencies in biomass costs collection and transportation. The proposed establishment of collection centres or biomass hubs is moving at snail pace. There is also market competition. Biomass faces cost competition from solar energy, which seen rapid price declines. Not to has mention elements of policy uncertainty. The transition to mechanisms like Net Energy Metering (NEM) and auctions may reduce FiT focus. There have been some recent developments. The quotas have been enhanced. There was increased allocations biomass for in 2023 to leverage underutilized In co-firing waste. the Initiatives, the integration of biomass with emissions is to reduce coal plants promoted. Whilst sustainability certifications mandates for certified sustainable biomass sources to address environmental concerns.





While FiT has driven biomass growth, Malaysia is exploring hybrid models (FiT + auctions) and circular economy approaches to optimize resource use. Biomass remains critical for meeting renewable targets, but success hinges on sustainable feedstock management and technological innovation. This is where FiT 2.0 needs resetting. Under FiT 1.0, most of the 21 odd quotas dished out did not materialise. It has been reported that less than 5 licensees are still actively participating. An audit exercise essentially concluded that Fit 1.0 failed. There is concern that FiT 2.0 may reach the same fate. What is most intriguing is that FiT 2.0 which should see some upward revision in rates does not allow the participation of the existing players with proven track record.

Malaysia's FiT program has effectively promoted biomass energy, capitalizing on agricultural strengths. However, addressing logistical, environmental, and policy challenges is crucial for long-term viability. Future strategies may blend FiT with newer mechanisms to sustain growth in the renewable sector. The most important factor in making FiT truly deliver the targets is to make sure the projects are economically viable. The rates must be realistic and the logistical challenges must be addressed. The other critical factor is technology. There must be initiatives to research and develop more innovative technologies which deliver cost efficiency. After all FiT is meant to buy time for the biomass to energy industry to grow. We have seen how technological improvements have improved the viability of solar and wind. The end game is to make the biomass to energy industry flourish without FiT.



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**COMPLIMENTARY INVITATION** 

# QUARTERLY ROUND TABLE ENGAGEMENTS ON OIL PALM BIOMASS (ONLINE) DIGANIZED BY BIOPALM REVIEW



EXCLUSIVELY FOR PARTICIPANTS WHO ATTENDED THE  $5^{TH}$  INTERNATIONAL OIL PALM BIOMASS 2025

FEATURED TOPIC: "BIOMASS TO ELECTRICITY PROJECTS, IS FEED IN TARIFF (FIT) PROGRAMS DELIVERING TARGETS? IF NOT, WHY? HOW SHOULD WE IMPROVE?"

Chaired By: Ybhg Dato Dr Ahmad Ibrahim

1 JULY 11 AM 12PM

THE SESSION WILL BE STREAMED LIVE ON ZOOM



For more information, please contact : +60 11-2856 9202 (Alwani) / +60 10-432 9029 (Ashikin)

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NO. 86, Jalan BP 7/8, Bandar Bukit Puchong <u>47120 Puchong, Selangor Darul</u> Ehsan, Malaysia

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For further enquiries, contact: Ms Atiqah : +60 11-2856 9202 Email: info@oilpalmbiomass.com