

## PFAD

### 1. What is PFAD?

PFAD stands for Palm Fatty Acid Distillate. It is a processing residue resulting from physical refining of crude palm oil products. At room temperature it is a light brown semi-solid, melting to a brown liquid on heating. Up to 80 percent of PFAD is free fatty acid (FFA), with palmitic acid and oleic acid being the major components. The remaining 20 percent is made up of components including triglycerides, partial glycerides, and vitamin E, sterols and squalene<sup>1</sup>.

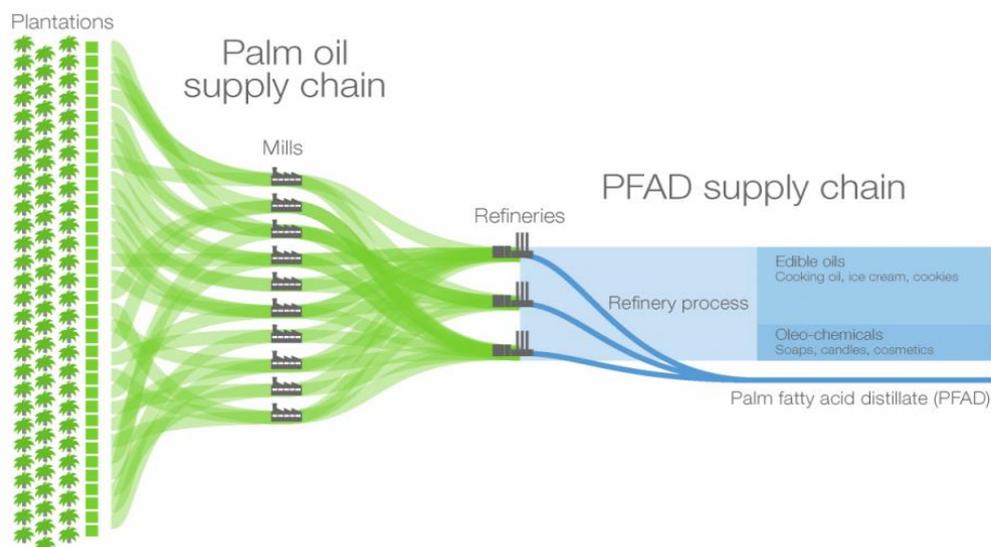
### 2. Is PFAD a residue?

- Yes, it is a processing residue that results from palm oil refining for the food sector.
- In 2018, Indonesia produced 43 million tonnes of crude palm oil<sup>2</sup> that yielded only 1.6 million tonnes or 3.7 percent PFAD<sup>3</sup>.

### 3. How is PFAD generated?

- The fat in the oil palm fruit will start degrading when normal bruising occurs while oil palm fruits are handled during harvest and transportation.
- The longer the transportation time, the more the fats in the oil palm fruits degrade.
- To meet the food industry's quality standards, the refining process removes these degraded fats yielding non-food grade PFAD.

### Illustration on where in the supply chain PFAD is generated



<sup>1</sup> <http://palmoilis.mpob.gov.my/publications/OPB/opb59-Bonnie.pdf>

<sup>2</sup> <https://ekonomi.kompas.com/read/2019/02/06/172400626/gapki--produksi-cpo-di-2018-memecahkan-rekor>

<sup>3</sup> <https://www.suarakarya.id/detail/103474/Industri-Oleokimia-Butuh-Keberpihakan-Regulasi>

#### 4. How is PFAD used?

- PFAD<sup>4</sup> is used as a renewable raw material in biofuels production as well as to produce candles, soaps, other oleochemical products, and animal feed.
- Specific to biofuel production in Europe, the EU allows Member States to account PFAD consumption towards greenhouse gas emissions reductions under its Renewable Energy Directive. The amount of emissions reductions depends on the PFAD's technical classification, a residue or co-product, which is up to the individual Member State.
- To verify the emissions reductions, the EU relies on voluntary certification schemes, such as the International Sustainability and Carbon Certification system<sup>5</sup>.

#### 5. What are the benefits<sup>6</sup> of using PFAD?

- Producing renewable fuels using PFAD is good for the climate. It is an efficient way to use waste generated through the palm oil refining process, preventing PFAD from going to literal waste. A by-product that is undesirable from the food industry perspective can be very desirable for other sectors.
- Neste MY Renewable Diesel<sup>7</sup> which is refined from PFAD and other waste and residue materials, such as Used Cooking Oil (UCO), helps to replace crude oil-based diesel in transportation.
- Using Neste MY Renewable Diesel can reduce greenhouse gas emissions by 90 percent on average compared to a diesel-powered vehicle using conventional fossil fuel-based diesel.

#### 6. Can PFAD be produced sustainably?

- Yes, PFAD can be produced sustainably, if the plantations, mills, and refineries from which the PFAD is sourced, are managed sustainably
- For example, a company like Neste<sup>8</sup> only buys PFAD from suppliers who are committed to sustainable production practices and comply with strict sustainability criteria such as deforestation-free and meet requirements in the biofuels regulation.
- Additionally, Neste uses PFAD that is traceable to the point it is removed from the main production stream at the palm oil refinery.

#### 7. Does PFAD-use put pressure on land?

No, Informa Economics<sup>9</sup> quoted that the use of PFAD does not boost production of palm oil, expansion of its cultivation, nor drive palm oil deforestation. PFAD is a non-desired output of the palm oil refining process. More PFAD generated results in less quality refined product and reduced profits for the palm oil refiner. It is in the interests of PO producers to reduce the amount of PFAD they generate. However, it is in the broader interest for this residue to find a use to avoid it becoming a waste product.

<sup>4</sup> <https://www.neste.com/corporate-info/sustainability/sustainable-supply-chain/pfad-residue-palm-oil-refining-process>

<sup>5</sup> <https://www.iscc-system.org/>

<sup>6</sup> <https://www.neste.com/corporate-info/sustainability/sustainable-supply-chain/pfad-residue-palm-oil-refining-process>

<sup>7</sup> <https://www.neste.com/corporate-info/sustainability/sustainable-supply-chain/pfad-residue-palm-oil-refining-process>

<sup>8</sup> <https://www.neste.com/releases-and-news/sustainability/sustainably-produced-biofuels-do-not-cause-deforestation>

<sup>9</sup> <http://www.inbio.biz/?p=383>

#### 8. Does GAR produce PFAD sustainably?

- GAR is committed to the sustainable production of palm oil, as set out in the GAR Social and Environmental Policy (GSEP)<sup>10</sup>.
- The GSEP applies to all upstream and downstream palm oil operations that we own, manage or invest in, regardless of the stake.
- PFAD from GAR operations is the result of sustainable production practices. Therefore, it can be considered a sustainably produced process residue.
- In line with our commitments in the GSEP, we produce palm oil in accordance with the sustainability requirements in the EU Renewable Energy Directive.

#### 9. Should governments incentivise PFAD consumption?

Yes, governments should encourage PFAD consumption for the following reasons:

- PFAD is a processing residue from the production of food grade products. Per circular economic principles, the industry should find a positive economic use for such processing residues as part of a waste reduction strategy.
- PFAD is derived from the palm oil fruit that has the highest oil productivity per hectare of land amongst the vegetable oils. Produced sustainably, palm oil requires less land per unit volume than the other oils.
- PFAD and palm oil production supports the livelihoods of 2.67 million smallholders<sup>11</sup> in Indonesia and 650,000 smallholders<sup>12</sup> in Malaysia.

#### 10. Actions for government and customers

- Government should
  - Recognise PFAD as a processing residue resulting from the physical refining of crude palm oil products
  - Avoid waste and instead, encourage usage of residues back into renewable products per circular economy principles
  - Call for its industries to implement sustainable sourcing policies to ensure traceable and sustainable production
  - Promote the use of certified sustainable PFAD products in the market
- Customers should
  - Invest in PFAD-based biofuel production in order to optimise the use of PFAD
  - Commit and implement sustainable sourcing policies to ensure traceable and sustainable palm oil production
  - Communicate and explain to stakeholders about the functional and environmental attributes of PFAD
  - Support companies with commitments to sustainable palm oil sourcing
  - Buy only certified sustainable PFAD products

<sup>10</sup> <https://goldenagri.com.sg/wp-content/uploads/2016/01/GSEP-English.pdf>

<sup>11</sup> <https://databoks.katadata.co.id/datapublish/2019/12/21/jumlah-petani-sawit-267-juta-kepala-keluarga>

<sup>12</sup> <https://www.straitstimes.com/asia/se-asia/eu-palm-oil-ban-sows-bitter-seeds-for-southeast-asian-farmers>

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