

Policy on sustainable salmon feed

Requirements

- As a minimum, salmon feed suppliers should be GLOBALG.A.P. or BAP certified by an accredited certification body (CB).
- All ingredients used in salmon feed (marine and non-marine¹) shall have a traceability system in place.
 - For raw materials of marine origin including those originating from trimmings, as a minimum, this shall include the volumes per species, fishery identification and the country of origin of the raw material.
 - For ingredients of plant origin, this shall include the country in which crops are both grown and processed and specifically for soy, this shall include the volumes per municipality and biome.
- Marine raw materials shall not originate from IUU (Illegal, Unregulated and Unreported) catch or from fish species classified as endangered by the International Union for the Conservation of Nature (IUCN) red list.
- A significant proportion of Mowi's marine ingredients shall be derived from by-products and downgrades of food fish (i.e. trimmings²) these already being an integral part of the fishmeal and fish oil supply chain.
- The origin of fishmeal and oil will be targeted such that, from a nutritional perspective, the most fit for-purpose material is used, whether derived from forage fish or trimmings. To clarify by way of an example, omega-3 rich forage fish oil will be used in preference to trimmings derived material (which typically has a lower omega-3 content) if and when the resulting net consumption fish oil is lowest to achieve the required feed and ultimately, fish specification.
- Marine raw materials processed from whole fish shall be sourced from suppliers who adhere to responsible fishery management practices. This entails:
 - Prioritising fishmeal and oil that are responsibly produced according to the MarinTrust Standard and/or produced from fish derived from an MSC (Marine Stewardship Council) certified sustainable fishery and/or achieve Fish Source scores ≥ 6 in all categories.
 - As a second option (if volumes as specified above are unavailable), material can be sourced from fisheries that are engaged in time-bound fishery improvement projects (FIPs) that are recognised by the MarinTrust and / or the MSC e.g. The MarinTrust Improver Programme.
- Feed raw material producers are encouraged to develop awareness of their direct and indirect greenhouse gas emissions and to strive to reduce these.

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- Mowi supports efforts to increase the purchase of sustainably sourced vegetable raw materials and strengthen the collaboration with suppliers of agricultural raw materials to promote adherence to good agricultural practice:
 - Traders, agents and producers are encouraged to make reasonable efforts to engage with their own suppliers on the criteria for sustainable sourcing and best practice set out in this policy.
 - Mowi encourages suppliers to obtain recognised third-party certifications or when certifications are not available, independent verification, that demonstrates compliance with good agricultural practice.
 - Suppliers shall adopt recognised best agricultural practices with regards to storage, use and application of agrochemicals and organic fertilisers, with the aim to ensure appropriate nutrient management and eliminate runoff linked with improper fertiliser, pesticide and herbicide use.
 - Producers should encourage growers to adopt recognised best practices to maintain and improve soils; ensure water is used responsibly; and protect biodiversity.
 - Suppliers of feed raw materials shall comply with recognised crop moratoriums.
 - Vegetable raw materials like for example soya, shall not originate from areas of deforestation. The producer shall also ensure legal use of land and water; respect the needs and rights of smallholders and indigenous people; as well as protect workers' health and rights. Mowi accepts that these requirements are met for soya certified according to the ProTerra and Roundtable for Responsible Soy (RTRS; segregated module) standards or their equivalent.
 - All palm oil, if used in Mowi's feed shall come from certified sources such as the Roundtable on Sustainable Palm Oil (RSPO) or equivalent. Mowi accepts mass balance supply chain RSPO or a higher level of certification (segregated or identity preserved).

 - Mowi has a zero-tolerance approach to modern slavery and human trafficking. Feed raw material suppliers shall have in place due diligence controls to prevent modern slavery from occurring in their own operations and supply chains. Work shall be conducted on voluntary basis, freely agreed and with documented terms of employment. In addition, the Mowi Code of Conduct for suppliers shall be followed by our suppliers ([General conditions for purchase of goods and services - Mowi Company Website](#)).

 - Mowi continually seeks to diversify its raw material base with the intention of achieving independence from individual feed ingredients be they of marine origin e.g. fishmeal and fish oil or agricultural commodities e.g. wheat, soya, corn etc. Provided that they comply with our sourcing criteria and can be implemented without detriment to animal performance, welfare or quality, commercially viable, emerging feed materials are welcomed in our feeds in accordance with our policy for emerging feed ingredients (see our policy on emerging feed raw materials).

 - When diversifying the portfolio of non-marine raw materials used in our feed we will continue to support the inclusion of ingredients that originate from verified sustainable sources.
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Requirements Assessment

Mowi's risk-assessment (5 years' timeline) to identify how marine ingredients and soy availability going forward may impact production is presented below. Marine ingredients and soy products listed below are based on Mowi's feed composition in 2022.

The following categories are used in Mowi's risk assessment:

Price increase: linked with long-term (> 5 years) trends on average price development. Impact and likelihood assessed based on procurement price development after consultation with internal Mowi stakeholders from Procurement, R&D and Communication departments & IFFO reports. Low impact means stable and predictable prices; Medium impact means prices are subject to increase but alternatives are available; High impact means prices can increase quickly and significantly with no alternatives & influenced by outside-the-market forces. Mitigation actions to minimise risk: increase diversification of feed raw materials/ongoing R&D into emerging feed raw materials and the balancing of feeds with regards key nutrients sourced from supplements / additives.

PRICE increase risk		IMPACT		
		LOW	MEDIUM	HIGH
LIKELIHOOD	LOW			
	MEDIUM	SPC: Brazil	FM: NE Atlantic, Peru/Chile, USA, SE Atlantic & ; SPC: Europe*	
	HIGH			FO: Peru/Chile, SE Atlantic, Eastern Atlantic, USA, NE Atlantic

FM = fish meal; FO = fish oil; SPC = Soy Protein Concentrate; For more info on species per FM and FO, country of origin, volumes and % purchased, please see Mowi's annual report, planet section sustainable feed
* affected by the war in Ukraine

Nutritional quality: linked with long-term (> 5 years) trends on expected changes in the nutritional profile of the raw materials after consultation with internal Mowi stakeholders from Quality and R&D departments. Low impact means current and future nutritional profile of raw material matches and is expected to continue to match the nutritional needs of the fish. Medium impact means nutritional profile of feed raw material can change leading to worse fish performance/quality/welfare. High impact means nutritional profile of raw material does not match nutritional needs of the fish.

NUTRITIONAL QUALITY risk		IMPACT		
		LOW	MEDIUM	HIGH
LIKELIHOOD	LOW	FM: NE Atlantic, Peru/Chile, USA, SE Atlantic & FO: Peru/Chile, SE Atlantic, Eastern Atlantic, USA, NE Atlantic; SPC: Brazil & Europe		
	MEDIUM			
	HIGH			

FM = fish meal; FO = fish oil; SPC = Soy Protein Concentrate; For more info on species per FM and FO, country of origin, volumes and % purchased, please see Mowi's annual report, planet section sustainable feed

Certification: Impact and likelihood assessed based on availability of certification schemes after consultation with internal Mowi stakeholders from Procurement, Quality and Communication departments & MSC, MarinTrust and FIP consultation. Low impact means certification in place. Medium impact means working towards certification using recognised vehicles. High impact means no certification in place and not working towards it. Mitigation actions to minimise risk: Working with NAPA and FIP for blue whiting. Encouraging stakeholders to go for full MarinTrust and then, MSC.

CERTIFICATION risk		IMPACT		
		LOW	MEDIUM	HIGH
LIKELIHOOD	LOW	FM: Peru/Chile, USA; FO: Peru/Chile, USA; SPC Brazil		
	MEDIUM		FM: NE Atlantic, SE Atlantic & FO: SE Atlantic, Eastern Atlantic, NE Atlantic; SPC Europe*	
	HIGH			

FM = fish meal; FO = fish oil; SPC = Soy Protein Concentrate; For more info on species per FM and FO, country of origin, volumes and % purchased, please see Mowi's annual report, planet section sustainable feed

* affected by the war in Ukraine

Climate impact: Linked with GHG emissions of used feed raw materials. Data from global databases is used or data from our suppliers when validated by external LCA experts. Mowi continues to work with Soy protein Concentrate (SPC) suppliers from Brazil to improve their value chain and reduce their carbon footprint. Mowi uses 100%-deforestation free soy in its entire supply chain either from Brazil or Europe. See our integrated annual report (Planet section) for updates on how we work with our SPC suppliers. Low impact means lower carbon footprint relative to other feed raw materials. Medium impact means similar carbon footprint relative to other feed raw materials. High impact mean higher carbon footprint relative to other feed raw materials. Mitigation actions to minimise risk: Continue to work with SPC suppliers from Brazil on primary GHG data and increase sourcing from Europe.

CLIMATE CHANGE risk		IMPACT		
		LOW	MEDIUM	HIGH
LIKELIHOOD	LOW	FM/FO:USA		
	MEDIUM		FM: NE Atlantic, Peru/Chile, USA, SE Atlantic & FO: Peru/Chile, SE Atlantic, Eastern Atlantic, USA, NE Atlantic; SPC: Europe/Brazil	
	HIGH			

FM = fish meal; FO = fish oil; SPC = Soy Protein Concentrate; For more info on species per FM and FO, country of origin, volumes and % purchased, please see Mowi's annual report, planet section sustainable feed

Reputation: Linked with stakeholder’s perception of feed raw materials used. Several mitigation strategies are used when faced with reputational risks such as engagement with suppliers through our Suppliers Relationship Management and Fisheries Improvement Projects (FIPS). Low impact means no issues identified which may affect the reputation of this feed raw material. Medium impact means some issues raised from a public perception point of view or country of origin as a medium/high risk profile from a social/political level. High impact means material risks linked with geopolitical risks with country of origin, deforestation or other consumer sensitive topics. Mitigation actions to minimise risk: encourage stakeholders to embrace/keep certifications; increase sourcing of SPC from Europe has climate benefits but due to the current geo-political situation we consider sourcing from Russia a high reputational impact.

REPUTATIONAL risk		IMPACT		
		LOW	MEDIUM	HIGH
LIKELIHOOD	LOW	SPC: Brazil; FO: Peru/Chile		
	MEDIUM	Fo/FM: NE Atlantic	FM: USA, SE Atlantic	
	HIGH			SPC Europe (Russia)*
<small>FM = fish meal; FO = fish oil; SPC = Soy Protein Concentrate; For more info on species per FM and FO, country of origin, volumes and % purchased, please see Mowi's annual report, planet section sustainable feed * affected by the war in Ukraine</small>				



Footnotes:

(1) Data on Mowi's consumption of fishmeal, fish oil and the use of fish trimmings plus supporting indices including FIFO, FFDRm and FFDRo are available in our Integrated Annual Report available here [Reports - Mowi Company Website](#)

(2) Arbitrarily directing trimmings to a specific part of the value chain e.g. by unilaterally increasing the share of trimmings within our own FM and FO purchases does not lead to improved sustainability in the "big picture" because the same amount of wild capture raw material will still enter the market but, it will simply be used by other stakeholders. This Unilateral action can lead to additional complexity in segregation and redistribution without increasing net utilisation or efficiency. Instead, Mowi encourages more trimmings in total (tonnes) to be allocated to either FM / FO production or direct integration into feeds e.g. as ensiled material and less to be wasted having been disposed of at either the, capture, processing or even domestic levels.

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Note: Some of our stakeholders are interested on Protein Efficiency Ratio (PER) or Protein Conversion Efficiency. Protein efficiency ratio (PER) is defined as the gain in animal weight as a function of crude protein intake ($PER = \text{gain in weight, g} / \text{protein consumed, g}$). PER is variously affected by factors including but not limited to, feed conversion ratio (FCR) and the protein content of the feed. Based on typical assumptions, the PER of Mowi's salmon is approximately 2.2. This value is a general assumption and will vary across the different Mowi farming operations according to variables including: production model e.g. conventional vs organic feeds; feed composition e.g. the feed's protein digestibility; and size of the fish at harvest.

