

## DSM's position on Sustainable Biomass

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**At DSM we're dedicated to securing the future availability of natural resources and unlocking more value from the limited resources we have. We strive to help society transform to a circular, bio-based economy that provides food, materials and energy in a way that is cyclical and regenerative by design – very much the opposite of our current linear economy where so much is wasted. Bio-based products, derived from sustainable biomass, will reduce the dependency on fossil fuels and contribute to tackle climate change. Sustainable bio-based products and materials replacing traditionally fossil based products are a strategic focus area to DSM, as part of the purpose driven strategy, to create Brighter Lives for all.**

### Concerns and risks related to biomass

We recognize the public concerns and risks related to the use of biomass: food security, land use, biodiversity loss, deforestation, and human rights. DSM is convinced of the need for and benefits of using biomass but only if we use this biomass in a responsible way.

We believe that the current and future needs for food, energy and materials can be met in a responsible way, provided that available land is optimally used, and that all parts of the plant, non-edible crops and agricultural residues are used in the most efficient way.

### What is biomass?

Biomass is derived from organic material, such as trees, plants, and agricultural and urban waste. Biomass can be used as a raw material to produce bio-based products such as chemicals, materials and fuels, and to produce power and heat.

One can distinguish between first, second and third generation renewable feedstocks. First generation feedstocks comprise plant oil, starch and sugar, which can also be used in the food chain. Second generation feedstocks comprise non-edible plant material and residues from forestry, agriculture and industry (including municipal waste), and energy crops that do not directly compete with food crops. Third generation feedstocks are derived from algae that do not require fertile agricultural land.

### Our responsibility

We are convinced that we need to use the full potential of sustainable biomass to transform to a circular, bio-based economy. We aim to use biomass for the highest possible quality application. For DSM the production of food must take priority over the use of biomass for bio-based industrial products and energy.

We believe that over time, bio-based products will predominantly be made from non-edible feedstocks and potentially from third generation feedstocks. However, for a period of time, plant oils, starch and sugar as feedstocks are needed as a steppingstone towards use of second-generation technology.

DSM always uses validated, internationally accepted and standardized methods (like Life Cycle Assessment) to assess the environmental and social impact of biomass utilization to ensure we make the best choices when it comes to sustainability trade-offs. Decisions with respect to product and process development are made based on such assessments.

### Responsible Sourcing of Biomass

Under DSM's [Global Supplier Sustainability program](#), we take sustainability explicitly into account in the process of selecting and evaluating our suppliers. We require all suppliers to trace the companies, plantations, fields and mills along their supply chains. We understand that sourcing biomass ingredients in a more traceable, transparent and sustainable way can be complex and challenging. Therefore, we support and promote suppliers who show real commitment to tackling those challenges.

DSM sources limited amounts of palm oil, soy derivatives and wood fibre. For these commodities, DSM supports globally recognized sustainability certifications (such as the Roundtable for Sustainable Palm Oil (RSPO), Greenpalm, Roundtable of Responsible Soy Association (RTRS), and Forest Stewardship Council (FSC)). We also recognize certifications for general industrial end-uses (such as ISCC Plus and RedCert), where available.

DSM's objective is to use 100% RSPO certified sustainable palm oil and palm oil products using RSPO "Mass Balance" supply chain models. DSM also aims to have all of our production sites that use palm oil or palm oil derivative products RSPO certified.

### Joint responsibility

DSM is convinced that the bio-based economy can only develop in a responsible way if consumers, businesses and governments support and stimulate investments and make decisions based upon comprehensive sustainability assessments. It is essential that internationally recognized (legal) frameworks, standards and certification systems are put in place through multi-stakeholder engagements. DSM actively campaigns for these goals and seeks to take a proactive leading role in international dialogues, as a member of the Bio-based Industries Consortium, ISCC and RSPO. We refer to the [WBCSD CEO Guide to the Circular Bioeconomy](#) and the Ellen MacArthur Foundation [CE100 Renewable Materials for a Low Carbon and Circular Future report](#), where we jointly collaborate with other businesses and organizations to advocate for a circular bio-based economy.

### DSMs (future) bio-based portfolio

At DSM bright science plays a key role in realizing the sustainable use of biomass. In DSM's current and future portfolio, bio-based products play an important role. Some examples include:

- *CanolaPRO*<sup>™</sup> plant-based protein, DSM's innovative technology turns an inedible agricultural byproduct of rapeseed, a major crop used all over the world for cooking oil and feed products, into a valuable plant protein for a wide range of uses in food.
- *EcoPaXX*<sup>®</sup>, a high-performance polyamide based on the tropical castor bean plant offers outstanding performance, including excellent chemical resistance and low moisture absorption, combined with a very high melting point (highest of all bio-plastics) and high crystallization rate.
- *Bio-based Stanyl*<sup>®</sup>, a high-performance polyamide based on mass balancing of bio-waste, offers outstanding performance, excellent chemical resistance combined with a high melting point.
- *Dyneema*<sup>®</sup>, the world's strongest fiber<sup>™</sup> and now the first ever bio-based ultra-high molecular weight polyethylene fiber. This high-performance material is based on mass balancing of renewable feedstock.

- *Sustainable solution for biofuels*, which enable fuel production from biomass from agricultural residues. We have developed patented bioconversion technologies (yeast and enzymes) for various feedstocks and processes (including starch-based and cellulosic) in the biofuels industry.
- *Delvo*<sup>®</sup>Plant family of enzymes, which deliver a better taste, texture and smoother mouthfeel to plant-based drinks. *Delvo*<sup>®</sup>Plant enzymes also unlock natural sweetness – fine-tuning the sugar profile of your products to meet different regional consumer preferences.
- DSM offers a wide portfolio plant-based dairy alternatives, including solutions to improve taste, texture, sweetness, and nutritional value of plant-based drinks and dairy alternatives.

Furthermore, DSM is committed to decreasing its reliance on fossil energy in its own operations and building bio-based infrastructure for future generations. An example is the on-site biomass heat and powerplant in Sisseln, Switzerland, which supplies steam to the production facility of DSM Nutritional Products and other non-DSM production sites. The origin of the woodchips used are restricted to locally sourced forestry residues (such as tops, branches, bark, sawdust) that have no other uses. To ensure the used woodchips are considered truly sustainable and contribute effectively to greenhouse gas reduction, we used the criteria of the Roundtable on Sustainable Biomaterials and incorporated these in the agreement.