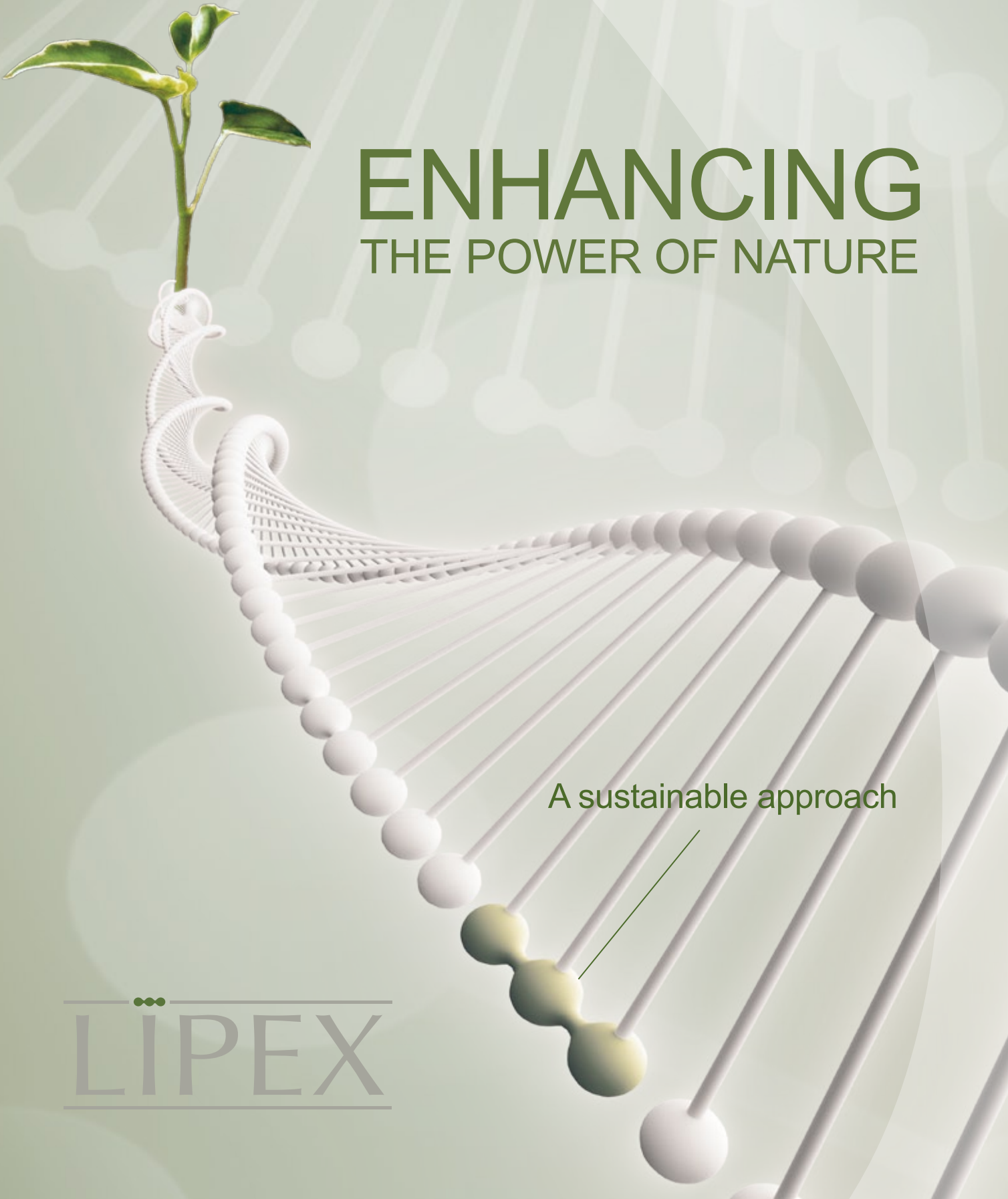


ENHANCING THE POWER OF NATURE

A sustainable approach

LIPEX



Lipex emollients and functional ingredients

– sustainable alternatives for the beauty and personal care industry

Sustainability is simple. Make sure that you and your children can make a living, improve life every day and enjoy all the wonders our planet can offer. This requires that you consider your actions in terms of environmental impact, social development for you and your neighbours, and the economy for you and the society. So, sustainability is also difficult – too often the three dimensions are in conflict, and you disregard one of them in favour of another. But everyone can contribute to an improvement step by step and all efforts combined, we can make the world more beautiful – and sustainable.

For the beauty and personal care industry vegetable oils offer a good starting point for finding more sustainable solutions for creative and high performance formulations. They are made from renewable raw materials, purified using gentle methods and customised to give high functionality in your formulations. They are also safe, both for the user and for the environment. Many vegetable oils also offer tools for social and economic development, especially in rural communities where other options are few.

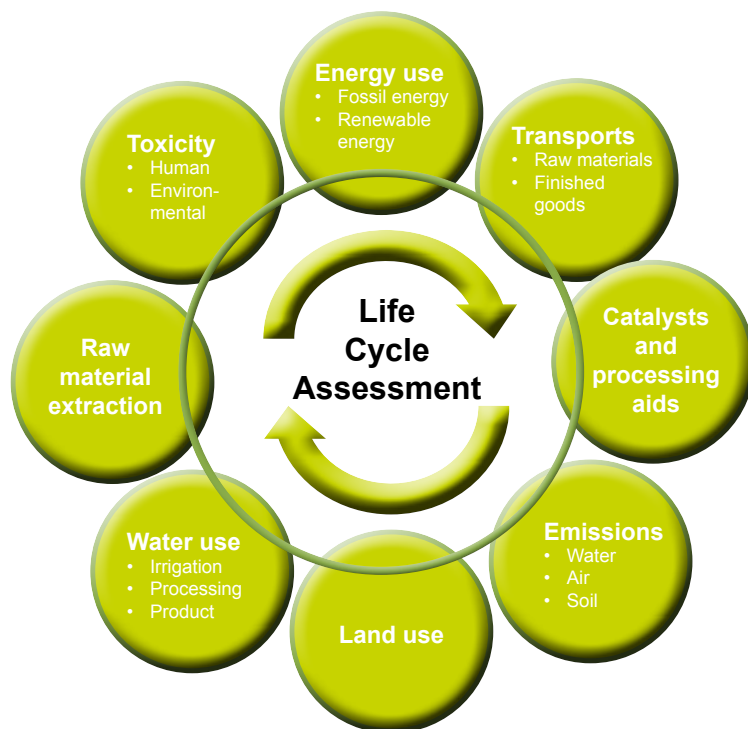
Life cycle analysis is a tool for sustainable development

Sustainability is often discussed in terms of Life Cycle Assessment: start in the field, collect your raw materials, process them, use them and release them back to the environment. In a sustainable society, this is a real cycle – whatever we take out from Nature, we also give back after having used it. A full Life Cycle Assessment is complex and difficult to make so let's do a simplified one: start with assessing parameters that you can control, and select the best option.

For vegetable oils, we can discuss the growing of the oilseeds, the extraction of the oil from the seeds, purification and modification processes and the user aspects.

Vegetable oils are derived from fruits, seeds, nuts and kernels of different plants. The plants themselves use the oil as a nutrient for starting up the new generation: the seedlings and plantlets need extra energy to get them growing. We can collect the seeds, crush them and press out the oil. The residual can be used for making proteins and carbohydrates for human

Life Cycle Assessment is the backbone for sustainability assessments



consumption or to feed our domestic animals. When the pressing operation is inefficient, for example when the oil content in the seed is low, we can also use a solvent to extract the residual oil. In this way we improve the total yield of valuable materials from the seed and decrease the land and resource utilisation in the growing step. And yes, the solvent is efficiently removed and recycled in the process, leaving a pure and safe ingredient.

Energy saving drives improvements in oil processing

Purification of the oil is also necessary. Environmental pollutants such as heavy metals from the soil and from fertilisers, intentional and unintentional pesticide residuals, contaminants from vehicle and heating exhausts and so on, all end up in the raw materials and need to be removed. At AAK we excel at purifying the oils from these contaminants, leaving an oil which is suited for use in infant nutrition and pharmaceutical applications. Users in the beauty and personal care industries get this quality for free – it is our standard. We have developed energy-efficient processes and, as much as possible, use renewable energy, for example from biofuels and hydropower. All Lipex in-

gredients are produced using 90% renewable energy, a result of our long-term commitment to energy efficiency.

Functionality by eco-design

Sometimes the oil needs modification before it is suited for use in cosmetics. Again, our processes are designed to be energy efficient and produce the functionality improvement we are looking for. This is eco-design before the word was even invented!

Purity, safety and functionality are keywords we often use to describe the Lipex ingredients. Purity – the absence of contaminants – is essential for safety but also for better stability and shelf life. Functionality, both in the formulation but also on the skin, is a must: shelf life, consistency, skin feel and moisturisation are typical benefits when formulating with Lipex ingredients.

Our raw materials

We have two favourite raw materials: shea butter from West Africa and rapeseed oil from Scandinavia. Both have a high value from both functionality and sustainability points of view.

Rapeseed oil (Canola oil) is a plant that grows in colder climates and gives an oil rich in skin nutrients: skin friendly fatty acids, protective vitamin E and skin healing phytosterols. After extracting the locally farmed oil, we can use the residual proteins to feed cattle and poultry, while the oil finds its uses in foods and cosmetics. From the rapeseed oil we have developed highly stable base emollients and bioactives with documented protective and skin healing function. Lipex Bassol C, the base emollient offers a renewable and sustainable alternative to mineral oil in many cosmetic applications. Lipex PreAct, the bioactive emollient, gives protection against damage caused by UV radiation and harsh household chemicals. Of course, both are safe ingredients for the user and for the environment, closing the life cycle once more.



Shea Butter creates opportunities for sustainable development

Shea butter is today a popular ingredient in most beauty and personal care applications, from skin care via colour cosmetics to hair and body cleansing. AAK has pioneered the development of shea butter into the versatile ingredient it is today, tailoring products to meet

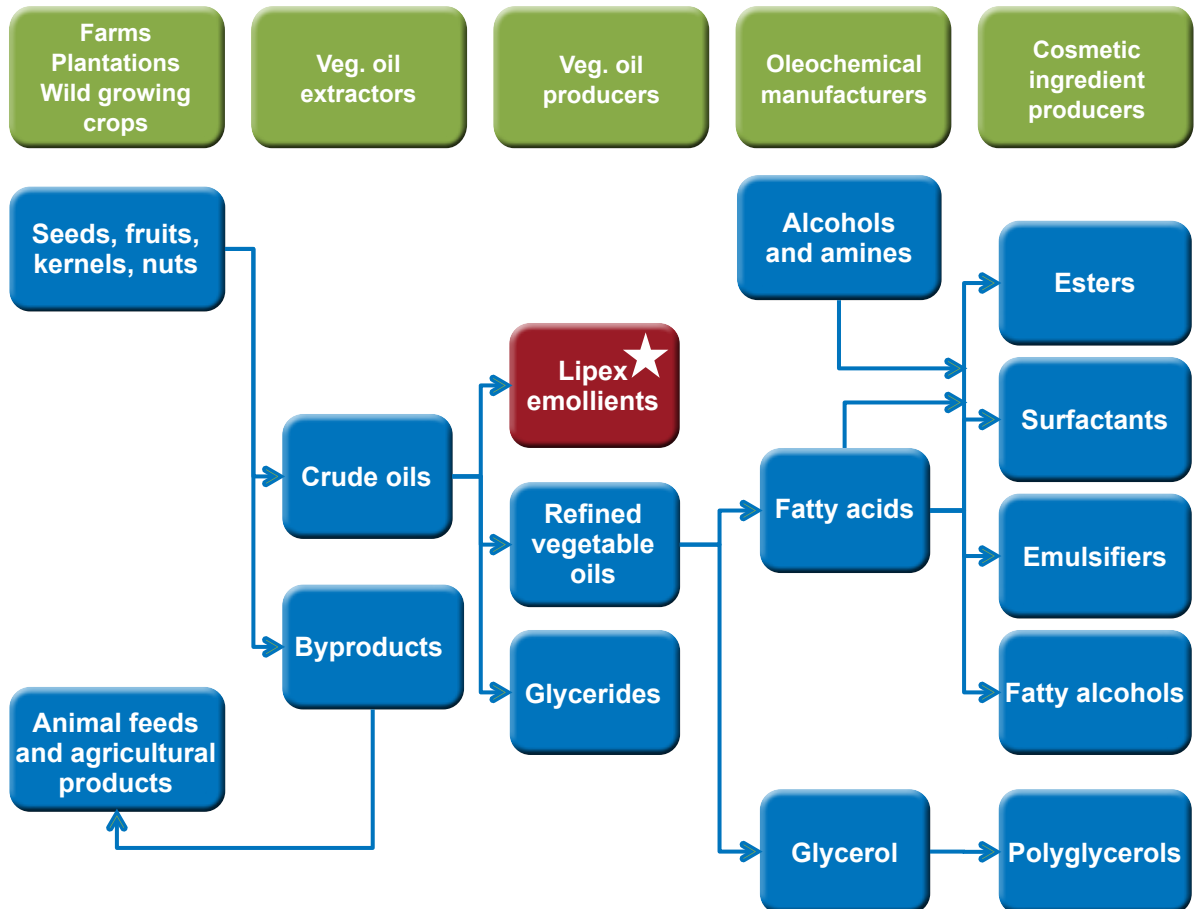
the requirement in all applications. Today we can safely say that there is not an application where you cannot use shea butter!

Shea butter is also an important tool for social and economic development in West Africa as it provides an extra income for the families,

especially for the women. AAK works for improving the quality of the shea kernels by local education and training as well as for transparency and efficiency in the supply chain.

The unique properties of shea butter have resulted in Lipex Shea, a shea butter with rapid

Vegetable oils can be used directly in cosmetic formulations but are also important raw materials for derivatives



Shea butter is an important crop for the economic and social development in West Africa, as well as a means to protect the environment.

Rapeseed oil / Canola oil

Botanical name:
Brassica campestris, Brassica napus

- Rapeseed has been grown in Europe since the 13th century
- Rapeseed has become the special oil plant of Northern Europe. Outside Europe the dominant producers are China, India, Canada and Australia
- Total world production is about 23 million tons of rapeseed oil per year
- Rich in omega fatty acids, tocopherol and phytosterols

- Shea trees are wild-growing and cannot be cultivated in plantations
- The life cycle of the shea tree is more than 200 years; the trees start to produce fruits at 20–25 years
- Shea trees do not infringe on biodiversity or displace indigenous people
- Shea trees are very drought tolerant and provide a long-term protection against desertification (Sahara)



Locally grown rapeseed oil has been developed by AAK into versatile ingredients, offering both base emollients and bioactive additives.

solidification, Lipex 205, the liquid shea butter for easy handling, and Lipex Sheasoft, the high melting point shea butter with high moisturisation capacity. The bioactive triterpene esters are utilised in Lipex Shea Tris to provide skin healing properties and to enhance skin elasticity and well-being.

Sustainable future for oleochemicals based on RSPO Palm oil

Finally, vegetable oils are also used as raw materials for further development of functional ingredients such as esters and surfactants. These

oleochemicals are to a large extent based on palm oil and palm kernel oil. Palm oil is a high-yielding oilseed and requires little in terms of fertilisation and pesticide use. However, it grows in the tropics, and huge areas of rain forest have been cleared to grow palm, so concerns for the sustainability of the palm oil industry led to the formation of RSPO, the Roundtable for Sustainable Palm Oil, with AAK as one of the founding members. Today various options for sourcing sustainable palm oil are available. One of the easy-to-use options is the Green-Palm, a certificate trading operation that offers

a book-and-claim mechanism for supporting the sustainable palm oil producers.

So whatever type of cosmetic products you are making and whichever consumers you are targeting, vegetable oils offer a truly sustainable way of formulating for function and attractiveness. With Lipex ingredients you don't have to worry about stability, skin benefits or sensory properties. Just release your creativity in formulation and work for a sustainable future. And if not you, then who?



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