



# SUSTAINABILITY AT MEGGLE

WHITEPAPER 2024





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## Imprint

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# 1. Introduction

Sustainability is becoming increasingly important in all sectors of the industry. In recent years, MEGGLE's business has been significantly impacted by developments in the field of sustainability, particularly with regard to energy efficiency and climate change. Political crises have exacerbated the impacts of these topics. Stakeholders are not only demanding transparency in terms of environmental, social and corporate governance (ESG) standards but are also actively engaging with us to ensure that we are committed to sustainable and responsible business practices.

Governments, too, along with regulatory bodies, are imposing stricter regulations as part of the European Green Deal, such as the Farm to Fork Strategy, the energy transition to renewables, the EU Taxonomy Regulation, the CSRD and the German Supply Chain Due Diligence Act. Every day we are inundated with media reports about the severe effects of climate change, environmental crimes, deforestation, species extinction, marine and land pollution from waste, and the contamination of water sources.

Despite this negative narrative, we at MEGGLE are committed to acting responsibly and managing our business with a positive, proactive, far-sighted, yet realistic and holistic attitude to the many ESG challenges that lie ahead. We have updated our sustainability strategy accordingly and identified areas for action to mitigate our risks and to create opportunities. Our strategic fields of action are underpinned by technological feasibility assessments and sound financial planning for significant future investments. Solid economic returns are an indispensable prerequisite for meeting all potential challenges associated with our key strategic areas:

- Phased energy/carbon/climate transformation concept
- Mitigation plan to prepare for demographic labor shortages
- Mitigation plan for quantitative changes in dairy supply chains
- Preparation for compliance with CSRD reporting for the entire production

All of these efforts are closely tied in with our concerns towards our staff, who remain the most important asset of our company. It is only with their responsible commitment that MEGGLE can successfully address the sustainability challenges that lie ahead of us.

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## 2. Pharmaceutical industry – its stance on sustainability

An increasing demand for sustainability in all spheres of life becomes more and more noticeable, as climate change becomes more severe. The pharmaceutical and other major industries are rethinking their manufacturing processes in order to turn carbon neutral and to reduce the consumption of fresh water and of energy. It is important to generate a minimal environmental impact by using renewable energy and by reducing greenhouse gases and all other emissions. The sustainability of pharmaceutical companies can be upgraded by improving their manufacturing processes, enhancing their supply chains and investing in modernization and human resources.<sup>1</sup>

To succeed in all expectations when it comes to sustainability, companies of all different sectors are transforming their business models by prioritizing sustainability in their core operations and meeting the growing demands of key stakeholders and conscious customers. However, it is often forgotten that when it comes to sustainability, one important and complex aspect is the ability to monitor, track, and report on companies' carbon footprint, energy transition goals, and environmental, social and governance (ESG) data. Without transparency and traceability no goals can be achieved.<sup>2</sup>

Therefore, it is important for companies to invest not only in modernizing their manufacturing processes or in renewable energies, but also in monitoring technology to put their business sustainability goals into verifiable action, in order to make a positive impact on the planet while ensuring long-term financial stability.



## 3. Sustainability at MEGGLE GmbH & Co. KG

### 3.1 Sustainability policy, procedures and practices

We have an integrated management approach for all material sustainability issues.

<b>Sustainable philosophy</b>	Our <b>sustainable philosophy</b> from the very beginning is focused on social responsibility and stable, long-term and future-oriented business practices. Our vision has not wavered since 1887, and our actions today are still guided by social responsibility and a sustainable business outlook.
<b>Sustainability policy</b>	<p>Our <b>sustainability policy</b> outlines our management approach integrating sustainability issues into the way we run our business. This includes the analysis of material sustainability topics, assessment of risk and opportunities and clear responsibilities.</p> <p><b>Continuous development</b> of our sustainability management system and strong partnerships with our internal and external stakeholders help us to meet the demands of the future.</p>
<b>Sustainability strategy</b>	<p>Our <b>sustainability strategy</b> is based on</p> <ul style="list-style-type: none"><li>• achieving commercial success through sound business models</li><li>• sustainable investments (e.g. transition from fossil fuel to renewable energy consumption)</li><li>• taking long-term responsibility for environmental, social and governance (ESG) issues throughout our value chain</li></ul> <p>This is an integral part of our economic behavior and the basis of our long-term business success. This requires foresight and can only be achieved through reliable collaboration, dialogue and joint efforts with our stakeholders.</p>
<b>Dynamic review process</b>	<p><b>Dynamic update</b> of our long-term business strategy and integrated sustainability strategy including:</p> <ul style="list-style-type: none"><li>• stakeholder dialogue</li><li>• sustainability risks and material topics</li><li>• strategic action fields</li><li>• Assign projects, budget and investments</li></ul>
<b>Defined responsibilities</b>	<p><b>Leadership and overall responsibility</b></p> <ul style="list-style-type: none"><li>• Board of Executive Directors of the MEGGLE Group GmbH</li><li>• Chief Operating Officer as senior position for sustainability</li></ul> <p><b>Responsibility for the sustainability management system</b></p> <ul style="list-style-type: none"><li>• Sustainability department</li></ul> <p>Recognizing the cross-sectional nature of sustainability management, we have clear defined responsibilities in each legal entity.</p>
<b>Integrated management system approved by the senior management</b>	<p>Policies form an integral part of our management handbook, which is approved by the Senior Management.</p> <p>All our policies, management systems and standards are part of an <b>integrated management system</b>, which includes the management of sustainability issues. Verification is carried out through an internal audit system, external audits and certifications.</p>



## Management standards

MEGGLE GmbH & Co. KG is governed by a large set of **management standards** that guide our day-to-day activities and help us implement our issue-based management policies:

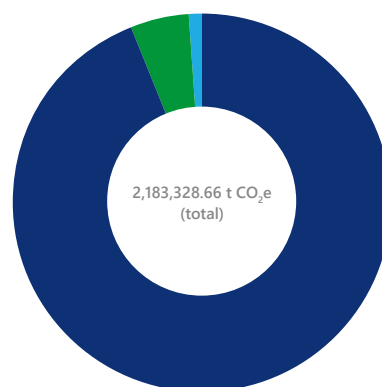
- ISO 9001 (Quality)
- ISO 14001 (Environment)
- ISO 45001 (Health and Safety)
- ISO 50001 (Energy)
- Sedex Member and SMETA 4-Pillar-Audit (Sedex Members Ethical Trade Audit)
- IPEC-PQG GMP Guide Pharmaceutical Excipients
- EXCiPACT (GMP and GDP for Pharmaceutical Excipients)
- Halal for defined lines
- Kosher for defined lines
- Vegan label

## 3.2 Environment

### 3.2.1 Greenhouse Gas (GHG) emissions and energy management

We are committed to reducing the Greenhouse Gas (GHG) emissions. We plan to reduce gas consumption and energy usage.

#### Corporate Carbon Footprint (CCF) of the MEGGLE group of companies (in line with the GHG protocol)\*



- Scope 1 (4.9%) 107,065.28 t CO<sub>2</sub>e
- Scope 2 (market-based) (0.5%) 10,656.23 t CO<sub>2</sub>e
- Scope 3 (94.6%) 2,065,607.15 t CO<sub>2</sub>e



- 1 of which non-milk-based materials (8.4%) 184,007.75 t CO<sub>2</sub>e
- 2 of which milk-based materials (82.5%) 1,800,761.82 t CO<sub>2</sub>e

\* CO<sub>2</sub>e-Footprint of all MEGGLE production sites (2022), details to find below point 6.

#### Commitment to reduce the total Greenhouse Gas (GHG) emissions

Our **commitment to reduce** Scope 1 and 2 **energy, climate and carbon strategy** applies to all production sites (details to find below point 6.) of the MEGGLE group and is an absolute carbon emission reduction target.

Our 2032 climate objective for carbon emissions\*

**-25%**

\* Baseline year: 2022





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**Scope 1 and 2:  
Planned reduction measures**

MEGGLE group's carbon emissions from Scopes 1 and 2 are mainly generated by our powder drying operations.

**Current situation**

It takes energy to manufacture and ensure the safety of our products – to run our machinery and for heating, drying and cooling processes. For efficiency reasons, we operate our own combined heat and power plant in Wasserburg. It has excellent energy efficiency. However, until now, for technical reasons, it had to be run on natural gas.

**Outlook**

- Strategic decision to embark on a **hydrogen transition path** has been made.
- We have decided to invest in a **biogas plant**, which will also enable us to use production residues for energy generation.
- Besides these major changes, we will continue to manage **energy-saving projects**

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**Scope 3:  
Planned reduction measures**

Milk ingredients account for 82.5 % of our CCF in the MEGGLE group. A reduction of Scope 3 emissions is essential for reaching the EU's aims as set out in the European Green Deal: reduction of GHG emissions to 55 % below 1990 levels by 2030 and to net zero by 2050

**Challenges** due to high complexity of assessment must be solved to achieve this goal:

- Systems for calculating the carbon emissions associated with milk production are far from standardized within the peer. This makes a legitimate comparison impossible.
- Primary data instead of secondary data are still not used by all Scope 3 peers for detailed calculations.
- Reduction measures are currently still being identified and tested in specific areas.
- High economic burden for farmers in order to reduce emissions.
- Significant additional costs of needed measures must be balanced with the general demand for affordable food.
- Complementary Effect: Positive environmental effects of milk production are often not yet included in overall calculation – procedures still need to be developed.

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**Scope 3:  
Planned reduction measures****Strategic action fields**

- **Close collaboration** with stakeholders (e.g. customers, suppliers, governmental bodies, dairies associations) to achieve regionally appropriate carbon reduction targets and realistic measures for our dairy-based raw materials.
- **Increase data accuracy:** We are progressively refining our Scope 3 emissions database from literature-based values to representative primary data from our suppliers.

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### 3.2.2 Water management

We are committed to reducing water consumption.

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**High importance of  
water usage at MEGGLE**

**Water** is one of the most important resources we use at MEGGLE. Although there is no risk of water scarcity in the regions we operate in, we are committed to sustainable and efficient water management.

Drinking water is very important for producing safe, high-quality products. We mainly use water for purification steps in lactose production, and in large quantities for cleaning and cooling purposes.



### High quality standards

- Fresh water usage complies with the **European Drinking Water Directive** or equivalent national regulations.
- Verification of water quality is an essential part of our preventive food safety management system.
- **Waste water discharge:** We have our own wastewater treatment plant for all waste water from production.
- No water is discharged into the environment without having undergone controlled treatment.

### Negative total water consumption

According to the **GRI calculation of water consumption** of the production sites in the MEGGLE group, we achieve a negative total water consumption as MEGGLE GmbH & Co. KG and MEGGLE Cheese GmbH evaporators concentrate whey and milk. The condensate from the evaporators is registered as water discharge, which results in negative water consumption.

### Water consumption

**Water consumption** of all MEGGLE production facilities\*

2022\*\*

**-247,928 m<sup>3</sup>**



\* details to find below Point 6

\*\* Negative water consumption due to evaporation of liquid dairy materials. None of our production sites source water from water-stressed areas.

### Water savings and water reuse in the past years

#### Water savings

By 2023, water consumption at our production site MEGGLE GmbH & Co. KG in Wasserburg was reduced by 23% as compared to 2016.

**Water reuse** has been increased in the past years:

We have made progress in reusing water. At present, we have achieved an average reuse rate of 39% freshwater savings at MEGGLE GmbH & Co. KG, 30% for all MEGGLE production sites\*.

\* 6 MEGGLE production sites, details to find below Point 6

### Water reduction target

Our 2025 **water target** (MEGGLE GmbH & Co. KG)\*

**-25%**

of freshwater consumption

**-23%**

reduction achieved so far



\* Baseline year 2016

### Reduction measures

The established **reduction measures** of the past years are ongoing and will be continued.

Please check out our sustainability report on our homepage for details on reduction measures, such as for example our investment in the expansion of our existing wastewater treatment plant.



### 3.2.3 Waste management

On-site and downstream waste management: we are committed to keeping the achieved levels.

#### On-site waste management

MEGGLE produces waste directly from its own operations, such as food waste, sewage sludge, packaging waste, construction and maintenance waste.

The consistent **sorting and disposal of waste** has been a long-standing practice at MEGGLE GmbH & Co. KG and is subject to strict internal management. Waste disposal is organized in accordance with local legal requirements and is carried out by approved service providers.

#### Downstream waste management

MEGGLE products generate waste from packaging materials, food waste from transport damage and food waste generated by the consumers of our products.

#### Food waste management

Food waste is often a by-product of food production, which cannot be completely avoided and is subject to strict regulations.

We systematically analyze our **food waste** to identify ways for **reduction** and develop sustainable options for alternative usage. Following a rigorous quality assessment scheme, by-products are safely used as animal feed or, where waste is downgraded for technical purposes or energy generation, through biogas production. The amount of food waste generated at our production sites\* is very low compared to the food-industry average.

\* 6 MEGGLE production sites, details to find below point 6

#### Food waste management target

#### Our strategic action fields

Food waste\*

Keep food waste at the achieved level of

0.9%

Keep the food waste ratio diverted from disposal at the achieved level of

~ 90%

\* 6 MEGGLE production sites, details to find below point 6

#### Waste management target

#### Our strategic action fields

Waste\*

Keep the ratio of waste diverted from disposal at

~ 70%

\* 6 MEGGLE production sites, details to find below point 6



### 3.3 Social

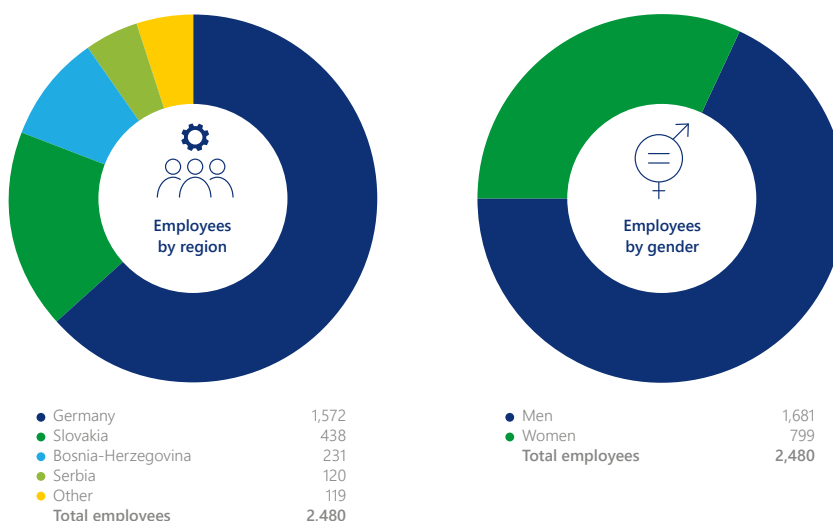
We are committed to complying to international standards on human rights. We value diversity, equity, equal employment opportunities, workplace safety and fair wages.

#### Social standards and policies

We comply to international standards on human rights. Please check our **statement of principles** which can be found on our Homepage for more details. We expect our employees and business partners to adhere to the same standards. At MEGGLE GmbH & Co. KG we have implemented a Code of Conduct for all employees. We require our suppliers to respect human rights based on the amfori BSCI code.

#### Diversity, equal opportunities and fair wages

Employee structure 2022\*



\* Employee structure relevant for the entire MEGGLE group

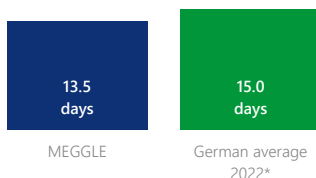
#### Our strategic action fields

- Promoting our employees regardless of their age, gender or ethnicity with a commitment to eliminating any form of discrimination within our company.
- Embracing social and individual diversity. Encouraging women to progress in traditionally male roles, such as production management

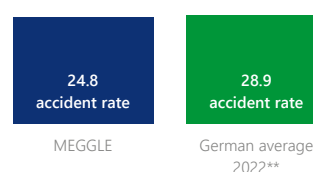
#### Workplace safety

Our health performance compared to the German average

Illness rate (days lost per employee)



Accident rate per 1,000 FTE (> 3 days lost)



\* German Statutory Accident Insurance (DGUV)

\*\* German Employers' Liability Insurance Association for the Food and Catering Industry (BGN)

Applicable to MEGGLE production sites, details to find below point 6.

- **Health and safety** is a high priority in our organization.
- Systematic risk assessments are carried out for various activities, operating materials and hazardous substances and if necessary measures are implemented. At the organizational level, we have a health and safety committee and health and safety training is conducted for employees, health and safety officers and first aiders.



### 3.4 Governance

<b>Legal entity</b>	MEGGLE GmbH & Co. KG is a subsidiary company of MEGGLE Group GmbH and part of the MEGGLE group of companies.
<b>MEGGLE sustainability report</b>	<b>Sustainability report</b> ( <a href="https://www.meggler-group.com/en/sustainability">https://www.meggler-group.com/en/sustainability</a> )
<b>Communication of commitment</b>	<ul style="list-style-type: none"> <li>The sustainability report is publicly available on our homepage for all stakeholders.</li> <li><b>Our statement of principles</b> (human rights and sustainability standards) is publicly available on our homepage.</li> <li>A close dialogue with all our stakeholders is conducted on sustainability topics.</li> <li>The code of conduct is communicated to all employees.</li> <li>Questions on sustainable topics can be addressed by internal and external stakeholder to <a href="mailto:sustainability@meggle.com">sustainability@meggle.com</a></li> </ul>
<b>Monitoring adherence to sustainability policy and objectives</b>	<ul style="list-style-type: none"> <li><b>Compliance management:</b> Responsibility for compliance matters is clearly assigned and embedded in our organizational structure. Compliance risks are regularly assessed, potential issues and deviations are investigated and are dealt with consistently in accordance with the established framework and the law.</li> <li><b>Supplier assessment:</b> As part of our supplier qualification process, we request information on management systems and compliance with environmental and social criteria.</li> </ul>
<b>Whistleblower system</b>	MEGGLE has established an internal and external <b>whistleblower system</b> ((EU) Directive 2019/1937) to learn about potential integrity issues and to provide information on policies or to take action to remediate ethical or business issues. ( <a href="https://www.meggler-group.com/en/whistleblower-guideline">https://www.meggler-group.com/en/whistleblower-guideline</a> )

### 3.5 Supply Chain

We are committed to raising awareness within our own company that environmental standards and human rights in the supply chain are part of our responsibility. We expect and seek to develop environmental awareness and ethical behavior in our suppliers.

<b>Code of conduct for suppliers</b>	We expect our suppliers to adhere to the same standards we do (see section 3.3 for a list). We require our suppliers to respect human rights based on the amfori BSCI code.
<b>Supplier risk assessment</b>	We request information on management systems and compliance with environmental and social criteria. In addition, the <b>German Supply Chain Due Diligence Act</b> has been fully implemented (e.g. risk assessment, measures).
<b>Local suppliers</b>	We have a high percentage of locally based suppliers. We define an external supplier as "local" if the counterparty to whom we pay is located in the same country as the buyer (MEGGLE). At MEGGLE GmbH & Co. KG we spent 73 % of the procurement budget 2022 on local suppliers.
<b>Certification QM-Milch</b>	All our raw milk suppliers in Germany that supply directly to us, are audited or certified by the German QM-Milch e.V. with the <b>QM-Standard</b> ( <a href="https://qm-milch.de/">https://qm-milch.de/</a> ). Since January 1, 2024, all soy products and feed containing soy in the QM milk system must meet the requirements of recognized standards for the procurement of sustainable and deforestation-free certified soy.





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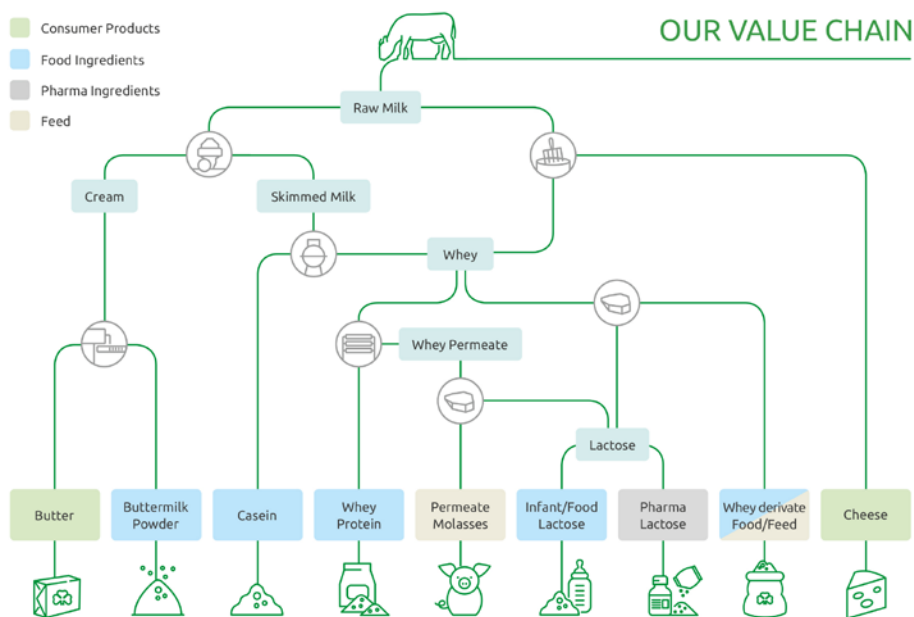
<b>Conflict minerals</b>	In the production process of MEGGLE products no ores or metals are used that are concerned by the Dodd-Frank Act <b>conflict minerals</b> (section 1502) (i.e. columbite-tantalite, cassiterite, wolframite or their extracted metals, gold) from Democratic Republic of Congo, The African Great Lakes region, or other adjoining countries. MEGGLE document Eip-0053.
<b>Residues and contaminants</b>	MEGGLE document EIP-0075 Regarding <b>residues and contaminants</b> the MEGGLE products fulfil the demands of the following EU and National Regulations, incl. relevant Amending Regulations: <ul style="list-style-type: none"><li>• Regulation (EU) 2023/915 regarding certain contaminants: mycotoxins (incl. Aflatoxin M1), plant toxins, metals and other elements (incl. lead, cadmium, mercury, arsenic), halogenated persistent organic pollutants (incl. dioxins and PCBs, perfluoroalkyl substances), processing contaminants and other contaminants (incl. nitrates, melamine, and perchlorate)</li><li>• Regulation (EC) No 396/2005 regarding pesticides incl. chlorate, (Information regarding maximum levels can be found in the EU pesticides database.)</li><li>• Regulation (EC) 470/2009 in connection with Commission Regulation (EU) No 37/2010, regarding veterinary medicinal products,</li><li>• Directive 96/22/EC concerning the prohibition on the use of certain substances having a hormonal or thyrostatic action and of beta-agonists,</li><li>• Directive 2009/32/EC regarding extraction solvents,</li><li>• Implementing Regulation (EU) 2020/1158 regarding the accumulated maximum radioactive level in terms of Cs-137,</li><li>• Regulation (EU) No 231/2012 for food additives for components which are regulates as food additives.</li></ul>
<b>Biodiversity and rorest conservation</b>	We work with our suppliers to reduce biodiversity loss and deforestation by <ul style="list-style-type: none"><li>• reducing the use of overseas feed for our dairy ingredients;</li><li>• using vegetable fats and oils with appropriate certification schemes;</li><li>• using wood-based materials with appropriate certification schemes.</li></ul>
<b>Animal welfare</b>	We have defined a set of <b>animal welfare</b> criteria against which we assess purchased dairy materials and decide whether further measures must be taken.  These are based on European and national legislation, including inspections by the relevant authorities. In addition, MEGGLE categorizes suppliers who have installed additional third-party certification standards that specify details and carry out regular on-site inspections, e.g. QM milk.  If the available information does not provide sufficient transparency, we seek dialogue with the relevant suppliers and decide on further action.
<b>Carbon reduction</b>	<ul style="list-style-type: none"><li>• We work with our suppliers and other stakeholders to achieve regionally appropriate carbon reduction targets for our dairy-based raw materials.</li><li>• To increase transparency concerning carbon emissions we are currently implementing an IT tool for progressively refining our Scope 3 emissions database from literature-based values to representative primary data of our farmers.</li></ul>

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MEGGLE is committed to using its dairy resources in an optimal and most efficient way. Over the years our product range was adapted to optimally process our dairy input. (see simplified chart below). We process our dairy raw materials into diverse

products. At the end permeate molasses remains as a residual. We are planning to build a biogas plant – using this residual as input for generating energy and heat generation for our production process.



## 4. MEGGLE’s pharmaceutical excipients for direct compaction and inhalation applications as a contribution to sustainability

Pharmaceutical tablet production by direct compaction (DC) is more environmentally sustainable than wet granulation (WG) due to the lower energy consumption. MEGGLE’s excipient department presents a broad portfolio of different lactose monohydrate grades for the pharmaceutical industry, among those different DC grades. They show many advantages in comparison to grades mainly used for WG. DC is a popular choice because it provides the shortest, most effective and least complex way to produce tablets. Therefore this manufacturing process dispenses also advantages relating to sustainability when it comes to a comparison with WG. During DC fewer manufacturing steps are performed, resulting in less manpower and equipment and therefore less space required within the manufacturing areas. In terms of

energy-consumption, DC can save a large amount of water and electricity compared to fluidized bed granulation (a commonly used WG technique) for the drying steps not required after the addition of water to the product. In addition to the DC grades, MEGGLE offers a wide range of grades developed for use in dry-powder inhaler (DPI) formulations. The following study shows the advantages of DPI formulations in comparison to pressurized Metered Dose Inhalation (pMDI). The study found that DPI formulations have an even higher positive impact on sustainability. The manufacturing processes of pMDIs are at the forefront of green-house gas emissions (GHG) with a 10 to 40-fold CO<sub>2</sub>-footprint compared to GHG-free DPIs. Jakob Bickhardt et al. (2022) investigated

and calculated the effect on the annual CO<sub>2</sub>-footprint and economic costs brought about by converting from pMDI to DPI formulations. The study came to the conclusion that a conversion of a pMDI-based inhalative therapy to a DPI-based therapy saved between 115 and 480 kg CO<sub>2</sub>e emissions per patient and year. A total of 184,297 and 164,165 defined daily doses (DDD) were prescribed by the clinic of the study for 2,610 (January-March 2020) and 2,693 (January-March 2021) patients, respectively. Due to the conversion, emissions were reduced by 35,000 to 40,000 kg CO<sub>2</sub>e between January-March 2020 and January-March 2021 in their clinic. During the same period, there was no increase in costs compared to nationwide costs. If all ambulant pulmonologists in Germany would prescribe 75 % DPI, CO<sub>2</sub>-emissions could be reduced by 11,650 tons CO<sub>2</sub>e per quarter and 46,600 tons CO<sub>2</sub>e per year, respectively. Therefore, a significant reduction of GHG emissions is possible without increased costs.<sup>3</sup>

Another investigation carried out by Nagasaki et al. documented that all inhaler-related GHG emissions were 202 kt CO<sub>2</sub>e in 2019 in Japan, of which 90.9 % were attributed to pMDI use.

It could be demonstrated that replacing 10 % pMDI with DPI would reduce emissions by 6.7 %, with a relatively modest increase in cost. Also, substituting 10 % of pMDI used by adults with alternative inhalers would reduce emissions by 6.1 %, with a 0.7 % increase in cost, according to this paper. Evaluations and reduction strategies for GHGs have so far been primarily studied in Europe, but not in other regions, which is why this study is also of international interest.<sup>4</sup>

The impact on sustainability with only a small effort by choosing the right Excipient and manufacturing process could be demonstrated.

**If you would like to learn more about how MEGGLEs DC and DPI excipients, please contact us. Do you need technical support? Our experts in excipients are there for you worldwide. Contact details contained on page 2.**

## 5. The future of sustainable manufacturing

The pharmaceutical industry is known as a big producer of waste and greenhouse gases that are having a significant impact to the nature. Large amounts of water and energy are consumed in the production of pharmaceuticals. In addition to all the impacts on plants, animals, and humans, there is also the question of social sustainability. It is important to find ways to provide access to medicines to developing countries that have no or inadequate healthcare. Because of these aspects, it is important to look to the future and see how sustainability will have a major impact on the pharmaceutical industry.<sup>5</sup>

### A sustainable future – ESG roles

As the pharmaceutical industry continues to evolve and tackle modern challenges, sustainability has emerged as a key focus. The future of the pharmaceutical industry, (as a representative of industries), sets big targets for a green future, which can only be achieved by compliant governments and industries working together. The concept of sustainability has evolved over time and is no longer solely focused on harmful emissions into the atmosphere. Today, it is an interaction of environmental, social, and governance (ESG) issues. Governance

is one of the aspects which depends on the willingness of pharmaceutical companies to commit to meaningful action, regulatory compliance, transparency of data and about their activities, quality standards, and ethical business practices.<sup>6</sup>

But while ESG sustainability targets are essential, it needs to be ascertained that launching new drugs is not slowed down. Standard ESG frameworks are important because they facilitate reporting on companies' sustainability progress. When setting sustainability targets, it is also important to set realistic targets, to really achieve an advancement in sustainable manufacturing. Such progress can already be highlighted, as some big players have already relocated to reduce their carbon footprint and focus on more sustainable and greener business models – a trend that is set to continue. Through these new locations they are more conveniently located to partners like leading scientific institutions, organizations and stakeholders. They have built more energy-efficient buildings and their offices are often designed to support new hybrid ways of working with more flexible work models. The environmental footprint of offices is now a key consideration with a focus on energy consumption, the health and wellbeing of employees and reduced CO<sub>2</sub> emissions.

## Net Zero Goals

Reducing overall energy consumption, reducing employees' travels through video conferencing and reducing the amount of water involved in manufacturing processes are all targets to achieve the 'Net Zero Goals'. 'Sustainability by Design' in the healthcare industry takes into account a number of factors around the whole lifecycle of a product, from material selection to scalability and end-of-life disposal. Manufacturing processes present opportunities for reducing environmental impact. From optimizing logistics to reducing water use and increasing energy efficiency, greener initiatives not only offer a sustainability benefit but also reduce operating costs. Additionally, new technologies play a role in reducing waste, through streamlined manufacturing processes", says Isobel Filipova, Design Engineer – Sustainability Lead Product Development at Owen Mumford.<sup>7</sup>

Reaching Net Zero Goals is still a big challenge that must be met. Realistic measures must be developed by a close collaboration of all stakeholders in the value chain.

## Employee welfare and happiness

As education on environmental issues continues, there is a growing movement, particularly among younger employees, to seek out fair and sustainable employers. A 2019 McKinsey report revealed that almost 40 % of millennials have chosen a job because of company sustainability. Furthermore, nearly 70 % of respondents said that if a company had a strong sustainability plan, it would affect their decision to stay with that company long term. Another 30 % said that they had left a job in the past because of the company's lack of a sustainability plan and the majority stated that sustainability is either important or very important to them personally, and that businesses should play a large role in advancing sustainability.<sup>8</sup>

## 6. References

- 1 American Pharmaceutical Review: [https://www.susupport.com/knowledge/single-use-technology/enhancing-sustainability-pharmaceutical-industry-with-single-use-technologies?utm\\_term=&utm\\_campaign=E2E&utm\\_source=adwords&utm\\_medium=ppc&hsa\\_acc=2703736568&hsa\\_cam=14222897476&hsa\\_grp=156834525270&hsa\\_ad=671858547064&hsa\\_src=g&hsa\\_tgt=dsa-1957185897989&hsa\\_kw=&hsa\\_mt=&hsa\\_net=adwords&hsa\\_ver=3&gad\\_source=1&gclid=EAlaQobChMI-KysibbahAMVe0KRBR1pgQ9mEAAyAAEgJSnfD\\_BwE](https://www.susupport.com/knowledge/single-use-technology/enhancing-sustainability-pharmaceutical-industry-with-single-use-technologies?utm_term=&utm_campaign=E2E&utm_source=adwords&utm_medium=ppc&hsa_acc=2703736568&hsa_cam=14222897476&hsa_grp=156834525270&hsa_ad=671858547064&hsa_src=g&hsa_tgt=dsa-1957185897989&hsa_kw=&hsa_mt=&hsa_net=adwords&hsa_ver=3&gad_source=1&gclid=EAlaQobChMI-KysibbahAMVe0KRBR1pgQ9mEAAyAAEgJSnfD_BwE)
- 2 [https://www.ibm.com/sustainability?utm\\_content=SRCWW&p1=Search&p4=43700074766319297&p5=p&gad\\_source=1&gclid=EAlaQobChMI-KysibbahAMVe0KRBR1pgQ9mEAAyASAAEgLRSPD\\_BwE&gclidsrc=aw.ds](https://www.ibm.com/sustainability?utm_content=SRCWW&p1=Search&p4=43700074766319297&p5=p&gad_source=1&gclid=EAlaQobChMI-KysibbahAMVe0KRBR1pgQ9mEAAyASAAEgLRSPD_BwE&gclidsrc=aw.ds)
- 3 Jakob Bickhardt, Cornelia Czupalla, Uta Bader (2022). Reduction of greenhouse gas emissions by inhaler choice in the therapy of asthma and COPD patients – PubMed. <https://pubmed.ncbi.nlm.nih.gov/35453159/>
- 4 Kazuya Nagasaki, Yuki Kaji, Yoshiki Wada and Takafumi Sasaki (2023). The environmental impact of inhaler replacement: A carbon footprint and economic calculation of the National Database of Health Insurance Claims in Japan. Journal of General and Family Medicine. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10357098/>
- 5 <https://www.pwc.de/en/sustainability/sustainability-in-the-pharmaceuticals-and-life-sciences-industry.html> and <https://pharmanewsintel.com/features/understanding-the-environmental-impact-of-the-pharmaceutical-industry#:~:text=The%20pharmaceutical%20industry%20is%20a,comes%20from%20fossil%20fuel%20sources.>
- 6 [https://datwyler.com/files/pages/data/downloads/esg-report-2022-esg-in-pharma/b366277519-1670401476/datwyler.com\\_esg-report\\_2022\\_esg-in-pharma.en.pdf](https://datwyler.com/files/pages/data/downloads/esg-report-2022-esg-in-pharma/b366277519-1670401476/datwyler.com_esg-report_2022_esg-in-pharma.en.pdf)
- 7 ONdrugDelivery Issue No. 153, October 30th, 2023, Drug Delivery & Environmental Sustainability
- 8 <https://sustainability-news.net/sustainability/the-future-of-sustainability-in-pharmaceutical-industry/>
- 9 <https://www.meggle.com/en/sustainability/>

Reference to 3.2 and 3.3

\* 6 MEGGLE production sites: MEGGLE GmbH & Co. KG, MEGGLE Bakery GmbH, MEGGLE Cheese GmbH, MEGGLE Slovakia s.r.o, MEGGLE Srbija d.o.o., MEGGLE BH d.o.o.