SUSTAINABILITY REPORT 2017 / 2018

Meeting expectations, gauging limits

1913

we make it grow

Klasmann-Deilmann

About this publication

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The complete Sustainability Report 2017/2018 according to GRI Standards 2016 is available for download at:
www.klasmann-deilmann.com/sustainabilty

About us

Klasmann-Deilmann is the leading corporate group in the international substrate industry, with sales and production companies in Europe, Asia and America. On every continent, our growing media provide a vital basis for the growth of fruit, vegetables, edible fungi, ornamental plants, trees and shrubs. They help ensure the success of our partners and customers in the commercial horticulture sector. Our product portfolio includes substrates for professional growers and the consumer sector, white and black peat as raw materials from our own resources, and green compost and wood fibre manufactured in-house.

As a supplier of renewable resources, we have also established ourselves in the field of renewable energy. Our short-rotation coppice (SRC) plantations contribute to the supply of climate-friendly energy, especially in the Baltic region.

We refer to internationally recognised benchmarks to gauge how seriously we take our responsibility for humankind, the environment and future generations. Regeling Handels Potgronden (RHP) monitors our raw materials and production processes. Our quality-management system is certified to the ISO 9001 standard and our environmental-management system adheres to ISO 14001. Most of our peat extraction areas are already managed in accordance with Responsibly Produced Peat (RPP) guidelines. We rehabilitate former extraction sites in compliance with statutory and regulatory requirements, chiefly by means of re-wetting. We have our carbon footprint verified to the ISO 14064 standard and we prepare our Sustainability Report in line with the Global Reporting Initiative's GRI Standards 2016.

The strategic focus of our company, a medium-sized family business, is extremely forward-looking. Keen to remain the most sustainable producer of growing media, we are working on far-reaching research projects to develop innovative raw materials, substrates and growing systems. In the renewable-energy and resources sector, too, we are single-mindedly pursuing a strategy of growth and are continuing to expand our service portfolio.

In all of our activities, our employees are a foundational asset. Time and again, their expertise and commitment play a crucial role in moving us forward in terms of corporate sustainability and customer satisfaction. We encourage their development and are delighted by their strong ties with our organisation.

Meeting expectations, gauging limits

In the two years since the last Sustainability Report was published, we have addressed our material sustainability topics in depth. Dialogue with our stakeholders has led to important new ideas arising during this period.

Increased proportion of alternative substrate constituents

Expectations made of us include further progress in the production and use of alternative raw materials that enable limits to be placed on the utilisation of peat as a growing medium for commercial horticulture. In this connection we have made big strides towards our target to increase the proportion of alternative substrate constituents to 15% by volume of our total annual production by the end of 2020. In conjunction with our strategic plan for the period until 2025, we aim to achieve a share of 30% by volume.

This positive development can be perpetuated only if it is accompanied by unbiased discussion of the extraction and use of the raw material that is peat, and of its future prospects. There remains a lack of suitable alternative constituents that are available both in the necessary quality and in the large quantities required if peat use is to be reduced on a global scale. The outlook for international commercial horticulture thus remains uncertain in one crucial regard: where the function in the growth process of a crop has been ideally served for decades now by peat-based growing media, this function must be reliably provided by alternative constituents or be replaced by completely new cultivation methods that can meet rising worldwide demand. Failing this, the importance of peat in horticulture will be maintained and possibly increased into the long term.

We intensified our research activities

Given this situation, additional efforts are expected of us aimed at preventing expansion of peat use. In response, we have further intensified our research activities targeted at developing completely new substrate constituents and growing systems. The versatility of well-established alternative ingredients such as wood fibre, green compost, coir pith and perlite is continuously being improved by our specialists. Our Research & Development division and the Incubator, which has been very active for some years now, are searching – across a sufficiently wide spectrum and with open minds – for new constituents, methods of cultivation and pioneering innovations. For a business with the character of an SME, the financial and human resources involved are considerable. Support measures are desirable here for those countries that are stepping up the phase-out of peat use, or indeed at EU level as well. We are submitting proposals to this end via our trade association and in direct dialogue with political representatives.

It should be borne in mind that by no means all research projects yield the hoped-for outcomes. Only rarely, in fact, are beneficial effects achieved. This was outstandingly the case with our long-term project involving Sphagnum farming: the deliberate cultivation of peat moss. Originally initiated with a view to developing a substrate constituent that is (in the best sense of the word) sustainable, it led to the discovery that peat moss grown in this way is ideally suited as a raw material for substrate production but its cultivation is not at present commercially viable. Excessively high land prices, low productivity, a lack of available means of financial support, inadequate harvesting techniques and other aspects were reasons not to pursue the original goal any further for the time being. At the same time, the project yielded other positive, if unexpected, results regarding the cultivation of peat moss specifically for raised-bog development. It is now clear that the Sphagnum-farming method developed by ourselves and our partners represents a significant advance for the restoration of former extraction areas. Before 2019 is over, we

aim to launch a related business model that can, on an appreciable scale, help to reduce greenhouse gas emissions from peatlands and to create living raised bogs.

Advances in peat moss cultivation

Emissions remain a challenge for Klasmann-Deilmann. Our business growth has been associated with additional greenhouse gas generation over the past two years. About one-third was generated by peat use and the same proportion by worldwide transport. We view this as a priority mission and have explored various scenarios aimed at countering this trend. We have opted for a model that will allow climate impacts from peat use and transport to be reduced: over the next few years we will invest heavily in decentralising our production. We are, with our factories, moving closer to customers in major markets; we will draw on locally available, renewable and sustainable raw materials while at the same time markedly reducing transport distances. This development has been partly driven by further stepping-up of the evaluation of upcoming investments using sustainability criteria.

Our chief commitment will be to the development of alternative constituents and growing systems in order to reduce emissions from peat production and transport, to rehabilitate former extraction areas and to provide renewable resources for the generation of renewable energy.

We look forward to your feedback on our activities and on our Sustainability Report 2017/2018, and to the continuation of our shared dialogue.

Geeste, September 2019
Managing Directors

Moritz Böcking Bernd Wehming

Klasmann-Deilmann Group

Companies of the Klasmann-Deilmann Group

We have assigned all strategic and controlling functions to our Group's lead company, Klasmann-Deilmann GmbH (based in Geeste, Germany). Klasmann-Deilmann Service GmbH, also located in Geeste, is our central service company. All other subsidiaries are either production or sales companies.

Klasmann-Deilmann GmbH
Lead company

Production		Service		Sales	
Klasmann-Deilmann Produktionsgesellschaft Nord mbH	DE	Klasmann-Deilmann Service GmbH	DE	Klasmann-Deilmann Europe GmbH	DE
Klasmann-Deilmann Produktionsgesellschaft Süd mbH	DE			Klasmann-Deilmann Asia Pacific Pte. Ltd.	SG
Schwegermoor GmbH	DE			Klasmann-Deilmann Americas Inc.	US
UAB Klasmann-Deilmann Silute	LT			Klasmann-Deilmann France S. A. R. L.	FR
UAB Klasmann-Deilmann Laukesa	LT			Klasmann-Deilmann Benelux B. V.	NL
UAB Klasmann-Deilmann Ezerelis	LT			Klasmann-Deilmann Belgium N. V.	BE
Klasmann-Deilmann Latvia SIA	LV			Klasmann-Deilmann Austria GmbH	AT
Klasmann-Deilmann Ireland Ltd.	IE			Klasmann-Deilmann Italia S. R. L.	IT
Klasmann-Deilmann Potgrondcentrum B. V.	NL			Klasmann-Deilmann Polska sp. z o.o.	PL
Klasmann-Deilmann Brugge N.V.	BE			Klasmann-Deilmann China Ltd.	CN
Bol Peat GmbH	DE			UAB Klasmann-Deilmann Bioenergy	LT
				Klasmann-Deilmann Bioenergy SIA	LV

Shareholders, management, governance bodies

Klasmann-Deilmann GmbH's shareholders are Deilmann-Montan GmbH (based in Bad Bentheim), with a stake-holding of 57.5 %, and Klasmann Anlage- und Verwaltungs GmbH & Co. KG (based in Meppen), which has a 42.5 % interest. The shareholders appoint members to the Administrative Board of Klasmann-Deilmann GmbH, of which Carl-Gerrit Deilmann has been the chair since 2007.

Managing Directors of the Klasmann-Deilmann Group are Moritz Böcking and Bernd Wehming.

The Managing Directors consult with the Administrative Board on key business developments, primarily with regard to their strategic, economic, environmental or social impact. The Board of Managing Directors was augmented in the summer of 2018 by a four-strong Executive Committee which contributes additional competencies from central corporate divisions. A further key decision-making body is the Management Board, which forms the interface between the strategic and operational levels and is made up of the two senior Managing Directors and the Executive Committee of Klasmann-Deilmann GmbH, as well as well as local-level managing directors of Klasmann-Deilmann Group subsidiaries

Certification

Product quality is controlled in a supply chain control process by the Dutch foundation 'Regeling Handels Potgronden' (RHP). The assessment criteria applied here are among the most stringent worldwide. RHP's quality-assurance process includes all the raw peat materials that we use, as well as our 'TerrAktiv' green compost and our 'GreenFibre' wood fibre product. The production sites in Germany, Ireland, Lithuania and the Netherlands are also RHP-certified; a large part of the marketed substrates originating from these manufacturing facilities is subject to monitoring for compliance with RHP standards.

Klasmann-Deilmann GmbH has been certified to the ISO 9001 standard since 1998 and to the internationally valid environmental standard ISO 14001 since 2008. Both certificates have, since then, been confirmed at each regular audit. Currently, our quality-management system and our environmental-management system satisfy the ISO 9001:2015 and ISO 14001:2015 standards. Our carbon footprint is verified to ISO 14064.

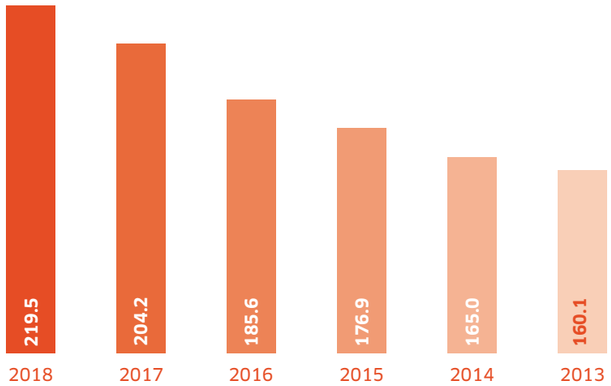
The bulk of our peat extraction areas are managed in accordance with the guidelines of the NGO 'Responsibly Produced Peat' (RPP).

Our brands

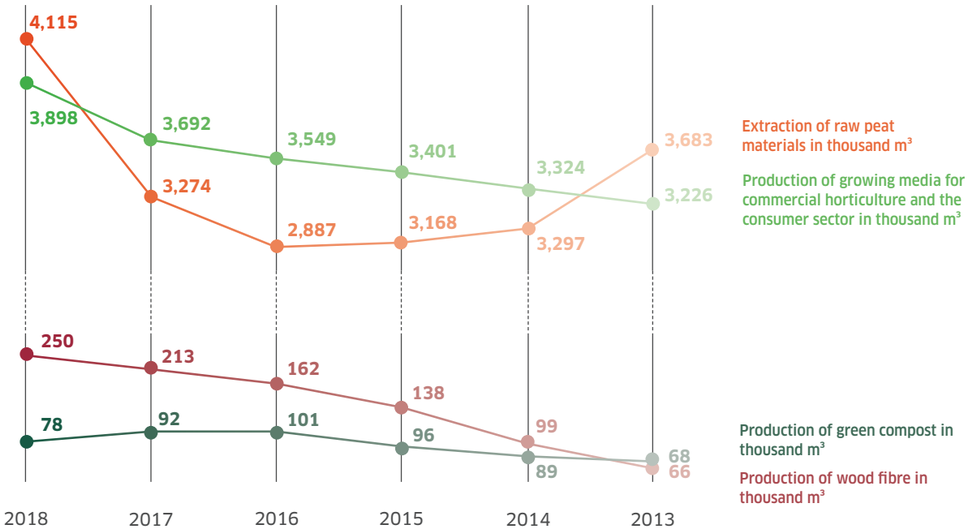
SUBSTRATES	RAW MATERIALS	BIOENERGY	INNOVATION
SUBSTRATES Easy Growing	RAW MATERIALS GreenFibre®	BIOENERGY Wood Chips	INNOVATION Academy
SUBSTRATES Select	RAW MATERIALS TerrAktiv®/FT	BIOENERGY Wood Trading	INNOVATION Growcoon
SUBSTRATES Florabella®	RAW MATERIALS Peat	BIOENERGY Wood Services	INNOVATION Peat Bog Restoration
SUBSTRATES ProLine	RAW MATERIALS Containermulch		

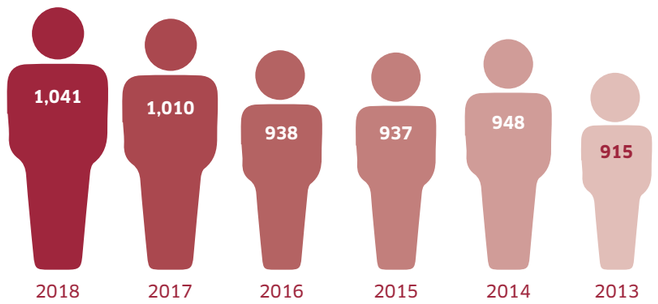
Key performance indicators 2017/2018

As a benchmark for our sustainable development, we employ key performance indicators (KPIs) that are tailored to specific aspects of our organisation and reflect our performance. Our goal is continuous improvement.

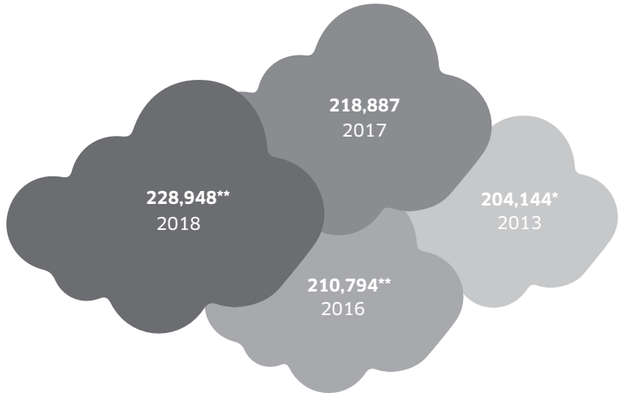


Sales revenue in million euros





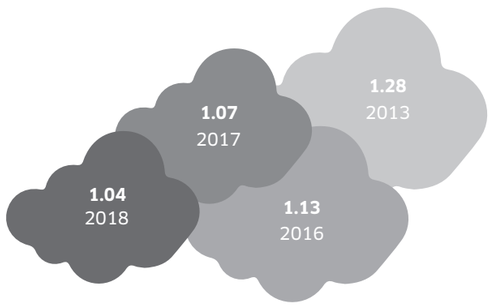
Average headcount (FTE)



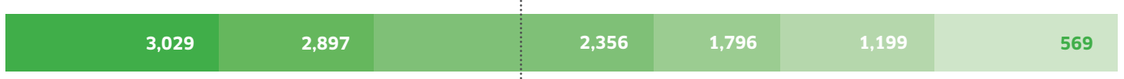
Total emissions in t CO_2e

* Verification 2017

** Verification 2019



Emissions per euro of turnover in kg CO_2e

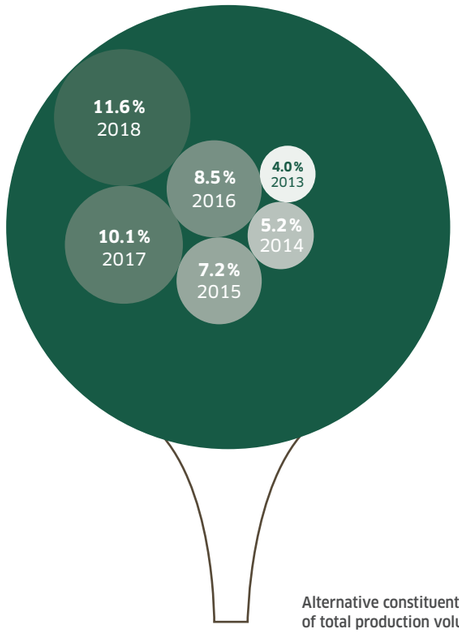


'Active' SRC plantations in ha

Total area of SRC plantations in ha

Alternative constituents

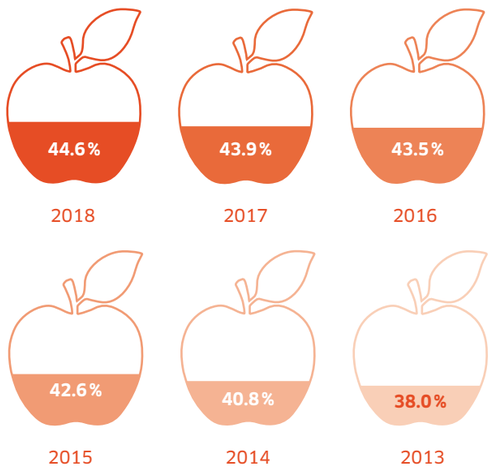
By 2020, we aim to increase the proportion of alternative constituents to at least 15 % of our total annual production. This KPI reflects the used volumes (in m^3) of our wood fibre product 'GreenFibre', our green compost 'TerrAktiv', and all other alternative bulking constituents in relation to the total quantity of growing media (in m^3) produced by the Klasmann-Deilmann Group.



Alternative constituents as proportion of total production volume

Food sector

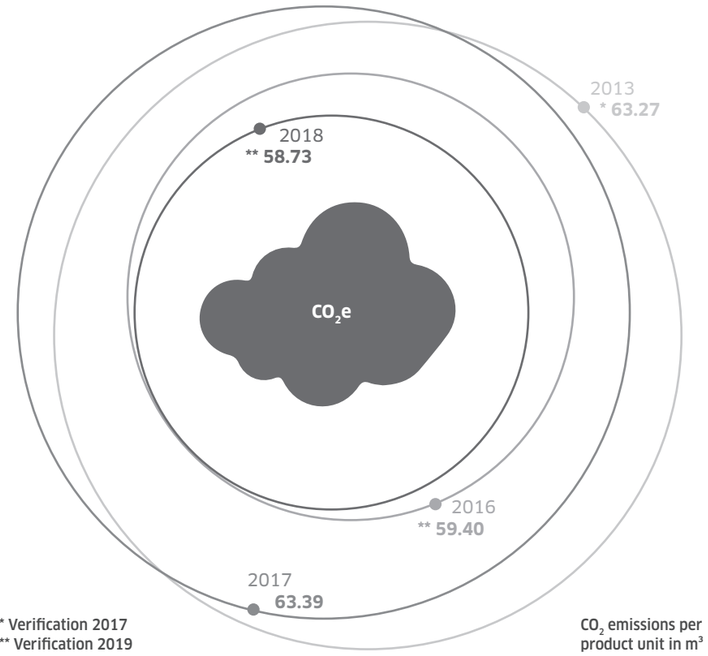
We wish, in future years, to step up our supplies to the fruit- and vegetable-growing sector. To document our progress here, we relate sales figures achieved for this area to total sales of growing media (in m^3 in both cases).



Sales to food sector as proportion of total sales

Emissions

As well as reducing our overall emissions, we are especially keen to reduce emission levels per product unit. In this KPI, therefore, we calculate the ratio between our corporate group's total emissions (in t CO_2e) and our total production volume (in m^3).

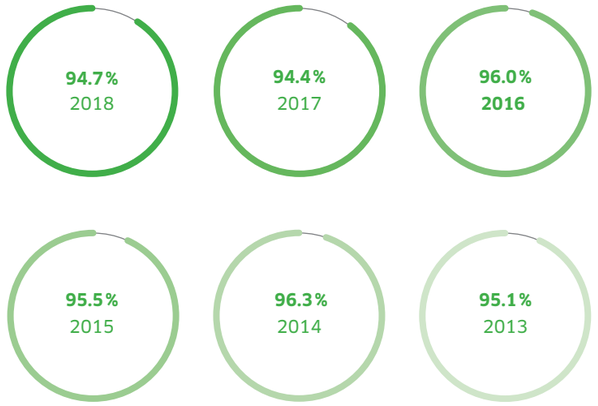


* Verification 2017
** Verification 2019

CO_2 emissions per product unit in m^3

Employee health

The following KPI of employee health gives the ratio between the total number of days to be worked by our international workforce and the number of days off sick (including sickness periods of less than and more than six weeks).



Employee health

Stakeholder groups involved

In the context of our sustainable development, we seek and cultivate direct dialogue with our stakeholders.

- Customers and sales partners in commercial horticulture, the most important target group for our sales activities;
- Customers and business partners in the renewable-energy and renewable-resources sectors, an increasingly important target group for our sales activities;
- Suppliers and other business partners of our corporate group;
- Employees of all companies within our corporate group;
- The Klasmann-Deilmann Group's shareholders;
- Lobby groups, especially at European and international level;
- Environmental organisations as our dialogue partners with regard to the use of peat as well as the management and rehabilitation of extraction sites;
- Public authorities and governments as approval bodies for projects of (in some cases) great importance to our company, and as our dialogue partners with regard to peat use as well as the management and rehabilitation of extraction sites.

Customer satisfaction

So that we can assess how satisfied sales partners and commercial growers – our most important customers – are with our substrates, services and employees, we set great store by direct dialogue on a worldwide scale.

As our experts are regularly on-site, we continuously receive feedback from our international markets and straight from the horse's mouth, so to speak. We evaluate it and take any necessary steps. In this way, we receive criticism and praise very soon after the event and can pass it on to the relevant teams. Problems can be solved and things put right without delay. This results in a continuous process of improvement that benefits our customers.

At less frequent intervals, we complement this non-systematic feedback with a specific customer satisfaction survey targeting professional growers.

Membership of organisations

Among other organisations, Klasmann Deilmann is a member of the following:

- Growing Media Europe AISBL
- International Peatland Society (IPS)
- Deutsche Gesellschaft für Moor- und Torfkunde (DGMT; German Peat Society);
- Regeling Handels Potgronden (RHP);
- Zentralverband Gartenbau (ZVG; Germany's national horticultural association);
- Bundesgütegemeinschaft Kompost e. V. (German Federal Compost Quality Assurance Association);
- Gütegemeinschaft Substrate für Pflanzenbau (GGS; Quality Assurance Association Growing Media for Plant Cultivation);
- Ökoring e. V. (Lower Saxony's advisory organisation for ecological growers);
- Bundesverband BioEnergie e. V. (BBE; German BioEnergy Association);
- Emsländische Stiftung Beruf und Familie (the Emsland region's 'Work and Family' foundation);
- Global Reporting Initiative (GRI);
- Niedersächsische Allianz für Nachhaltigkeit (Lower Saxony's Alliance for Sustainability);
- 3N Kompetenzzentrum e. V. (Lower Saxony's central information point for renewable resources and bioenergy).

Growing media

Quality assurance of our substrate constituents

Both for our customers and ourselves, it is crucial that we secure the constituents we need to produce our substrates – including peat, wood and green compost – while ensuring the highest product standards in terms of functionality and the impact on health and reliability. We therefore continuously test proven and new components as to their suitability for use in substrates. We assess their physical, chemical and biological properties and subject them to growing trials. The same also applies to in-house solutions relating to fertiliser formulations, wetting agents and other additives. To absolutely ensure their highest quality, we commission testing of our raw materials – and, if appropriate, the suppliers – to the requirements of Dutch organisation 'Regeling Handels Potgronden' (RHP).

Peat

Raised-bog peat has been the most important component in growing-media manufacturing for decades now. Commercial horticulture is tailored to its multiple advantages that lead to optimum growth and high yields in industrial-scale plant production. Peat-based substrates deliver unique reliability in crop cultivation. They can be continuously produced and supplied to a consistently high quality. After processing, the different types of peat have physical, chemical and biological properties that make them ideal for horticulture and which, overall, are unmatched by any other raw material.

Securing the sourcing of raw materials is, therefore, a high priority. We have sites in Germany devoted to the extraction of frozen black peat, although this will not last beyond the 2020s. In Lithuania, high-quality grades of more decomposed peat are available, which will replace German black peat to an increasing extent. We use our extensive resources in Lithuania, Latvia and Ireland for sod-cut or milled white-peat extraction – with which supplies to our production facilities are ensured for many years to come. The techniques involved in raw-materials extraction and processing are subject to an ongoing process of improvement.

Why peat?

Chemical properties

- Ideal pH value
- Optimum nutrient levels
- Good nutrient buffering
- Free from harmful substances

Physical properties

- High structural stability
- Optimum ratio between air and water capacity
- Good wettability

Biological properties

- Largely free from weed seeds
- Free from pathogens

Economic properties

- Long-term availability
- Uniform characteristics
- Quality that meets the horticultural requirements of a wide range of plants

Green compost

Since the early 1990s, we have run our own composting facilities in Groß Hesepe and Bohmte – with another plant operating in Dörpen since 2006 – at which green waste is processed into 'TerrAktiv', a compost for growing media. Our units are the only ones in Germany subject to RHP quality assurance. TerrAktiv green compost carries the RAL quality-assurance mark and, for use in substrates for organic production, complies with EU Regulation (EC) No. 834/2007 and Annex I to Implementing Regulation (EC) No. 889/2008.

TerrAktiv green compost and TerrAktiv FT, an innovative variation of this product, play a very important role as chief components of substrates for organic production for ecologically run businesses. By manufacturing them at our own facilities, we ensure the raw material is of consistently high quality.

As green waste is being utilised more and more as an energy source, there is now competition for these materials. Particular grades of green-waste material are no longer available to us. However, we will do all we can to pursue our composting activities at a high level; increasingly, our policy is one of strategic partnerships with external compost producers that meet our quality standards.

Why green compost?

TerrAktiv green compost

- is biologically active
- suppresses root diseases
- ensures potted herbs live longer
- is quality-assured
- acts as a slow-release nutrient source
- has a high buffering capacity
- improves re-wettability
- promotes the conversion of organic fertiliser into plant-available nutrients

TerrAktiv FT wood fibre/compost blend

- is nitrogen-stable
- increases air capacity in press pots
- optimises germination and plant development
- allows peat substitution of up to 50% by volume in combination with other constituents
- lowers the risk of excessive supply of ammonium to seedlings

Wood fibre

We have been using wood fibre as a bulking ingredient in our substrates since the 1990s. Following a developmental phase lasting several years, in 2010 we put into operation (in Germany) the first facility for manufacturing our own wood fibre product branded 'GreenFibre'. At the end of 2018 we had a total of six production lines in Germany, Ireland and the Netherlands.

Production of GreenFibre involves subjecting softwood chips to special heat and physical treatment which separates the fibres. The process generates temperatures of over 90 °C, ensuring that unwanted substances escape from the woodchips as gas, sterilising the GreenFibre. This process also allows the structure – and hence the physical properties – of wood fibre to be precisely defined, giving rise to a consistently high-quality component produced from renewable resources.

The woodchips used to produce GreenFibre are sourced entirely from responsibly managed woodland. Whenever possible, we favour raw materials from local sources that meet sustainability criteria, and opt for PEFC- and/or FSC-certified raw wood materials from which to produce our wood fibre. GreenFibre also bears the RHP quality label, which is a long-term endorsement of its suitability for use in commercial horticulture. To ensure its consistently high quality, GreenFibre production units are – like our other facilities – certified to strict RHP standards.

Why wood fibre?

GreenFibre

- supports healthy, rapid root development
- ensures optimum drainage
- increases air capacity and ensures long-term structural stability
- ensures straightforward supplementary fertilisation of crops due to the stable nitrogen cycle
- reduces transport costs due to substrate's low overall weight
- for use in substrates for organic production, complies with EU Regulation (EC) No. 834/2007 and Annex I to Implementing Regulation (EC) No. 889/2008

Procurement practices

Our 'Sustainability guidelines for suppliers', in force since 2012, augment our selection criteria for our suppliers; they contain requirements for upholding human rights, for employees' working conditions and for environmental standards, as well as a business ethics code.

We require all our suppliers to commit to these guidelines. The standards this document defines, and their adoption, are a prerequisite for all supply agreements with Klasmann-Deilmann. In accepting a contract or order, our supplier undertakes to ensure that all their processes conform to the provisions of our guidelines.

The key points of our sustainability guidelines are:

- prohibition of child labour on the part of our business partners or their suppliers;
- prohibition of forced or compulsory labour;
- prohibition of any form of discrimination;
- freedom of association and the right to conduct collective bargaining;
- minimum wage and overtime pay in line with statutory benefits for staff;
- encouraging ongoing improvements and refinements to occupational health and safety arrangements in compliance with national regulations;
- prohibition of bribery, extortion and embezzlement;
- evaluation of suppliers on the basis of their optimisation measures regarding the management of resources, minimisation of ecological damage, adoption of a pre-cautionary approach, and the promotion of environmental responsibility and environmental technologies.

Production

Making a growing medium involves enriching our substrate base materials – peat, green compost and wood fibre – with perlite, lime, fertilisers and additives such as sand or clay. Organic and mineral fertilising solutions ensure that plants are specifically provided with all the nutrients and trace elements they need. The addition of lime regulates the substrate's pH level.

Our growing media are manufactured at our own production facilities, which are equipped with modern machinery and technical installations. A range of around 150 different raw peat materials, alternative constituents, admixing agents, fertilisers and additives are available.

Substrates for organic production

Our organic substrates conform to the regulations and requirements of growers' associations in Germany, Austria and Switzerland. Depending on what our substrates are specifically utilised for, in certain cases we achieve peat substitution of up to 50% in organic horticulture by adding TerrAktiv, GreenFibre and clay. In this segment, use is made of organic fertiliser such as hoof and horn shavings from BSE-free countries.

Substrates for the consumer segment

In the consumer segment, we chiefly sell potting soils and garden composts under the Florabella brand. The composition of these products is based on our substrate recipes for commercial horticulture. For reasons of both quality and availability, peat will also remain essential as the main component in consumer products, although here too the utilisation of alternative constituents for substrates is continuously increasing. Overall, at our manufacturing facility that specialises in potting soils and garden composts, alternative substrate constituents account for some 40 % by volume of products made.

Product stewardship

All of our products are made to the highest industry-specific standards. One hundred per cent of our products and services undergo customary inspections with regard to their impact on health and safety, in order to determine additional potential for improvement. As well as using our own raw materials, we buy in components and additives for substrates, choosing only products that comply with RHP standards.

The labelling of our products – and the raw materials we utilise – on packaging, and their designation on delivery notes, consistently complies with the requirements of the recipient countries.

Packaging

The packaging for our growing media is made chiefly from petroleum-based granules. Sometimes, further development of these source materials on the part of our suppliers provides scope for cutting down on packaging material without compromising on quality – by reducing foil thickness, for example. Since the summer of 2018, we have used foil with a thickness of 80 µ instead of 90 µ as previously for the packaging of our 70-litre bags. This equated to CO_2 avoidance of around 55 t by the end of 2018.

We are assessing innovative materials (some based on renewable resources) currently in development, in terms not only of their intrinsic suitability but also their economic, environmental and social impact. However, we are not at present aware of any alternative raw material that satisfies our packaging needs.

Waste disposal

No working policy for recycling is in place for our products and packaging. Our growing media are generally disposed of together with the crop at the end of its life cycle. In the best-case scenario, both are composted as green or organic waste. On an international scale, however, the more likely situation is that both crop and substrate are disposed of with general residual waste. Where they are used outdoors, our substrates remain in the soil for the most part. Our packaging, too, is disposed of in accordance with standard local practice in the country to where the goods are shipped.

A system whereby leftover packaging and substrate are returned to us or sent for proper recycling would be disproportionately effort- and cost-intensive, and associated with additional transport-related emissions.

We appreciate that this state of affairs presents an ongoing challenge, and are therefore pursuing the following remedies:

1. Reduction of foil thickness for our packaging
2. Larger units that require less packaging material than smaller ones
3. Delivery of non-packaged goods, this chiefly being an option for customers located within the region of our production facilities

Water management

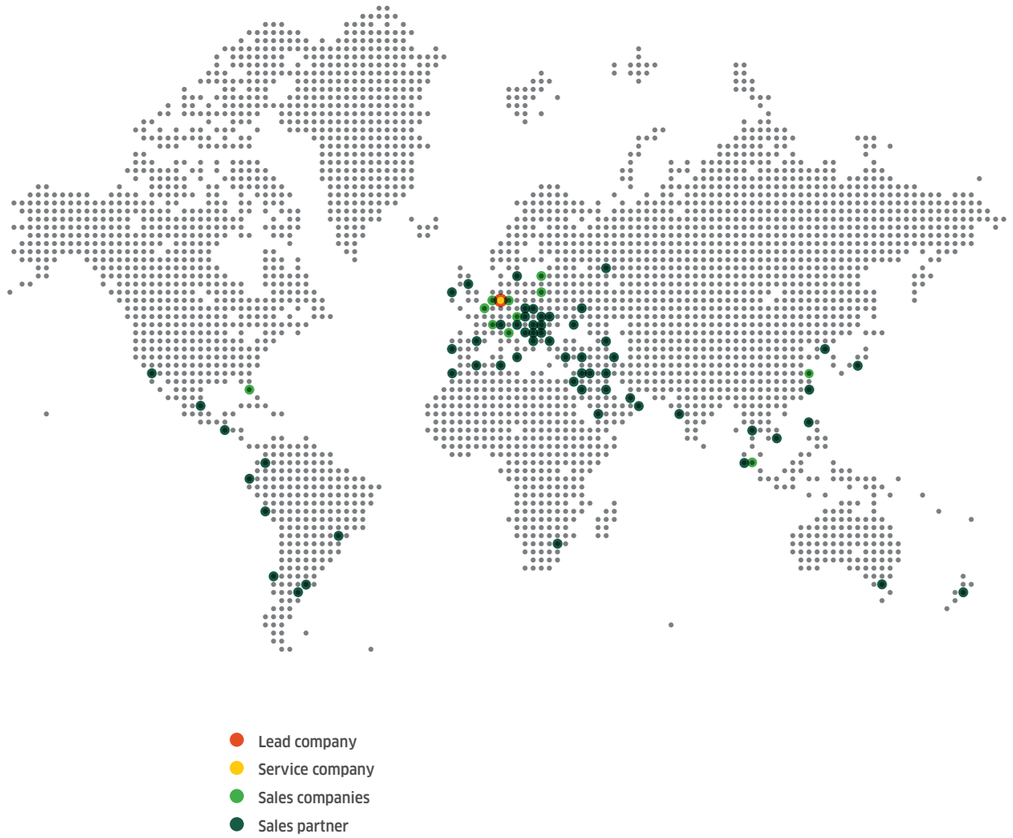
The manufacture of growing media does not require unusually large quantities of water: its consumption in the context of production is of relatively minor importance in terms of our sustainability-related activities. Nevertheless, our water management practices adhere to locally applicable legal provisions and are geared towards consuming resources as sparingly as possible and towards environmentally sound use.

Our customers in commercial horticulture and the consumer segment

Our most important market segment is commercial horticulture, which we supply with ready-to-use growing media, the end customers being nurseries throughout the world. Some 10 % of our total annual production volume of substrates are intended for the consumer segment. As a supplier, we form an integral part of the materials value chain in commercial horticulture. This incorporates our consulting and other services, as well as our innovation management practices.

International sales structure

Our sales of growing media extended to more than 70 countries worldwide in the reporting period. In most of these markets, we supply independent sales partners with which we have long-term agreements and which are exclusively responsible for local distribution. Within the central sales markets, our own subsidiaries are in charge of distribution and providing support to sales partners.



Systematic product development and innovation management

Of crucial importance to our organisation's long-term success is systematic, cross-functional innovation management. To this end, we have formed various teams within the areas of Research & Development, Product Development, Advisory Services and Quality Management as well as an 'incubator' that work closely and conduct joint research projects with higher-education centres, training and research institutes as well as with suppliers. We aim to develop growing media and cultivation systems which, meeting the proven horticultural standards, take into account sustainable criteria and achieve wide acceptance by policy-makers, NGOs and the public at large. At the same time, we are continuing application-targeted engagement with professional growers. We take on board our customers' ideas and needs, and turn them into innovative product solutions that are geared towards long-term gain and bring plant producers tangible advantages.

Joint projects with innovative companies

We have, from the end of 2016 onwards, been distributing an innovative cultivation system called Growcoon, developed by Dutch company Maan BioBased Products B.V. The product has since been finding a continuously expanding customer base in various horti-cultural segments worldwide.

Growcoon is a biodegradable plug with a flexible and open mesh structure. When used in propagation systems, it holds the propagation substrate together and, in this combination, forms a stable root ball. It is made from food-safe components and features the OK COM-POST label certifying it to the EN 13432 standard. This means, among other things, that the Growcoon does not entail any pollution risk with respect to farmland, people or the environment, and leaves no harmful residues. This propagation system is proving espe-cially effective in the rooting of cuttings, in the growing-on of young plants from in vitro propagation systems, and in the use of hydroponic cultivation. The main benefits of using Growcoon for propagating young plants are shorter growing cycles, robust plant health, greater root ball stability and – especially with delicate seedlings – lower failure rates.

The arrangement with Maan BioBased Products has been extended to include cooperation on other innovative products as well. Joint projects will be launched in the next few years aimed at developing new substrate constituents.

Furthermore, partnerships have been established in the Netherlands with the new World Horti Center, the Vertical Farming Association and StartLife, an organisation based at the University of Wageningen. This positioning, closely aligned with highly innovative net-works, gives Klasmann-Deilmann direct access to those projects in research and industry (including startups) that are geared towards new technologies and solutions for commer-cial horticulture and the food sector.

'Smart Growing Systems', an incubator launched by Klasmann-Deilmann, has tested more than 40 potential new substrate constituents in recent years. One recurrent difficulty with possible substitute materials is their poor water uptake and storage capacity compared with peat. There are at present no prospects of a breakthrough involving an ingredient that can fully replace peat.

Renewable resources

In view of climate change, increasing importance is being attached to alternative energy sources which more and more contribute to a balanced and reliable overall mix of different energies in future years. The objective is to supply both power and heat in an environmentally friendly manner. Renewable resources such as wood are firmly established in this context.

Among the renewable resources especially in demand is forestry and timber industry waste, which is utilised as biogenic solid fuel (in the form of woodchips) in biomass co-generation plants.

Short-rotation coppice (SRC) plantations are also playing an increasingly important role in this context. This involves planting cuttings of fast-growing tree species such as willows or poplars: their wood growth is harvested after three to four years and the biomass then goes for energy production. Over a period of at least 20 years, growth and harvest cycles repeat at intervals of three to four years. Compared with other energy crops such as maize, the relationship between inputs and yield is especially positive.

Biomass production in the Baltic region

We have been carrying out extensive SRC projects in the Baltic region since 2010. The situation is especially good here in terms of production and sales of renewable resources: demand for biomass for energy use is increasing in the Baltic States and the economic environment is far more favourable towards sustainable energy solutions than in Germany.

In 2016, subject to consolidation of already existing areas, we acquired additional agricultural land in Lithuania for planting with SRC. The total area increased from 3,131 hectares in 2016 to 3,267 hectares in 2017 and 3,350 hectares as at the end of 2018. In addition, further SRC sites were planted with cuttings, making a total of 3,029 hectares of actively cultivated land by the end of 2018 (2017: 2,897 hectares). Yield from corporate SRC sites in the same year amounted to 46,000 m³ of woodchips (2016: 15,000 m³).

3,350 2018

3,267 2017

3,131 2016

Agricultural land in Lithuania for planting with SRC in hectares

We also provide close-to-nature forest management services. Timber felled in this connection is processed and marketed.

To ensure that the strong demand for wood (especially in cold winter periods) is met in terms of raw materials sourcing, agreements covering the supply of substantial resources are in place with external suppliers.

Alongside woodchips, fuel peat continues to play a part in the region's energy mix. The scope for using the Baltic states' own resources in generating heat and power helps make them independent of gas, oil and coal supplies from abroad.

In Lithuania, woodchips produced in-house and bought in are marketed through UAB Klasmann-Deilmann Bioenergy, as are biomass blends of woodchips and fuel peat. Since 2017 we also have, in the form of Klasmann-Deilmann Bioenergy SIA, a sales company distributing biomass for energy and heat generation. The total volume sold in 2018 was 1,056,000 m³ (2017: 1,013,000 m³).

Nature conservation and climate protection

In 1913, the formation of the Heseper Torfwerk GmbH peat plant laid the foundation for the present-day Klasmann-Deilmann Group. Georg Klasmann was appointed its manager. Within only a few years, the firm had risen to become the leading supplier of animal bedding and also benefited the economic development of the Emsland region by constructing a fuel peat-fired power station. In the aftermath of the Second World War, the company was instrumental in achieving the goal – defined under the Marshall Plan – of making agriculture and housing development possible on a large scale in north-western Germany by draining peatland. In those decades peat extraction was expressly desired politically, and socially accepted.

With the growing environmental consciousness in the 1970s, a fundamental change was clearly on the way. In Lower Saxony, peat production legislation came into force in 1981. Our company adapted to these new circumstances and, since then, has used only peatlands that are already drained or degraded to extract raw peat materials; this included land either owned or leased. Pristine bogs have been designated protection areas in Germany and are left untouched by us. After peat extraction has ceased, we initiate rehabilitation measures at our extraction sites in line with official requirements. We also apply this principle with our activities in the Baltic region and Ireland. However, as we continue to extract and process peat, our organisation must help strike a balance between peatland protection and responsible usage of this raw material in commercial horticulture.

RPP-certified extraction areas

The European certification system 'Responsibly Produced Peat' (RPP) was established in 2013 with the following aims:

- Leaving natural peatlands of high conservation value untouched, and preserving them over the long term;
- Permitting controlled peat production solely on sites already drained and/or previously used for agriculture;
- Ensuring the long-term availability of peat as a valuable growing-media constituent;
- Increasing the rate of peat production from degraded peatlands so that restoration measures can be started as early as possible.

A European non-governmental organisation, RPP brings together relevant lobby groups across the peat and substrate industry, including renowned scientists, environmental associations and many companies in the sector. RPP aspires to consistently achieve a workable balance between the interests of the substrate industry and those of nature conservation and climate protection. The aim is to establish the RPP label as a prestigious, reliable and recognised environmental standard similar to PEFC and FSC.

To this end, RPP has established a reliable and transparent certification system for responsible peat production. Member companies and their extraction areas are examined by an independent auditor on behalf of certification organisation ECAS.

Against this background, we have applied for RPP certification for most of our extraction sites in recent years. By the end of 2018, this had been obtained for 76 % of our total extraction area. And, in the 2018 financial year, 75 % of the peat we produced was from RPP-certified sites.

Measures following cessation of peat extraction

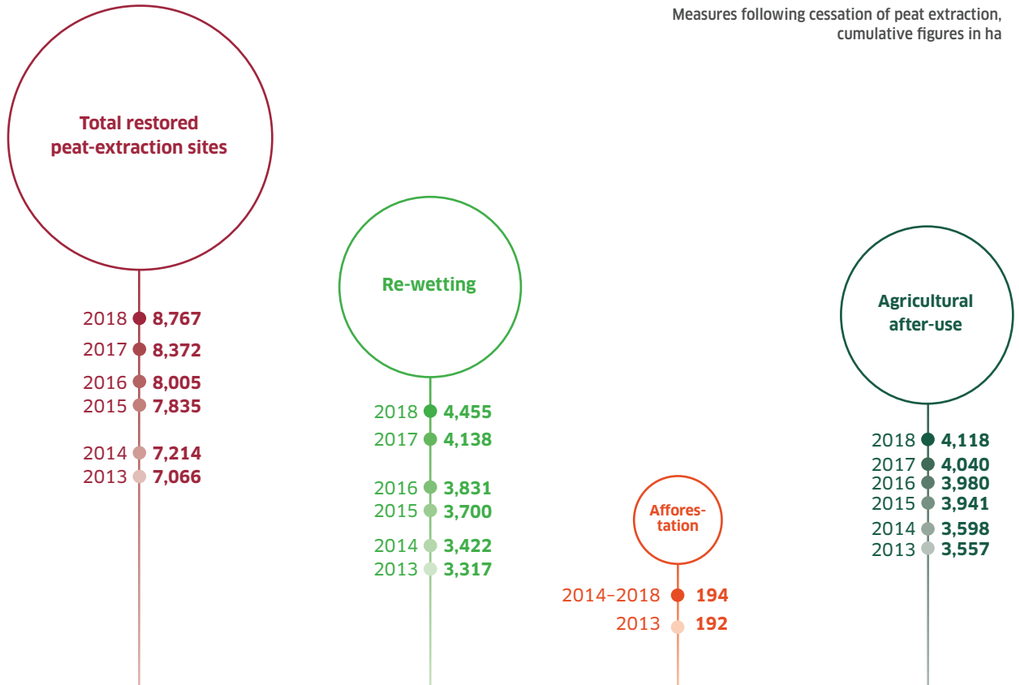
Depending on the method used, peat production on a given site may continue for several decades. After raw-material extraction has ceased, sites remain covered with residual peat to at least the legally required depth. There are essentially four options for their subsequent usage, and which of these is implemented in a given case is stipulated by the relevant authorities in permit documents issued prior to commencement of extraction activities.

The most important form of after-use in Germany is re-wetting. Its aim is to establish peat moss (Sphagnum) and other typical peatland plants, such as cotton grass. In re-wetted areas, the presence of standing water will lead to the former hydrological conditions being restored, resulting in bog-like vegetation (i.e. rehabilitation) or even typical bogland vegetation (i.e. regeneration), and these sites can become CO_2 sinks when the peat body begins to grow again. In this way, a re-wetted area can contribute to the biodiversity typical of peatland – in this case, to the variety of ecosystems present – and again become a characteristic feature of the landscape.

Because local geological and hydrological situations differ, not all sites can be returned to nature in this way once peat extraction comes to an end. Instead, some former production areas are afforested or prepared for agricultural after-use. In some cases, buffer zones are also established between differently utilised areas and left to the process of natural succession.

Since 1960 we have re-wetted, afforested or made available for agricultural after-use a total of 8,767 hectares.

Measures following cessation of peat extraction, cumulative figures in ha



Peatland restoration measures in Ireland and the Baltic states

In 2016, and for the first time, we returned to the state of Lithuania a re-wetted extraction site some 43 hectares in size. Projects aimed at rehabilitating former extraction sites are also in preparation at other locations in the Baltic region and Ireland. Here, we are seeking to put into practice innovative approaches to peatland restoration that provide additional environmental and climate benefits, such as Sphagnum farming. In all such cases, we are tailoring our practice to local conditions and adhering to applicable local laws. Klasmann-Deilmann's locally responsible subsidiaries are liaising closely with the relevant authorities on this matter.

Sphagnum-farming project

In close collaboration with the University of Hanover and the Thünen Institute in Braunschweig, Klasmann-Deilmann carried out an extensive Sphagnum-farming project between 2015 and 2018. A total of 10 hectares of former extraction areas were prepared for the cultivation of peat moss on black peat. The special moss required for the project – namely, moss obtained from peat hummocks – was removed from semi-natural peatland and then distributed over already re-wetted sites or sites earmarked for re-wetting. This made it Germany's largest project involving the farming of Sphagnum on black peat.

The aim of this effort, funded with resources from the federal state of Lower Saxony, was to achieve Sphagnum growth that is reproducible under specific conditions, producing material that could then be used as a peat substitute and in creating further such sites. Any changes over time in biodiversity on the sites in question, and in greenhouse gas emissions, were scientifically investigated by the University of Hannover and the Thünen Institute, with funding by the German Federal Environmental Foundation (DBU). Klasmann-Deilmann worked intensively on assessing the profitability of peat moss cultivation, starting with land acquisition and going on to consider site establishment, operational aspects, maintenance and, finally, the use of peat moss as a substrate constituent. The project's original aim of developing a renewable resource for substrate production has been abandoned for the time being. Although trials have now confirmed that peat moss is indeed very much suitable as a substrate constituent, its economic viability cannot currently be demonstrated. In this context, clarification is sought on other key issues:

- How to increase yields;
- Provision of land on a sufficiently large scale;
- Mechanisation of distribution, maintenance and harvesting;
- Sufficient availability of irrigation water;
- Eligibility for funding as an agricultural crop.

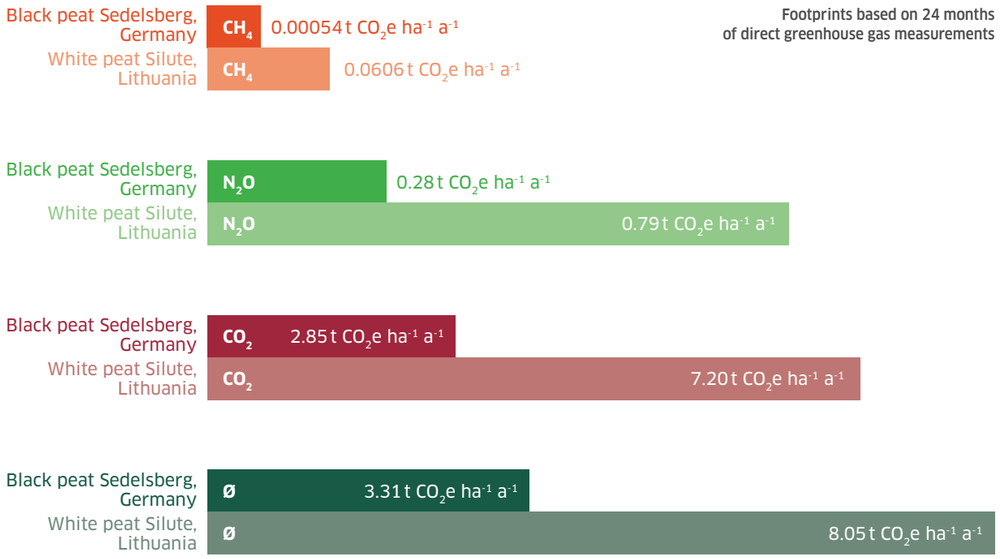
However, the successful outcome concurrently achieved in the rehabilitation of degraded peatland is something we wish to build on in the near future. The scientific studies on our optimised practices have shown that flora and fauna similar to that of raised bogs can develop within a short period of time while greenhouse gas emissions decrease considerably. This means that former extraction sites can contribute sooner to climate protection and nature conservation. Klasmann-Deilmann will continue this approach and make it available as a service to third parties.

Emissions from peat extraction

For the last 10 years there has been an overlap between, on the one hand, the discussion on emissions from the extraction and usage of peat and, on the other, the conservation-related debate that has been continuing since the 1970s on the preservation of peatland. Until a few years ago, however, scientific knowledge on the climate impact of peat extraction and use existed only to a small extent.

In view of this, we initiated a study and, between February 2015 and February 2017, conducted greenhouse gas measurements on our white-peat and black-peat extraction areas. The aim was to close the existing gap in the scientific data and to provide reliable information about emissions from the extraction and use of peat. We were ably assisted, in both the monitoring campaigns and in drawing up the footprint, by the Cologne-based Meo Carbon Solutions GmbH. On completion of the first 12 months, and after the entire project had been concluded and evaluated, we discussed our approach and results with experts from Meo, the Müncheberg-based Leibniz Centre for Agricultural Landscape Research (ZALF), the regional State Agency for Mining, Energy and Geology (LBEG) in Hanover, the German Research Centre for Geosciences (GFZ) in Potsdam, and the Kiel Institute for the World Economy (IFW). It was confirmed that measurements and footprinting activities in the first year had yielded valid outcomes and that, since a second year of monitoring had been completed, these also meet scientific criteria.

The mean emission levels determined for the black-peat extraction area used for monitoring in Germany were 3.13 t CO_2e ha^{-1} a^{-1}. On the white-peat extraction site in Lithuania, monitoring revealed average emissions of 8.05 t CO_2e ha^{-1} a^{-1}.

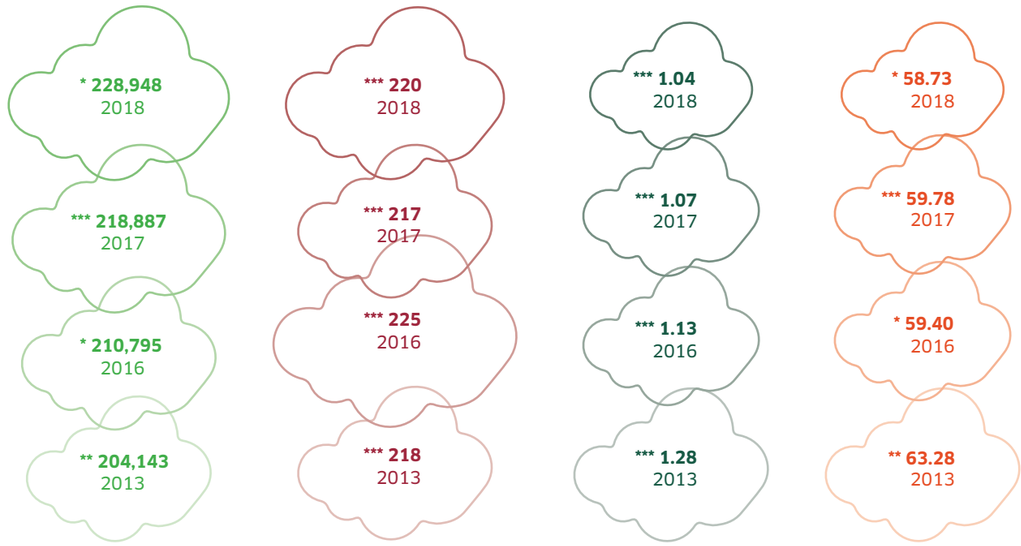


Carbon footprint for 2017/2018

In our Sustainability Report 2013 we published a world first: a carbon footprint for a company in the peat and substrate industry. Since then, we have had enhanced the calculation model in each successive year, especially in order to be able to precisely convey complex issues relating to land management and the use of raw materials in subsequent carbon footprints.

The calculation model has now achieved a degree of precision that led us, in addition to the calculation of the 2018 carbon footprint, to recalculate and re-verify the footprint for 2016. In consultation with the partners involved in drawing up these footprints, we took 2016 as the new base year instead of (as previously) 2013. A carbon footprint is also available for the 2017 financial year, though this has not been verified.

Our corporate and product carbon footprints were calculated by Cologne-based Meo Carbon Solutions GmbH. The carbon footprint was audited and verified by SGS United Kingdom Ltd. (Cheshire, UK), with regard to its assumptions, function and internal coherence, in accordance with the ISO 14064-1 standard and at a limited level of assurance.



Emissions in CO_2e

* Verification 2019 / ** Verification 2017 / *** These figures have not been verified

System boundary for carbon footprints 2017/2018

The new 'base year' for calculating our carbon footprint is 2016. Our corporate carbon footprints for 2016, 2017 and 2018 include all emissions arising within the system boundary 'cradle to gate, plus transport to customers'. We are incorporating the Logistics division as it is a major factor in our turnover.

Carbon footprint

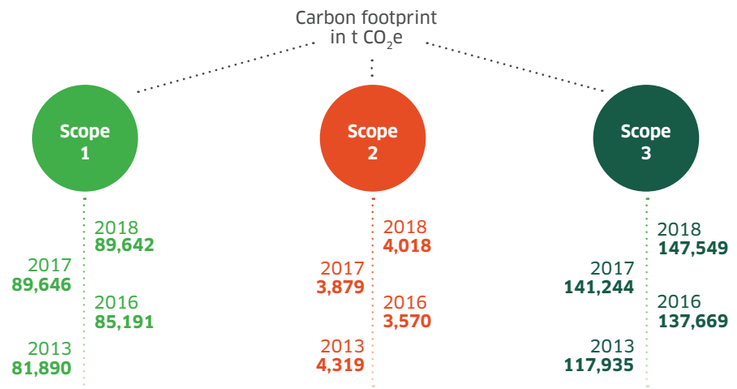
Emission sources	2018 in t CO_2e	% of total footprint	2017 in t CO_2e	2016 in t CO_2e	*2013 in t CO_2e
Extraction areas	70,471	30.79	66,333	60,682	75,474
Energy consumption	23,084	10.08	19,808	21,357	19,692
Transport	83,412	36.43	84,050	85,599	65,759
External suppliers	51,981	22.70	48,696	43,157	43,218
Carbon footprint of company as a whole	228,948		218,887	210,795	204,143
Total quantity of substrates, raw materials incl. trading (tm^3)	3,898		3,662	3,549	3,226
Carbon footprint per m^3 of substrate (kg CO_2e)	58.73		59.78	59.40	63.28

* Figures from the Sustainability Report for 2016

Classification of emissions into scopes

The greenhouse gas calculating tool classifies emissions into three categories called 'scopes' in conformity with ISO 14064 and the requirements of the Kyoto Protocol.

- Scope 1 includes all emissions directly generated, for example, from combustion processes in the company's own facilities and the decomposition of raw peat materials.
- Scope 2 covers emissions relating to either purchased energy such as electricity or heat energy sources such as woodchips.
- Scope 3 refers to emissions from third-party services and purchased preliminary services.



‘Positive’ footprint for 2017/2018

Renewable-energy and -resources activities are to be considerably expanded as a business area in the coming years. They also contribute to emissions avoidance. Under the requirements of the ISO 14064 standard, however, these positive effects are disclosed separately from the carbon footprint. The chief reason for this is that the bulk of the energy generated in this way will not be consumed by Klasmann-Deilmann itself, but fed into the grid and sold. In addition to our carbon footprints, ‘positive’ carbon footprints have therefore also been drawn up (i.e. footprints that take only carbon-positive measures into account). They disclose how many emissions from fossil energy sources such as coal, oil and natural gas are avoided by usage of renewable energy from short-rotation coppice (SRC) and photovoltaic installations.

2018	2017	2016	2013
16,240 t CO_2e	*2,470 t CO_2e	18,881 t CO_2e	11,193 t CO_2e

Use and generation of renewable energy and of forest resources

* Lower quantities were sold due to the relatively warm winter in the Baltic region.

Product carbon footprint

The product carbon footprint (PCF) we publish differs from the corporate carbon footprint (CCF) in that the former includes the ‘cradle to grave’ system boundary, i.e. one that incorporates both the use phase and the ‘end of life’ of our substrates.

Based on this breakdown, the bulk of the emissions are generated outside our system boundaries. We regard this as affirmation of our responsibility to enhance our range of substrates so as to produce fewer greenhouse gases at every link of the value and consumption chains. This is the foundation of measures that are an integral part of our strategy, such as increasing the proportion of alternative constituents in our substrate blends to 15 % by volume by 2020 and 30 % by volume by 2025.

With reference to a recipe database, the data for the corporate carbon footprint can be converted for individual products, creating PCFs. By way of example, the table below gives the carbon footprints of selected growing media for the years 2016 to 2018 within the ‘cradle to gate’ and ‘cradle to grave’ system boundaries.

					
Rezeptur	70413	70002	70062	70080	70698
Name	Base substrate	Potgrond P	KKS organic tray substrate	Seedling substrate	BP substrate
Typ	White-peat substrate	Black-peat substrate	Black-peat / white-peat blend with green compost	Black-peat / white-peat blend with coir pith	Black-peat / white-peat blend with wood fibre
Emissions 2018 "cradle to gate"	36.56	24.22	39.66	32.77	25.77
Emissions 2018 "cradle to grave"	216.22	245.17	195.78	184.76	168.05
Emissions 2017 "cradle to gate"	45.40	16.52	28.05	30.41	20.58
Emissions 2017 "cradle to grave"	165.42	240.48	155.25	147.22	146.17
Emissions 2016 "cradle to gate"	48.30	14.18	28.80	31.71	20.51
Emissions 2016 "cradle to grave"	162.53	241.98	154.25	145.82	145.90

Figures in kg CO_2e/m^3

Energy management

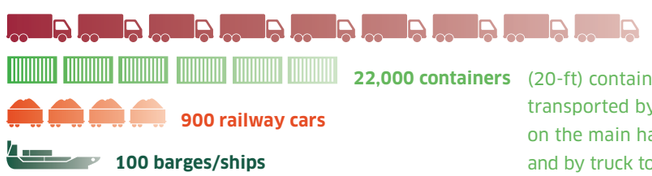
Among the measures by which we wish to lower our emissions are those aimed at reducing our energy needs. To identify potential here, energy consumption is monitored and evaluated on an ongoing basis. For this purpose, we use the automated recording and processing system that forms part of our energy management scheme. Furthermore, to increase the energy efficiency of our facilities and machinery, we keep abreast of technical developments in this area and apply them whenever it is possible and expedient to do so. Our organisation's overall heating requirements are decreasing thanks to ongoing improvements in heating technology and insulation standards, although needs do partly depend on winter temperatures. Our German sites obtain electricity from hydropower and our Irish production company uses only wind power-derived electricity. Additional savings are achieved by optimising lighting and compressed-air generation.

Energy consumption by use	2018	+/- in %	2017	2016	2013
Energy consumption for extraction sites (diesel, electricity)	18,149	6.0	17,120	18,664	18,160
Internal peat transport (diesel)	10,196	- 8.3	11,118	13,797	16,704
Energy consumption for buildings (electricity, gas)	4,935	19.8	2,245	2,693	1,532
Packaging material (film)	6,048	11.5	5,426	5,401	4,657

Figures in t CO_2e for the Group as a whole

Logistics

Thanks to long-standing relations with dependable national and international haulage companies and transport service providers, Klasmann-Deilmann can guarantee that all orders are processed reliably and quickly. We utilise rail and shipping wherever these are feasible and efficient options. In 2018, Klasmann-Deilmann used:



(20-ft) containers which are transported by seagoing vessel on the main haul of the journey and by truck to and from the ports.

The resulting greenhouse gas emissions add up to about one-third of all those caused by Klasmann-Deilmann, so our Logistics operations play a highly responsible role in terms of sustainability. At the same time, however, and in this area in particular, we repeatedly come up against the limits of what is feasible and commercially viable.

For example, rail transport still often proves uneconomical compared with road haulage, a major factor being high transhipment costs. Moreover, many customers want their orders delivered as quickly as possible, within a few days. This is often not feasible by rail. With regard to movement of goods between Western and Eastern Europe, another problem is that of rail gauge incompatibility as this means there are no direct rail links. Nevertheless, as production company Klasmann-Deilmann Produktionsgesellschaft Nord mbH has its own rail connection to the Deutsche Bahn rail network, we use this for as many shipments as possible.

Within Western Europe, we also make use of the opportunities provided by domestic waterway shipping. Water routes needed for a comparable volume of trade in goods with Eastern Europe are lacking, so that chartering seagoing vessels is the only realistic alternative. For deliveries overseas, we make exclusive use of container transport.

Overall, road transport is essential to us, whether for direct deliveries to our customers in Europe or as a component of combined (road/water/road) transport.

Nevertheless, we strive to keep the environmental impact of our logistics operations as low as possible. We reduce internal transport between our various production sites. Setting up intermediate storage facilities in selected European target regions, too, enabled us to switch to rail for a significant proportion of the annual volume transported. The weight of our raw materials and growing media is another starting point: the drier – and hence lighter – these materials, the greater the volumes that can be carried in each transport unit. And we will, in the future, focus more on decentralised production so that transport distances to our customers can be shortened and that far larger quantities of raw materials can be transported in a more climate-friendly way, namely by water.

Emissions reduction measures

Apart from its strategically integrated carbon-effective projects, Klasmann-Deilmann will also identify emissions reduction measures from its carbon footprint – especially with regard to emissions from extraction areas.

- Set-aside of land used for peat extraction is planned, especially in Germany, but also in the Baltic region.
- Transport to customers accounts for around one-third of our carbon footprint. There is potential for emissions reduction here, with one starting point being the weight of raw materials and substrates. The drier – and hence lighter – these are, the greater the volumes that can be carried in each transport unit.
- Decentralised production close to our customers could also help avoid transport-related emissions, as raw materials are delivered by water, which is more climate-friendly than the alternatives, and include regionally available constituents. Marketing-strategy analyses are currently underway in this connection, which could lead to the construction of new production facilities located nearer to sales markets in Europe and overseas. The expected reduction in transport-related emissions is a major criterion here.
- Klasmann-Deilmann has set itself the target of increasing the proportion of alternative constituents – such as its GreenFibre wood fibre product and TerrAktiv green compost – by at least 30 % (in volume terms) overall by 2025.
- Carbon is actively removed from the air, and stored in the form of woody biomass, both through creation of short-rotation coppice (SRC) plantations and by woodland managed by Klasmann-Deilmann. We see additional potential here from our activities in the renewable energy and resources sector.

It follows from the Klasmann-Deilmann Group's own strategic guidelines and the carbon footprint for 2018 that the Group is committed to considerably reducing its own emissions at both company and product level. At company level, economic growth runs counter to the lowering of emissions. However, the fact that further progress is being made in the reduction of emissions is indicated by the product carbon footprint within the 'cradle to grave' system boundary. This is an approach by which future developments could be represented.

Green services

A policy of continuing sustainable development is, for us, among the major strategic goals for the coming years. We are also keen to make progress on the climate front. To further raise awareness of this important issue among our customers too, and to encourage demand for alternative constituents, we provide services relating to horticultural carbon footprints.

Carbon footprint for substrates supplied

As of 2018, our customers can now have the carbon footprint disclosed for the growing medium we supply them with. Upon request, the level of CO_2 emissions – expressed in carbon dioxide equivalents (CO_2e) – will be individually calculated and a product carbon footprint (PCF) sent by e-mail to the horticultural business in question. In this way we aim to further increase awareness, in a direct manner, of a key sustainability issue within our own customer base.

Under the cradle-to-grave approach, the bulk of product-related emissions, especially from peat use, are generated (primarily by the consumer) during the substrate's use phase. The proportion attributable directly to Klasmann-Deilmann or in the nursery is considerably lower. Here we acknowledge our responsibility to increasingly focus on ensuring that, with our range of substrates, fewer greenhouse gases are produced at every link of the value and consumption chains. This is the rationale behind measures that are an integral part of our strategy such as increasing to 15 % by volume the proportion of alternative raw materials in our total annual production by 2020.

Optimised substrate blends lead to lower CO_2 levels

Additionally, and as of 2018, our customers are able to request a calculation of which substrate blends they can use to achieve improved CO_2 levels. A calculating tool available to our company's specialists precisely reveals how the selection of substrate components impacts the product carbon footprint (PCF). Called the PCF Compass, it shows real-time changes in a PCF as soon as the substrate blend is manually adjusted. A direct comparison with the actually used substrate demonstrates how, for example, the use of different grades of peat – or proportions of the GreenFibre wood fibre product – affect the carbon footprint.

Carbon footprint for a nursery or crop

Growers can also request that we prepare a carbon footprint for their own business. For this purpose, a calculating tool was developed, based on the same program as that used to calculate our own carbon footprint. Nurseries provide the necessary key data on, for example energy consumption and operational inputs used. Based on this, the tool computes the carbon footprint for the business as a whole (corporate carbon footprint, CCF); it can also provide a data breakdown for an individual crop, resulting in a product carbon footprint (PCF).

Employees

Maintaining and strengthening employer attractiveness

We want our employees to enjoy working in our company. Our low staff turnover shows that a lot of them do, with many of our employees having been with us for several decades. We want this to remain the case. Which is why we are intensifying and being innovative with ways to keep us attractive as an employer.

In the years ahead, a generational shift is coming for a number of positions – and this includes key posts within Klasmann-Deilmann. In succession planning, our policy is to focus on our own young employees. Our business growth means that, particularly for highly specialised business units and employee roles, we need additional expertise that we wish to develop internally and, as required, enrich with new recruits from outside.

Demographic change and the skills shortage, especially in rural areas, require the enhancement of employer-branding measures. We are an attractive employer and as such have a presence at both regional and national trade and job fairs, aiming to recruit qualified specialists and young people to our organisation.

A modern work environment

After an 18-month construction phase the 'Innovation Center', Klasmann-Deilmann GmbH's new head office in Geeste, Germany, opened in the summer of 2018. The reason for the investment in this new building is our continuous growth. For some years, the previous administrative building (the 'Business Center') no longer had sufficient space. In the Innovation Center, additional PC workstations and open-plan areas are now in place for more than 40 employees. It also houses an Academy and a multimedia exhibition area, thus providing a suitable setting for events. From this new building, the Group is now managed, and strategic and international cooperation strengthened – both within the Klasmann-Deilmann Group and with partners, customers and stakeholders. A modern experimental greenhouse called the Research Center has been purpose-built for research projects on innovative growing media, growing systems and raw materials for substrates. An additional technical facility, the Technikum, is currently under construction. The entire location is thus geared towards research, development and innovation. And large parts of the former administrative building have been extensively refurbished and modernised. Taken as a whole, these new or redesigned buildings contribute significantly to enhancing Klasmann-Deilmann's appeal as an employer.

Vocational training, on-the-job trainees and scholarships

We continue to offer a number of vocational training places, especially for administrative and IT-related job profiles. Dual training programmes are playing an increasingly important role in this regard. At the end of 2016, the Chamber of Commerce and Industry (IHK) for Osnabrück, Emsland and Bentheim County awarded us 'IHK Top Training Workplace' status. Internships combined with work or studies, and opportunities to produce Bachelor's and Master's theses are also increasingly made use of. Our measures also include awarding further Deutschlandstipendium scholarships and, for the first time, a locally based scholarship for the Emsland region ('Emslandstipendium').

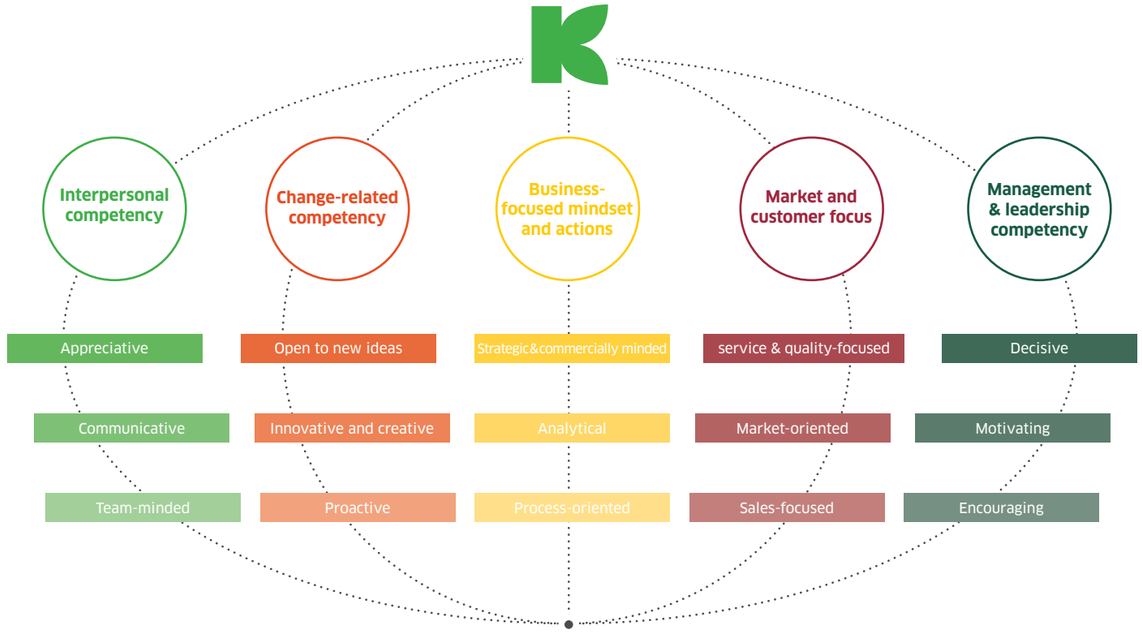
In order to attract especially promising candidates, particularly international ones, we are increasing opportunities enabling recruits to join us as on-the-job trainees. For some years now, we have continuously had two International Trainees on our team. The prime focus here is on future opportunities in market development, production and digital business models. Against this background, we are expanding our contacts with higher-education institutions – including Osnabrück University of Applied Sciences, and Wageningen University & Research in the Netherlands – that specialise in professional fields of particular relevance to us.

We ensure that, in all cases, close guidance is provided within the relevant departments. It is not only high-quality training in the subject matter itself that is important to us, but also personality development. Many of the young people who complete their vocational training journey with us are subsequently taken on as new employees.

Strengthening competencies, encouraging talent

As part of our long-term personnel development strategy, we have developed and launched several programmes over the last two years aimed at improving our employees' competencies, integrating them more fully in our business development, and encouraging their stronger identification with our organisation. This is an investment aimed at enhancing our appeal as an employer both internally and externally.

Our in-house model of competency management is proving useful in this context. This has, since 2017, been the key approach for many tools used in systematic personnel development. Its very specific requirements make targeted support measures possible.



Competency management model

A family-friendly company

Klasmann-Deilmann is among the founding members of the Emsland region's 'Work and Family' foundation (www.familienstiftung-emsland.de), whose aim is to help local people combine family and career. The foundation first certified us as a family-friendly company in 2012. Its November 2018 audit resulted in our family-friendliness being confirmed for the third time and this quality label being renewed.

Promoting health

For many years now, we have been running a proactive health management programme, the aim of which is to maintain, improve or restore the health and well-being of our employees. Accordingly, health management is an integral part of all operating processes.

Central elements are regular preventive health check-ups as well as promoting various measures aimed at improving employees' general health, including free flu vaccinations. Additionally, an internal works agreement enables all employees to exercise in gyms and other fitness facilities, with Klasmann-Deilmann covering a substantial part of the costs.

Measures to prevent psychological stress are also in place. In conjunction with the employee representation body and health and safety committees, a risk assessment approach was developed in which psychological stress for different work areas was listed and weighted, with Procedural instructions for line managers drawn up on this basis.

The working-life span lengthens

We have adjusted to the fact that our staff will remain in employment for longer than would have been the case a few years ago. To the greatest extent possible, we intend to encourage this trend by creating attractive conditions with regard to working hours, provision of the right equipment and resources and, in particular, health promotion. The mechanisation of work processes in our technical/industrial operations has reached a high level at all locations, as has the equipping of office workplaces, so that physically demanding work is required only in exceptional cases. In Germany, our workforce also benefits from the option of partial retirement.

Health and safety management strengthened

Klasmann-Deilmann maintains a health and safety management system whose goal is the total prevention of accidents. Its aim is to identify potential workplace hazards in good time and, as far as possible, to remove or remedy them. Among the measures to achieve this are regular on-site inspections by in-house and external safety experts, company medical officers and safety officers, as well as meetings of the health and safety committees. Additionally, incidents are automatically documented at organisational level. Near misses, too, are thoroughly documented and assessed within the health and safety committee. Employees periodically receive training on this topic. To involve them closely in the implementation of health and safety measures, special rewards are available for ideas to enhance workplace safety proposed under the employee suggestion scheme.

Nevertheless, we recorded a total of 32 work-related accidents in 2018, of which 17 were notifiable. In 2017, 10 of the 25 work-related accidents were notifiable.

Our leadership standards

Our company leaders are asked to perform a balancing act, reconciling diverse interests. Considerable demands are placed on them – both by their staff and by their own line managers. And a lot is required of them in dealings with customers and suppliers as well. Our executives also greatly influence the way the firm does business, what the working atmosphere is like and where a given department stands in relation to the organisation as an integrated whole. In view of this, Klasmann-Deilmann has developed what we call Leadership Standards, which constitute a binding framework for action on the part of every executive in our organisation.

Female executives

Across the Group, we currently employ 15 female executives, nine of them at our international locations. These account for 14 % of our worldwide total of 110 executives. Our female executives include:

- a production manager in Germany;
- a divisional director on our international Management Board; and
- a managing director at our sales company in the Netherlands.

Compliance requirements for the entire workforce

The point of departure for our rigorously implemented compliance policy was an event in 2009 at which Klasmann-Deilmann GmbH's executives underwent comprehensive training. On its completion, they signed a statement undertaking to observe our company's compliance principles. Since then, newly appointed executives have been familiarised with, and commit to, these principles as part of their induction training.

Additionally, an agreement with the Management Board and the General Works Council came into effect In November 2013 that requires all employees of Klasmann-Deilmann GmbH to comply, among other things, with competition and monopolies law, with a prohibition on the offering and granting of benefits, and the prohibition of money laundering.

The managing directors and the financial executives from our subsidiaries undergo training on Group-wide compliance requirements, most recently in the autumn of 2018. They were also put in charge of implementing relevant arrangements in their particular company.

Moderate increase in headcount

The average number of staff employed within the Klasmann-Deilmann Group increased from 938 in 2016 to 1,010 in 2017 and 1,041 in 2018. Of these, 410 men and women were in technical jobs in 2018, with 631 in administrative activities. The proportion of those employed outside Germany was 66.9 % in 2018 (having been 65.2 % in 2017 and 62.0 % in 2016).

	2018			2017			2015			2013		
	Σ	♂	♀	Σ	♂	♀	Σ	♂	♀	Σ	♂	♀
Germany	344	276	68	351	285	66	362	294	68	371	302	68
Lithuania	392	335	57	376	325	51	301	253	48	295	259	36
Latvia	110	86	24	105	85	20	100	68	32	88	59	29
Ireland	71	68	3	64	61	3	63	60	3	69	66	3
Netherlands	47	44	3	38	35	3	38	36	2	34	32	2
France	20	11	9	21	12	9	21	13	8	19	11	8
Belgium	14	10	4	12	10	2	11	9	2	9	7	2
Singapore	11	3	8	11	3	8	10	2	8	9	2	7
China	14	8	6	13	8	5	9	6	3	0	0	0
Poland	8	6	2	9	7	2	9	7	2	9	7	2
Italy	6	3	3	6	3	3	6	3	3	6	3	3
USA	2	2	0	2	2	0	5	2	3	4	1	3
Austria	2	1	1	2	1	1	2	1	1	2	1	1
Summe	1041	853	188	1010	837	173	937	754	183	915	750	165

All figures are full-time equivalents (FTE)

The majority of our activities are carried out by our permanent employees. Additionally, the Klasmann-Deilmann Group employs workers of subcontracted employers at its production sites, especially during the summer months; these may total between 100 and 200 individuals at any given time.

Community commitment

In this globalised wold, our company is part of a diverse network involving people, professional associations and other organisations, and the worlds of politics, culture and sport, as well as very different interest and needs. We take our social responsibility (which extends beyond our business objectives) seriously. That's why we do what we can to get involved: financially, in the realm of ideas, on a voluntary basis and always with great dedication.

Klasmann-Deilmann GmbH supports local sports clubs, for example – especially in communities that are home to our employees. It also sponsors specific charitable and cultural projects. Every year during the Advent season, a major fundraising effort takes place, with selected clubs, associations and projects in the social, political and economic spheres receiving financial assistance.

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we make it grow

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