SUSTAINABILITY REPORT 2017 / 2018

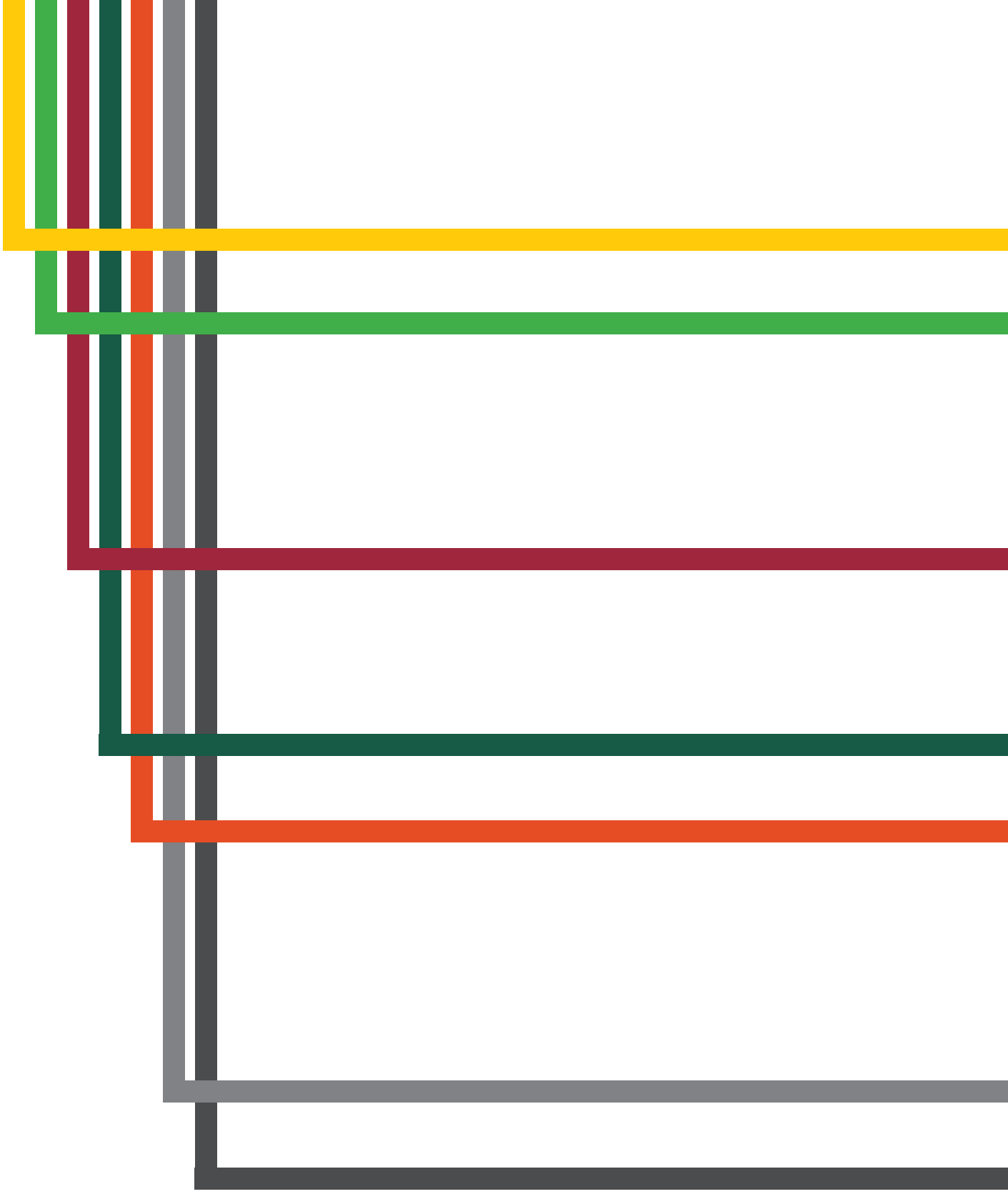
Meeting expectations, gauging limits

according to GRI STANDARDS 2016

1913

we make it grow

Klasmann-Deilmann



About us

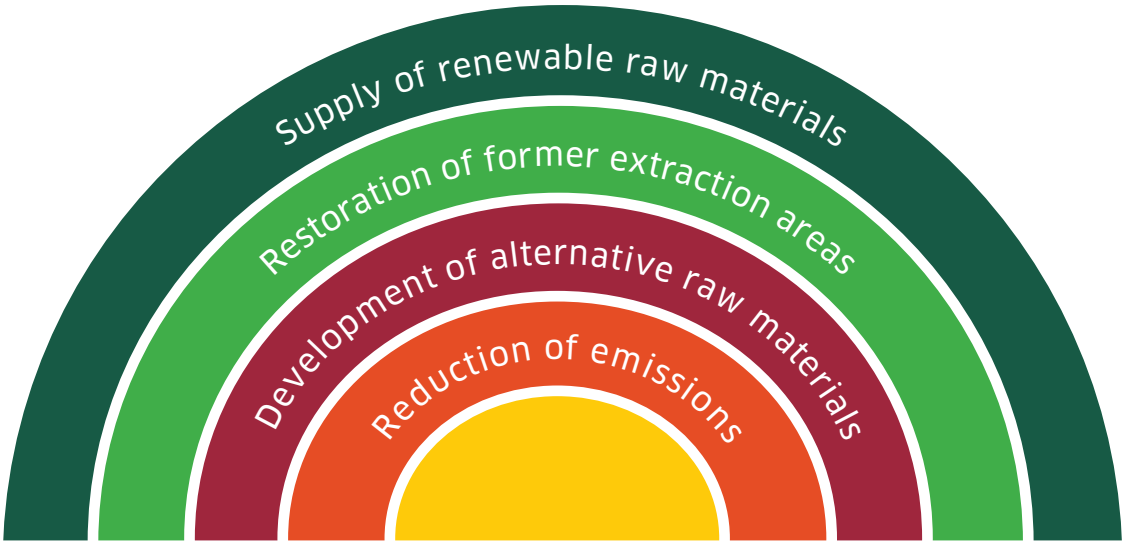
Klasmann-Deilmann is the leading corporate group in the international substrate industry, with sales and production companies in Europe, Asia and America. On every continent, our growing media provide a vital basis for the growth of fruit, vegetables, edible fungi, ornamental plants, trees and shrubs. 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.


Supply of renewable raw materials
Restoration of former extraction areas
Development of alternative raw materials
Reduction of emissions

01

Reduced to the max or how we focus on the essential goals.

"We have drawn sharper dividing-lines between issues material to us and those less so or not at all. Going forward, we will once again be focusing on those areas where the expectations placed on us are greatest, and which unlock sustainable potential."

Moritz Böcking & Bernd Wehming, Germany, Managing Directors

Meeting expectations, gauging limits

102-11, 102-14

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. The outcome was that we redefined our sustainable-development aspirations within the Klasmann-Deilmann Group.

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. Moreover, a recent study presented by academic Chris Blok of the University of Wageningen in the Netherlands (cf. Chris Blok 2019) predicts considerable growth in global demand for growing media which, according to current understanding, cannot be met even if available peat resources are used to the full. 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.

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.

Advances in peat moss cultivation

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.

Reduce climate impacts from peat use

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.

Alongside these developments relating closely to our core business, we have once again subjected all the criteria of our sustainability strategy to a materiality analysis. This was

prompted by the realisation that we were, increasingly, occupied with time-consuming tasks that stretch to the limit the human resources of our company, with its lean organisation, yet without appreciable benefits in terms of sustainable development. In response, we have drawn sharper dividing-lines between issues material to us and those less so or not at all. Going forward, we will once again be focusing on those areas where the expectations placed on us are greatest, and which unlock sustainable potential.

Sustainable Development Goals

Our chief commitment will, therefore, 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. In this way we are doing what we can to help achieve the following Sustainable Development Goals, of which there are 17 under the International 2030 Agenda (see UNITED Nations):

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

Moritz Böcking

Bernd Wemming

02

May the force be with us or the will to act even more sustainably.

“In implementing our strategic goals, we follow sustainability criteria. We assess our activities and product solutions in terms of their social and economic acceptability and ecological compatibility. And we seek dialogue with our stakeholders, even on more controversial issues. In this way we are placing our company’s success and long-term prospects on a broad foundation.”

Ted Vollebregt, Netherlands, Director Sales & Supply

2.1 Report profile

Procurement of external advice on GRI Standards and ISO 14064-compliant verification

102-54, 102-56

This report has been prepared in accordance with the 'GRI Standards: Core option'. Our reporting thus includes all aspects identified as material to our sustainable development, as well as related internal and external impacts. In this context, the Managing Directors of our organisation set great store by the procuring of professional content-related advice from an external independent body. As in previous years, we contracted the Wuppertal-based agency triple innova GmbH, which is not affiliated with our company, with this task. For the Materiality Disclosures Service, GRI Services reviewed that the GRI content index is clearly presented and the references for Disclosures 102-40 to 102-49 align with appropriate sections in the body of the report.

The corporate carbon footprint (CCF) calculated for the years 2016 to 2018 with the assistance of Meo Carbon Solutions GmbH of Cologne, and the relevant calculation tools, were verified by SGS United Kingdom Ltd (Cheshire, UK) to the ISO 14064-1 standard. It was found, as previously, that the calculation of product carbon footprints (PCFs) on this basis also led to verifiable outcomes. The audit report is set out on pages 97-103. It includes the following topic-specific disclosures: 305-1 (Scope 1), 305-2 (Scope 2), 305-3 (Scope 3) and 305-4 (carbon footprint per m^3 of substrate) of the GRI Standards (2016).

Reporting cycle

102-50, 102-51, 102-52

This Sustainability Report for the financial years 1 January 2017 – 31 December 2018 is issued by Klasmann-Deilmann GmbH. Following our reports on the financial years 2011, 2012, 2013, 2014, 2015 and the Sustainability Report for 2016 published in October 2017, this is the seventh time we have reported about all the key issues ('material topics') and activities relating to sustainable development within our organisation. The Sustainability Report 2017/2018 is the first to cover a two-year period. All future Sustainability Reports will also be published on a biennial basis in order to keep the time and effort involved within reasonable proportions and, above all, to give the various sustainability projects sufficient time to develop favourably.

Contact point for questions regarding the report

102-53

The contacts for enquiries on sustainable development and the Klasmann-Deilmann Group's Sustainability Report are as follows:

Sustainable development & carbon footprint
Dr Jan Köbbing, Production & Sustainability
+49 (0) 5937 31 288
jan.koebbing@klasmann-deilmann.com

Sustainability Report
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dirk.roese@klasmann-deilmann.com

2.2 Material topics

Our business areas

102-2

The core business areas of the Klasmann-Deilmann Group are the extraction of raw peat materials, the manufacture of wood fibre and green compost, and the development, production and sale of growing media. This includes international logistical and consulting services for our subsidiaries, sales partners and customers in international commercial horticulture, as well as trading in substrate constituents. The extraction and use of peat repeatedly provides opportunities for critical debate with NGOs, authorities, political parties and governments regarding the environmental and climate impact of our business activities.

Furthermore, and especially in the Baltic region, we are active in the field of renewable energy and resources. We have established ourselves by creating and managing large-scale short-rotation coppice (SRC) plantations on agricultural sites, by increasing our trade in raw wood materials, and by selling woodchips and biomass blends as energy sources (cogeneration plants being an example). We also provide close-to-nature forest management services. Within this context, we are facing up to the debate on the use – for energy production – of fuel peat in the Baltic region, which remains common but is declining.

Our brands

102-2

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

Defining report content and topic boundaries

102-44, 102-46

Integration within the company

Ever since the first Sustainability Report was prepared, our sustainable development has been overseen and promoted by an in-house project group. Its make-up is characterised by continuity and reflects the Klasmann-Deilmann Group's various divisions and organisational structure. The project group includes:

- the Managing Directors of Klasmann-Deilmann GmbH, our organisation's lead company;
- representatives of the following divisions at Klasmann-Deilmann GmbH: Production & Sustainability, Technology & Procurement, Research & Development, Human Resources & Legal, Financial Services, and Corporate Communications & Corporate Marketing;

- representatives of two divisions at Klasmann-Deilmann Service GmbH: Sales Administration & Logistics, and
- Advisory Services & Quality Management;
- representatives of Klasmann-Deilmann Europe GmbH, the largest sales company; and
- representatives of Klasmann-Deilmann Benelux B.V., which is concerned with significant material flows.

The project group's functional competence extends to the review of our material topics and the defining of topics for each report (including topic boundaries). It also assesses our corporate performance with regard to the material topics and related internal and external impacts.

The boundaries of reporting have been continuously extended since the Sustainability Report 2011, and today relate to the entire Klasmann-Deilmann Group including its lead company and the service company, as well as all sales companies and production companies. At the same time, reporting based on GRI's reporting framework in recent years has, at various points, led to additional information being brought together and to the collection of additional data on various aspects which in turn helped us to further enhance the efficiency of our internal reporting system as well. In this way, our Sustainability Reports ensure that a comprehensive picture is provided of sustainable development within our organisation.

Development of material topics

Those topics that are material to our company were, for the first time, explored and defined at two workshops facilitated by triple innova GmbH, a sustainability agency, in 2011. The materiality process carried out in this context led to the identification of sustainability aspects material to Klasmann-Deilmann which we have, since then, been continuously developing further both strategically and operationally. In this connection we also benefit from the outcome of engagement with our stakeholders, new ideas from work with professional associations and feedback from readers of our publications.

In 2018, as part of her Master's thesis, a student based in the Production & Sustainability division reviewed the findings from 2011. She was able to confirm the materiality of many topics sounded out and deemed to be material back then. There were also a number of new issues that selected stakeholders had referred to in a face-to-face or telephone inter-

view. Those questioned were internal and external stakeholders, including employees and regional and federal-state level political representatives. A comparison with other sustainability reports from within our sector and with lists of requirements for sustainability reporting was also carried out.

The new results obtained in this connection led to a thorough discussion being conducted in-house, concerning further sustainable development at Klasmann-Deilmann and the possible need to redefine goals. The outcome was our decision that, in the future, our sustainability strategy should maintain its focus on those issues that relate to our core business and on which all of our stakeholders expect us to make appreciable progress in our development. We will continue – or begin with immediate effect – to address aspects that go beyond the above; however, we will not include them in the set of our material topics. In the years to come, we want to continue to harness our combined strengths to the greatest possible effect and to avoid overburdening our organisationally lean company.

In addition to the issues already defined by Klasmann-Deilmann as material topics, the stakeholders surveyed for the Master's thesis listed the following areas as important:

- Health and safety: This issue is one to which we attach great importance, as is reflected in the related activities (see 6.). Klasmann-Deilmann is carrying out an ongoing process of improvement that often exceeds the statutory requirements.
- Work-life balance: The physical demands faced by those in technical/industrial jobs within our sector have markedly diminished; at the same time, however, psychological stress is on the rise and many fields of activity are increasingly requiring a high degree of flexibility. In the context of personnel development, we have begun to define a framework that promotes – and makes binding provisions for – a sound work-life balance.
- Training and professional development: We attach great importance to having highly qualified employees, and encourage them to embrace lifelong learning – including Klasmann-Deilmann-funded educational measures.
- Customer satisfaction: At the end of 2019 we will launch a new regular newsletter aimed particularly at our sales partners and customers. And, once a year, we will use this medium to conduct a web-based customer satisfaction survey.

Another suggestion made in the Master's thesis is that Klasmann-Deilmann extend its sustainability reporting to include the following:

- Employee remuneration policy, working-hours arrangements, diversity and equal-opportunities policy, (gender) equality and women in leadership roles, identifying and integrating the interests of the workforce;
- Water and waste management;
- Supply chain sustainability including relevant environmental-management systems;
- Compliance and anti-corruption policy;
- Emissions from business travel by car, by rail and (in particular) by air;
- Management of sustainable development including allocated responsibilities.

For each of these topics, Klasmann-Deilmann is pursuing basic activities that satisfy, and in some cases even exceed, the legal requirements. If we set in motion new developments in any of these areas, these will be outlined in future Sustainability Reports. For example, we will be able to include the outcome of the employee survey – aimed at 'identifying and integrating the interests of the workforce' – in the 2019/2020 report.

List of material topics

102-47, 102-49

Our material sustainability issues are as follows:

- The debate on the appropriateness/advisability of peat in commercial horticulture and calls for a substantial increase in the use of alternative constituents, both of which were initiated in particular by nature conservation organisations and have long also been relevant at the political level (see 3.1);
- Securing the sourcing of raw materials necessary for substrate production, such as peat, wood fibre and green compost, while ensuring the highest product standards in terms of functionality, health and reliability, this being vital both to all those involved along the horticultural value chain (including consumers), and to our internal stakeholders (see 3.1);
- The relevance of peat extraction areas with regard to climate protection and nature conservation, which is being discussed by bodies including nature conservation organisations and the relevant authorities, as well as at political level (see 5.1, 5.2, 5.3);
- The reduction of emissions, especially relating to peat extraction, and the development of options for reducing emissions relating to transport, in which area Klasmann-Deilmann can contribute to achieving the 13th Sustainable Development Goal and the climate goals adopted at the UN Climate Change Conference ('COP21') in Paris (see 5.5, 5.6);
- The expansion of activities in the field of renewable energy and resources, by which we are – not least as a means of spreading risk – applying our core competencies to industry sectors that are a good fit for us (see 4).

The 'recruitment and retention of employees by our company', for instance through broad scope for training and professional development, encouragement of junior employees and young talent, and personalised opportunities for personality and competency development (see Chapter 6), has been included as a material topic for the first time in this Report.

In connection with these topics, we carried out measures including the following (which are elaborated on later in this Report) in 2017 and 2018 as well:

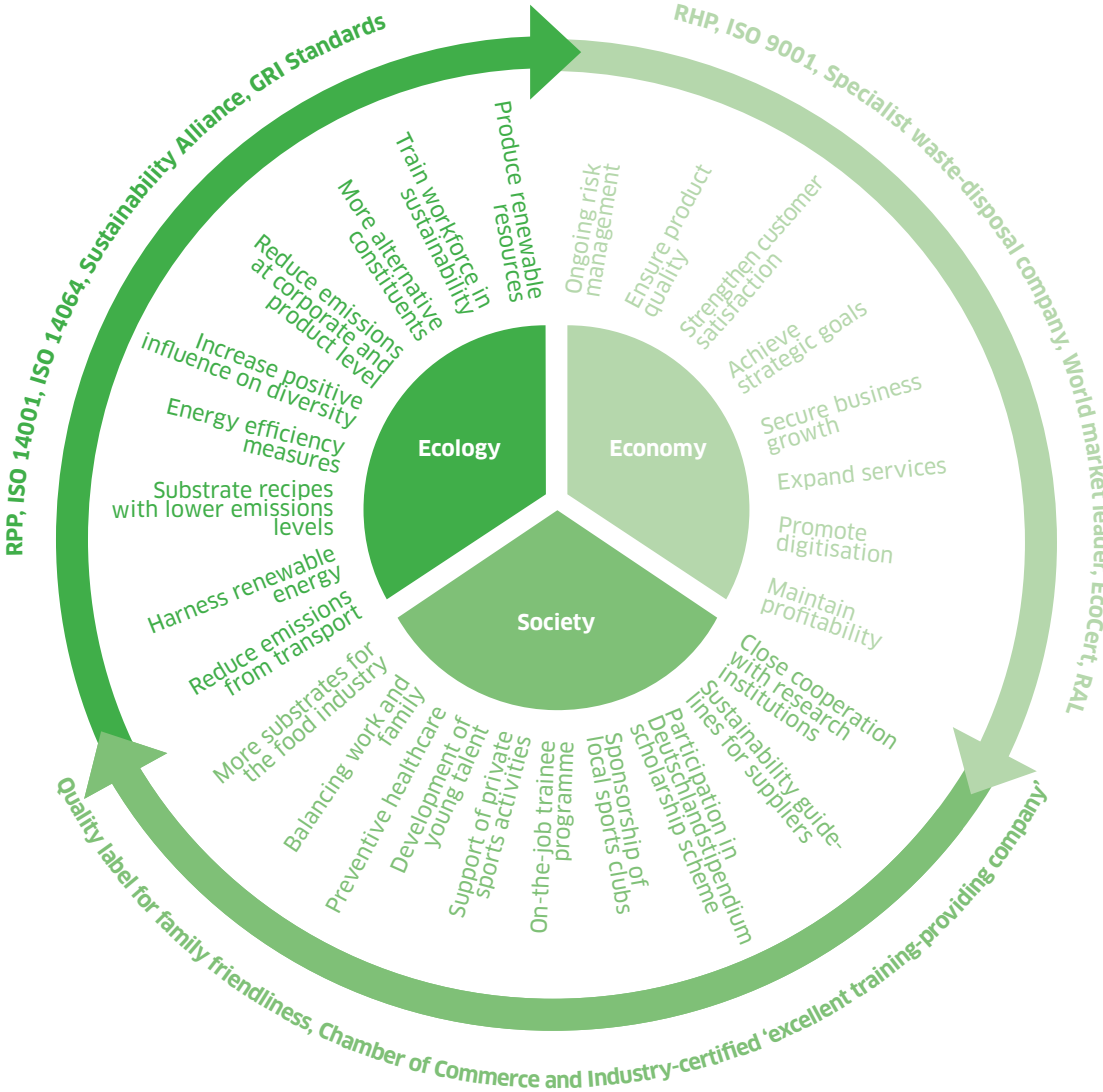
- Continuation of dialogue with political and NGO representatives;
- Securing and expansion of raw-material resources and production capacity, especially with regard to alternative substrate constituents;
- Assistance with developing the 'Responsibly Produced Peat' (RPP) certification system
- Advising our trade association 'Growing Media Europe' in Brussels with regard to - development of a model for calculating and assessing Life Cycle Assessments (LCAs) for all commonly used substrate constituents
- Launching of comprehensive and diverse personnel management and development programmes internally branded 'go'.

Engagement with our stakeholders also results in measures which help us develop more sustainably. The most important of these are as follows:

- Use, which has been increasing since the early 1990s, of alternative substrate constituents such as green compost and wood fibre; the target is that these will account for at least 15 % by volume of our annual total production by 2020, rising to 30 % by 2025;
- Far-reaching current research projects aimed at developing new substrate constituents and growing systems, including the Growcoon (see 3.4);
- Support of the 'Responsibly Produced Peat' (RPP) initiative, in order that independent verification of our responsible corporate action can be provided for the selection, use and restoration of peat extraction sites;
- Expansion of our activities in the renewable-energy sector, which has enabled us to already establish ourselves as a supplier of renewable resources in the Baltic region.

How we see sustainable development within our company

Over and above our material topics, we pursue activities relating to other important parts of our corporate remit in the three dimensions of sustainability:



2.3 Organisational structure

Companies of the Klasmann-Deilmann Group

102-1, 102-3, 102-4, 102-10

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. The focus of its activities is on commercial/administrative and advisory services in the fields of sales, purchasing, finance, transport and human resources, as well as product development and consulting – the aim being to get the best use of support resources for the Klasmann-Deilmann Group's companies, both in Germany and elsewhere. All other subsidiaries are either production or sales companies.

In 2017 we formed Klasmann-Deilmann Bioenergy SIA, a new sales company in Latvia, whose business purpose is directed solely to the field of renewable energy and resources. Its activities are carried out in close cooperation with our Lithuanian sales company UAB Klasmann-Deilmann Bioenergy. The activities and contractual agreements of UAB Klasmann-Deilmann Gedrimai, a production company located in the border region between Lithuania and Latvia, were assigned to Klasmann-Deilmann Latvia SIA. Deutsche Kompost Handelsgesellschaft mbH was amalgamated with Bol Peat GmbH with effect from 1 January 2018.

Shareholders, management, governance bodies

102-5, 102-7, 102-18

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.

Dr Norbert Siebels stepped down as Managing Director at Klasmann-Deilmann in the summer of 2018, having been in this role since 1990. Moritz Böcking and Bernd Wehming have jointly served as Managing Directors since Siebels' departure, with Böcking joining our company in 2011 and Wehming having held the post of Executive Authorised Officer at Klasmann-Deilmann from 1995 until his appointment as Managing Director.

The Managing Directors of Klasmann-Deilmann GmbH 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.

As at 1 January 2019, the Klasmann-Deilmann Group is organised into a lead company, a service company, production companies and sales companies.

Certification

102-11, 102-12

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) (see 5.1).

2.4 Financial results for 2017/18

102-7, 102-45

In 2018, the average number of staff employed within the Klasmann-Deilmann Group stood at 1,041; the figure for 2917 was 1,010. Klasmann-Deilmann GmbH's financial statements for 2017/2018 include all of our corporate group's subsidiaries. They were audited by KMPG Wirtschaftsprüfungsgesellschaft AG, Düsseldorf.

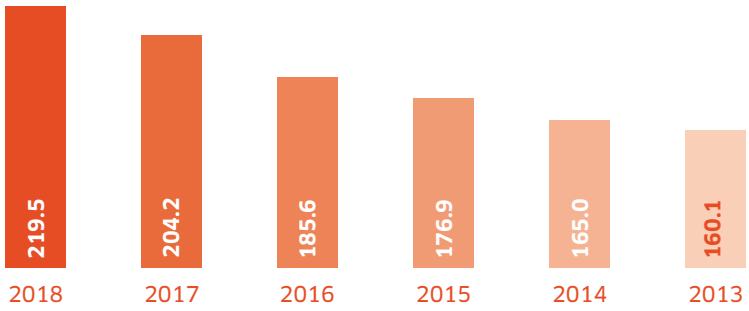
In the 2018 financial year, the Klasmann-Deilmann Group posted turnover of EUR 219.5 million; the figure for 2017 was EUR 204.2 million. The earnings performance, which is also stable, is founded on the business success enjoyed at all our major subsidiaries. The Klasmann-Deilmann Group's financial situation remained on an extremely sound footing. Our company has adequate financing possibilities for future corporate developments. Liabilities to credit institutions are mainly long term in nature.

The end-of-year balance sheet total for 2018 was EUR 198.4 million; the figure for 2017 was EUR 192.6 million. Equity capital increased from EUR 86.7 million in 2017 to EUR 93.9 million in 2018. Business figures for Klasmann-Deilmann GmbH are regularly published on the website of the German Federal Gazette.

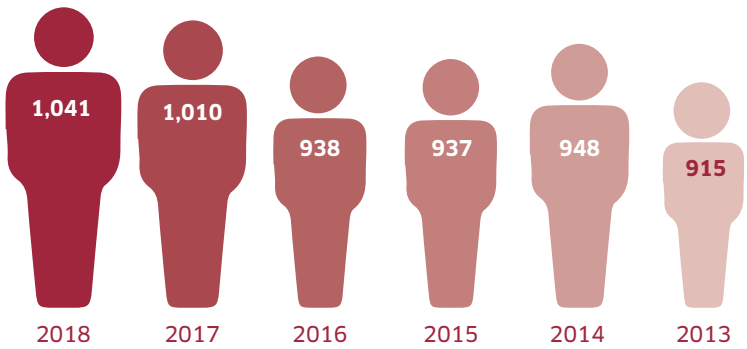
2.5 Key performance indicators 2017/18

102-7

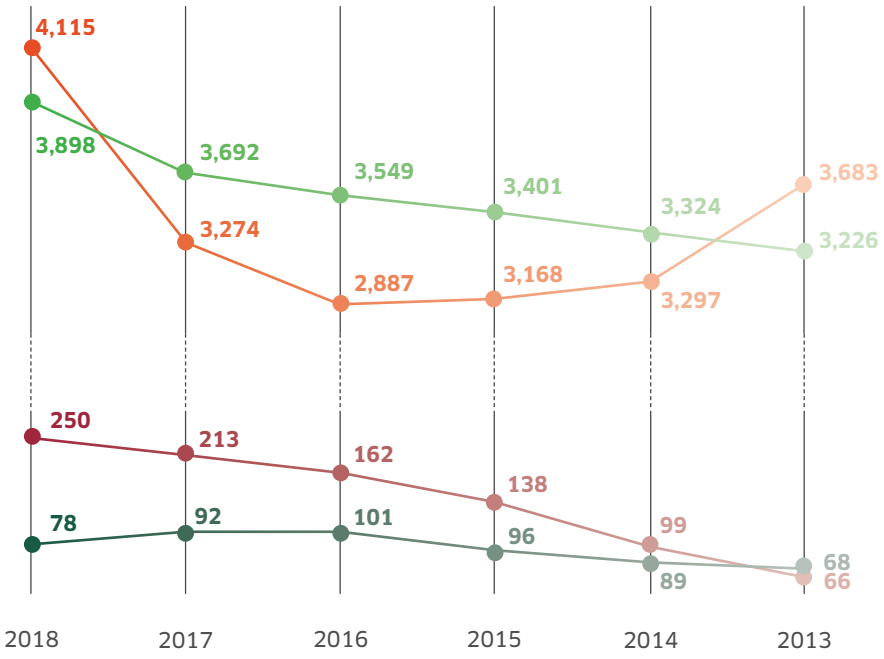
As a benchmark for our sustainable development, we employ key performance indicators (KPIs) that are tailored to specific aspects of our organisation and reflect our performance. Our goal is continuous improvement.

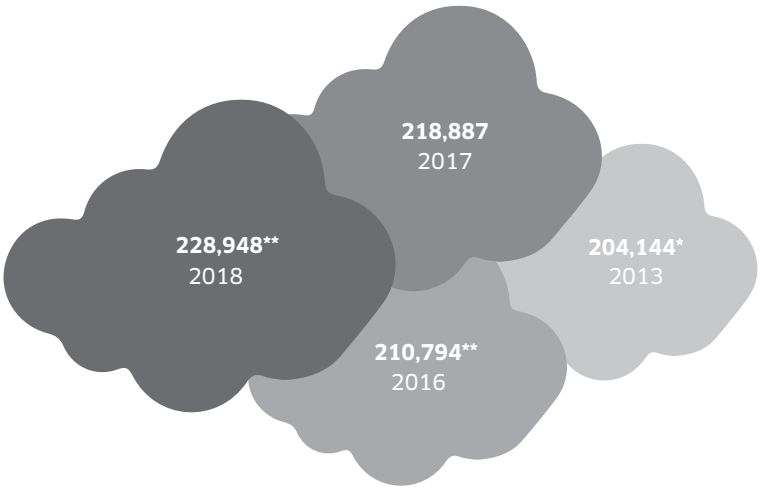


Sales revenue in million euros



Average headcount (FTE)

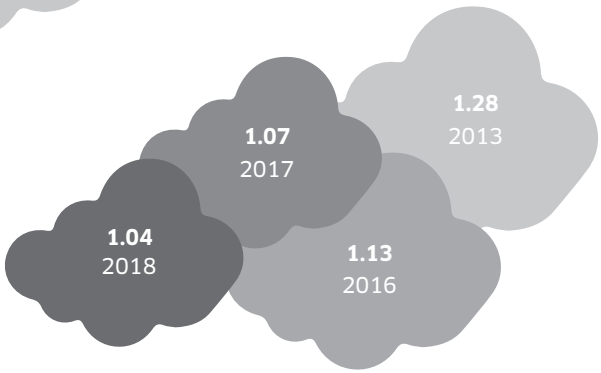




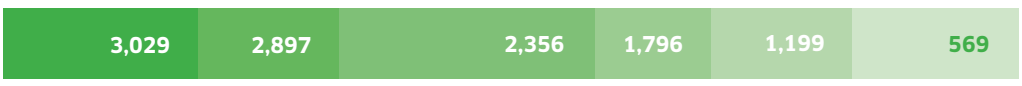
Total emissions in t CO_2e

* Verification 2017

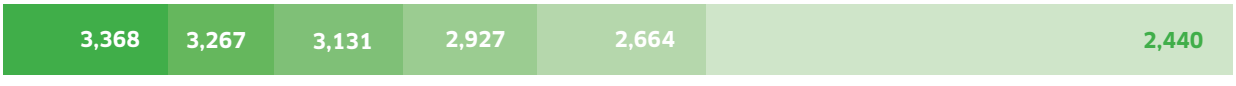
** Verification 2019



Emissions per euro of turnover in kg CO_2e



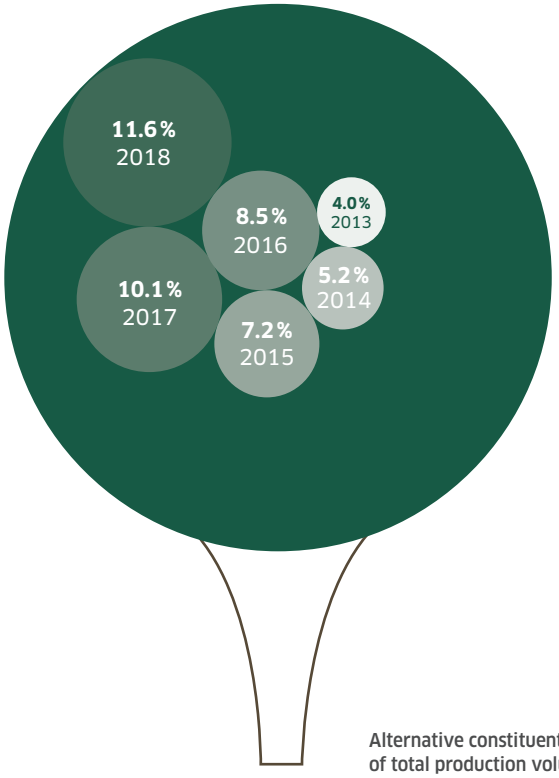
'Active' SRC plantations in ha



Total area of SRC plantations in ha

Alternative constituents

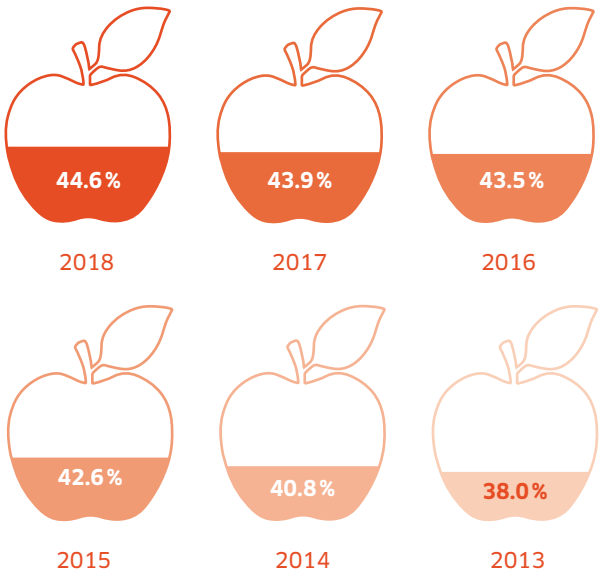
By 2020, we aim to increase the proportion of alternative constituents to at least 15 % of our total annual production. This KPI reflects the used volumes (in m^3) of our wood fibre product 'GreenFibre', our green compost 'TerrAktiv', and all other alternative bulking constituents in relation to the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



Alternative constituents as proportion of total production volume

Food sector

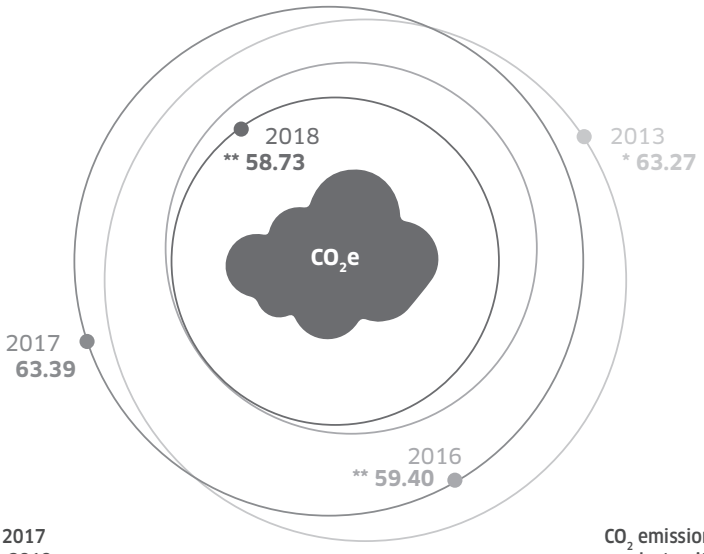
We wish, in future years, to step up our supplies to the fruit- and vegetable-growing sector. To document our progress here, we relate sales figures achieved for this area to total sales of growing media (in m^3 in both cases).



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).

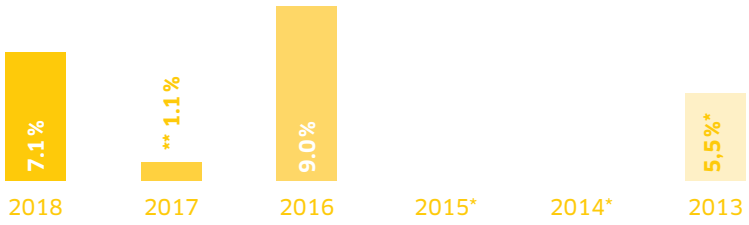


* Verification 2017
** Verification 2019

CO_2 emissions per product unit in m^3

Renewable energy

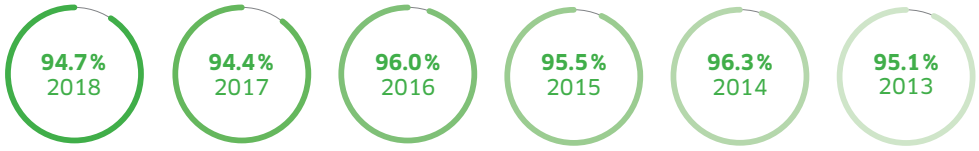
We want to see considerable growth in our Renewable Energy and Resources business unit over the coming years. Our activities in this area also contribute to emissions avoidance. The figure given below is the ratio between our corporate emissions (CCF in t CO_2e) and the emissions avoidance that we made possible (in t CO_2e); it underlines the importance of energy activities in our organisation and takes account of the emissions-preventing impact of our measures.



* Revised figures from the Sustainability Report for 2016, excluding forest resources; data for 2014 and 2015 were not recalculated
** The strong fluctuation in this KPI results from differences in weather conditions during the winter months

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

2.6 Stakeholder dialogue

Stakeholder groups involved

102-40, 102-42, 102-43, 102-44

Our key stakeholders are as follows:

- 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.

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

- For example, the Managing Directors of the Klasmann-Deilmann Group are engaged in ongoing discussions with our shareholders. Meetings are held with the shareholder-appointed Administrative Board several times a year.
- Our employees are kept informed in as full and timely a manner as possible, and included in a multifaceted process of dialogue. For this purpose we have, since 2018, been using an in-house smartphone app via which news and communications from the company are published, enabling employees without a workstation to access this information. We also use well-established means of communication such as regular performance appraisals, departmental meetings, occasional newsletters on prominent developments within the company, noticeboards, circular e-mails, our Intranet presence and company meetings.
- Relevant personnel at all hierarchical levels maintain close contact with our sales partners, customers, suppliers and other business partners, as well as with authorities and environmental organisations. We favour face-to-face conversations, but also use other common channels.
- Cases of particular importance (as, for instance, in dialogue with representatives at government level) are dealt with by the Managing Directors of the Klasmann-Deilmann Group.
- Where matters and plans of overarching importance are involved, part of the communication takes place at professional-association level. During the reporting period this applied, for example, to the ongoing dialogue between the European lobby group 'Growing Media Europe' and the responsible EU Commission in Brussels.
- In addition, in 2015 we identified from among the above-mentioned stakeholders the product champions, opinion leaders and sparring partners that are most important to us worldwide. Since 2016, we have increasingly involved these more than 20 individuals in targeted dialogue on issues relevant to us and our stakeholders.

Customer satisfaction

102-43

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. We were delighted at how positive customer response was in the most recent surveys (2011 and 2014). Analysis of the many responses showed that not only our products but also our specialists paying on-site visits were rated very highly. This confirms the assumption that direct dialogue remains of particular importance for our customers in commercial horticulture.

At the end of 2019 we will launch a new regular newsletter aimed particularly at our sales partners and customers. And, once a year, we will use this medium to conduct a web-based customer satisfaction survey.

External initiatives

102-12, 102-13, 102-43

Through membership of leading international, European and domestic associations, societies and other organisations, we are strengthening political and scientific dialogue. This dialogue may, in turn, influence political decisions that affect both our economic sector and society at large. The focus is on:

- securing the supply of, and developing, substrate constituents;
- the harmonisation and enhancement of quality standards;
- legislation, especially at European level;
- the interdisciplinary complexities involved in the horticultural sciences;
- image-promoting and informative measures within the European and international peat end growing-media industry.

At European level, we are actively involved in (and a founding member of) Growing Media Europe AISBL, which is the lobby group of the peat and substrate industry and successor organisation to the European Peat and Growing Media Association (EPAGMA). We provided the Chair until 31 December 2017, since when Klasmann-Deilmann has been represented within Growing Media Europe, both on its Board (by specialists from our company) and in selected bodies. On behalf of member companies, the organisation represents its members' shared interests in the drafting and revision of European regulations relating to the peat and substrate sector and to commercial horticulture. Growing Media Europe has also launched a Sustainability Agenda and initiated the creation of a tool for calculating Life Cycle Assessments (LCAs) for raw materials and substrates. In this way, a shared foundation is being established within the organisation that will allow comparability and can strengthen competition in the future.

As our company's internationalisation continues, one of our focuses is on work with professional associations at a global level. It is clear to us that the International Peatland Society (IPS) is of particular importance here. The current President of the IPS previously worked in the field of Research & Development at our company before his retirement from Klasmann-Deilmann.

Looking ahead, we expect professional associations such as the IPS to play an increasingly important role. They will ensure objective and value-neutral dialogue with international conventions exploring (at global level) the balancing act between peatland protection and peatland use.

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).

42.6 %
2015

43.5 %
2016

44.6 %
2018

40.8 %
2014

43.9 %
2017

03

There‘s enough for everyone. If everyone does enough for it.

“We supply an ever-increasing proportion of our growing media to the food sector. As resources for food production available to the increasing global population are limited, our products are gaining in importance. Our substrates are instrumental in securing and enhancing yields from the cultivation of fruit, vegetables, herbs and edible mushrooms.”

Bert Desmet, Singapore, Managing Director Klasmann-Deilmann Asia Pacific

3.1 Raw materials and other resources

102-11, 301:103-1, 301:103-2, 301:103-3

The world's need for crops cannot be met unless their growth is specifically boosted. Especially within the food sector, it will become increasingly important that land available is used as efficiently as possible. Yield per unit area must be increased if the food supply for the world's steadily growing population is to be secured. Yet it is also vital to conserve soils and resources. It is crucial that crop yields obtained utilising modern technology and growth-promoting products are generated in line with sustainability criteria. This is just as relevant to commercial horticulture, in which we operate on a global basis, as it is to agriculture. Our growing media help to meet increasing global demand efficiently and with extreme reliability.

A substrate's quality is measured by how well it works in nurseries. These days, professional growers demand well-developed, tried-and-tested and highly reliable products for trouble-free cultivation. It remains the case that peat-based growing media are best suited to meet these requirements. Peat is a substrate constituent that has the full range of physical, chemical and biological properties needed by plant producers, and which is available long term in large quantities. For just over 60 years, peat has been the only raw material that is fully proven as a growth medium in modern commercial horticulture.

Nevertheless, criticism persists of the use of peat in substrates for commercial and non-commercial growers. Since the 1980s, voices from the realm of politics, nature conservation bodies and critical consumers have called for peat usage to be halted or at least considerably reduced and phased out, the reasons being twofold: to protect boglands in which peat forms, and to mitigate climate change (as peat emits CO_2).

In the debate, however, one question remains insufficiently answered: which materials are to replace peat as a raw material without compromising on quality and quantity? Suggesting the use of alternative substrate constituents such as green compost and wood fibre is not entirely helpful in this context.

For decades now, Klasmann-Deilmann has been involved with the development and utilisation of alternative raw materials in growing media. 1991 saw us start up our first composting facility; today we have three. Substrate blends containing up to 40 % green compost have been standard for us for quite some time. In the 1990s we began adding wood fibre; we now operate a number of wood fibre facilities of our own and are continuously developing new uses for this raw material. The proportion of alternative organic constituents in our growing media is increasing because their utilisation in many areas of application is horticulturally beneficial and provides additional advantages. Being renewable resources, they help to conserve peat resources and to further improve these substrates' carbon footprint. With their use we are also fulfilling demands from policymakers and society and contributing to wider acceptance of our product portfolio.

Nevertheless, there are limits to the use of alternative constituents, as they can – in terms of their valuable properties – generally reach their full potential only in combination with peat. And there are not nearly enough alternative raw materials available to allow peat substitution in terms of quantity. We are, therefore, investing much in ensuring our own production capacity, in securing necessary resources by means of long-term supply agreements and – applying the high-quality standards expected of a substrate manufacturer – in producing wood fibre and green compost ourselves, so that alternative ingredients will always be available in the largest possible quantities.

Klasmann-Deilmann has also set itself the goal of continuously broadening the scope for usage of alternative constituents. Targets here are to increase their proportion of our annual production to at least 15 % (by volume) by 2020 and to 30 % by 2025. We are facilitating this process by intensifying our sales and consulting activities, as horticultural businesses in many countries first need guidance on the properties and the additional advantages of alternative constituents. At the same time, we evaluate all of our measures on an ongoing basis, particularly through close dialogue between sales, product development and management. As well as the latest findings from in-house and external research and development, we pay heed to the experience of our customers in commercial horticulture.

However, peat, with its unique properties, will remain an essential – and only partially replaceable – substrate constituent for an unspecified period of time. It is because of this that we have secured our long-term peat supplies through our own resources as well as through supply agreements.

Complaints relating to the production or use of peat and alternative constituents are dealt with under our sophisticated complaint management system, one of the requirements for our certification to the ISO 9001 and ISO 14001 standards.

Quality assurance of our substrate constituents

102-11, 301:103-2

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

102-2, 301:103-2

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. In view of this, peat will remain the key constituent in substrate production until an all-round replacement is found. A breakthrough in research and development within this area is not at present foreseeable. In the light of this and the limited resources of alternative substrate constituents, the significance of peat for substrate production and commercial horticulture may continue to increase in the decades to come (cf. Chris Blok 2019).

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.

After a raw-materials yield totalling 3,274 thousand m^3 in 2017, peat extraction increased to 4,115 thousand m^3 in the 2018 financial year (2016: 2,887 thousand m^3). Prolonged frost periods occurred repeatedly, extending into April 2018; these are a key factor, especially regarding the quality of our more strongly decomposed raw materials in Germany and the Baltic region. As there was no appreciable rainfall in the extraction areas throughout Europe between May and October of that year, harvest targets were exceeded due to the excellent conditions at all production sites.

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

Economic properties

- long-term availability
- uniform characteristics
- quality that meets the horticultural requirements of a wide range of plants

Biological properties

- largely free from weed seeds
- free from pathogens

Green compost

102-2, 301:103-2, 301-2

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. Both green waste and collection points undergo regular inspection. The same applies to the rotting process, which is continually checked by means of chemical analyses, and during which the compost is enriched by adding biodynamic preparations, ensuring that microbial activity is stimulated. Colonisation by predatory mites effectively aids biological control of sciarids in the greenhouse, as do innovative fertilising solutions that we have developed in cooperation with a German university. Biological parameters, too, are constantly monitored; this includes conducting growth trials on sensitive plant species. In addition, inspections are conducted several times a year by an independent, external certification organisation.

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.

In-house production of the substrate constituent TerrAktiv totalled 92,000 m^3 in 2017 (2016: 101,000 m^3), decreasing to 78,000 m^3 in 2018. The reasons for this decline were a reduction in the supply of raw materials and weather-related changes in their make-up. As green compost is the only recycled material that we use on an appreciable scale, recycled materials accounted for about 2.49 % of our total production of 3.692 thousand m^3 in 2017 and, in 2018, around 2.00 % of our production total of 3,898 thousand m^3 (2016: 2.85 %).

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

102-2, 301:103-2

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.

Because of the special production process, GreenFibre contains only a very low share of fine particles, which prevents subsidence and reduction of air capacity in the substrate during cultivation in containers. The coarse particles of Klasmann GreenFibre have an optimised fibrous structure to ensure drainage and even distribution within the growing medium.

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.

The quantity of the GreenFibre substrate constituent manufactured rose from 162,000 m^3 in 2016 to 213,000 m^3 in 2017 and 250,000 m^3 during the 2018 financial year. Part of this was processed in combination with TerrAktiv green compost to form the fermented wood fibre / compost blend, 'TerrAktiv FT', which is of increasing importance in the manufacture of our substrates for organic production. We also make other wood products such as container mulch, of which 20,100 m^3 was produced in 2016, 27,000 m^3 in 2017 and 25,000 m^3 in 2018.

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

Raw-material-related locations

102-4, 102-7

The following production companies extract and produce our raw materials.

	Country	Peat extraction	Green-waste composting	Wood fibre production	Raw-materials processing
Klasmann-Deilmann Produktionsgesellschaft Nord mbH	DE	•		•	
Klasmann-Deilmann Produktionsgesellschaft Süd mbH	DE	•	•	•	
Schwegermoor GmbH	DE	•	•	•	
UAB Klasmann-Deilmann Silute	LT	•			
UAB Klasmann-Deilmann Laukesa	LT	•			
UAB Klasmann-Deilmann Ezerelis	LT	•			
UAB Klasmann-Deilmann Latvia SIA	LT	•			
Klasmann-Deilmann Ireland Ltd.	IE	•		•	
Klasmann-Deilmann Potgrondcentrum B.V.	NL			•	•
Bol Peat GmbH	DE				•

Additional quantities of wood fibre are produced to our standards by a contractually affiliated partner company in Duiven, the Netherlands. In 2019, bark composting will go into operation at our location in Ireland.

Materials used

301-1

In connection with the manufacture of growing media, we used the following quantities of key substrate base materials and additives, fertiliser, packaging film and pallets:

	2018	2017	2016	2015	2014	2013
Raw peat materials in thousand m^3	3,623	3,397	3,299	3,144	2,915	3,075
GreenFibre wood fibre product in thousand m^3	247	222	169	141	107	81
TerrAktiv green compost in thousand m^3	93	76	59	43	44	32
Lime in t	18,775	18,719	19,543	18,716	18,448	17,392
Clay in t	15,891	16,909	19,248	10,303	10,114	7,609
Sand in thousand L	2,725	2,760	2,465	2,497	2,389	2,152
Mineral fertiliser in t *	4,646	4,451	4,496	4,190	3,325	2,525
Organic fertiliser in t	828	827	806	698	632	537
Packaging film in t.	2,263	2,404	2,185	2,019	1,240	1,493
Pallets (units)	609,527	580,948	575,513	435,675	556,050	549,780

* Figures for 2013 without substrate production from Belgium, as of 2014 including Belgium

Where the above trends do not follow a clear pattern, this is caused largely by differences in the degree of compaction of the raw materials prior to processing, the varying proportions of sod-cut peat that has yet to be fractionated, the different amounts of loose goods as a proportion of total goods produced, and the order-related potential for capacity utilisation of pallets.

Procurement practices
102-9, 102-16

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.

At irregular intervals, conversations with our suppliers take place during which we reiterate the importance of our sustainability guidelines and play an active part in achieving a common understanding of social, ethical and ecological standards. On this basis, we confirm that our suppliers adhere to these standards.

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 precautionary approach, and the promotion of environmental responsibility and environmental technologies.

3.2 Production

102-2

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.

Production processes
301:103-2

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. Production of growing media for commercial horticulture and the consumer segment increased from 3.549 million m^3 in 2016 to 3.692 million m^3 in 2017 and 3.898 million m^3 in 2018.

Easy Growing

102-2

Our Easy Growing product line contains a range of those growing media in greatest demand from our customers worldwide. With a focus on optimum functionality for diverse uses in commercial horticulture, each product is fully tried and tested in terms of its composition and has proved successful across many applications.

In the 2018 financial year, Easy Growing products accounted for 27.9 % of our total sales volume.

Select

102-2

The Select product line is all about finding the ideal substrate blend for individual requirements. These may include a particular crop, a special propagation system, or unusual technical, climatic or geographical factors. With guidance from our experts, the right components and a suitable combination of nutrients are selected, and an appropriate mixture ratio determined.

Within the Select line, a country-specific range of specialist growing media has emerged in virtually all international commercial horticulture markets, tailored to the specific demands of the crops preferred in a given locality.

In the 2018 financial year, Select products accounted for 60.6 % of our total sales volume, the customers primarily being highly specialised commercial growers in Europe.

Substrates for organic production

102-2

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.

In view of the further increase in demand for substrates for organic production, especially in international markets, we have chosen a new basis for our certification. As of the start of 2019, our production of growing media for organic use is subject to control by Ecocert®, an international organic certification organisation. This body now tests and certifies more than 200 recipes for the organic market on our behalf in accordance with the EU regulation on organic farming.

Special substrates for reliable cultivation of soft fruits

102-2

In response to the high global demand for soft fruit, we have developed a compact range of specialist substrates for the reliable propagation and high-yielding subsequent cultivation of soft fruits in pots and containers. It contains tried-and-tested substrate solutions, primarily for strawberries, blueberries, raspberries and currants in containers on the basis of various raw materials: peat, coir, GreenFibre and perlite. In terms of their pH values and nutrient supply, these substrates have been precisely designed to meet the needs of soft fruits. For example, they contain chelated trace elements to specifically ensure a reliable supply of iron.

We also offer nurseries comprehensive guidance on all detailed aspects of soft-fruit cultivation, especially for growers just entering this segment. This advisory service is augmented by guidelines that provide the essential facts and facilitate entry into this market.

Substrates for the consumer segment

102-2, 301:103-2

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. An example is the 'Florabella organic potting soil' we sell, which contains a high proportion of green compost and wood fibre from domestic renewable resources. Also available is our 'Florabella potting soil from renewable resources', which is manufactured solely from the above-mentioned raw materials, making it a completely peat-free product. We also produce appreciable quantities of high-quality growing media for the retail consumer segment. 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.

In the 2018 financial year, growing media for the retail consumer segment accounted for 11.5 % of our total sales volume.

Our production sites

102-4, 102-7

The following production companies process our raw materials into substrates:

	Country	Production of growing media for commercial horticulture	Production of growing media for the consumer segment
Klasmann-Deilmann Produktionsgesellschaft Nord mbH	DE	•	
Klasmann-Deilmann Produktionsgesellschaft Süd mbH	DE	•	
Schwegermoor GmbH	DE		•
UAB Klasmann-Deilmann Silute	LT	•	
Klasmann-Deilmann Ireland Ltd.	IE	•	
Klasmann-Deilmann Potgrondcentrum B.V.	NL	•	
Klasmann-Deilmann Brugge N.V.	BE	•	

Product stewardship

102-2, 102-11

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.

Because of their components' properties, substrates tend to be of high weight. Therefore, we also offer smaller, and hence lighter, packaging sizes, particularly in the consumer segment. We have also, in the form of our 200-litre bales, developed a size of container for commercial horticulture that is much more lightweight than other standard packaging units. Many of these bales are exported to countries in which they are manually transported and handled.

We determine the content quantities of our substrate packaging units, and the quantities of loose substrate supplied, on the basis of the relevant statutory requirements with calibrated instruments and using the procedure described in EN 12580. At regular intervals, the relevant office of the Weights and Measures authority in Lower Saxony (MEN) conducts neutral checks of content quantities at the German production sites. Furthermore, Klasmann-Deilmann has committed to voluntary self-regulation with regard to content quantities resulting from a joint initiative between the horticultural-industry association Industrieverband Gartenbau (IVG e. V.) and German substrate producers.

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

Hazardous waste, harmful substances and appreciable quantities of waste water as defined by GSI Standard 306 are not caused by Klasmann-Deilmann.

Water management

304:103-2

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.

However, there is appreciable disturbance of the hydrological balance of an intact peatland. The peat moss that forms the main body of a bog can absorb many times its own weight. Stored water is lost during drainage in preparation for peat extraction. Klasmann-Deilmann obtains raw peat materials solely from sites drained decades beforehand, and such interventions have been largely consigned to history. During land use too, however, stored water is drained into a complex of special ditches and ultimately enters rivers, canals or natural water bodies. In this, we strictly adhere to the applicable rules and regulations and work closely together with the relevant approval bodies. During the course of peatland restoration, most of the now-depleted areas are re-wetted; in this way, they progressively recover their water storage function.

3.3 Customers and sales

Our customers in commercial horticulture and the consumer segment

102-6, 102-9

Commercial horticulture has reached an extremely high level of industrialisation in many countries. Computer- controlled irrigation and fertilisation regimes, automated potting machines, transplanting robots, air-conditioned greenhouses and just-in-time production dominate the production process in modern nurseries. Many businesses now specialise in one particular crop or a specific stage of cultivation, such as young-plant propagation.

The wide spectrum of our substrates originated in the diversity of the horticultural companies we supply. They range from small speciality businesses for exotic crops, and ecologically-minded businesses producing potted herbs, to tree nurseries, golf course landscapers and large-scale producers. Just as seed, cuttings, young plants, the technical set-up and the cultivation method used are crucial, so too are our substrates. They ensure that the various production resources interact effectively and that crops develop optimally.

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.

Our activities along the growing-media value chain

International sales structure

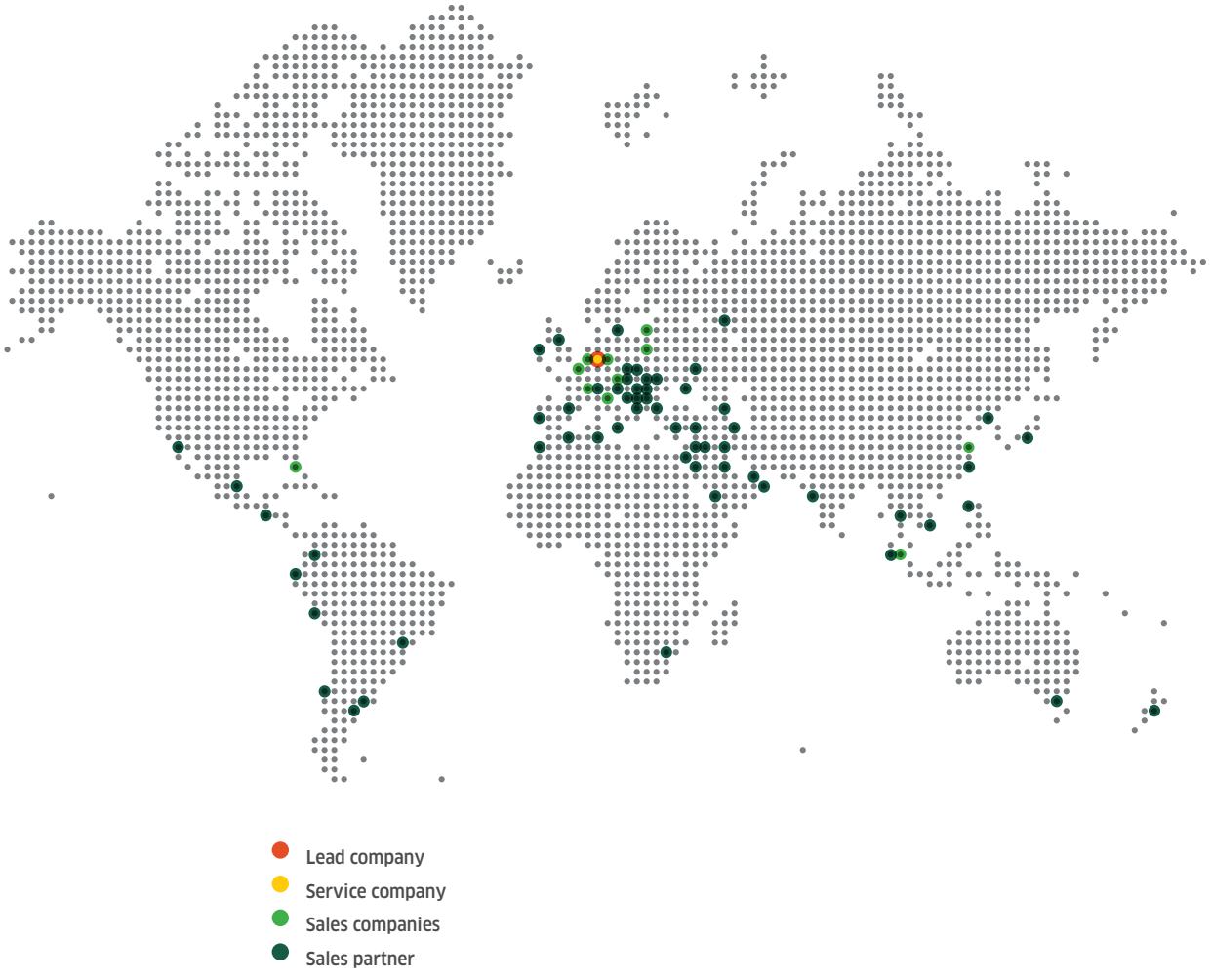
Our sales of growing media extended to more than 70 countries worldwide in the reporting period. In most of these markets, we supply independent sales partners with which we have long-term agreements and which are exclusively responsible for local distribution. Within the central sales markets, our own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

Country-specific sales companies:

- Klasmann-Deilmann Benelux B. V.
- Klasmann-Deilmann France S.A.R.L.
- Klasmann-Deilmann Belgium N. V.
- Klasmann-Deilmann Austria GesmbH
- Klasmann-Deilmann Italia S.R.L.
- Klasmann-Deilmann Polska sp. z o.o.
- Klasmann-Deilmann China Co. Ltd.
- Deutsche Kompost Handelsgesellschaft mbH
  (merged with Bol Peat GmbH with effect from 1 January 2018)

Transnational sales companies:

- Western and Eastern Europe: Klasmann-Deilmann Europe GmbH
- North and South Africa: Klasmann-Deilmann France S.A.R.L.
- Asia, Oceania, Middle East: Klasmann-Deilmann Asia Pacific Pte. Ltd.
- North, Central and South America: Klasmann-Deilmann Americas Inc.



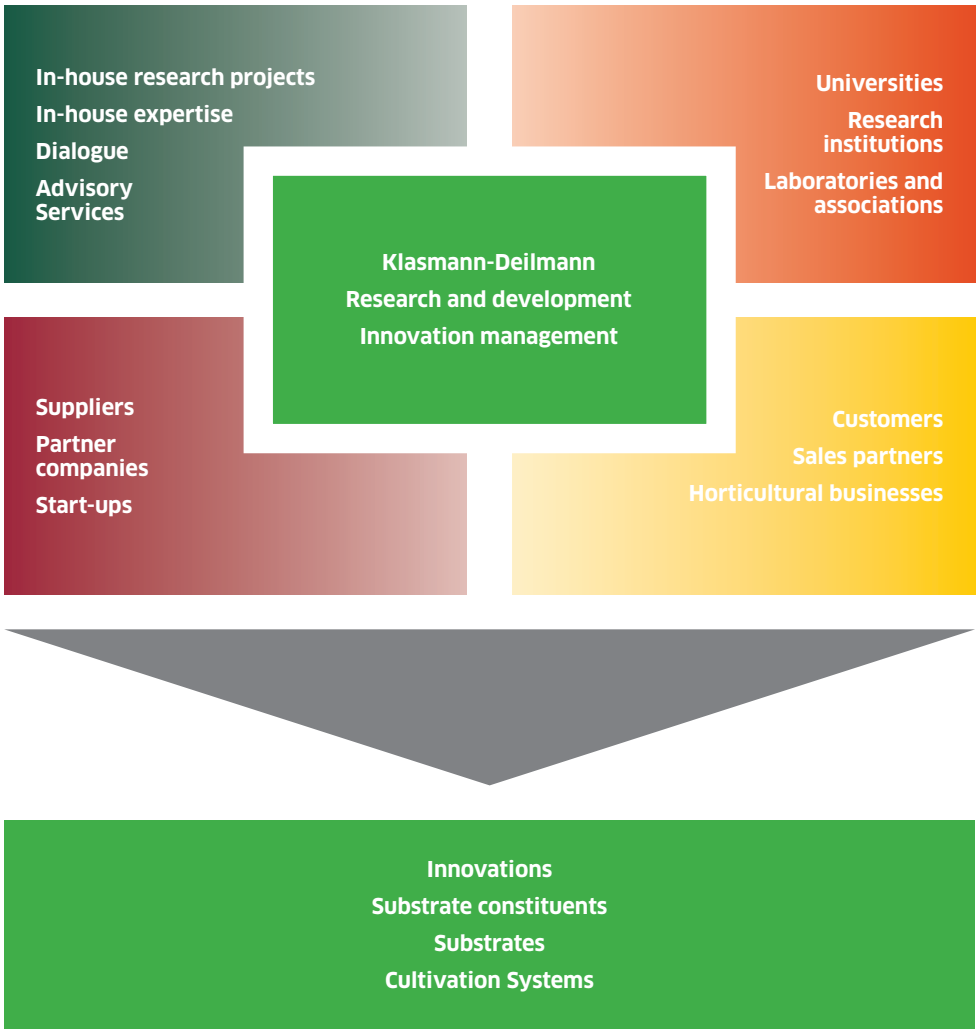
3.4 Innovation

Systematic product development and innovation management

102-6, 102-9

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.

Research & development and innovation management in context



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 horticultural 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 COMPOST 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 especially 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.

Many different standard and special sizes are available, as are trays for use with these sizes, which means the Growcoon can be used in all established propagation systems and with different trays. A dispenser specially designed for the Growcoon is now sold by Dutch company Flier Systems. The dispenser is located upstream from the tray-filling machine and automatically places the Growcoons in trays. Alternatively, this can still be done manually.

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 networks, gives Klasmann-Deilmann direct access to those projects in research and industry (including startups) that are geared towards new technologies and solutions for commercial 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.

Wood Chips

Wood Trading

Renewable Resources

Wood Services

04

Every day Mother Nature inspires us to find new ways to avoid fossil fuels.

"As suppliers of renewable resources for the production of renewable energy, we are particularly well positioned in the Baltic region. We trade in raw wood materials and have at our disposal extensive tracts of land for creating and managing our own short-rotation coppice (SRC) plantations. Our energy sources contribute to the avoidance of fossil fuels."

Kazimieras Kaminskas, Lithuania, Director Bioenergy

4.0 Renewable resources

Wood as an environmentally sound energy source

102-11, 301:103-1, 301:103-2, 301:103-3, 302:103-1, 302:103-2, 302:103-3

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.

Unlike the fossil fuels – petroleum, natural gas and coal – which are finite resources, renewable resources are repeatedly available as they continuously regenerate themselves in specific cycles. Their good climate performance in energy production results:

- from the extent to which they replace fossil fuels;
- from the essentially climate-neutral cycle involving release of CO_2 when used as a source of energy, and the recapture of carbon through photosynthesis during growth; and
- from the fact that state-of-the-art and energy-efficient technology is used, as for example in cogeneration plants.

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 cogeneration 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.

Our activities

302:103-1, 302:103-2

Klasmann-Deilmann has been a player in the field of renewable resources for renewable-energy production for just over 10 years now. Our involvement focuses on our expertise in managing land on a large scale and in utilising biomass.

Having rapidly entered this market in both Germany and the Baltic region, it was soon evident that, in the longer term, we required both a ‘faster’- and a ‘slower’-track approach. In the Baltic states, our activities in SRC management and in the sale of environmentally sound fuels are going well. In Germany, however, our activities are severely constrained as SRC is not subsidised, unlike the widespread planting of maize as an energy crop. The high costs of acquiring farmland for planting up SRC are another factor. A desirable alternative would be the sustainable management of our own former peat extraction sites with SRC, but this is not possible under current legislation.

Biomass production in the Baltic region

102-6, 102-7, 301-1, 302:103-1, 302:103-2

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.

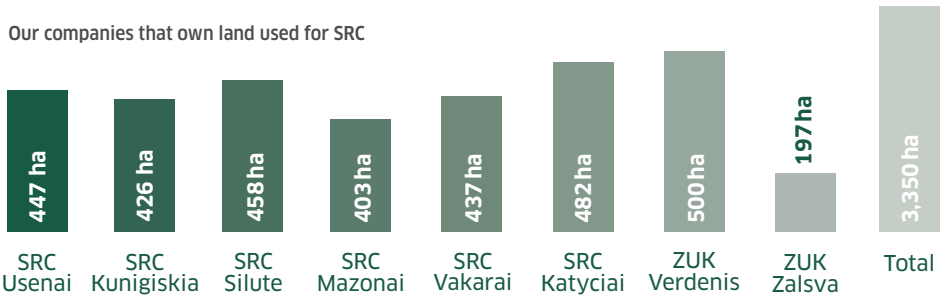
In 2016, subject to consolidation of already existing areas, we acquired additional agricultural land in Lithuania for planting with SRC. The total area increased from 3,131 hectares in 2016 to 3,267 hectares in 2017 and 3,350 hectares as at the end of 2018.

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). 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).

Our companies that own land used for SRC



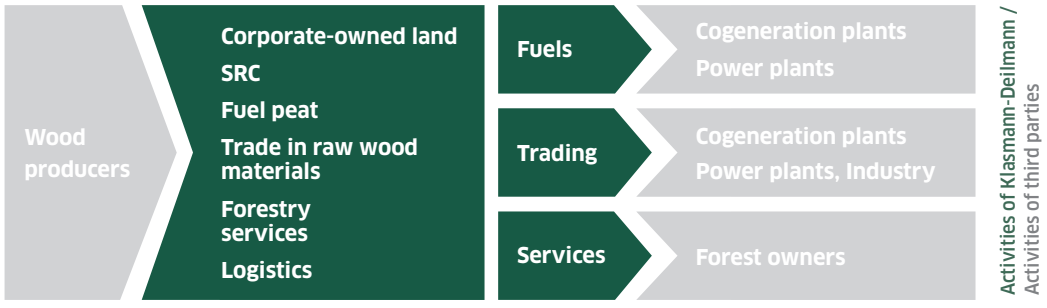
Extraction, production and sales of biomass

102-6, 102-7, 301-1

The following subsidiaries produce, process and/or sell woodchips and fuel peat:

	Country	Fuel peat extraction	Biomass from SRC	Sales of bio-mass as an energy source
Klasmann-Deilmann Produktionsgesellschaft Süd mbH	DE		•	
UAB Klasmann-Deilmann Silute	LT		•	
UAB Klasmann-Deilmann Ezerelis	LT	•		
UAB Klasmann-Deilmann Bioenergy	LT			•
Klasmann-Deilmann Bioenergy SIA	LV			•

Our activities along the renewable-energy value chain



Land use

302:103-3

Cultivating crops as renewable resources exploited for energy purposes is a form of land use that essentially competes with infrastructural and housing development, as well as agricultural food production. This is why we help ensure that existing farmland is used effectively, and that coexistence on an equal footing is achieved between the various interests.

Another challenge consists in harmonising land use with environmental protection and biodiversity. However, we have identified promising opportunities here to take advantage of synergies. For example, mitigation and compensatory measures can be beneficially combined with the generation of wood biomass so that, for agricultural land with intensive demands placed on it, extensification is encouraged while the need for materials and energy is satisfied.

In creating and managing SRC sites, consideration must be given to:

- preservation of the ecosystem and the hydrological balance;
- maintenance of biological diversity and the scenic quality of the countryside;
- minimisation of risk with regard to pests and disease infestation;
- the utilisation of herbicides and fertilisers only where necessary.

Objections to SRC

302:103-3

Objections to this land use form relate to its apparent similarity to agricultural monocultures rather than more natural forests. However, the reference scenario for SRC in terms of a comparable, commercially cultivated site is not mature woodland but a field of maize. If the two are compared, the benefits of SRC are greater: most arable land is tilled twice a year, whereas SRC sites are harvested only every three years. And, throughout their overall cycle lasting 21 years, these sites are treated with herbicides only once. Moreover, land previously used for commercial agriculture undergoes considerable ecological upgrading when planted with SRC. For example, as the soil is not cultivated, this means:

- that soil humus levels build up;
- that erosion is reduced due to permanent ground cover;
- there is a permanent root mat which leads to improvement in both infiltration and the soil's ability to store water.

Because of the accumulation of both wood and humus, SRC plantations are considered to be carbon sinks whereas conventional agricultural is a net carbon emitter. We shall continuously monitor and evaluate scientifically based objections and assessments in connection with SRC plantations.

Overall, we value and make use of these plantations as a modern, responsible form of land management and means of producing energy sources. On the strength of its environmental, economic and social constants, short-rotation coppicing satisfies the criteria for sustainability.

Emissions per m³ substrate 2013:
63.29 t CO_2e

Emissions per m³ substrate 2016:
59.40 t CO_2e

Emissions per m³ substrate 2018:
58.73 t CO_2e

05

The next giant leap for mankind is a small footprint.

“We are keen to equip not only ourselves but also our customers for the demands of the future. Those able to account for how environmentally and climate-friendly their products are have an additional competitive advantage, since retail consumers and wholesalers are paying increasing attention to responsibly produced goods and reward sustainable development.”

Dr Jan Köbbing, Germany, Head of Sustainability Management

5.1 Land use

102-2, 304:103-1, 304:103-2

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 1953, Georg Klasmann received Germany's Federal Cross of Merit for his efforts. 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 (see Niedersächsischer Minister für Ernährung, Landwirtschaft und Forsten 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.

Voluntary commitment to the Code of Practice

102-11, 102-12, 102-16, 304:103-2

In its management of peatlands, Klasmann-Deilmann has since 2009 – voluntarily – adhered to the applicable Code of Practice of the former European Peat and Growing Media Association (EPAGMA), whose successor organisation as of 2016 is the European lobby group Growing Media Europe. This code of practice (see EPAGMA 2011) specifies rules governing choice of extraction areas, method of extraction, and peatland restoration once these activities have ceased. The voluntary commitments include:

- complying with locally applicable legislation;
- exclusive use of already drained or degraded peatland;
- minimising emissions of dust and noise;
- avoiding soil contamination, and environmentally sound disposal of waste;
- regulating self-heating in storage stacks;
- including the local population in the overall process, and giving stakeholders a means of providing feedback;
- preserving biological diversity and ecosystem functions during after-use once raw-material extraction ceases;
- responsibly managing extraction sites, including management systems with risk assessment relating to accidents, emissions and health aspects, as well as training on safe working practices.

It is expected that the Code of Practice currently in force will be replaced by a new Growing Media Europe document that gives a comprehensive picture of the present discourse on private-sector sustainable development and applies it to the peat and growing-media industry. Klasmann-Deilmann will be involved in implementing this project and will contribute its own experience of sustainability issues.

At international level, our land management and our raw-material extraction comply with Responsible Peatland Management guidelines laid down by the International Peatland Society (IPS; see International Peatland Society 2010).

RPP-certified extraction areas

102-11, 102-12, 304:103-2, 304:103-3

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

304-3

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.

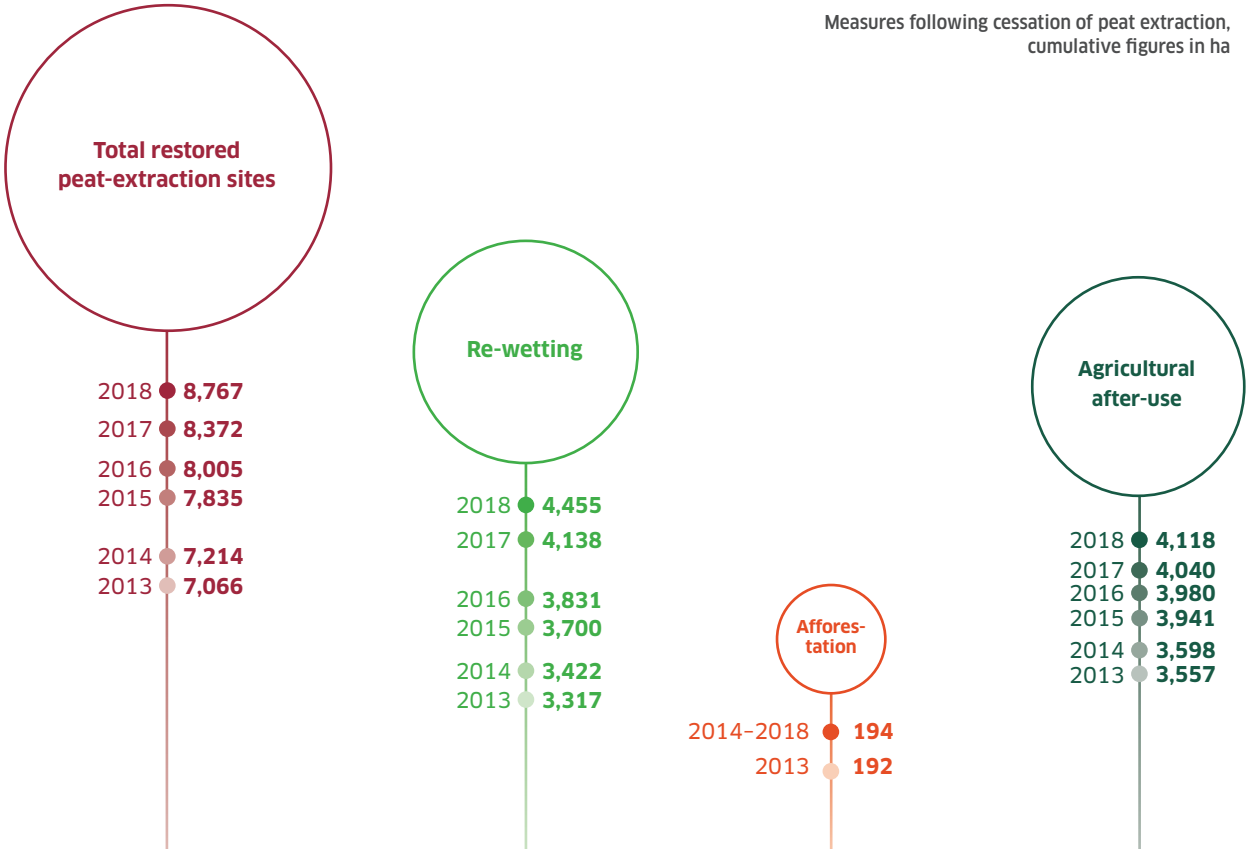
Because local geological and hydrological situations differ, not all sites can be returned to nature in this way once peat extraction comes to an end. Instead, some former production areas are afforested or prepared for agricultural after-use. In some cases, buffer zones are also established between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

Responsibility for implementing these measures generally rests with Klasmann-Deilmann. Over a several-year period, the effectiveness of measures carried out is monitored by the relevant authorities and – in line with its voluntary commitment to the code of practice – by Klasmann-Deilmann itself.

In certain cases, our after-use projects go beyond the official requirements, a major reason for this being to apply new knowledge of how to restore peatlands. Groundbreaking findings have been made in this connection by our Sphagnum-farming project (see below).

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

102-12, 304:103-2, 304:103-3

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

304:103-2

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.

Scope for improving profitability is now being explored in a follow-up project funded with EU INTERREG resources. For the time being, however, our assumption is that Sphagnum farming will not contribute significantly in terms of making alternative substrate constituents available.

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.

5.2 Emissions from peat extraction

305:103-1

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-house measurements

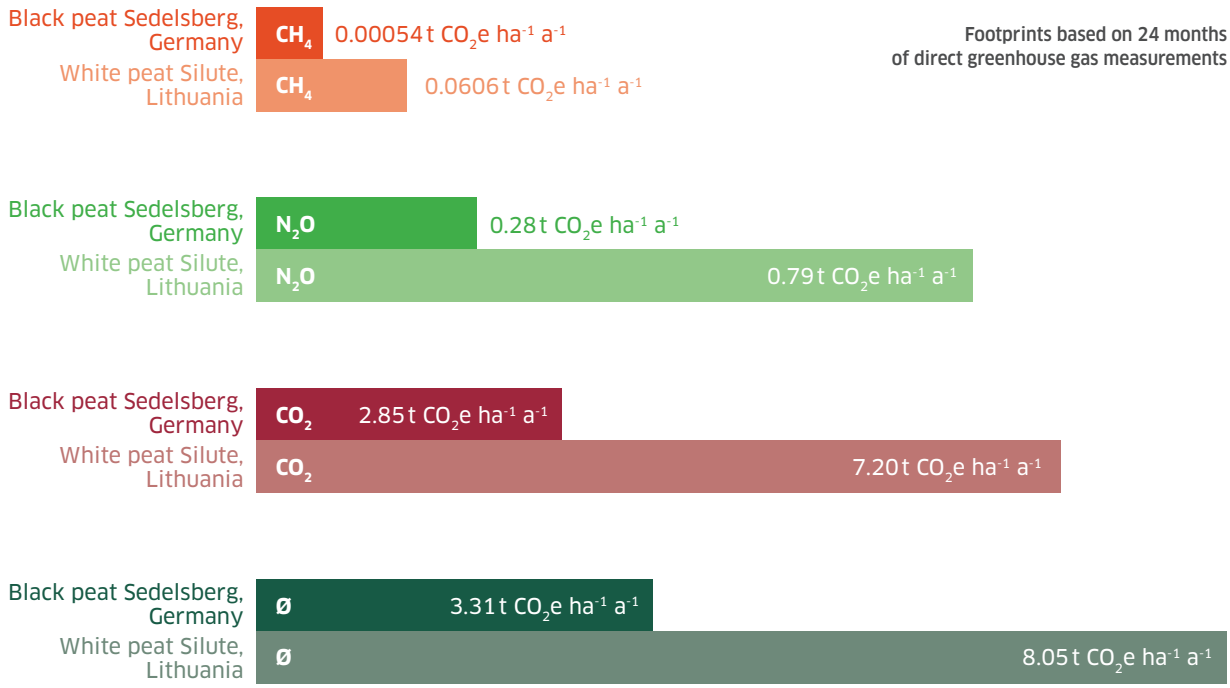
305:103-2

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.

Measurement set-up

To carry out cumulative global-warming impact assessments for the trace gases carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O), we used the chamber-based measuring technique that had already been employed in the BMBF study 'Klimaschutz durch Moorschutz' ('Combating Climate Change by Protecting Peatlands'; see DRÖSLER 2011) and is also used in other scientific studies and greenhouse gas measurements. Monitoring using two manual sampling units took place on a black-peat extraction site in Germany and a white-peat extraction area in Lithuania. These sites were chosen such that the results reflect the corporate situation as representatively as possible in terms of peat grade, climatic conditions, etc. Greenhouse gas measurements were, for the most part, carried out on a 14-day cycle using repeat determinations from five spatially separate plots. For each site, a set of chambers consisting of one opaque and one translucent chamber was available for CO_2 monitoring. The measurements were carried out on site using an LI-820 infrared gas analyser manufactured by LI-COR. CH_4 and N_20 samples were taken and analysed in the lab using gas chromatography. The outcome, incorporated into a cumulative footprinting model, then formed the basis for calculating average emission levels from peat extraction.

Outcome 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}.



5.3 Carbon footprint for 2017/18

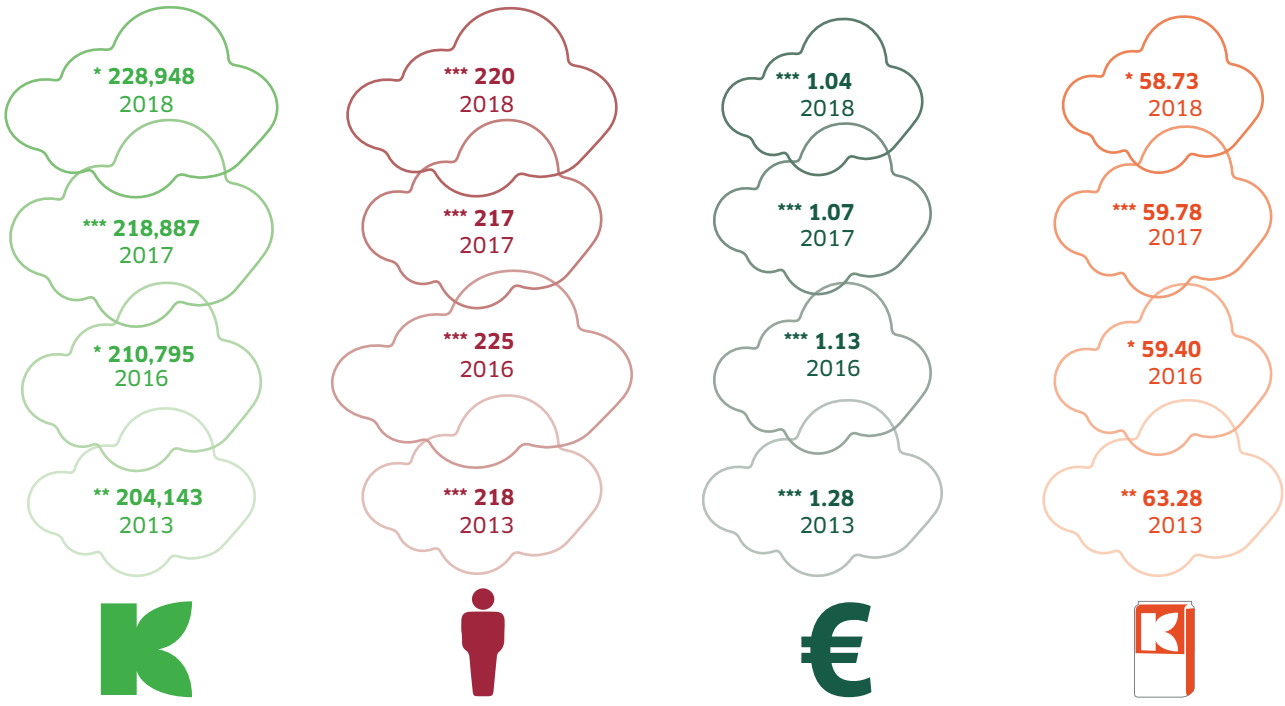
305:103-1, 305:103-2, 102-48, 102-49

In our Sustainability Report 2013 we published a world first: a carbon footprint for a company in the peat and substrate industry. This put us in the picture regarding the level of emissions for which Klasmann-Deilmann is responsible. It also made a major contribution towards greater transparency in dialogue with our stakeholders. 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 results of our study on emissions from peat extraction (see 5.2) are also important in these footprints' preparation. Furthermore, various digitisation projects have enabled us to continually refine the essential underlying data obtained from our company. The various parts of the company are increasingly involved in the data collection process, thus encouraging each division to examine its own climate impact.

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. The subject matter of the internal and external audits conducted in this context included quality-management aspects associated with the data collection process.

Taking into account all climate-related factors along the value chain 'from raw-material extraction to the factory gate, including transport', our corporate carbon footprint for 2018 reveals emissions of 228,948 t CO_2 equivalents (CO_2e). In 2017 we were responsible for 218,887 t CO_2e; in the new base year, 2016, the figure was 210,795 t CO_2e.



Emissions in CO_2e
* Verification 2019 / ** Verification 2017 / *** These figures have not been verified

System boundary for carbon footprints 2017/2018

305:103-1

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. The end-of-life phase is not factored into the carbon footprint. This means that a distinction is made between emissions attributed to our company and those attributed to downstream users such as nurseries or retail consumers. We are aware that this means a considerable proportion of greenhouse gases are not included in the carbon footprint. The rationale behind this decision is that, in the same way that an oil producer is not responsible for a car driver's petrol consumption, a substrate producer cannot be held to account for the way a product is used by a customer. At product level, however, both footprints – with and without end use – are disclosed in order to provide (for instance) a nursery with reliable information on how to calculate its own carbon footprint.

A robust carbon footprint

102-48

In order to systematically further enhance the robustness of Klasmann-Deilmann's carbon footprint, a small number of individual corrections, improvements and additions were made to the calculating tool. If these adjustments subsequently affect the underlying calculations for the base year, this base year is recalculated. In 2017 and 2018, the calculating tool was fundamentally redesigned in order to simplify data maintenance and make this more precise.

Calculations for the new base year (2016)

In this connection, overall emissions from 2016 changed – for two main reasons: corrections regarding transport distance, and the size of individual extraction sites in the Baltic region – by a total of 1.865 t CO_2e, i.e. by 0.9 %. Under internal procedural guidelines, repeat verification is required in the event of a 'material change' of 2.5 % or higher. Given that the calculation tool had been fundamentally redesigned, a new verification of the 2016 carbon footprint was nevertheless carried out and the decision made to adopt 2016 as the new base year.

Following the changes to the new base year (2016), taking into account all climate-related factors 'from cradle to gate' as well as transport to customers, the resulting corporate carbon footprint is 210,794 t CO_2 equivalents. In relation to turnover for the year (EUR 186 million) and average headcount (938), this yielded figures of 1.13 kg CO_2e per EUR of turnover and 225 t CO_2e per employee. With the total volume of both growing media and raw materials sold standing at 3,548,594 m^3, this equates to an average carbon footprint (expressed per cubic metre of substrate, per annum) of 59.40 kg of CO_2e/m^{-3}.

Factors affecting the calculated carbon footprint for 2018

The following were the most important factors influencing our carbon footprint as calculated for 2018:

- Fundamental changes made in redesigning the calculating tool for the new base year (2016) were also adopted for 2018;
- 2018 was an exceptionally good harvest year and thus saw strong gains in terms of peat volumes extracted. As a result, quantities stored in stacks increased, leading in turn to higher emissions;

- At various locations, especially in Germany, sites at which extraction had ceased were returned to their previous owners. Additionally, a wooded peatland area covering some 550 hectares in Ezerelis, Lithuania, was returned to the state without peat having been produced there;
- Peat used in Ireland will, from now on, be assessed on a differential basis. That produced in-house will be factored into the carbon footprint in the form of individual values. Volumes from regional suppliers will be deemed external purchases and assigned the average emission factor for Klasmann-Deilmann;
- The 'positive balance', which is merely indicative, previously included sales of wood-chips as an energy source for power stations in the Baltic region, renewable energy, and woodland / short-rotation coppice (SRC) sites on mineral soils. From now on, the only items included in this positive balance will be emissions avoided by third parties which result from energy sources such as woodchips or sold photovoltaic installations. These remain, therefore, beyond ISO 14064 boundaries. Carbon stored in corporately owned sites (woodland or SRC) is, however, directly avoided by Klasmann-Deilmann itself and can thus be included in the corporate carbon footprint but must be disclosed separately (as GHG removals). This principle was also applied retrospectively for 2016;
- The only woodchips included in the carbon footprint are those bought in; traded goods in transit are not factored into calculations;
- Transport distances for raw materials bought in and resold by our own trading arm were fully updated;
- In the category 'non-bulking constituents', the density of sand and pumice was corrected, resulting in a difference of 5,652 t CO_2e. This correction was also applied retrospectively for 2016;
- Preferential use of 'eco-compatible' rail logistics enabled emissions to be reduced by a certified quantity of 2,123 t CO_2 on transport of our substrates to Italy;
- Various emission factors from Ecoinvent and other sources were updated, including those for diesel. This has an impact on both internal and external transport as well as on purchases of peat, packaging material and fertiliser.

Comments on changes over time (2016 vs. 2018) in the carbon footprint

- The carbon footprint for the 2018 financial year was 18,152 t CO_2e higher than that for 2016.
- Reduction in area means that emissions from peat extraction sites are decreasing. During the period under review this was chiefly the case in Germany, where black peat is produced and land is being returned. At the same time, emissions taken into account from the reference scenario have a lesser effect on the carbon footprint for extraction areas, resulting in the latter increasing by a total of around 8,787 t CO_2e.
- Energy-related emissions rose by around 1,002 t CO_2e.
- The number of loads internally transported fell by 3,601 t CO_2e, due partly to the decrease in peat production in Germany, with a concurrent increase of in purchases.
- Increased purchases of peat led to a 5,731 t CO_2e rise in emissions.
- Total emissions from additives rose by 3,093 t CO_2e owing to an increase in the quantities involved.
- The increase – associated with greater quantities being traded – in emissions from transport to customers is 1,414 t CO_2e.

Carbon footprint

305-4

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					
1. Reference scenarios	- 89,874		- 100,230	- 109,887	- 135,574
2. Peat extraction, interim storage	146,569		154,111	154,754	157,171
3. After-use scenarios	18,816		22,106	25,230	45,156
4. End use 1/100	7,222		6,228	6,220	8,346
5. Forest, SRC	- 12,262		- 15,882	- 15,635	375
Emissions from extraction areas	70,471	30.79	66,333	60,682	75,474
Energy consumption					
6. Extraction sites	18,149		17,538	18,664	18,160
7. Other sites	4,935		2,270	2,693	1,532
Emissions from energy consumption	23,084	10.08	19,808	21,357	19,692
Transport					
8. Raw materials, internal	10,196		11,118	13,797	16,704
9. Deliveries to customers	73,216		72,932	71,802	49,055
Emissions from transport	83,412	36.43	84,050	85,599	65,759
External suppliers					
10. Peat incl. transport	24,623		21,561	18,892	11,753
11. Alternative constituents incl. transport	21,083		21,310	18,693	26,808
12. Packaging material incl. transport	6,275		5,825	5,572	4,657
Emissions from external suppliers	51,981	22.70	48,696	43,157	43,218
Carbon footprint of company as a whole	228,948	100.00	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

Explanatory notes on the structure of our carbon footprint

Extraction areas

1. Reference scenarios: Before raw-material extraction began, drained bogs were already emitting trace gases (in the form of CO_2, N_2O or CH_4) that affect the climate. Even without peat extraction, the sites would – depending on land use – have continued to emit these gases. Following this line of reasoning, the emissions pertaining to this timebased reference scenario have been factored out of the company's carbon footprint.
2. Peat extraction, interim storage: The emissions stated here are those from our extraction and usage of peat, examples being actively worked peat extraction sites, peat storage in stacks and the peat used in growing media.
3. After-use scenarios: This gives the emissions that arise after peat harvesting ceases – in relation to peatlandrestoration, for instance – before an area stores greenhouse gases once more.
4. End use 1/100: The emissions disclosed here are caused by degradation of peat as a raw material or in substrates. In respect of this, we convert emission totals into CO_2 equivalents with a global-warming potential (GWP) for the next 100 years (GWP100). In our corporate carbon footprint, a resulting aggregate mean value for the reporting year is adopted, equivalent to 1% of the GWP100. Emissions arising during the products' usage or end-of-life stage are disclosed solely in the product carbon footprint (PCF).
5. Forest, SRC: The emissions disclosed here are those resulting from the establishment and maintenance of forests and SRC sites. Over and above this, no CO_2 sinks or reservoirs exist that would need to be included in the carbon footprint; neither do we operate any of the same.

Energy consumption

6. Extraction sites: This line refers to the emissions of our lead company and our subsidiaries that own peat extraction operations, and primarily includes consumption of diesel, heating oil, electricity, natural gas and woodchips.
7. Other sites: The figures given here are total emissions from our production and sales companies which, particularly in the administrative buildings, result from consumption of heating oil, electricity, natural gas and woodchips.

Transport

8. Raw materials, internal: This line states the emissions resulting from transport of raw materials within the Klasmann-Deilmann Group.
9. Deliveries to customers: These emissions are those originating from transport to the customers worldwide. A detailed breakdown was provided for transport by road, container, water and rail.

External suppliers

10. Peat inclusive of transport: Emissions from the extraction and transport of bought-in peat are disclosed here. As we use these raw materials, the emissions are attributed to us.
11. Alternative substrate constituents and additives inclusive of transport: Emissions stated in this line result chiefly from production of our own alternative substrate constituents, TerrAktiv green compost and GreenFibre wood fibre. This figure also incorporates those emissions generated by our suppliers through production and transport of additives such as fertiliser and lime. As we buy and use these products, these - emissions are attributed to us.
12. Packaging materials inclusive of transport: This line gives the total emissions resulting from usage of packaging film, paper, cardboard and pallets.

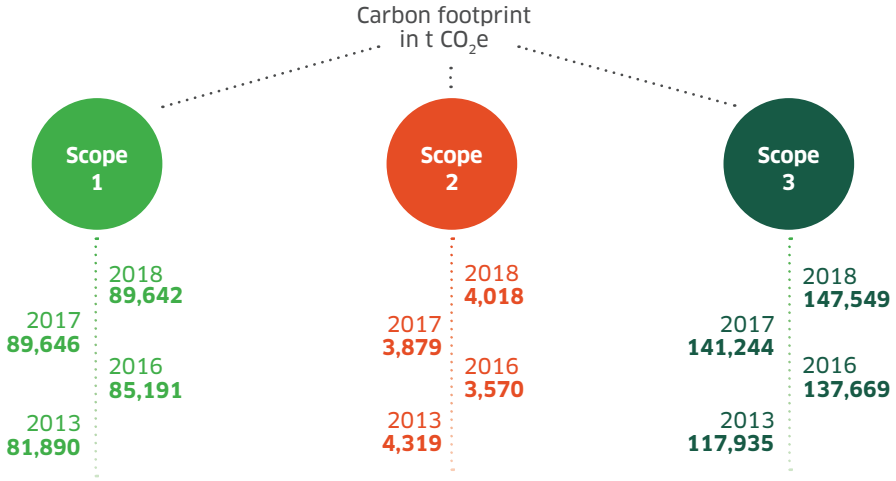
Classification of emissions into scopes

305-1, 305-2, 305-3

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.

The base year is 2016. Global-warming potential is calculated over a 100-year interval. The basis of calculations for the Scope 2 energy mix is as follows: the electricity mixes AT, BE, CN, DE, FR, IR, IT, LT, LV, MY, PL, SG and US, district heating and green electricity (certified as being from hydropower in Norway or from wind power in Ireland, EcoInvent 3.3/3.4/3.5).



Emission factors and other factors not derived from calculations based on corporate data were, as before, extracted from the 'ecoinvent.org' or 'searates.com' databases, or from the 'Quantis study' (see QUANTIS, EPAGMA 2011). Emissions from the extraction and use of peat were calculated on the basis of the results of the study described under 5.2.

The following greenhouse gas emissions are not included in the corporate carbon footprint and are disclosed here in accordance with Chapter 4 of the Greenhouse Gas Protocol:

Scope 1

Not factored in:

- Internal and customer-related empty runs, as the hauliers and transport providers whose services are enlisted are – in accordance with relevant joint agreements – responsible for providing onward and return transport. This arrangement has an impact on the applied prices per transport kilometre. Solely the outward journeys are (in compliance with the ISO 14064-1 standard) taken into account, with only Scopes 1 and 2 to be included. Transport that our customers arrange themselves, and from which we generate no turnover, is not incorporated either;
- Intentional or unintentional release of fugitive emissions such as CFCs from refrigerators.

Scope 2

Scope 2 is fully included.

Scope 3 (optional)

Emissions under Scope 3 are only partially included. Emissions from the following are not reported:

- Return journeys by hauliers (see above);
- Transport of purchased fuel and of waste;
- Car, bus/coach and train journeys or flights associated with work-related travel and/or journeys to or from the place of work, excluding journeys in company cars;
- Leased assets, franchises and outsourced activities;
- Waste-related emissions (Sec. 7 (1) of the 36th German Federal Regulation for the Implementation of the Federal
- Emissions Control Act (BImSchV)), as these are already included in the emission factors for purchased packaging and are not generated by Klasmann-Deilmann itself. Waste from administration is negligible and thus not disclosed.

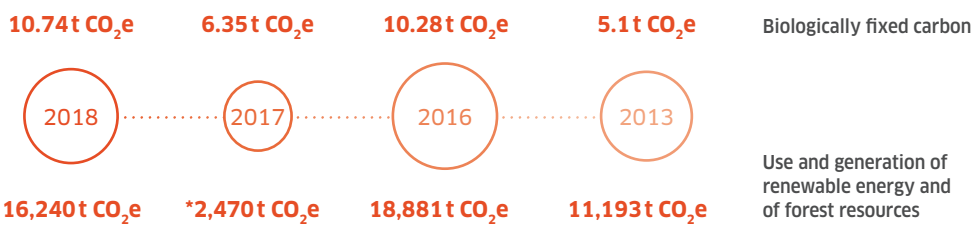
Certain of the bulking constituents that Klasmann-Deilmann uses in substrate production are deemed to be waste and residuals under Sec. 7(1) BImSchV and it would be possible to factor this into the carbon footprint with a value of zero. However, the arrangement is dependent on the raw material's origin and processing. With certain substrate blends, especially those for organic production, there is scope for considerably optimising the product carbon footprint. Klasmann-Deilmann decided against this approach, as it compromises a nuanced consideration of their climate impact.

'Positive' footprint for 2017/2018

302-1, 302-2, 305-1

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. The following factors are also taken into account:

- Under our cooperative arrangement with the organisation Plant for the Planet, 73,951 trees were donated. The resulting amount of carbon stored per tree is put by Plant for the Planet at 10 kg CO_2 a^{-1} over an average life of 10 years.
- Biomass produced by third parties that is subsequently used as an energy source is disclosed separately as 'biologically fixed carbon'. In our case, this is chiefly in the form of woodchips.



* 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.

Recipe-No.	70413	70002	70062	70080	70698
Substrate	Base substrate	Potgrond P	KKS organic tray substrate	Seedling substrate	BP substrate
Type	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

5.4 Energy management

305:103-2, 305:103-3, 302-1

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

Energy consumption by energy source	2018	+/- in %	2017	2016	2015	2014	2013
Electricity	43,136.5	6.3	40,568.6	38,397.2	35,069.4	31,421.1	31,040.0
Heat	14,824.9	- 15.2	17,492.1	16,061.4	17,725.3	17,054.1	19,569.6
Diesel	220,111.3	30.8	168,318.6	172,281.4	171,080.0	169,744.0	160,506.1

Figures in gigajoules for the Group as a whole

Energy consumption (conventional and renewable)	2018	+/- in %	2017	2016	2015	2014	2013
Total energy consumption	278,072.7	22.8	226,379.3	226,740.0	223,874.7	218,219.2	211,115.6
Of which from renewable energy	7,058.9	86.1	3,793.8	3,781.6	3,944.0	2,386.7	3,520.8

Figures in gigajoules for the Group as a whole

5.5 Logistics

305:103-2, 305:103-3

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:

Responsible logistics

Our growing media and raw materials are relatively bulky and heavy. The consignees are primarily horticultural businesses in around 70 countries on five continents. 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. Whereas sea transport is a good solution for raw materials and loose materials, the loss ratio associated with loading pallets onto such vessels is excessively high. 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. Moreover, many customer orders involve very short delivery times – in some cases next-day delivery – and these can only be met using road haulage. Due to the growing shortage of truck drivers, however, freight space in Germany, Europe and in some overseas markets is becoming increasingly scarce overall. This weakens the customer's position vis-à-vis the contractor in terms of promoting sustainable development in road haulage. And the sluggish economic situation will be unable to do more than slow this general trend – it cannot halt it.

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.

Apart from the above, we do not at present see any means of appreciable reducing logistics-related emissions. Significant progress requires a collective effort by the industry as a whole.

5.6 Emissions reduction measures

305:103-2, 305:103-3

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.
- Both the EPAGMA study and the analysis of our carbon footprint indicate that the increasing use of bulking substrate constituents which substitute for peat helps reduce emissions at both product and corporate level. In view of this, 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. The potential quantities that would achieve this are being determined, and the technical foundations laid, with a view to meeting this objective both quantitatively and qualitatively. In 2018, alternative constituents already accounted for 11.6 % of the total production volume of 3.8 million m^3. Adoption of the ‘cradle to grave’ approach here is crucial, as this incorporates the complete mineralisation of the carbon in peat.
- 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. As both the 'cradle to gate' and 'cradle to grave' approaches are mutually dependent and influence each other both positively and negatively, footprinting for 2018 and retrospective calculations for the new base year (2016) will be followed by development of a specific and realistic target for emissions reductions. 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.

5.7 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. We are extremely keen to start a conversation between our experts and customers with a view (as far as possible) to switching to substrates that impact the climate less.

The PCF indicates the quantities of climate-impacting trace gases a given product contains. The raw materials used in our substrates (peat, green compost, wood fibre, etc.) store carbon dioxide (CO_2) and other trace gases that influence the climate. Over time, these substances are released and emitted into the environment. This process begins even at the raw-material extraction phase and continues during substrate production, in nurseries, in association with retailers, when a product is used by retail customers, and right through to its disposal or recycling. To obtain the PCF, the different trace gases are converted into CO_2 and the total is stated as the CO_2 equivalent (CO_2e). Converting the gases into this figure enables the impact of the different trace gases to be compared at a glance. The CO_2e is calculated per cubic metre of growing medium (CO_2e/m^3).

Two alternative means of disclosing the PCF have become established worldwide:

- The PCF's 'cradle to gate' figure includes all CO_2 equivalents right through from resource extraction to the point the substrate leaves our factory, including production. These are the CO_2e levels generated by Klasmann-Deilmann and factored into the company's own carbon footprint.

– In the PCF's all-encompassing 'cradle to grave' measure, all CO_2 equivalents are incorporated right through from resource extraction to disposal or recycling, including production and transport, as well as use in horticultural businesses, in association with retailers, and by retail customers. Some of these emissions (the cradle-to-gate portion) are generated by Klasmann-Deilmann, some in nurseries, and still others during other use phases of the product.

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).

Firstly, all relevant factors are identified in detail and fed into the calculations. These include consumption of electricity, natural gas, petroleum and coal, the seed used, fertilisers and pesticides utilised, and packaging and growing containers. The use of growing media, including their transport to the nursery, is also precisely factored in.

The CCF subsequently determined by the calculating tool enables a given horticultural business to develop its own strategy for reducing emissions and to assess this over several years. Potential parameters here may include the business's heating strategy or the use of substrates with a higher proportion of alternative constituents.

The results can be converted to give product carbon footprints for the relevant individual crops – lettuce, leaf lettuce, lamb's lettuce, cabbage, herbs, leek, celery and poinsettias – raised in either trays or press pots. The outcome is a product carbon footprint (PCF) for a given crop.

Source of emissions	Emissions in kg CO_2e	Emissions (%)
Fertiliser	41	0.0025
Pesticide	70	0.0043
Packaging and growing containers	31,201	1.9156
Energy (total emissions)	1,488,800	91.4049
Seed & young plants	50	0.0031
Substrates	108,634	6.6696
Total emissions (all sources)	1,628,796	100.0000

All major emissions factors are included in the above corporate carbon footprint for a grower. The carbon footprint shown here for a seedling nursery indicates that energy consumption accounts for by far the greatest proportion of emissions.

	Cabbage		Poinsettia	
Source of emissions	Emissions in g CO_2e	Emissions (%)	Emissions in g CO_2e	Emissions (%)
Fertiliser	0.24	0.0032	431.07	0.6341
Pesticide	0.40	0.0054	1.55	0.0023
Packaging and growing containers	0.00	0.0000	2,218.53	3.2635
Energy	3,634.00	49.1241	58,317.00	85.7853
Seed & young plants	0.95	0.0128	1,557.00	2.2904
Substrates, of which:	3,762.00	50.8544	5,455.00	8.0244
Substrate production (cradle to gate)	2,200.00	29.7394	4,032.00	5.9311
Substrate transport to the grower	1,562.00	21.1150	1,423.00	2.0933
Emissions per 1,000 plants	7,397.59	100.0000	67,980.15	100.00

A product carbon footprint (PCF) factors in all major emissions sources. The above table compares emissions for 1,000 young cabbage plants grown in 4-cm press pots (cultivated from March) with emissions for 1,000 miniature poinsettias (cultivated from August). Because the crop is grown in a heated greenhouse, energy consumption accounts for the greater part of emissions arising from poinsettia production. For young cabbage plants grown in press pots, however, just over 50 % of emissions relate to the substrate. For both crops, an appreciable proportion of emissions arising from substrate consumption results from transport of substrates to the nursery.

The PCF per 1,000 plants (e.g. cabbage, lettuce) or 1,000 press pots (e.g. corn salad, herbs) depends in part on seasonal factors. Winter crops cause higher emission levels than those grown in summer, this being related to weather conditions (= greater energy consumption) and light levels (= longer growing cycle in the cold season). There is a rule of thumb which states that substrate-related emissions account for 45 % of the total in winter, as energy consumption is relatively high. In summer, this proportion increases to 75 %, since less energy is used.

In the calculation of both corporate and product carbon footprints described here, the focus is on a nursery's value chain including the operational inputs it buys in. This is a cradle-to-gate scenario calculation ending at the time when crops leave the premises and are, for example, resold.

In terms of the PCF for a given crop, however, broader considerations are advisable, since the substrate used will fully break down over time and release further quantities of CO_2. With regard to this, it does not matter in which context the substrate decomposes (e.g. on farmland or in a retail consumer's garden). What is important are the emissions that must be additionally attributed to a given crop if its entire life cycle is taken into account (end-of-life approach). For the crop as a product, emissions accrue along the value chain that have nothing to do with the nursery itself, including transport-related emissions and those relating to the substrate in which it was grown and in which it may remain until it is composted.

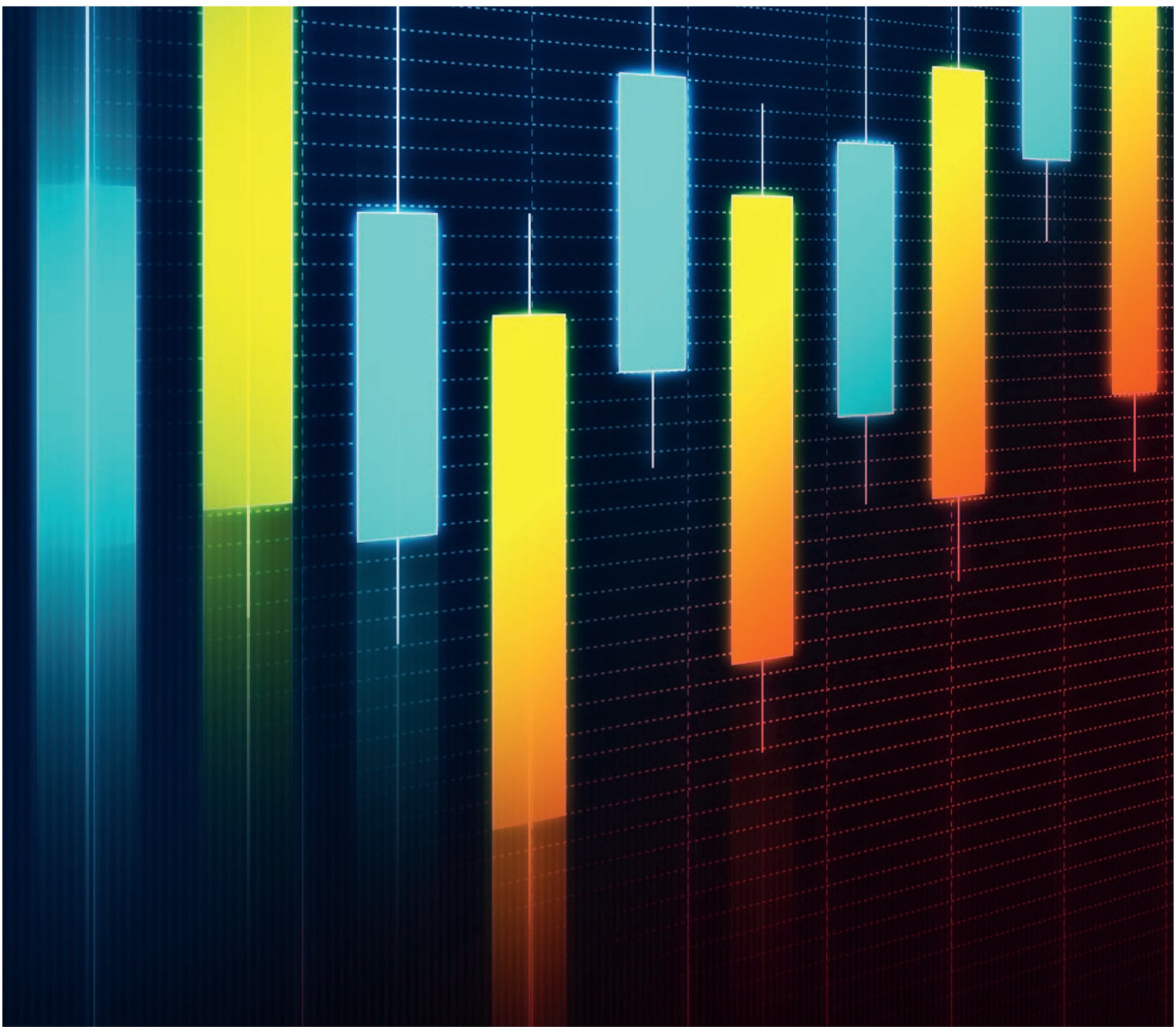
Especially when this all-encompassing end-of-life approach – which considers a crop over its entire life cycle – is adopted, alternative constituents in a growing medium have a positive impact as they help substantially reduce a crop's PCF. This is because renewable substrate constituents themselves generate no emissions since, in cyclical fashion, they first absorb carbon from the air before subsequently releasing it. Therefore, emissions can be attributed only to the associated production processes (e.g. producing fibre from woodchips). Peat, however, is considered a fossil resource for which emissions from its decomposition are fully taken into account.

In the cradle-to-gate approach, however, alternative constituents have only a slight impact. This is due to the brief period during which the substrate is used in the nursery. Accordingly, only a small proportion of emissions arising from the substrate are generated in the nursery itself. To a large extent, the actual decomposition process takes place at the later stages of the value chain.

Summary conclusions

The PCFs determined in this project for different crops under different cultivation conditions resulted in the following main findings:

- The bulk of emissions in nurseries results from the use of fossil fuels and substrates;
- Winter crops cause higher emission levels due to (weather-related) greater energy consumption and (light-related) longer growing cycles than summer crops;
- When plants are sown and propagated in press pots, this tends to lead to higher substrate-related emissions than for tray-grown crops;
- Cultivation of young vegetable plants under cold-house conditions gives rise to relatively high emissions relating to the substrate used;
- The use of a blocking substrate, 10 % of which (by volume) is the GreenFibre wood fibre product, can reduce PCF (per 1,000 plants) under the end-of-life approach.



06

Our company`s most valuable assets are not found on our balance sheet.

“We know that our success depends on our employees’ commitment, motivation and expertise. So we are creating a forward-looking work environment that enables dialogue and transparency; one that creates an atmosphere conducive to innovation. Together we can make our company’s development even more sustainable.”

Dirk Sajogo, Germany, Director Human Resources & Legal

Scope of reporting

404:103-1

The following remarks relate to all Klasmann-Deilmann Group employees. Strategic personnel management is part of the role of Klasmann-Deilmann GmbH, the lead company. It is guided centrally and implemented with local assistance. All measures – in particular recently launched programmes – are continuously reviewed as to their effectiveness. To this end, Human Resources and management consult closely with each other and the relevant employees. This allows a quick response if it is decided that revisions must be made, additional aspects considered or certain things not carried out after all.

Maintaining and strengthening employer attractiveness

404:103-1, 404:103-2, 404:103-3

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

404:103-2

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. Visitors from all over the world came here for the inauguration ceremony, including business partners and customers from China, Taiwan and Argentina. Our guests also included Lower Saxony’s Minister for the Environment, Olaf Lies. The guest speaker was mathematician and environmental scientist Professor Franz Josef Radermacher, who addressed the prospects for and challenges in feeding a growing global population.

In his ceremonial address, Carl-Gerrit Deilmann, Chair of the Administrative Board, stressed that “Klasmann-Deilmann is very much bound up with the resource that is peat. However, our company is also seeking to explore completely new avenues. We have therefore located our new headquarters at a site that will, in the future, no longer have its own peat supply. This will spur us on to develop innovative products and business models – which is why we have called this building our Innovation Center. Our goal is completely new growing media, new substrate constituents, new cultivation systems – in other words, genuine innovation.”

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

404:103-2

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

404-2

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.

go on

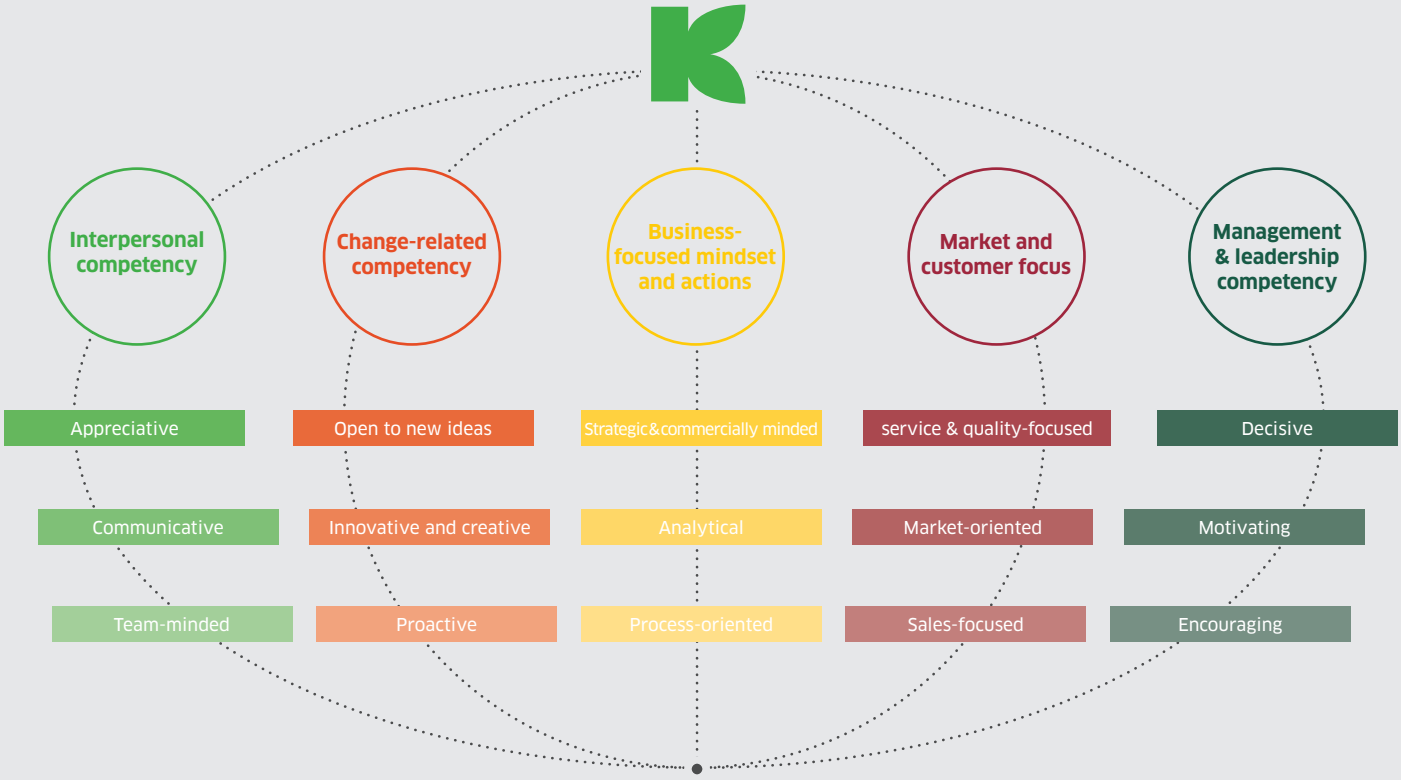
'go on' is an international talent development programme within the Klasmann-Deilmann Group aimed at promising junior employees. It features workshops on specific topics. Alongside the programme, the participants also work on various projects of strategic relevance. 'go on' provides them with an opportunity to develop their personal skills.

go ahead

Our international competency programme called 'go ahead' is designed for staff who are key post-holders within the Klasmann-Deilmann Group. The aim is to strengthen distinctive competencies and, where possible, to harness them even more effectively, as well as to identify approaches to improving areas where employees are less strong.

Competency management model

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

go lean

'go lean' is a management programme by which Klasmann-Deilmann, as the name suggests, is introducing suitable lean-management methods with a view to making the company organisationally streamlined. In conjunction with a higher-education institution, workshops are held at which employees learn to enhance their understanding of processes, identify vulnerabilities in these processes and develop ideas for improvement. The intention is to minimise waste of personnel and material resources and, instead, to optimise value creation. Work processes that go smoothly and without interruption are the aim here. Following a number of successful measures with our technical/industrial employees, our lean-management approach is also to be established within our administrative operations.

go forward

What we call 'go forward' is an innovation programme. Workshops are intended to raise employees' awareness of the whole area that is innovation, devise novel approaches to generating ideas and try out new ways of being creative.

go together

A dialogue programme is being pursued under the banner 'go together'. Its aim is for everyone, at all levels of the workforce and across all Klasmann-Deilmann's companies, to get talking to one another and especially to those in management. The main goals are to strengthen cohesion, to air questions prompted by business developments, to discuss strategic targets, to make technical and specialist issues known, and to strengthen the sense of identification with our organisation.

go start

A programme called 'go start' was initiated for those doing vocational training (which some combine with a degree). This includes an 'icebreaker day' to which they are invited with their parents prior to starting at Klasmann-Deilmann. A booklet with practical information is sent to vocational trainees' homes shortly before they begin. This means they know in advance about dress codes, what time they need to be here, and formality of address. On the first day, the vocational trainees are welcomed by the supervisor at HR, the Safety Officer takes them on a safety tour of the workplace, and the relevant departments are presented to them.

A 'go start' workshop is held every six to eight weeks, featuring a speaker from within the company. These events address topics that are either specific to Klasmann-Deilmann or augment classes at vocational colleges. Here, the vocational trainees learn our in-house etiquette code to help them behave appropriately in this workplace. They receive training in the MS Office package, especially Excel. Our own experts help them to connect with their particular area of work. Interpersonal and soft skills are coached in workshops on teamwork, as well as on conflict and time management.

Every three years external instructors hold a three-day drama workshop for vocational trainees across all years. They explore one aspect of our company culture, develop a play of their own in teams, and – after brief stage and acting training – perform it in front of an audience consisting of the management, their superiors and colleagues.

A family-friendly company

404:103-2

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. This involved not only reviewing what had already been achieved but also, and primarily, identifying forward-looking approaches and opportunities. As a response to emerging trends, the main discussion points were:

– that human-resources planning should be guided by the various life stages;
– the personalisation of job-related solutions.

Since each stage of life leads to quite different aspirations concerning career and family, employers should gear themselves to greater workplace flexibility as soon as possible so they can keep their long-term appeal for good employees.

Promoting health

404:103-2

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. A body consisting of executives, works council members and our company medical officer advises at regular intervals on measures to promote health.

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. Our employees are also increasingly taking part in regional sporting events, forming teams whose makeup changes. There are of course health benefits, but the focus here is also – and primarily – on the shared experience this provides.

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 proportion of time employees are at work and not absent due to illness (Gesundheitsquote,'health rate') for all employees of the Klasmann-Deilmann Group – including time off sick greater than six weeks' duration – increased to 94.7% in 2018, having stood at 94.4% in 2017 and 96.0% in 2016 The number of paid sick days per employee decreased to 13.4 days in 2018, having stood at 14.0 days in 2017 and 10.0 days in 2016.

The working-life span lengthens

404-2

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

102-16, 404:103-2

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.

We, the executives of Klasmann-Deilmann, shall …

- exemplify the Leadership Standards and willingly invest the time needed to perform our leadership role;
- consistently act and make decisions in the interests of sustainable business success on the part of the Klasmann-Deilmann Group;
- agree on achievable goals with our employees, keeping in mind the wider strategic corporate objectives;
- appreciate good performance and communicate this appreciation;
- help our employees to develop professionally and personally in line with needs;
- give and receive constructive feedback promptly and on a regular basis;
- provide information in a timely manner, and communicate understandably and appreciatively;
- honour appointments, commitments and agreements made, and implement any decisions taken both reliably and wholeheartedly;
- address problems, conflicts and mistakes objectively and remedy them as soon as possible;
- be open to new ideas and continuously improve operational processes.

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.

Our leadership standards

102-16, 404:103-2

Our company's success depends crucially on all employees working hand in hand. Only when everyone gives his or her very best in their own particular role, when rules are respected, and when a common goal is pursued can staff and managers alike work successfully and with the proper motivation.

Since 2009, therefore, a value-based, personnel-related Mission Statement has been in place at Klasmann-Deilmann, which reflects the vital importance of our employees and lays significant foundations for constructive cooperation. It shapes our corporate culture, guiding staff as to what is needed and desired with regard to personal conduct, and how to relate to each other, in their work together within the company.

The Mission Statement has stimulated change leading to further improvements in workplace morale and etiquette, team spirit, the degree of care taken and the dedication shown. The aim is that all employees and executives will find, in their own respective jobs, that the commitments in place at Klasmann-Deilmann benefit each and every individual, strengthen the team he or she is in, and move the company forward. This can only be achieved if everyone takes the Mission Statement to heart.

Compliance requirements for the entire workforce

102-16, 404:103-2

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

102-7, 102-8, 102-41

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).

Of personnel employed in Germany, 52% have employment contracts directly covered by collective-bargaining agreements. Usually, the essence of these agreements is transferred to other parts of the workforce in Germany. Outside Germany, there are no such agreements that cover employees in our subsidiaries.

The Klasmann-Deilmann Group's workforce

	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
Total	1041	853	188	1010	837	173	937	754	183	915	750	165

All figures are full-time equivalents (FTE)

Permanent/Fixed-term contracts 2018

Total headcount: 1,041

Permanent contracts:	836	Men:	676	Germany: 252
				Other countries: 424
		Women:	160	Germany: 57
				Other countries: 103
Fixed-term contracts:	205	Men:	171	Germany: 24
				Other countries: 147
		Women:	34	Germany: 11
				Other countries: 23

All figures are full-time equivalents (FTE)

Mode of employment			2018	2017	2016	2015	2014	2013
Total headcount: 1,041			1,041	1,010	938	937	948	915
Full time			1008	981	896	898	903	868
Permanent contracts:	Administrators	Men:	231	208	234	230	222	208
		Women:	112	100	109	103	101	94
	Technical/Industrial	Men:	442	437	436	442	454	449
		Women:	21	30	24	36	32	27
Fixed-term contracts:	Administrators	Men:	20	34	1	3	4	4
		Women:	17	10	2	1	4	2
	Technical/Industrial	Men:	156	154	78	77	83	83
		Women:	9	8	12	6	3	1
Part time			33	29	42	39	45	47
Permanent contracts:	Administrators	Men:	3	3	5	3	3	3
		Women:	26	24	34	35	37	39
	Technical/Industrial	Men:	0	0	0	0	2	3
		Women:	1	1	1	0	1	1
Fixed-term contracts:	Administrators	Men:	0	0	0	0	0	0
		Women:	1	0	2	1	2	1
	Technical/Industrial	Men:	1	1	0	0	0	0
		Women:	1	0	0	1	0	0

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.

In order that production can cope with the strong, seasonal build-up of delivery orders, we use intermediate storage facilities in Austria, France, Germany, Switzerland and Hungary; these are not run by employees of the Klasmann-Deilmann Group.

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.

DO IT!

DO IT!

DO IT!

07

Speech is silver, silence is golden but implementation is priceless.

"Our Sustainability Report meets the GRI Standards 2016. Global Reporting Initiative specifications have prompted us to examine sustainability issues in greater depth, and the requirements with regard to the contents of our report are now more challenging. What this means for our shareholders is additional opportunities for evaluating our sustainable development."

Dirk Röse, Germany, Head of Corporate Communications

7.1 GRI Content Index

For the Materiality Disclosures Service, GRI Services reviewed that the GRI content index is clearly presented and the references for Disclosures 102-40 to 102-49 align with appropriate sections in the body of the report.

102-55 GRI 101: Foundation 2016

General Disclosures (GRI Standards 2016)

GRI Standard	Disclosure	Page	Omission
GRI 102: General Disclosures 2016, Organizational profile	102-1: Name of the organization	20	--
	102-2: Activities, brands, products, and services	15, 34, 35, 36, 38, 39, 40, 56	--
	102-3: Location of headquarters	20	--
	102-4: Location of operations	20, 37, 40	--
	102-5: Ownership and legal form	20	--
	102-6: Markets served	43, 46, 50, 52	--
	102-7: Scale of the organization	20, 22, 37, 40, 50, 52, 89	--
	102-8: Information on employees and other workers	89	--
	102-9: Supply chain	38, 43, 46	--
	102-10: Significant changes to the organization and its supply chain	20	--
	102-11: Precautionary Principle or approach	8, 21, 32, 33, 40, 50, 56, 57	--
	102-12: External Initiatives	21, 28, 56, 57, 59	--
	102-13: Membership of associations	28	--
GRI 102: General Disclosures 2016, Strategy	102-14: Statement from senior decision-maker	8	--
GRI 102: General Disclosures 2016, Ethics and Integrity	102-16: Values, principles, standards, and norms of behavior	38, 56, 88, 89	--
GRI 102: General Disclosures 2016, Governance	102-18: Governance structure	20	--
GRI 102: General Disclosures 2016, Stakeholder engagement	102-40: List of stakeholder groups	26	--
	102-41: Collective bargaining agreements	89	--
	102-42: Identifying and selecting stakeholders	26	--
	102-43: Approach to stakeholder engagement	26, 28	--
	102-44: Key topics and concerns raised	15, 26	--

GRI Standard	Disclosure	Page	Omission
GRI 102: General Disclosures 2016, Reporting practices	102-45: Entities included in the consolidated financial statements	22	--
	102-46: Defining report content and topic Boundaries	15	--
	102-47: List of material topics	18	--
	102-48: Restatements of information	62, 63	--
	102-49: Changes in reporting	62	--
	102-50: Reporting period	14	--
	102-51: Date of most recent report	14	--
	102-52: Reporting cycle	14	--
	102-53: Contact point for questions regarding the report	14	--
	102-54: Claims of reporting in accordance with the GRI Standards	14	--
	102-55: GRI Content Index	94	--
	102-56: External assurance	14, 97	--

Topic-specific disclosures (GRI Standards 2016)

GRI Standard	Disclosure	Page	Omission
Materials			
GRI 103: Management approach 2016	103-1: Explanation of the material topic and its Boundary	32, 50	--
	103-2: The management approach and its components	32, 33, 34, 35, 36, 38, 40, 50	--
	103-3: Evaluation of the management approach	32, 50	--
GRI 301: Materials 2016	301-1: Materials used by weight or volume	37, 50, 52	--
	301-2: Recycled input materials used	35	--

GRI Standard	Disclosure	Page	Omission
Energy			
GRI 103: Management approach 2016	103-1: Explanation of the material topic and its Boundary	50	--
	103-2: The management approach and its components	50, 53	--
	103-3: Evaluation of the management approach	50, 53	--
GRI 302: Energy 2016	302-1	68, 71	--
	302-2	68	--
Biodiversity			
GRI 103: Management approach 2016	103-1: Explanation of the material topic and its Boundary	56	--
	103-2: The management approach and its components	43, 56, 57, 59	--
	103-3: Evaluation of the management approach	57, 59	--
GRI 304: Biodiversity 2016	304-3: Habitats protected or restored	58	--
Emissions			
GRI 103: Management approach 2016	103-1: Explanation of the material topic and its Boundary	60, 62, 63	--
	103-2: The management approach and its components	60, 62, 71, 72, 73	--
	103-3: Evaluation of the management approach	71, 72, 73	--
GRI 305: Emissions 2016	305-1: Direct GHG emissions (Scope 1)	67, 68, 97	--
	305-2: Indirect energy-related GHG emissions (Scope 2)	67, 97	--
	305-3: Other indirect GHG emissions (Scope 3)	67, 97	--
	305-4: Intensity of GHG emissions	65	--
Training and Education			
GRI 103: Management approach 2016	103-1: Explanation of the material topic and its Boundary	82	--
	103-2: The management approach and its components	82, 83, 86, 88, 89	--
	103-3: Evaluation of the management approach	82	--
GRI 404: Training and Education 2016	404-2: Programs for upgrading employee skills and transition assistance programs	84, 86	--

7.2 SGS Verification Statement

102-56, 305-1, 305-2, 305-3

Greenhouse Gas Verification Statement Number UK.VOL.INV.A.0115.2018

The inventory of Greenhouse Gas emissions in the period 01/01/2018 – 31/12/2018 for

Klasmann-Deilmann GmbH
Georg-Klasmann-Str. 2-10
49744 Geeste
Germany

has been verified in accordance with ISO 14064-3:2019 as meeting the requirements of **ISO 14064-1:2018**

To represent a total amount of: 228,946 tCO_2e

For the following activities: **Substrate production**

Lead Assessor: Dina Bauer
Technical Reviewer: Henk Jan Olthuis

Authorised by:
Pamela Chadwick
Business Manager
SGS United Kingdom Ltd

Verification Statement Date 9th August 2019

This Statement is not valid without the full verification scope, objectives, criteria and conclusion available on pages 2 to 4 of this Statement.

Schedule Accompanying Greenhouse Gas Verification Statement Number UK.VOL. INV.A.0115.2018

Brief Description of Verification Process
SGS has been contracted by Klasmann-Deilmann GmbH for the verification of direct and indirect carbon dioxide (CO_2) equivalent emissions as provided by Klasmann-Deilmann GmbH, Georg-Klasmann-Str. 2-10, 49744 Geeste, Germany in their GHG Assertion in the form of a Greenhouse Gas Emissions Report covering CO_2 equivalent emissions.

Roles and responsibilities
The management of Klasmann-Deilmann is responsible for the organization's GHG information system, the development and maintenance of records and reporting procedures in accordance with that system, including the calculation and determination of GHG emissions information and the reported GHG emissions.

It is SGS' responsibility to express an independent GHG verification opinion on the emissions as provided in the Klasmann-Deilmann GHG Assertion for the period 01/01/2018 – 31/12/2018.

SGS conducted a third party verification following the requirements of ISO 14064-3: 2019 of the provided CO_2 equivalent assertion in the period April to July 2019.

The assessment included a desk review and a site visit at Klasmann-Deilmann headquarters office in Geeste. The verification was based on the verification scope, objectives and criteria as agreed between Klasmann-Deilmann and SGS on 12th November 2018.

Level of Assurance
The level of assurance agreed is limited.

Scope
Klasmann-Deilmann has commissioned an independent verification by SGS of reported CO_2 equivalent emissions arising from their activities, to establish conformance with the requirements of ISO 14064-1:2018 within the scope of the verification as outlined below. Data and information supporting the CO_2 equivalent assertion were historical in nature and proven by evidence.

This engagement covers verification of emissions from anthropogenic sources of greenhouse gases included within the organization's boundary and meets the requirements of ISO 14064-1:2018.

- The organizational boundary was established following the operational control approach.
- Title or description of activities: Substrate production.
- Location/boundary of the activities: all winning and production sites of Klasmann-Deilmann Group.
- Physical infrastructure, activities, technologies and processes of the organization: peat winning, after use of peat areas, the production of substrates, internal transport and transport to client and the end of life emissions (for one year).
- GHG sources, sinks and/or reservoirs included:

Scope 1 fugitive emissions of peat, stationary emissions from fuels, mobile combustion from fuels;
Scope 2 purchased electricity;
Scope 3 3rd party distribution by rail, road and sea, emissions from production of other ingredients, end use of product, upstream emissions from energy generation.

Removals – planted forest – are reported separately to the inventory and included in the scope, if action took place in the boundaries of Klasmann Deilmann.

- Types of GHGs included: CO_2, N_2O, CH_4.
- Directed actions: certain activities relating to renewable energy generation and forestry are reported separately. Only forestry included in the boundary of Klasmann Deilmann is included within the inventory.
- GHG information for the following period was verified: 01/01/2018 – 31/12/2018.
- Intended user of the verification statement: internal, customers and general public.

– GHG sources, sinks and/or reservoirs excluded: Wastes, employees travelling by air, return journeys for ships/vessels and trains.

Objective
The purposes of this verification exercise are, by review of objective evidence, to independently review:
– Whether the CO_2 equivalent emissions are as declared by the organization's CO_2 equivalent assertion.
– That the data reported are accurate, complete, consistent, transparent and free of material error or omission.

Criteria
Criteria against which the verification assessment is undertaken are the requirements of ISO 14064-1:2018 and Klasmann-Deilmann's own methodology.

Materiality
The materiality required of the verification was considered by SGS to be below 10%, based on the needs of the intended user of the GHG Assertion.

Conclusion
Klasmann-Deilmann provided the GHG assertion based on the requirements of ISO 14064-1:2018. The GHG information for the period 01/01/2018 – 31/12/2018 disclosing gross emissions of 228,946 metric tonnes of CO_2 equivalent are verified by SGS to a limited level of assurance, consistent with the agreed verification scope, objectives and criteria.

SGS' approach is risk-based, drawing on an understanding of the risks associated with modeling GHG emission information and the controls in place to mitigate these risks. Our examination included assessment, on a sample basis, of evidence relevant to the voluntary reporting of emission information.

SGS concludes with limited assurance that there is no evidence to suggest that the presented CO_2 equivalent assertion is not materially correct and is not a fair representation of the CO_2 equivalent data and information and is not prepared following the requirements of ISO 14064-1:2018.

We planned and performed our work to obtain the information, explanations and evidence that we considered necessary to provide a limited level of assurance that the CO_2 equivalent emissions for the period 01/01/2018 – 31/12/2018 are fairly stated.

SGS makes the following qualifications:

– The methodology used for the calculation of fugitive emissions from peat is based on ongoing research and has inherent uncertainties because of this, but is estimated as lower than 1%. This uncertainty has not been accounted for within the materiality level applied. For 2016, for the first time, the results of two years' in-house GHG measurements were used.
– In 2019 verification, the base year was changed to 2016 and recalculation for the base year 2016 has been done as well.

- The organization's scope 3 emissions from the customer's fugitive emissions from peat are accounted for a period of 1 year only.
- The methodology used for the calculation of fugitive emissions from peat provides a net emissions figure taking account of baseline emissions that would have occurred without the activities of the client.
- Empty transport emissions (journeys back) are not included in the inventory as part of scope 3 emissions.

This statement shall be interpreted with the CO_2 equivalent assertion of Klasmann-Deilmann as a whole.

Note: This Statement is issued, on behalf of Klasmann-Deilmann GmbH, by SGS United Kingdom Ltd, Rossmore Business Park, Inward Way, Ellesmere Port, Cheshire, CH65 3EN ("SGS") under its General Conditions for GHG Validation and Verification Services.The findings recorded hereon are based upon an audit performed by SGS. A full copy of this statement and the supporting GHG Assertion may be consulted at Klasmann-Deilmann (www.klasmann-deilmann.com). This Statement does not relieve Client from compliance with any bylaws, federal, national or regional acts and regulations or with any guidelines issued pursuant to such regulations. Stipulations to the contrary are not binding on SGS and SGS shall have no responsibility vis-à-vis parties other than its Client.

Greenhouse Gas Verification Statement Number
UK.VOL.INV.A.0115.2018

The Product Carbon Footprint Calculation Tool of:

Klasmann-Deilmann GmbH
Georg-Klasmann-Str. 2-10
49744 Geeste
Germany

has been verified in accordance with ISO 14064-3:2019 as enabling calculation of:
Carbon Footprints

For the following calculation tool for substrate products: #
KD PEAT Corporate_SQ_2018_SCE2016_v9

Lead Assessor: Dina Bauer
Technical Reviewer: Henk Jan Olthuis

Authorised by:
Pamela Chadwick
Business Manager
SGS United Kingdom Ltd
Verification Statement Date 9th August 2019

This Statement is not valid without the full verification scope, objectives, criteria and findings available on pages 2 to 3 of this Statement.

Schedule Accompanying Greenhouse Gas Verification Statement Number UK.VOL. INV.A.0115.2018

Brief Description of Verification Process
SGS has been contracted by Klasmann-Deilmann GmbH, for the verification of a methodology and tool used to calculate the Product Carbon Footprint of substrate products in accordance with ISO 14064-3:2019.

Roles and responsibilities
The management of Klasmann-Deilmann is responsible for the organization's GHG information system, the development and maintenance of records and reporting procedures in accordance with that system, including the calculation and determination of GHG emissions information and the reported GHG emissions.

It is SGS' responsibility to express an independent GHG verification opinion on the GHG emissions as provided in the Klasmann-Deilmann product carbon footprint calculation methodology and tool.

The verification was based on the verification scope, objectives and criteria as agreed between Klasmann-Deilmann and SGS on 12th November 2018.

Level of Assurance
The level of assurance agreed is that of limited assurance.

Scope
Klasmann-Deilmann has commissioned an independent verification by SGS of the Product Carbon Footprint methodology and calculation tool to establish conformance with the principles of relevance, completeness, consistency, accuracy and transparency within the scope of the verification as outlined below. The data and information supporting the GHG assertion were historical in nature, based on collected data from 2018.

This engagement covers verification of the client's own methodology and tool for calculating emissions. The tool has the option to calculate emissions from cradle-to-gate or cradle-to-grave sources of greenhouse gases included within the life cycle of the product. The tool is modular, and the option also exists to calculate emissions from cradle-to-gate plus transportation of product to the client including choice of mode of transport, selection of production site and origin of ingredients, the use phase and the end of life phase, taking account of emissions over a period of 1 to 100 years. The verification is based on ISO 14064-3:2019.

The scope of this engagement covers:

- The assessment of fugitive emissions from peat fields (land use change), including after use of land and drying of peat, raw materials, production of other ingredients, transport, packaging, bulk storage, and consumer phase emissions.
- Physical infrastructure, activities, technologies and processes of the organization: peat winning, after use of peat areas, the production of substrates, transport (but without empty journeys back), use and the end of life.
- Types of GHGs included: CO_2, N_2O, CH_4.
- In Intended user of the Verification Statement: external use (customers, suppliers, investors and other).

Objective
The purpose of this verification exercise is, by review of objective evidence, to independently review:

- The methodology employed in the tool calculates CO_2 equivalent emissions per functional unit according to the requirements of the criteria below.

Criteria
Criteria against which the verification assessment are the principles of relevance, completeness, consistency, accuracy and transparency.

Materiality
The materiality threshold applied by SGS was 10%, based on the needs of the intended user.

Conclusion
Klasmann-Deilmann provided the Product Carbon Footprint Methodology and Calculation Tool based on the principles of relevance, completeness, consistency, accuracy and transparency. The methodology employed, the tool used to calculate the product carbon footprint of substrate products based on different recipes, and the input data for 2018 used in the tool are verified by SGS to a limited level of assurance, consistent with the agreed verification scope, objectives and criteria.

SGS' approach is risk-based, drawing on an understanding of the risks associated with modeling GHG emission information and the controls in place to mitigate these risks. Our examination included assessment, on a sample basis, of evidence relevant to the reporting of emission information.

SGS concludes with limited assurance that, there is no evidence that the Methodology and Product Carbon Footprint tool stated above is not materially correct and does not present data that is complete and accurate.

SGS makes the following qualifications:

- The methodology used for the calculation of fugitive emissions from peat is based on ongoing research and has inherent uncertainties because of this but is estimated as lower than 1%. This uncertainty has not been accounted for within the materiality level applied. For 2016 for the first time the results of two years own GHG measurements were used.
- The base year has been changed to 2016 and a recalculation has been done.
- The methodology used for the calculation of fugitive emissions from peat provides a net emissions figure taking account of baseline emissions that would have occurred without the activities of the client.

Note: This Statement is issued, on behalf of Klasmann-Deilmann GmbH, by SGS UK Ltd ("SGS") under its General Conditions for GHG Validation and Verification Services available at http://www.climatechange.sgs.com/terms_and_conditions_climatechange.
The findings recorded hereon are based upon an audit performed by SGS. A full copy of this statement, the findings and the supporting GHG Assertion may be consulted at Klasmann-Deilmann (www.klasmann-deilmann.com). This Statement does not relieve Client from compliance with any bylaws, federal, national or regional acts and regulations or with any guidelines issued pursuant to such regulations. Stipulations to the contrary are not binding on SGS and SGS shall have no responsibility vis-à-vis parties other than its Client.

7.3 Bibliography

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7.4 About this publication

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