



IKEA Climate Report FY22



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About this report
This report summarises our performance during FY22 compared to the IKEA commitment to become climate positive by FY30. The climate commitment is a key element of the IKEA sustainability strategy, People & Planet Positive. This report covers the entire value chain and franchise system and provides an update on activities and the ongoing work to measure progress. The IKEA Climate Report is issued by Inter IKEA Group . ¹
The reporting period follows the financial year 2022 (FY22), which runs from 1 September 2021 to 31 August 2022. Percentages in this report may not total 100% due to rounding differences.
The IKEA business is defined as the business activities performed by all entities operating under the IKEA Brand. “We” in this report refers to the IKEA business. The IKEA value chain includes sourcing and extracting raw materials, manufacturing, transporting of products, retail activities in stores, customer travel to stores, product use in customers’ homes and product end-of-life.
To ensure the long-term growth and development of the IKEA business, we use a franchise system . This provides financial stability while allowing franchisees to challenge, test and explore new markets and ideas. Together, we continue to develop the IKEA brand.
Read the complete IKEA Sustainability Report FY22

¹ Inter IKEA Group consists of Inter IKEA Holding B.V. and all its subsidiaries. An overview of all Inter IKEA Holding subsidiaries can be found [here](#).

Increasing transparency and making progress every year

The world has six years of carbon budget left to limit global temperature increase to 1.5°C compared to pre-industrial levels.¹ Taking action to achieve tangible results is now more critical than ever before.

We are committed to doing our part, by taking a full value chain approach, working towards becoming climate positive and securing a just transition.² We recognise the importance of setting credible targets in line with science and to understand their consequences. We're currently in the process of assessing the business impact of the Net-Zero Standard by the Science Based Targets initiative (SBTi).

The IKEA climate footprint in FY22 is estimated to be 25.8 million tonnes of CO₂ eq – a decrease in absolute terms of 5% since last year, and 12% compared to our baseline year FY16. This means that we're on our way to reaching our current goal for FY30 of an absolute reduction of at least 15%. The relative climate footprint has also decreased compared to the baseline by 20%.³ The reduction of the IKEA climate footprint is mainly due to the increased share of renewable energy in both retail and production, and a more energy-efficient range, particularly SOLHETTA LED bulbs.

The SOLHETTA LED range is not only our most energy-efficient LED bulb to date, but it's also more affordable

than previous IKEA LED bulbs, enabling more people to access energy-efficient solutions for their homes. This development is especially important in times of surging electricity prices in many markets. Additionally, we've seen a continued increase in the share of sales of our plant-based food options, such as the plant ball and the veggie hot dog.

Our work towards consuming 100% renewable energy across IKEA retail and other operations continued in FY22. The total renewable energy share for IKEA retail and other operations is now 64% compared to 57% in FY21. Twenty-four IKEA retail markets are now consuming 100% renewable electricity. For IKEA retail and other operations, we've managed to secure 100% renewable electricity in Austria and Spain (mainland), and made significant progress in China (from 8% in FY21 to 98% in FY22).

We also managed to increase the share of renewable electricity in production from 52% in FY21 to 64% in FY22. In FY21, we launched a programme to enable the purchase of renewable electricity for our suppliers. The initial focus has been on the three markets where the climate footprint from electricity consumption was the highest – China, India and Poland. The programme is showing good results, and we'll roll it out to additional markets in FY23.

A key challenge for the climate footprint of our materials relates to securing accurate and complete

data and assessing progress against set goals as well as the impact of actions taken. In FY22, the overall climate footprint of materials is therefore mainly based on extrapolation using our volume growth and we're not able to separately show the improvements we see in, for example, metals, textiles, and comfort materials. This means that the disclosed climate footprint from materials is a conservative figure where the actual range developments have not been possible to include, such as our big movement towards 100% recycled polyester.

For product transport, we are committed through the initiative EV100+ to only use zero-emission electric trucks for heavy-duty vehicles. Together with previous commitments, this means that the IKEA business will provide only zero-emission transports for home deliveries by 2025,³ and for ocean shipping and heavy-duty vehicles by calendar year 2040. This means, in the future, transport will have almost no GHG emissions or air pollution.

There's a strong synergy between reducing GHG emissions and reducing air pollution. As part of our People & Planet Positive Strategy, we're committed to "actively reducing air pollutants", but haven't been able to properly quantify this and set a goal. With this report, we're taking the lead by being one of the first businesses to disclose the outdoor air pollution generated across a value chain. Even though more work is needed to improve our analysis and set targets, we hope that by sharing our findings in a transparent way

we inspire other companies to also address air pollution together with climate change.

Our climate positive commitment means that we not only aim to reduce the climate footprint of the IKEA value chain in line with the 1.5°C target, but also contribute with additional reductions in society by going beyond the IKEA business, and without relying on carbon offsets. An example of our contribution to society is the SOLSTRÅLE home solar offer, from the largest IKEA retailer, Ingka Group. During the year, we also launched the ÅBÄCKEN water nozzle, which can enable customers to save up to 95% of water used in taps at home.

Our performance is the result of a lot of hard work by co-workers, suppliers and partners across the IKEA business who are committed to addressing every part of the IKEA footprint. Together, we will take the remaining actions needed to contribute to limiting global warming to 1.5°C.



Jon Abrahamsson Ring
Chief Executive Officer,
Inter IKEA Group



Pär Stenmark
Chief Sustainability Officer,
Inter IKEA Group

¹ Mercator Research Institute on Global Commons and Climate Change, "Remaining carbon budget", 1.5°C scenario selected, 2022
² A just transition addresses the social consequences of actions taken to reduce climate impact and transition to a circular economy.
³ The volume of products manufactured in FY22 was 10% higher than in the baseline year FY16, but 1% lower than FY21. The relative climate footprint decreased by 20% tonnes CO₂ eq per produced volume (m³) of IKEA products compared to the baseline.
⁴ Scope: Inter IKEA Group and IKEA retail business of franchisee Ingka Group.

Becoming climate positive

By FY30, IKEA is committed to becoming climate positive by reducing more greenhouse gas emissions than the IKEA value chain emits, while growing the IKEA business. This will be achieved without relying on carbon offsetting. This is how we contribute to limiting the global temperature increase to 1.5°C by the end of the century.

Becoming climate positive means reducing the greenhouse gas emissions from the IKEA value chain in absolute terms in line with the 1.5°C target,¹ while contributing to additional reductions in society.

To achieve becoming climate positive, we have set the following strategic goals, in order of priority:

- 1

Drastically reducing GHG emissions across the IKEA value chain, in absolute terms

The overall goal is, by FY30, to reduce the absolute GHG emissions from the IKEA value chain by at least 15% compared to FY16, while still growing the IKEA business. In addition, sub-goals are set for specific parts of the IKEA value chain. Together, these sub-goals add up to a larger reduction than the 15% in the overall goal.
- 2

Removing and storing carbon from the atmosphere through forestry, agriculture and products within our value chain

Trees and agricultural crops – which are used for materials, food and fuels – absorb and store carbon as they grow, in the plant itself and in the soil. This removes CO₂ from the atmosphere and, if the land is responsibly managed, has a potential to reduce climate impact. In contrast to carbon offsets, this takes place within our supply chain and is part of how we responsibly source materials for the IKEA range. A strategic goal will be set once the [Land Sector and Removals Guidance by GHG Protocol](#) is finalised, which is expected to be in the spring of 2023. This accounting guidance is the final piece since the [Forestry, Agriculture and Land \(FLAG\) target setting standard by Science Based Targets initiative \(SBTi\)](#) was launched in September 2022. Even though a goal has not yet been set, we're taking actions that we know will have a positive contribution.

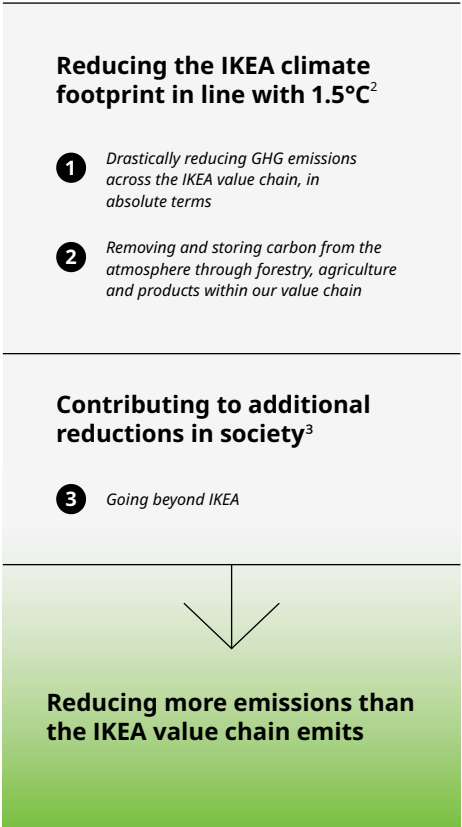
- 3

Going beyond IKEA

To reduce more GHG emissions than we emit, we will contribute to additional reductions in society by taking an extended responsibility for the climate footprint of our customers, suppliers and in our sourcing areas and not just the part which we can account for as part of the IKEA climate footprint. A strategic goal will be set once the guidance is ready for “removing and storing carbon” and when the framework for going beyond has been developed by SBTi. We are taking actions that we know will have a positive contribution, even though a goal has yet to be set.

We'll achieve our climate positive ambition without using carbon offsets, as we firmly believe that we need to address the root causes of our climate footprint within our own value chain or in connection to our customers, suppliers, and sourcing areas. Only by doing so can we transform into a sustainable business.

We're currently assessing the business impact of the Net-Zero Standard by SBTi, which will mainly impact the strategic goal for “drastically reducing greenhouse gas emissions”, as reduction of emissions is the most important movement to limit global warming to 1.5°C.



¹ As defined by the Intergovernmental Panel on Climate Change (IPCC) special report “Global Warming of 1.5°C”.

² Assessing the business impact of the Net-Zero Standard by SBTi is currently ongoing.
³ Effect in addition to what's required to reduce the IKEA value chain emissions to be aligned with the 1.5°C and will never act as any discount or offset to reach the GHG emission reduction goal.

FY22 summary of progress

1. Drastically reducing GHG emissions across the IKEA value chain, in absolute terms

In FY22, the IKEA climate footprint is estimated to be 25.8 million tonnes CO₂ eq, a decrease of 5% compared to FY21 and 12% compared to baseline year FY16. When looking at how the relative climate footprint in terms of volume produced has developed compared to FY21, it has decreased by 4% tonnes CO₂ eq per produced volume (m³) of IKEA products. Compared to baseline FY16, the relative reduction has been 20%.

Comparing the performance of the IKEA climate footprint versus the business growth is difficult in FY22 due to high inflation and supply chain disruptions. It's therefore important that we analyse the underlying performance. The decrease in the climate footprint in FY22 can be attributed to multiple factors, including a higher share of renewable energy across the value chain and improved energy efficiency of product use at home. The decrease is also a result of lower volumes produced.

The share of renewable energy for IKEA retail and other operations increased from 57% in FY21 to 64% in FY22, with renewable electricity reaching a share of 76%. In production, the renewable energy share increased from 46% in FY21 to 50% in FY22, while renewable electricity increased to 64%. A total of 111 additional factories or suppliers achieved 100% renewable electricity. For product transport, the share of alternative fuels, such as biofuels

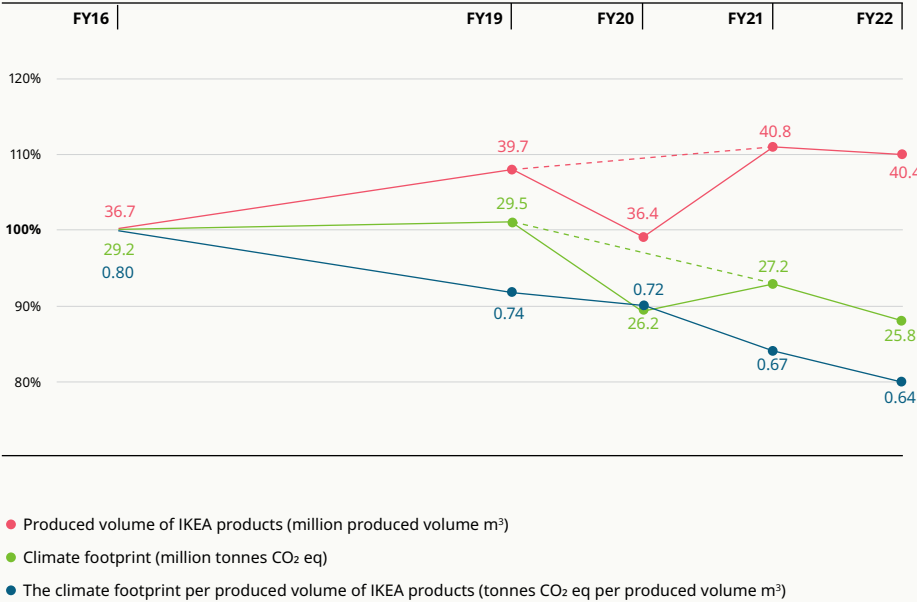
and hydrogen, remained flat at 6%, while the GHG efficiency (in terms of kg CO₂ eq per tonnes and kilometres transported) improved by 11% compared to FY21.

Product use at home is the second largest part of the climate footprint, and in FY22 we saw a reduction of 20% compared to FY21. Since the baseline year FY16, the product use at home footprint has decreased by 45%. Additionally, we saw a slight increase in the share of sales in IKEA restaurants for plant-based options, increasing from 14% in FY21 to 17% in FY22, within the HUVUDROLL range.

For the materials used in IKEA products – the largest climate footprint – material innovation and development plans are set and are expected to lead to new and more efficient use of materials. It's still difficult to draw any conclusions about the full performance since the amount of materials used in the IKEA range is based on estimations for most types of materials, including the share of recycled or renewable materials.

In FY23, our digital development will reach important milestones, allowing us to better analyse performance through more accurate measurements of the climate footprints of materials. This is expected to be in place for the IKEA Sustainability Report FY23 and IKEA Climate Report FY23.

Decreasing the climate footprint in both absolute and relative terms¹



--- The trend when disregarding the significant COVID-19 disruptions in FY20

¹ Due to high inflation and supply chain disruptions in FY22, the climate footprint is compared against the produced volume of IKEA products, as opposed to retail sales in the FY21 report. Produced volume was determined to be a more relevant and consistent basis for comparison since it is the main driver of the largest portion of the climate footprint - materials.

FY22 key activities across the IKEA value chain to drastically reduce GHG emissions

→ Increasing the share of plant-based food sold

The positive trend of customers choosing plant-based food continues. The share of sales of the plant ball and veggie ball in IKEA restaurants increased from 14% in FY21 to 17% within the HUVUDROLL range and from 24% in FY21 to 26% in the Swedish Food Market ([page 16](#)).

→ The impact of SOLHETTA LED bulb on the IKEA climate footprint

The launch of the new LED range SOLHETTA in October 2021 was a success, contributing to improving the overall efficiency (in terms of lumen per Watt) of our lighting range by 19% and a key contributor to reducing the footprint of product use at home by 20% compared to FY21 ([page 29](#)).

→ Increasing share of renewable electricity for production in Poland and China

The renewable electricity share for production in China increased from 32% in FY21 to 64%, while in Poland it increased from 76% in FY21 to 84%. This resulted in the climate footprint of electricity consumption in China and Poland decreasing by 0.22 million tonnes CO₂ eq. The development in China was supported by the programme to enable the purchase of renewable electricity for suppliers, launched in FY21 ([page 18](#)).

→ Towards the phase-out of coal- and fossil oil-based fuels in production

An additional 12 suppliers have phased out the use of coal on-site. Overall, a reduction of one percentage point was achieved. Since FY16, we have reduced the use of coal- and fossil oil-based fuels in production from 12% to 5%, with the aim to reach zero by FY25 ([page 20](#)).

→ Committing to zero emissions in heavy-duty road transports by calendar year 2040 through EV100+

The IKEA business has committed to reach zero-emissions solutions for all product transports and home deliveries¹ by calendar year 2040 at the latest, through initiatives EV100, EV100+ and Cargo Owners for Zero Emission Vessels (coZEV). Not only will this reduce our greenhouse gas emissions, but also air pollution ([page 22](#)).

→ Significantly improving the efficiency of product transportation²

The efficiency of product transports improved by 11% compared to FY21. This improvement was driven by an increased share of ocean transportation and the high share (46%) of land intermodal³ transportation ([page 21](#)).

→ Significant progress towards 100% renewable electricity for IKEA stores by FY25

The renewable electricity share for IKEA retail and other operations increased to 76% compared to 71% in FY21. We achieved 100% renewable electricity in Austria and Spain (mainland), and made significant progress in some markets, especially China (from 8% in FY21 to 98% in FY22) ([page 25](#)).

→ Reaching our food waste reduction goal

The IKEA business reached the goal of reducing food waste from preparing meals in IKEA restaurants⁴ globally by 50% by the end of 2022 (54%), compared to FY17. By the end of 2022, 91% of all IKEA stores had food waste solutions in place (2021: 89%) ([page 24](#)).

¹ Scope of home deliveries include Inter IKEA Group and IKEA retail business of franchisee Ingka Group
² Transport efficiency is measured in relative terms as kilogram CO₂ eq emitted per transported tonne and kilometre.
³ Land intermodal transport refers to multiple modes of transport, such as rail, barge or short sea used in combination with trucks.
⁴ Specifically, food preparation in the IKEA restaurant, bistro, Swedish café and co-worker restaurant.



→ Setting one of the first ever corporate outdoor air pollution baselines

Air pollutants and GHG emissions often come from the same source and there is a strong synergy between the actions needed to reduce emissions. What has been missing for companies is a scientifically robust method that provides the appropriate approaches to quantify air pollutant emissions across their value chain. To address this, Inter IKEA Group, together with Stockholm Environment Institute (SEI) and the Climate & Clean Air Coalition (CCAC), developed the first-ever guide for businesses on measuring outdoor air pollution across value chains.

The guide, “[A Practical Guide for Business: Air Pollutant Emission Assessment](#)” was launched for all companies at COP27 in Sharm El Sheikh, Egypt, after a year’s pilot trial. This year, we are publishing one of the first-ever air pollutant emissions inventories of a business across a value chain. Having a baseline will enable us to manage our impact on air pollution and set goals for reductions in the future ([page 32](#)).

2. Removing and storing carbon from the atmosphere through forestry, agriculture, and products within the IKEA value chain

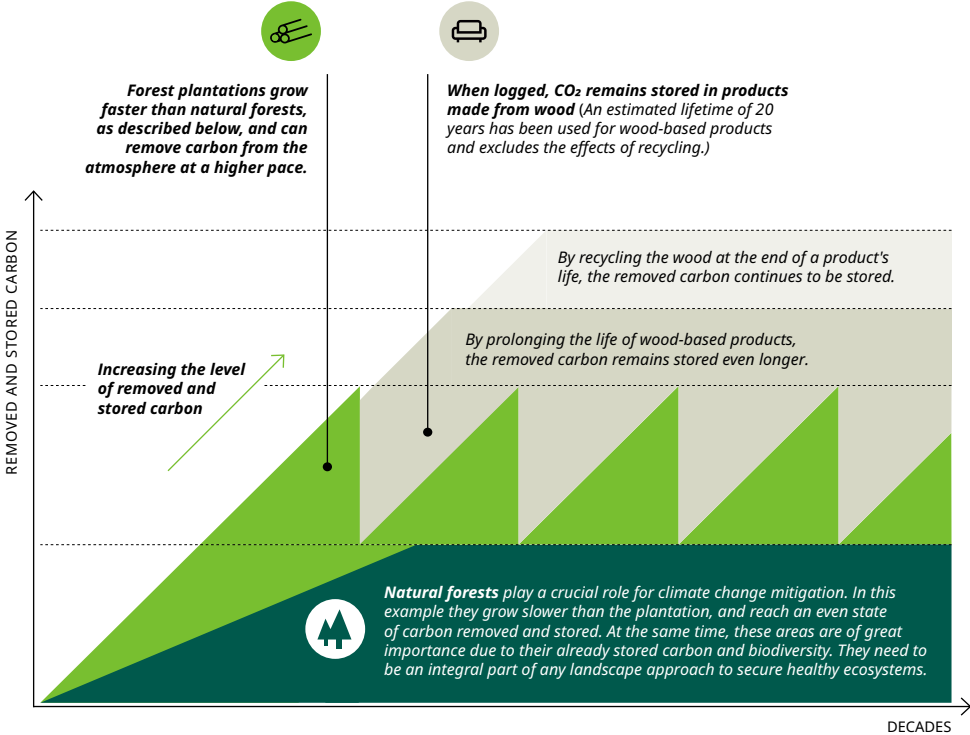


During FY22, we continued to contribute to the work of the GHG Protocol in developing their Land Sector and Removals Guidance. This will extend the GHG Protocol with guidance on how to account for and report GHG emissions and carbon removals and storage connected to land use. The IKEA business has been part of the Advisory Committee and Technical Working Groups and has been conducting pilots during the public consultation in the fall of 2022.

The guidance provides the accounting principles for the target setting standard by Science Based Targets initiative (SBTi) on land-based emissions and removals from Forest, Land and Agriculture (FLAG) – work that the IKEA business also contributed to.

The completion of the guidance is expected during the spring of 2023. Once it's ready, we'll set a strategic goal for removing and storing carbon through forestry, agriculture and products as part of our climate positive commitment. Although the effect of removing and storing carbon will potentially be significant, it's important to recognise that carbon removals and storage can never replace the drastic emission reductions needed to limit global warming to 1.5°C. Removals and storage can only neutralise any remaining emissions after they have been reduced as far as possible.

As pilots are currently ongoing and the standard will soon be finalised, we have decided not to disclose any performance this year.



A simplified model of removing and storing carbon through the establishment of fast growing tree plantations plus restoration of natural forests on degraded land, including the effect of prolonging the carbon storage effect through wood based products and recycling. Trees from responsibly managed forest plantations absorb substantial amounts of carbon dioxide (CO₂) from the atmosphere. When trees are made into wood-based products, they act as temporary carbon storage. This storage effect can be extended through reuse, refurbishment, remanufacturing and recycling of the material at end-of-life. In resilient landscapes, the contribution of responsibly managed forest plantations towards climate change mitigation, and the many contributions of natural forests, in terms of biodiversity or soil protection, for example, have to be considered together. A forest's landscape resilience is important in itself in order to secure that the carbon is not released back to the atmosphere due to extraordinary weather events or pests (for instance). A holistic view, where we balance forest growth, carbon storage and other environmental services, such as biodiversity, is critical.



➔ **Piloting the coming Land Sector and Removals Guidance by GHG Protocol**

We're actively engaging in the development of the Land Sector and Removals Guidance by GHG Protocol. The current focus is on pilots where the draft guidance is tested in practice in order to discover how it incentivises effective climate action within a company's land-based value chains. The pilots also ensure that we listen to and discuss with other stakeholders to create relevant input to the secretariat for the development of the guidance. Our ambition is that the guidance should be transparent, truthful and able to be implemented.



➔ **Increasing carbon storage through acacia plantations in Vietnam**

Smallholders¹ and communities – including minority ethnic groups – manage roughly 65% of Vietnam's plantation forests. Due to certain management practices and a lack of support for smallholders, the land's production capacity isn't always achieved and soil productivity is at risk. This can negatively impact both smallholder income and carbon emissions as the soil's ability to store carbon can be reduced. In FY22, through our project in the Thua Thien Hue province, the IKEA business partnered with a local forestry cooperative to support

more than 1,000 smallholders and their families. The partnership shares and builds knowledge among the smallholders to increase their income and improve land management practices. One aim is to prolong the crop rotation period from five years to ten. This will enable a shift from mainly producing chips for paper pulp production to wood used for sawn goods that then go into furniture production in various shapes and forms. This will hopefully lead to longer carbon storage times in products as well. The goal is to use wood from these acacia plantations in IKEA products.

¹ These smallholders each manage an average of two to three hectares of acacia plantations.

3. Going beyond IKEA by taking an extended responsibility for customers and suppliers

In FY21, our methodology to measure going beyond IKEA was finalised. However, it remained a challenge to measure and follow up across the IKEA business in a consistent way. A formal strategic goal will not be set until one is in place for removing and storing carbon.

The larger the contribution from removing and storing carbon, the smaller the contribution needed from going beyond IKEA in order to reach the IKEA commitment to become climate positive. However, it's important to note that, while no strategic goal has been set, we're already actively working with actions that are part of the going beyond IKEA agenda.

To secure that the actions are connected to the IKEA business transformation, all actions and activities in going beyond IKEA are connected to the IKEA value chain. This means that they are either part of the IKEA range, supplier base or sourcing area. Any effect of going beyond IKEA will never act as an offset towards reaching our emission reduction goal.

Therefore, any contribution must be within one of the following three areas:

Resource use at home: Solutions that enable the generation of renewable energy like, for example,

the SOLSTRÅLE home solar offer.¹ It also includes solutions to improve the efficiency of energy- and water-consuming products, when used as intended. One example is the newly launched ÅBÄCKEN water nozzle, which can enable customers to save up to 95% of water used in taps at home.²

Renewable energy for suppliers: Actions by the IKEA business to convert our supplier partners to 100% renewable energy for their entire factory or operations, not just the IKEA share of their business.

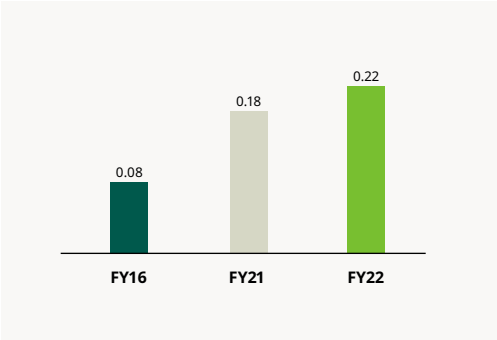
Improving forestry and agriculture in IKEA sourcing areas: Actions by the IKEA business to improve forests or agricultural practices for the total surroundings/landscape where we source raw materials. The possibility to follow up on this impact will be enabled through the Land Sector and Removals Guidance by GHG Protocol.

To avoid overestimating the contribution, we're only accounting for the contribution occurring each year, instead of adding up the total avoided GHG emissions that have taken place since baseline FY16.

This year, we're only disclosing the effect of resource use at home through the SOLSTRÅLE home solar offer. Due to the ongoing digitalisation of the climate footprint reporting, it wasn't possible to secure quality and consistency in the reported

figures for the non-IKEA part of production. The going beyond IKEA contribution from suppliers will be followed up on in the next annual climate report.

In FY22, the SOLSTRÅLE home solar offer was available in 11 IKEA markets.³ The total avoided emissions through the renewable electricity it generated was approximately 0.22 million tonnes CO₂ eq (+26% compared to FY21). This is calculated as the effect of the electricity in the national grid, which the renewable electricity from home solar replaces. The average effect is calculated for the lifetime of the home solar panels, similar to how the climate footprint for product use at home is calculated for lighting and appliances.



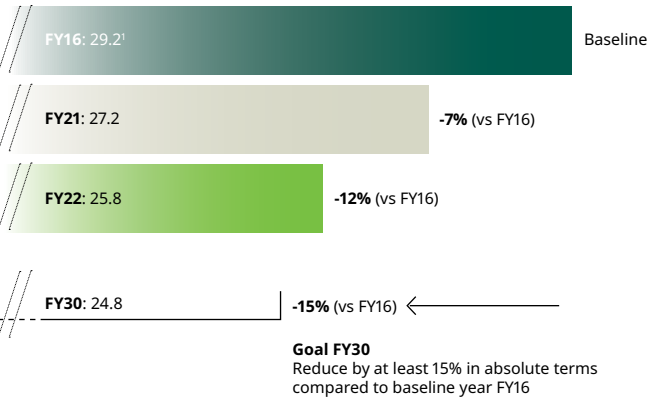
Millions of tonnes CO₂ eq avoided through SOLSTRÅLE Home Solar



¹ Available in Ingka Group markets.
² This excludes lighting, appliances, taps, showers and circular services or solutions since they are already accounted for as GHG emissions in the IKEA climate footprint. Any improvement of these is accounted for in the IKEA climate footprint (drastically reducing GHG emissions), instead of going beyond IKEA.
³ In FY22, the SOLSTRÅLE home solar offer was available in the following markets: Australia, Belgium, France, Germany, Italy, The Netherlands, Poland, Portugal, Spain, Sweden and Switzerland.

IKEA climate footprint

Performance vs. baseline FY16 (million tonnes CO₂ eq)



In FY22, the total IKEA climate footprint decreased by 1.4 million tonnes of CO₂ eq in absolute terms compared to the previous year – a reduction of 5%. The reduction was driven by continued strong progress in the use of renewable energy across the value chain and significantly improving the energy efficiency for product use at home.

¹ Historical data should not change, but we always revise historical figures if data quality or science has improved.
² Includes the climate footprints of capital goods, materials connected to retail equipment and co-worker clothing, and waste generated in IKEA operations.

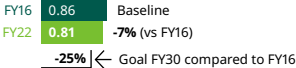
Climate footprint at each stage of the IKEA value chain (million tonnes CO₂ eq)

FY16 FY22 ← Goal FY30 compared to baseline (FY16)

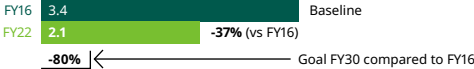
Materials



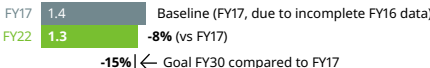
Food ingredients



Production



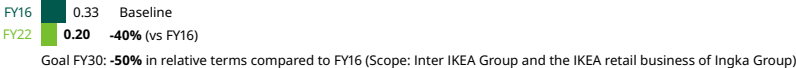
Product transport



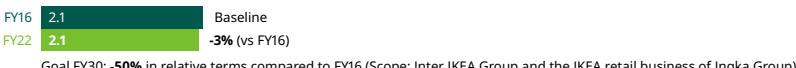
IKEA retail & other operations



Co-worker commuting & business travel



Customer travel & home deliveries



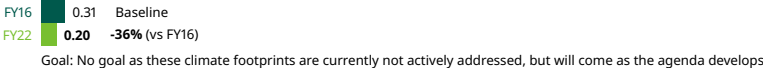
Product use at home



Product end-of-life



Other²



Materials

(52.2% of the total IKEA value chain climate footprint in FY22)

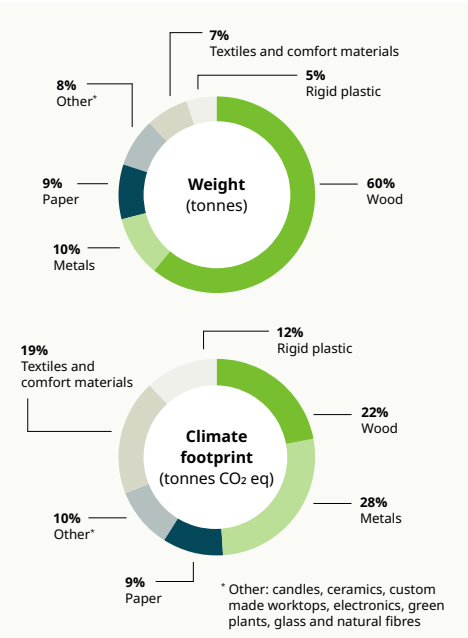
Climate footprint (million tonnes CO₂ eq)¹

FY16: 12.1	Baseline
FY21: 13.6	+13% (vs FY16)
FY22: 13.5	+11% (vs FY16)

Goal FY30: under development

Sub-goal

By FY30, aim to only use recycled or renewable materials.



Share of material weight (% tonnes) vs. climate footprint (% tonnes CO₂ eq)

The materials used in the IKEA range contribute the most to our climate footprint. The five material areas with the largest footprints are metals, paper, plastics, textile and comfort materials, and wood. Combined, they represent about 90% of our material needs, with wood-based materials being the largest by weight at 60%.

Reducing the climate footprint of materials is a long-term development agenda. Climate roadmaps are integrated into every long-term plan for our material agenda, called IKEA material directions. These roadmaps have so far helped us to identify actions (including innovation and development) that will enable us to reach at least half of the needed footprint reduction by FY30. The climate footprint of materials has decreased by 1% in FY22 compared to FY21 (mainly due to lower production volumes) and increased by 11% since baseline year FY16.

Drawing any further conclusions continues to be difficult as the amount of materials used in the IKEA range is based on estimations for most types of materials. Accurate yearly figures for different

amounts of materials continue to only be available for wood and paper. This means that the disclosed climate footprint is a conservative figure where actual range developments, such as moving towards 100% recycled polyester, are not included. During FY22, a project to develop a solution for measuring the material amounts from each supplier was started. In range and product development, work has also begun to map the material amounts of products in the IKEA range. This will give us accurate data about how much of each material is used in an IKEA product. Both initiatives will conclude in FY23, providing measured and more accurate climate footprints of materials for the next IKEA Sustainability Report and IKEA Climate Report.

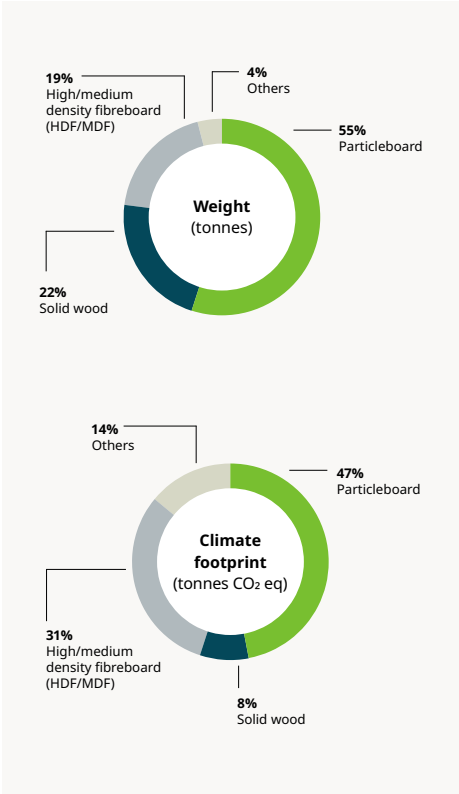
Going forward, we have set clear directions for the materials used within the IKEA business. These enable us to identify the critical movements in material choice for our existing range and new product development, as well as the material innovation and development needed. Some main movements include bio-based glues for our wood-based products; aiming for 100% recycled content in key materials; more sustainable cellulose-based textile fibres; and aiming for 100% renewable energy at our material suppliers, such as board factories and paper mills.

The overall challenge we face in balancing affordability, accessibility, and sustainability remains. Switching to more recycled content, for example, or using new innovative materials or technologies can still initially affect the price – limiting the potential scale and impact of the solution. Even when affordable sustainable materials do exist, access can be limited or the traceability of the raw materials can be difficult to secure. Finding innovations and solutions that can be quickly deployed remains challenging, as many needed solutions are still at the research stage or need to be scaled up.

In FY22, we continued our efforts to increase the use of recycled materials (also known as secondary raw materials) in our products. In FY21, we reported that 56% of the materials we sourced were renewable and 17% were recycled. We're currently working to implement an automated data collection tool that will increase the efficiency and accuracy of our reporting and are therefore not able to update these figures for FY22. We plan to report figures for FY23. Read more about our work with responsible sourcing of materials in the [IKEA Sustainability Report FY22](#).

¹ Scope: GHG Protocol, scope 3 emissions: Purchased goods and services – raw material extraction and transports occurring until the entry gate of tier 1 home furnishing, food (packaging only), components, and catalogue and print suppliers.

Wood-based materials



Share of material weight (% tonnes) vs. climate footprint (% tonnes CO₂ eq)

Wood remains the most used material in the IKEA range. It's part of our identity and Swedish heritage and includes particleboard, fibreboard, solid wood, and veneer. Today, 99.5% of all wood and paper we use comes from more sustainable sources such as Forest Stewardship Council® (FSC®) certified or recycled wood. We aim to improve the sustainability performance of wood even more through the IKEA Forest Positive Agenda 2030.

We use a significant amount of glue for many wood-based materials to hold wood components or fibres together. The glue used represents approximately 5% of the total IKEA climate footprint. Moving towards glues from renewable sources is a key enabler to achieving our overall climate goal. So far, we've mapped the existing and future alternatives in terms of performance, cost and climate footprint. One bio-based system for particleboard is being prepared for implementation in the spring of FY23 and another for fibreboard has advanced to smaller-scale production. Many more options continue to be explored, with IKEA Industry leading this development.

A big challenge with bio-based glues remains that not all are compatible with our current conventional glue and application technology. Instead, factories must switch entirely to bio-based glues and update their facilities and machinery/technology accordingly. A further challenge in keeping costs low is that most



bio-based glues are still more expensive than fossil-based glues. One main reason is that fossil-based glues have been optimised for use in the board industry for over six decades.

Another way to reduce the climate footprint of wood-based materials is by securing that board materials are produced using 100% renewable energy. The wood-based board industry already has a high share of renewable energy. Now we're developing a quantified baseline to identify gaps and take the appropriate actions to secure 100% renewable energy.

Finally, one of the main ways to improve the climate performance of wood-based materials is by improving land management practices from where the wood is sourced. This is a key element of our forest agenda.

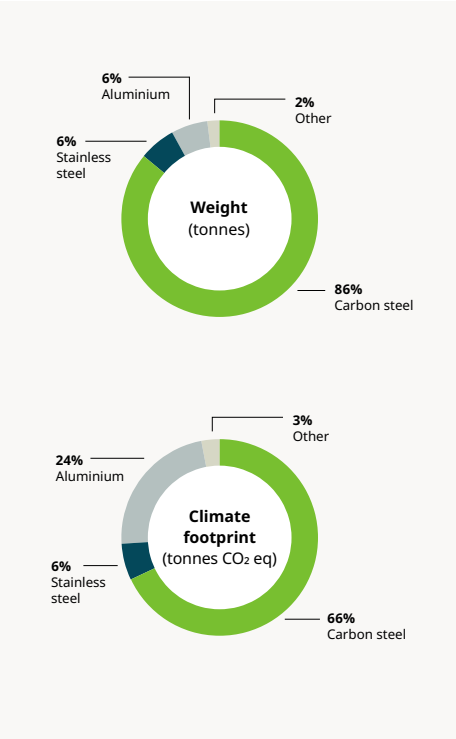
Paper

We continue to use an increasing amount of paper as we move towards packaging solutions and materials with better circular capabilities since paper is renewable, recyclable and one of the most commonly recycled packaging materials globally. Paper is a key material for the transition away from plastic packaging solutions in consumer packaging.

As the applications for paper increases, so does the amount used, as well as its climate footprint. To counter this, we are continuing to develop innovative packaging solutions. We are also continuing to explore alternatives to fossil-based packaging components. This is the final step before reaching 100% renewable or recycled packaging material. Further, applications of paper are limited by the fact that paper is seen as a single-use material with a short lifespan. Paper is also sensitive to humidity, which limits its application in some regions of the world and in certain areas of the home.

We're continually steering our sourcing towards paper mills with higher shares of renewable energy. By increasing the backward integration in the value chain, we're placing more production processes under an IKEA scope of influence, thereby enabling us to change these processes to more sustainable ones.

Metals



Share of material weight (% tonnes) vs. climate footprint (% tonnes CO₂ eq)

Even though metals are not one of the most-used materials in the IKEA range, they have one of the biggest climate footprints. That is due to the energy intensity of extraction and processing, as well as the heavy use of coal and coke in the steel industry.

Metals do, however, have unique properties that can't be easily substituted with other materials in products like cutlery, pots and pans. The three main metal materials used in IKEA products are carbon steel, aluminium and stainless steel. To reduce the climate footprint, the focus is on three main movements:

- Increasing the recycled content
- Using more from less (using less material for the same function)
- Using the right material for the right application

We're making good progress through a stepwise approach to increase the share of recycled content in our products. This reduces the overall climate footprint, as the footprint of recycled metals is significantly smaller than the footprint of virgin metal. The average recycled content for aluminium increased from 41% in FY21 to 57% in FY22. We're also continuing to explore new technologies – such as low-emission steel – where the use of coke and coal has been nearly eliminated – to significantly reduce the climate footprint of metals.

Reaching 100% recycled metal materials remains a significant challenge. That's because most metals today already have a high share of recycled content, and a share of virgin material is needed in a metal blend to reach the right performance. However, there are limitations to increasing this due to the availability of recycled metal material and the technical limitations of producing 100% recycled steel. As a small buyer on the market, we have less leverage to impact either of these limitations. Nevertheless, we continue to seek alliances and collaborations in the industry to learn and influence as much as possible. In FY22, the additional challenge of soaring energy prices also impacted the affordability of the materials.

Making better material choices in the product development process is another way to reduce the climate footprint of metals. This ensures that we can develop more-from-less solutions, optimise material use in production, and choose the right metal for the right application – which includes selecting carbon steel over stainless steel whenever possible. A key development here is to move away from zinc and zamak to recycled aluminium in utensils, knobs and handles. In this way we can reduce the climate footprint by up to 80% for these products and components, while maintaining the same function and quality. A key improvement in using more from less is that we are reducing the thickness of the aluminium we purchase from 1.2 mm to 0.8 mm wherever possible.

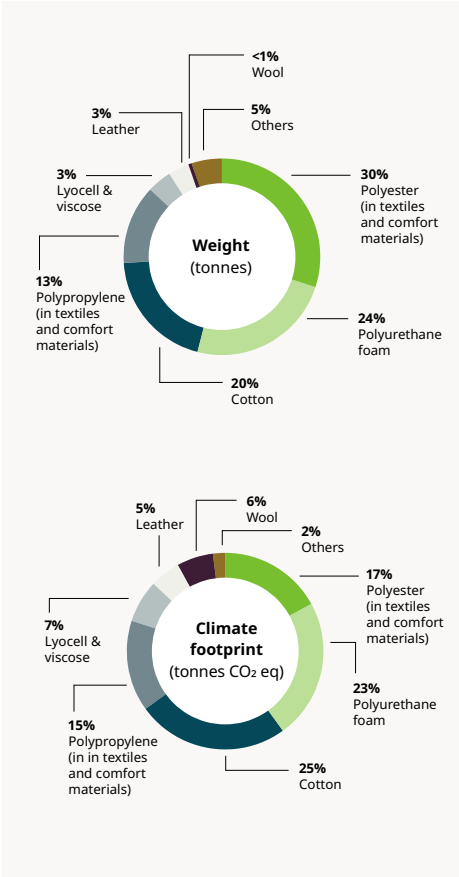


With the LINDBYN mirror, we increased the content of recycled aluminium to 80% as well as reduced the amount of material by making the frame profile thinner and changing to a silver-free back on the mirror.



By replacing zinc and zamak with recycled aluminium for utensils, knobs, and handles, we're not only using better material, we're also making products lighter while maintaining the same functionality, quality and style.

Textiles and comfort materials



Share of material weight (% tonnes) vs. climate footprint (% tonnes CO₂ eq)

This material area includes textiles and comfort materials from across the home – from bed textiles, curtains, towels and rugs to sofas and mattresses.

We've seen much success in implementing recycled polyester, achieving almost 90% across all polyester-based materials (textiles and filling fibres), and with many new products with 100% recycled polyester. One example of this is the new children's range BLÄVINGAD, which includes soft toys and rugs made with 100% recycled polyester and a super soft feel.

During FY22, we continued the journey taking the next step in recycled polyester – textile-to-textile recycling. To help us, we've been exploring potential feedstocks to enable wider access to waste textiles and recycling opportunities. Today, we're already using pre-consumer waste textiles from our own partners' production waste. Long term, we aim to combine this with post-consumer waste textiles.

Our target for FY25 is for a minimum of 20% of either renewable or recycled content in the polyol (the main foam ingredient in foam). This supports our agenda to reduce dependency and consumption of virgin fossil materials. The foam industry is developing well and we believe 20% to be challenging but achievable. In FY22, we had around 4% recycled or renewable content. The 'new' foams perform to the same quality as the original foams, meaning we can introduce these solutions directly into both our new and running product ranges.

Looking ahead, textile-to-textile recycling is a long

journey and we are only in the beginning. We see this as a top priority for FY23 and beyond, as well as continuing the introduction of new renewable materials.

➔ Increasing the use of viscose and lyocell

We continue to build on our renewable textile options with more products using manufactured cellulose, including lyocell or viscose. We chose these materials for a lower climate footprint and softness.



The ÄNGSNEJLIKA duvet cover and pillowcase is 80% cotton and 20% viscose

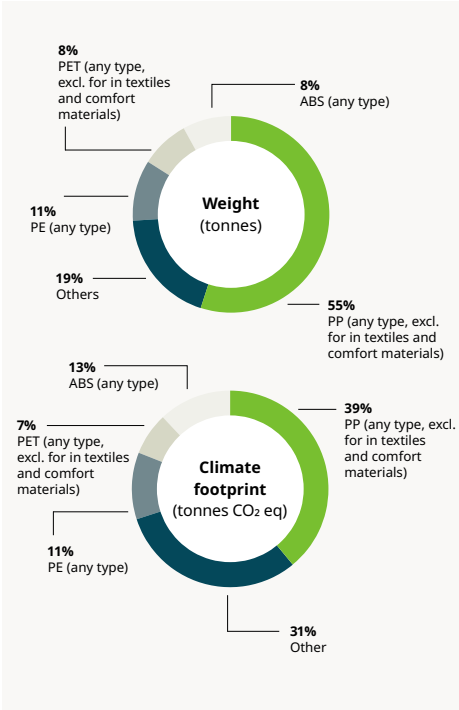


➔ Introducing recycled cotton through pilot collections

In FY21, as part of our recycled textile agenda, we began to introduce recycled cotton (rCotton) in pilot collections, such as FORTSKRIDA curtains where we incorporate recycled denim fabric with recycled polyester. During FY22, we continued the journey of rCotton by developing a deployment plan for a wider scope of products.

Recycled cotton offers both a lower cost and a lower footprint. Initial indications show the cost to be around 30% less compared to virgin cotton and with an 80% lower climate footprint. Depending on the blend of the final textile, we believe we can increase our share of recycled content to around 30%. But, there are many challenges in this material implementation both due to limited access to feedstock and restrictions from legislation in some countries.

Plastics



Share of material weight (% tonnes) vs. climate footprint (% tonnes CO2 eq)

Sub-goal

By FY28, aim to phase out plastic from customer packaging.

Plastics are found throughout the IKEA offer – from furniture and electronics to fittings and packaging material.

We continue to shift towards using more recycled or renewable plastics for both existing and new products. However, since these recycled or renewable materials can have different properties, product development is also needed. In the short term, we continue to use more post-industrial feedstock to convert to recycled materials. From FY25 onwards, we'll begin to use more post-consumer – and renewable feedstock in our range while we develop innovations in materials and technologies to meet our climate goal and our ambition to only use renewable or recycled materials by FY30. As of January 2020, all single-use plastic products have been removed from the IKEA home furnishing range globally.

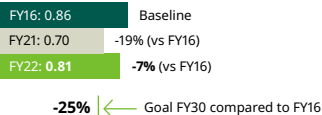
Our main challenges include the affordability of, and accessibility to the right feedstock, as well as the right technical solutions on a commercial scale, especially for our four key plastic materials: polypropylene (PP), polyethylene (PE), polyester (PET) and acrylonitrile butadiene styrene (ABS). Another challenge is determining the climate footprint of renewable plastics, which is highly dependent on the type of feedstock, management practices, production location and process steps.



Food ingredients

(3.1% of the total IKEA value chain climate footprint in FY22)

Climate footprint (million tonnes CO₂ eq)¹



Goal FY30

Reduce the food-related GHG emissions in absolute terms by 25%, or a 38% relative reduction in food-related GHG emissions per calorie, compared to FY16.²

Sub-goals

Sub-goals 2025: 50% of main meals offered in the restaurants will be plant-based.

Sub-goals 2022: On average, cut food waste from preparing meals for IKEA restaurants by 50% by end of 2022 compared to FY17 baseline.³

The climate footprint of food ingredients increased by 15% in FY22 compared to FY21. Compared to baseline year FY16, we've seen a reduction of 7%.

One of the main reasons for the development has been a 21% increase in the amount of food sold, compared to FY21. This growth is primarily driven by lower sales in the previous year following the second wave of COVID-19 when some IKEA restaurants were closed or had limited seating (mainly between November 2020 and May 2021). Furthermore, overall store visits dropped during this period.

On a positive note, there's a trend towards customers choosing more from the plant-based options in our main food range. The share of quantity sold of plant balls and veggie balls in the IKEA Restaurant increased from 14% to 17% within the HUVUDROLL range and from 24% to 26% in the Swedish Food Market. Compared to the veggie ball, the plant ball, in absolute terms, stands for most of the sales quantity. For all hot dogs sold in IKEA bistros, the share of quantities sold of the veggie hot dog increased from 13% to 15%. Overall, the impact on the relative climate footprint per kg of food ingredient (excluding tap water) decreased in FY22 compared to FY21 from 3.6 to 3.5 kg CO₂ eq per kg food ingredient sold.

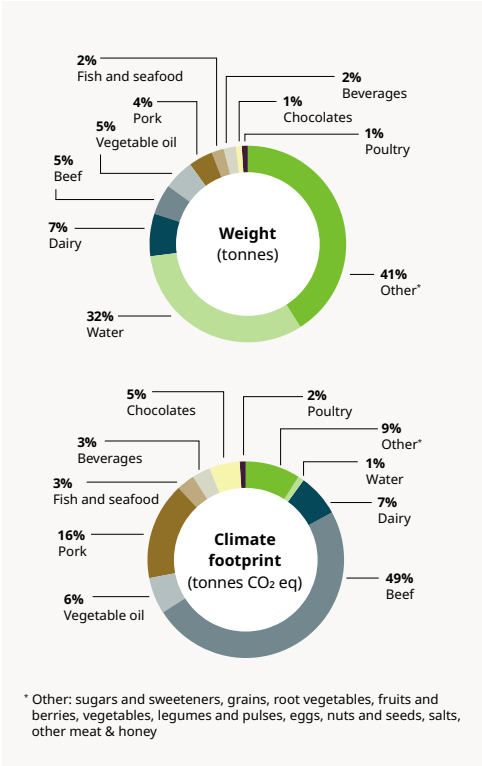
To further promote plant-based food, we undertook several communication initiatives to inspire consumers to choose plant-based meals and to support our markets in selling more. And, for the first time, a plant-based food initiative was part of Common Commercial Activities for all IKEA organisations. The activity was supported with a communication package available for all markets to use.

In FY22, we reached our food waste reduction goal of 50% (page 24). Throughout FY22, to gain full transparency of the range offer in all markets, we've been re-evaluating our food goals to reflect new ways of working and to include both global and local food ranges. Updates in our digital reporting landscape will give us a more complete overview

of the range offer and will support us in better setting and measuring our sustainability goals in a holistic way.

Testing a new communication approach for plant-based foods

In FY22, we tested a new communication approach for plant-based foods in three stores operated by IKEA Germany.⁵ The approach was based on scientific insights from the World Resources Institute (WRI) for how to make plant-based foods more appealing. Even though we didn't see an immediate increase in sales quantity of plant-based foods during the test period, we received a positive response in surveys conducted on the communication initiative and can see a measurable improvement in customer awareness of our plant-based range offer. The communication approach will, therefore, be rolled out in more markets. A positive sign is that the sales quantity of our veggie hot dog almost doubled in FY22 compared to FY19 (before COVID-19). This can largely be attributed to a substantial price decrease in our German market. However, store closures in the previous fiscal year make it difficult to compare and draw any definitive conclusions.



Share of material weight (% tonnes) vs. climate footprint (% tonnes CO₂ eq)⁴

¹ Scope: GHG Protocol, scope 3 emissions: Purchased goods and services – raw material extraction and processing of food ingredients up until the entry gate of tier 1 food suppliers.

² In line with our commitment to the Cool Food Pledge of the World Resources Institute.

³ This is calculated for all IKEA restaurants which use the food waste digital solutions by end of 2022.

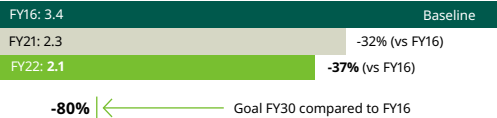
⁴ This is a simplified overview. Drinking water is omitted as it has a high weight but low relative footprint and we have grouped the food ingredients based on the relative footprint size.

⁵ IKEA Germany is operated by the franchisee Ingka Group.

Production

(8.2% of the total IKEA value chain climate footprint in FY22)

Climate footprint (million tonnes CO₂ eq)¹

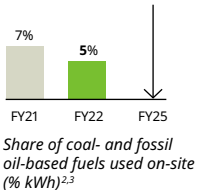


Goal FY30

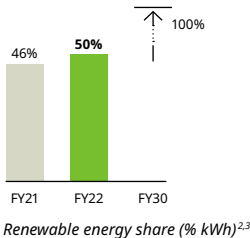
By FY30, reduce the absolute GHG emissions from production by 80% compared to FY16.

Sub-goals

By FY25 at the latest, phase out all coal- and fossil oil-based fuels used on-site in production where feasible, significantly reducing the climate footprint and improving air quality.



Strive towards 100% renewable energy (electricity, heating, cooling and fuels) in production by FY30.

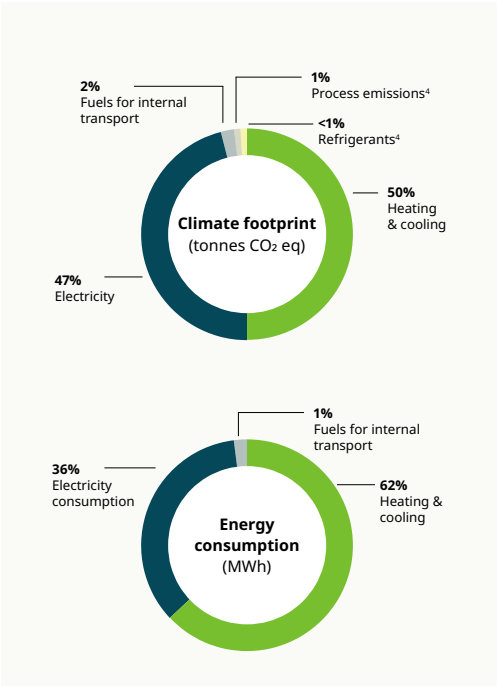


The climate footprint of production decreased by 8% compared to FY21. Compared to baseline FY16, it's been reduced by 37%.

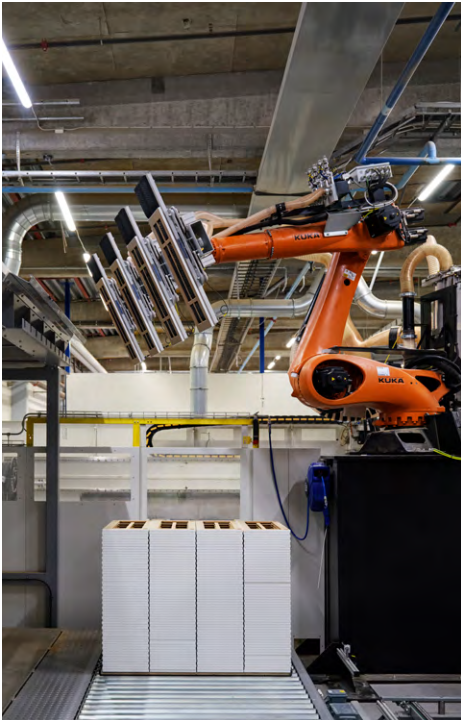
The reduction was achieved while the amount of produced goods increased by 8% for home furnishing products between calendar years 2020 and 2021.² A key contributor was the programme to enable suppliers to purchase renewable electricity launched in FY21. Steps were also taken to reduce the amount of coal- and fossil oil-based fuels used on-site, down from 7% in FY21 to 5% in FY22.

To continue our efforts to drastically reduce GHG emissions from production, our focus remains on continually improving energy efficiency and on the following movements to strive towards 100% renewable energy:

- Promoting on-site renewable energy generation and new installations to make more renewable energy available to the many
- Enabling purchase of renewable electricity for what can't be generated on-site
- Phasing out coal- and fossil oil-based fuels used on-site
- Electrification of production processes, heating and internal transports



Production climate footprint vs. energy consumption³



¹ Scope: GHG Protocol, scope 3 emissions: Purchased goods and services – scope 1 & 2 emissions and connected scope 3: fuel- and energy-related activities (incl. transmission and distribution losses) of tier 1 home furnishing, food, components, and catalogue and print suppliers.

² To secure consistency with data reported by our external suppliers, data covers the calendar year 2021.

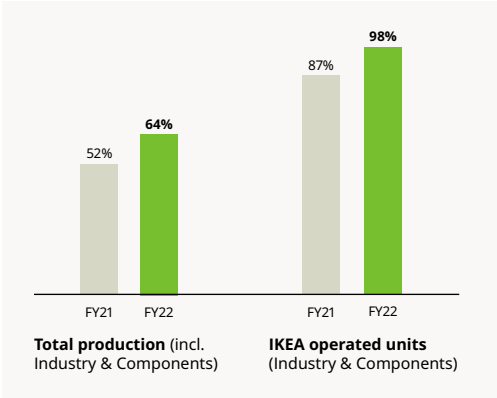
³ Excludes food suppliers due to breakdown in emission categories not available for these suppliers. Food production accounts for 7% of total production footprint.

⁴ Refrigerants and process emissions do not consume energy.

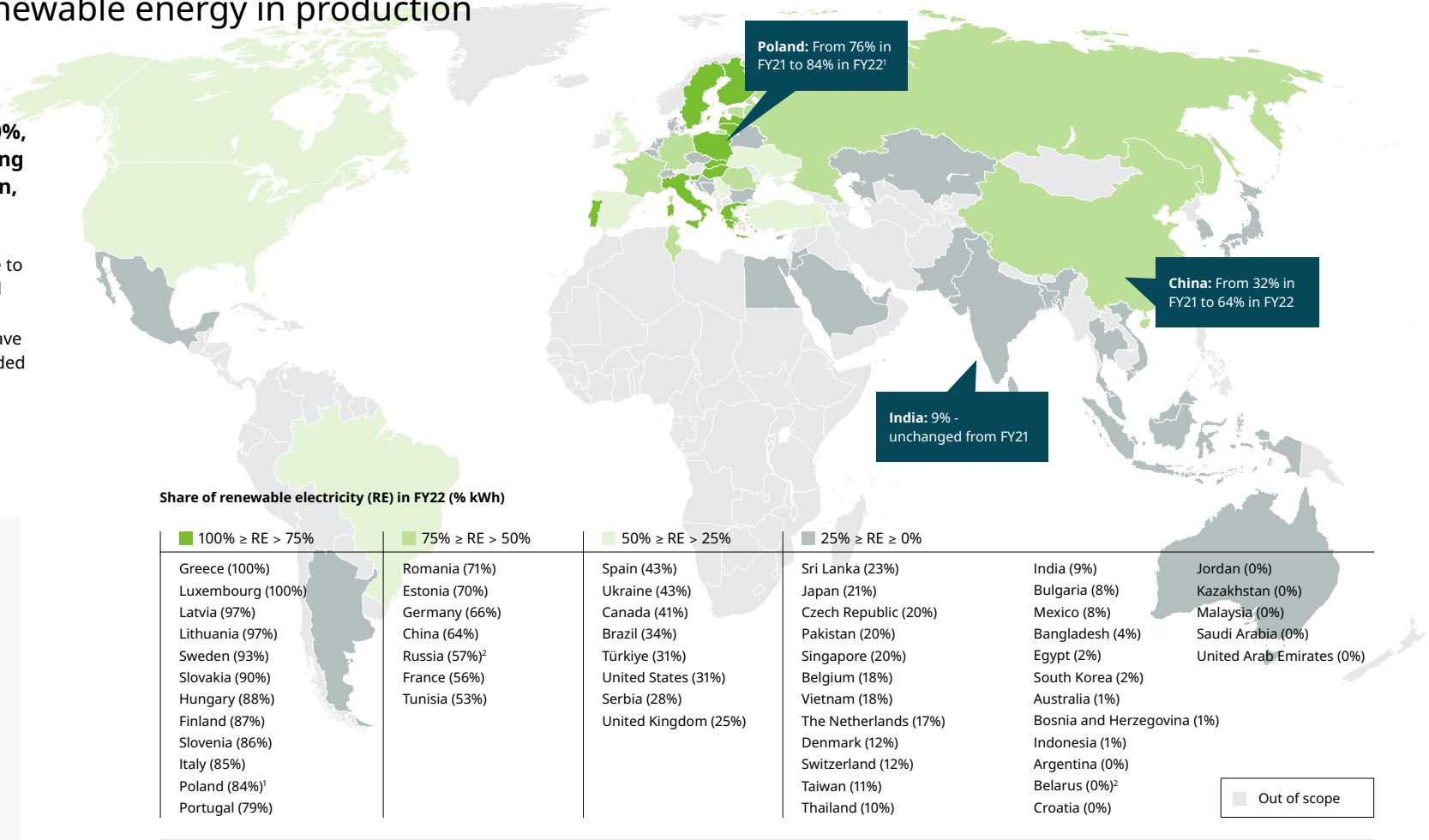
Striving towards 100% renewable energy in production

Between FY21 and FY22, the use of renewable energy in the production of IKEA products increased from 46% to 50%, with an additional 111 suppliers achieving 100% renewable electricity consumption, moving the total to 268 suppliers.

The increase was largely driven by the programme to enable purchase of renewable electricity, launched in FY21. The overall share of renewable electricity increased from 52% in FY21 to 64%. For the first wave of markets, a renewable electricity offer was provided to suppliers in China during calendar year 2021 (reporting scope FY22), while it has been provided for India and Poland during calendar year 2022 (reporting scope FY23).



Renewable electricity share FY22 (% kWh)



¹ Excluding the IKEA operated factories by IKEA Industry - where IKEA already has secured 100% renewable electricity - the development in Poland improved from 46% in FY21 to 64% in FY22.

² Performance before beginning of March 2022, when Inter IKEA Group and Ingka Group announced the pausing of IKEA operations in Russia and Belarus. In June the decision was taken to stop IKEA operations in the countries, and we have since been scaling down, step by step.

Renewable electricity

As part of the first wave of markets – China, India and Poland – we launched an offer for our suppliers in China during the reporting scope of this report (calendar year 2021 for production). This resulted in an approximate reduction of 0.18 million tonnes CO₂ eq. During FY22, but after the reporting scope of calendar year 2021, we also managed to secure offers in Poland and India. Not only have we been successful in negotiating renewable electricity contracts, but in some cases, they have also been considerably more affordable than the previous electricity contracts. One example is securing at least 50% cheaper electricity in Poland through a Power Purchase Agreement (PPA). This is a good example of the fact that wind and solar today are the cheapest ways to generate electricity in most markets.

The large increase in Poland without an offer in place was due to many suppliers actively securing 100% renewable electricity themselves. In India, many suppliers joined the provided offer, but the effect will first be visible in the FY23 report.

The second wave of the programme consists of the following ten markets: Czech Republic, Germany, Italy, Lithuania, Portugal, Romania, Slovakia, Sweden, Türkiye, and Vietnam. The combined electricity consumption for production in these markets stands for 0.27 million tonnes CO₂ eq, or 13% of the production climate footprint.

For our different types of suppliers, a main driver of the increase of renewable electricity has been our external suppliers producing metals, plastics, and float glass, where the share of renewable electricity increased from 38% in FY21 to 56% in FY22. For suppliers producing wood-based products, the renewable electricity share increased from 63% in FY21 to 77% in FY22. Compared to last year, an additional 111 factories and suppliers have achieved 100% renewable electricity consumption, moving the total to 268. In more challenging industries for renewable energy transformation, like textile furnishing production, we also see a potential positive development as the renewable energy share increased to 14% in FY22 compared to 13% in FY21.

Renewable heating, cooling and fuels

In terms of heating and cooling, the share of renewable energy has decreased from 44% in FY21 to 43% in FY22. The slight decrease in the share of renewable energy can be explained by natural gas energy consumption which increased by 9% in FY22 compared to FY21. The increase is mainly driven by the high natural gas demands for ceramics (+18%) and textile products (+6%) production.

To convert the most heat intensive categories, projects are initiated to identify the best solution for replacing natural gas. For ceramics and glass, we are exploring electrification, biomethane and green hydrogen. In other applications, especially in lower temperature heating, biomass is one option to replace natural gas – a solution which has already been widely adopted in the wood-based production.



➔ Major new IKEA Industry solar energy investments

In May 2022, IKEA Industry Zbąszynek in Poland launched construction for one of the largest own-use solar farms in Europe, with a total capacity of 19 MW. In August 2022, the IKEA Industry factory in Nantong, China opened a new solar installation adding an extra 4.5 MW of energy production capacity to the already existing 3.5 MW solar installation opened in 2015. The combined 8 MW installation will produce enough electricity to cover 50% of the electricity consumption for IKEA Industry Nantong.

These investments should lower the climate footprint of IKEA furniture manufacturing, save energy costs and make us more resilient to sudden price increases on the electricity market. The investment in the on-site combined heat and power plant at IKEA Industry, using the new innovative technology from Meva Energy AB, which generates both electricity and heating from wood waste that's currently not possible to recycle, will be commissioned in 2024.¹ The technology will generate more electricity than conventional combined heat and power plants, while producing a minimal amount of air pollution.

¹ Meva Energy, "Meva Energy signs green energy agreement with IKEA Industry to produce long-term renewable power from wood residue", 2021.

Phasing out coal- and fossil oil-based fuels used on-site

By FY25, our goal is to phase out coal- and fossil oil-based fuels used on-site in the production of our products, wherever feasible.

Coal-based fuels continue to have the largest negative impact on climate change and air pollution and remain a challenge to phase out. To find solutions, projects are initiated for all coal-consuming categories with a special focus on textile products in India, Pakistan and Türkiye – where the use of coal is amongst the highest. However, subsidies for coal-based fuels remain high in markets such as Pakistan, India, Indonesia, Türkiye and China, which affects the cost of alternatives. For fossil oil-based fuels, the use is predominantly for internal transport at factories. Here, the electrification of forklifts, for example, is a crucial step.

Despite challenges, progress is being made. The share of coal- and fossil oil-based fuels decreased from 7% in FY21 to 5% in FY22 – a reduction of 30,000 tonnes CO₂ eq. In FY22, we also managed to phase out coal at 12 suppliers mainly within textile furnishing production.



Financing for the on-site generation of renewable energy

The IKEA business has a EUR 100 million fund to finance the on-site generation of renewable energy. This provides discounted loans to IKEA suppliers, enabling investments to accelerate the transformation to 100% renewable energy.

During FY22, six business cases have been reviewed. Of these, five were for the installation of solar panels and one was a request for combined heat and power plants using biomass – increasing the renewable electricity and heat generated on-site. Since the launch in FY19, the sum of approved applications has been around EUR 30 million of the EUR 100 million.

Once realised, the investments for the on-site generation of power through solar panels will generate about 23 GWh of additional renewable energy per year and a reduction of about 11,000 tonnes of CO₂ eq per year. In turn, the investments for combined heat and power plants will generate about 49 GWh of additional renewable energy per year and a reduction of about 17,500 tonnes of CO₂ eq per year.

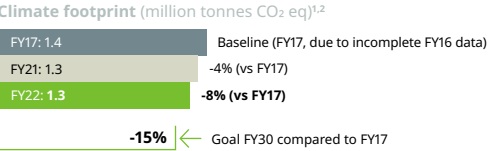
To increase the number of business cases, extensive feedback has been collected from suppliers and purchasing teams. Apart from increasing awareness

and not charging any risk mark-up, we have also decided to absorb the handling cost incurred, normally applied to the interest rates for supplier financing, making the loans more attractive and hopefully enabling additional investments.

Going forward, it is important to gain business cases that address energy-intensive processes such as glass furnaces, ceramic kilns, boilers for heating and steam, and surface treatments. These together represent a very large part of the climate footprint in production and require large investments to address. Since most of these processes are heat- and fuel-driven processes, they can't be addressed through the programme to enable the purchase of renewable electricity. Only through on-site investments can these processes be converted to 100% renewable energy. However, the geographical coverage has improved, as four out of six applications were in markets outside of Europe, compared to only two last year.

Product transport

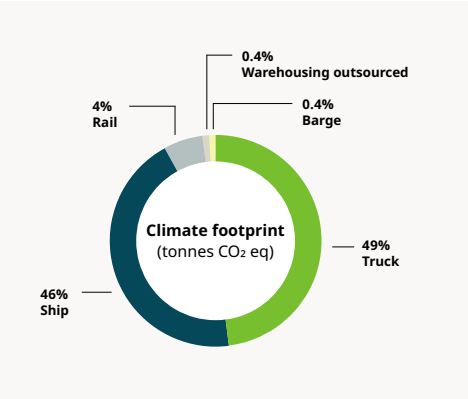
(4.9% of the total IKEA value chain climate footprint in FY22)



Goal FY30

By FY30, reduce our absolute greenhouse gas (GHG) emissions from product transport by 15% compared to FY17.

- Sub-goals**
- By calendar year 2040, only procuring zero-emission medium- and heavy-duty vehicles (MHDVs).³
- By calendar year 2040, only purchase zero-emission ocean transport services.⁴
- By FY25, consume 100% renewable electricity in all logistics service units.



The climate footprint from product transport decreased by 4% in FY22 compared to FY21. Compared to baseline year FY17, we've seen a reduction of 8%.

The IKEA business is a large shipper with a global reach. In FY22, we made approximately 2 million shipments, causing 1.3 million tonnes CO₂ eq of GHG emissions.

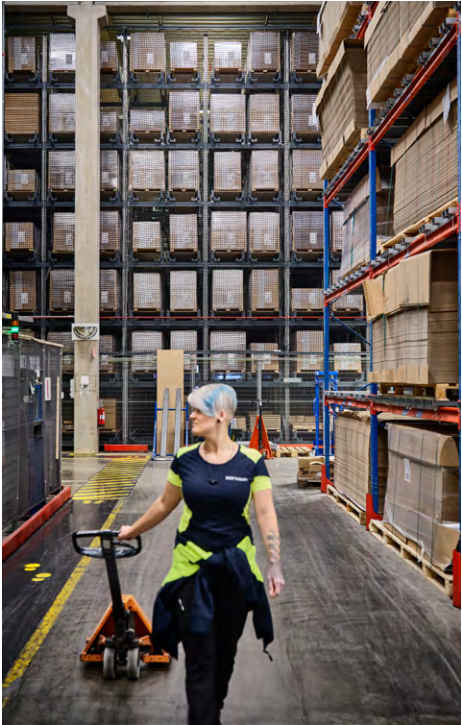
Even though we increased transport by 12% in transported tonne and kilometre, we reduced the total emissions by 8% compared to the baseline year FY17.⁵ With this, we've made progress on decoupling the growth of our business from the climate footprint.

The relative emissions per shipment decreased by 11% to 19 g CO₂ eq per tonne km transported in comparison to FY21 and 18% less compared to the baseline year FY17. This efficiency improvement was driven by an increased share of ocean transportation and a high share of 46% land intermodal transportation. Both transport methods are recognised as more efficient compared to

trucking only. We increased the filling rates of all our shipments by 1% by optimising our loading. We used biofuels for ocean transportation, which decreased its emissions by 4%.

To reduce the climate footprint of product transport, three pillars guide our agenda:

- **Reduce:** Increasing efficiencies. Working together with our service providers to reduce energy and fuel consumption, increase equipment utilisation, and optimise our network.
- **Replace:** Replacing fossil fuels and energy with zero-emission solutions and renewable energy.
- **Rethink:** Integrating innovations and new types of collaborations into our value chain. Rethinking everything by being open to new ideas, thinking outside the box, and collaborating with others to drive innovation.



¹ Scope: GHG Protocol, scope 3 emissions: Upstream transportation and distribution and connected fuel- and energy-related activities of tier 1 product transport suppliers.

² From FY22, we reviewed our scope of reporting to account for the empty mileage linked to IKEA product transport and ensured we're compliant with the GLEC framework. This led us to review figures from previous years, which presented an increase of +20% of product transport footprint.

³ As defined by [The Climate Group](#).

⁴ As defined by [Cargo Owners for Zero Emission Vessels](#)

⁵ The baseline for product transport is FY17, due to limitations in source data for FY16 to follow-up progress. For the sake of the baseline for the IKEA value chain, it has been estimated for FY16.

Towards intermodal and zero-emission road transports



Compared to FY21, the absolute climate footprint from road transports decreased by 6% and from rail by 28%. This is mainly a result of a higher share of ocean transport instead of trucks/rail.

In FY22, 46% of our global land transportation, in terms of transported tonnes and kilometres, was conducted by intermodal transportation. The longer stretches were made by rail, short sea or inland waterways. Switching from diesel trucks to intermodal transport reduces emissions by 50% on average. We hope our big share of intermodal

solutions can be an inspiration to other stakeholders within the transportation industry.

This year, we committed through EV100+ to transition to zero-emission electric trucks by calendar year 2040. We have already made important steps towards this commitment. In China, seven electric heavy-duty trucks are now used in our operations. Most are running on flows in central China, from two IKEA distribution centres to IKEA stores. All electric trucks are powered by renewable electricity since their first day of operation.



➔ Introducing hydrogen trucks in Shanghai

In FY22, we introduced hydrogen-powered trucks into our transport network. There are currently 21 hydrogen trucks running in the Shanghai area. These trucks transport home furnishing goods from our distribution centre to ports. The goods then continue their journey via ocean. The hydrogen powering the trucks is an industry by-product that's collected, refined and turned into fuel (i.e. white hydrogen). The trucks are fuelled at local hydrogen fuelling stations.

Reducing GHG emissions from ocean shipping

Global ocean shipping represents around 3%¹ of the world's GHG emissions. While ocean shipping represents less than 2% of the total climate footprint of the IKEA value chain, it's an important share that also has an impact on air pollution.

To reduce the footprint on a short- to medium-term, the focus has been on increasing the use of biofuels and improving shipping efficiency. This year, we've scaled up the amount of biofuels made from used cooking oil, which reduced the ocean climate footprint by 4%. This builds on the innovation project from 2019, together with the shipping line CMA CGM, the Port of Rotterdam, and GoodShipping, where we successfully piloted biofuels on a deep-sea ocean container vessel for the first time.

We've also been positively affected by the overall improvements in the ocean shipping industry. Based on the emission factors from Clean Cargo,² vessel efficiency is improving overall by 3% on average on a yearly basis. We welcome the new international regulations on vessel energy efficiency. Enhancing the transparency and granularity on ocean shipping emissions is important to us.

As announced in FY21, we are committed to only shipping our goods in zero-emission vessels by calendar year 2040 at the latest. As part of the collaborative platform coZEV, we're coming together with other stakeholders to demonstrate our determination to reach set targets and reassure stakeholders of the direction of our climate agenda ahead.



Striving towards 100% renewable energy in warehousing

In addition to product transports, the climate footprint also includes the warehousing of products in our logistic services units.

Compared to FY21, the climate footprint for logistics services has reduced by 16%. We've also reached 51% renewable electricity, starting from zero in the baseline year FY19, and we're well on our way to achieving our goal of having 100% renewable electricity in our logistics units by FY25.³

➔ **More sun power for our warehouses in United Arab Emirates and Malaysia**

At the IKEA distribution centre in Dubai, we're generating renewable energy through solar panels on the roof. The installation of the panels was completed at the end of FY21, and in FY22, we began to reap the full benefits with 4.8 GWh generated. This is enough electricity to power two warehouses of a similar size.

Even though the distribution centre generates more energy than the operation needs, it's still essential to save energy. The



savings from installing motion sensors and switching off the air conditioning during non-operational hours is 0.95 GWh per year.

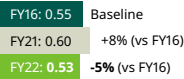
We started to operate our new distribution centre in Port Klang, Malaysia, during FY21. In FY22, solar panels were installed on its roof, which generate up to 30% of the unit's monthly electricity consumption. Going forward, we aim to generate renewable electricity to cover the full operational needs of the warehouse.

¹ International Maritime Organization (IMO), "Fourth Greenhouse Gas Study", 2020
² Clean Cargo is a collaborative partnership between ocean container carriers, freight forwarders, and cargo owners. [Read more.](#)
³ The scope of the reporting is outsourced warehousing (excluding the warehouse in Bucharest) and Inter IKEA Group owned warehouses.

IKEA retail & other operations

(2% of the total IKEA value chain climate footprint in FY22)

Climate footprint (million tonnes CO₂ eq)¹



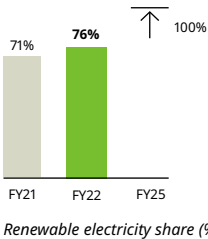
-80% | ← Goal FY30 compared to FY16

Goal FY30

By FY30, reduce the absolute GHG emissions from retail and other own operations by 80% compared to FY16.²

Sub-goal

By FY25, consume 100% renewable electricity in retail and other own operations and IKEA owned factories.³



The climate footprint from IKEA retail and other operations decreased 12% compared to FY21. It also marks the first time this figure is below the baseline year FY16 – having decreased 5% below baseline.

The reduction was mainly achieved through an increase in the share of renewable electricity from 71% to 76% between FY21 and FY22. This was driven by retail markets that achieved 100% renewable electricity in FY22 – Austria and Spain (Mainland) – and where we made significant progress, such as China (from 8% in FY21 to 98% in FY22) and Cyprus (3% in FY21 to 34% in FY22). The renewable energy share from energy consumption other than electricity – such as heating, cooling and fuels – increased from 17% to 22% between FY21 and FY22. It's now three percentage points higher than the baseline year FY16. This is due to an increase in renewable heating, cooling and fuel energy between FY21 to FY22 in Switzerland (+22 percentage points), Portugal (+15 percentage points), Germany (+12

percentage points), Hungary (+9 percentage points) and France (+5 percentage points).

Since it's easier to secure 100% renewable electricity compared to renewable heating, we are focusing on achieving that first. Focusing on securing renewable electricity provides time to identify solutions and plan investments for renewable heating, which are more capital intensive and require retrofitting existing buildings. We prioritise electrification of heating using ground- and air-source heat pumps over other solutions wherever possible. In some markets (e.g., IKEA Germany) we secured long-term biogas contracts, where the share of biogas in the heating mix increases every year.

Reducing food waste

In 2022, on average, we achieved the goal of reducing food waste from preparing meals for IKEA restaurants by 50% by end of 2022 compared to FY17 baseline.⁴ This was calculated for all IKEA restaurants, which used the food waste digital solutions by end of 2022. Additionally, 91% of all IKEA stores had food waste solutions in place by the end of 2022, compared to 89% in 2021.

The reduction was achieved with a food waste measurement solution that uses a smart scale. The tool measures the amount of food waste produced in IKEA restaurants, bistros, Swedish cafés and co-worker restaurants.



Food waste is measured and registered using AI technology and smart scales, collecting data on what is being wasted and why.

¹ Scope: GHG Protocol, scope 1 & 2 emissions and scope 3: Fuel- and energy-related activities (incl. transmission & distribution losses) of Inter IKEA Group operations (excl. production at IKEA Industry and IKEA Components) and IKEA retail part of our franchisees' business. This therefore includes scope 3: Franchises.

² Scope: Inter IKEA Group and the IKEA retail business of Ingka Group.

³ Scope: Inter IKEA Group (excl. production at own units of IKEA Components and IKEA Industry) and the IKEA retail business of Ingka Group (scope 1 & 2).

⁴ Scope: IKEA restaurants, bistros, Swedish cafés and co-worker restaurants which have implemented the digital solution to measure food waste.

Striving towards 100% renewable energy for IKEA operations¹

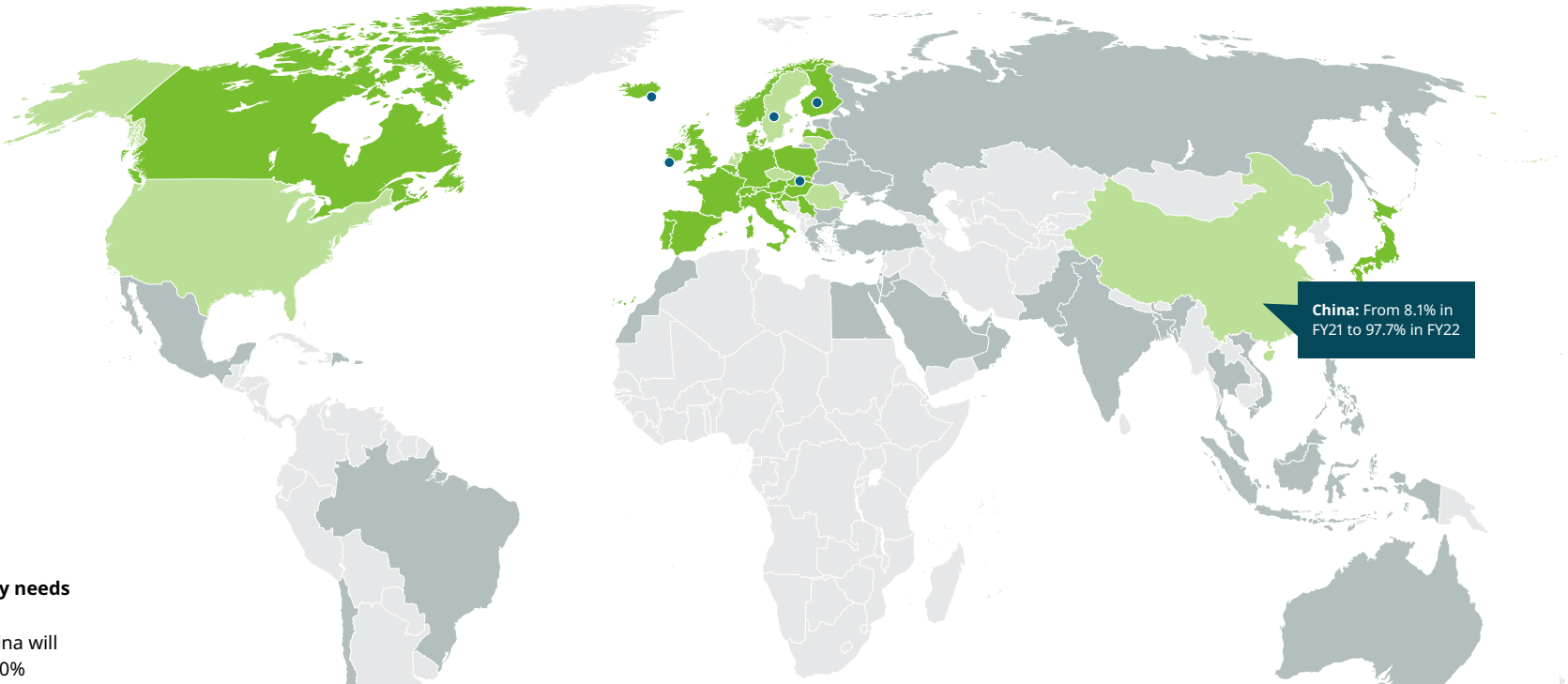
To become climate positive, we're striving towards 100% renewable energy for all IKEA operations (stores, warehouses, factories, offices and other operations) in every market. In FY22, 24 IKEA markets are consuming 100% renewable electricity (the same number as in FY21, but a slight difference in which countries reached 100%). For heating and cooling, only five IKEA markets are almost at 100%.

In FY22, 236 IKEA stores have installed solar panels (compared to 230 in FY21).

➔ IKEA store in China generates all its energy needs

The Tianjin Dongli IKEA store in Northern China will be one of the first IKEA stores to generate 100% of the electricity it needs. Over 22,400 m² of solar panels have been installed, which will provide the store with 100% renewable electricity – with extra electricity exported back into the city's power grid. The store has quadrupled the space available to install solar panels by mounting them on large awnings across the car park.

¹ Scope: Inter IKEA Group and the IKEA retail business of each IKEA franchisee. It therefore also includes IKEA Industry and IKEA Components units covered in the production footprint.



■ Achieved 100% renewable electricity		● Almost achieved 100% renewable heating and cooling
Austria <i>New</i> Belgium Canada Croatia Denmark Finland France Germany Hungary Iceland Ireland Italy		Finland (96.5%) Iceland (96.2%) Ireland (98.3%) Slovakia (96.7%) Sweden (97.9%)
Japan Latvia Norway Poland Portugal Serbia Slovakia Slovenia Spain - Mainland <i>New</i> Spain - The Canary and Balearic Islands United Kingdom		
■ Almost achieved 100% renewable electricity (only minor units remaining)		
China (97.7%) Czech Republic (99.5%) Lithuania (99.9%) Romania (99.4%) Sweden (99.7%) The Netherlands (98.2%) United States (99.5%)		
■ Not yet achieved 100% renewable electricity		■ Out of scope

Co-worker commuting & business travel

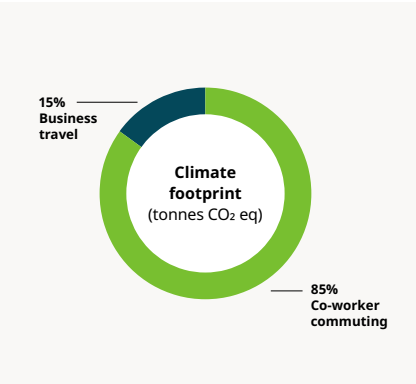
(0.8% of the total IKEA value chain climate footprint in FY22)

Climate footprint (million tonnes CO₂ eq)¹

FY16: 0.33	Baseline
FY21: 0.20	-40% (vs FY16)
FY22: 0.20	-40% (vs FY16)

Goal FY30

By FY30, reduce the greenhouse gas (GHG) emissions from co-worker travel by 50% in relative terms per co-worker compared to FY16.²



The climate footprint of co-worker commuting and business travel increased by 1% in FY22 compared to FY21. Compared to baseline year FY16, we’ve seen a reduction of 40%.

The business travel footprint alone reduced by 82% compared to baseline FY16. The main reason for the reduction is that business travel remains at very low levels compared to pre-pandemic. Co-worker commuting has decreased by 8% compared to FY21, even with a growth in the number of co-workers from 225,000 in FY21 to 231,000 in FY22. The improvement is mainly due to shorter distances travelled by co-workers as a result of hybrid working. As with other mobility models, we revised the model by taking into account the emission factor for well-to-tank (WTT) to ensure that we are fully capturing the emissions associated with the entire lifecycle of a fuel. Further, in order to capture all emissions related to business travel, we have added hotel stay emissions for the IKEA franchisee Ingka Group. Adding this information improved the accuracy of the model since business travel is still estimated for the other IKEA franchisees.



➔ **Further improvements in guidelines for reducing business travel**

In FY21, Inter IKEA Group launched an updated Meet & Travel policy with standpoints on how to improve the wellbeing and life balance of co-workers by reducing unnecessary business travel. The travel reductions will also save costs and reduce GHG emissions. In FY22, this was further clarified to also include standpoints on:

- Preventing travel for one-day meetings
- Minimising the travel of multiple people from the same team

- Stipulating that regular internal meetings such as boards and management teams be held digitally for at least 40% of the time
- Streaming multi-day conferences and events for large audiences

The goal of these updated standpoints is to ensure that the climate footprint from business travel remains below pre-pandemic levels and encourage more efficient meetings.

¹ Scope: GHG Protocol, scope 3 emissions – category 6: Business travel of Inter IKEA Group and IKEA retail part of Ingka Group, scope 3 emissions – category 7: Employee commuting of Inter IKEA Group and IKEA retail part of Ingka Group.
² Scope: Inter IKEA Group and the IKEA retail business of Ingka Group.

Customer travel & home deliveries

(8.1% of the total IKEA value chain climate footprint in FY22)

Climate footprint (million tonnes CO₂ eq)¹

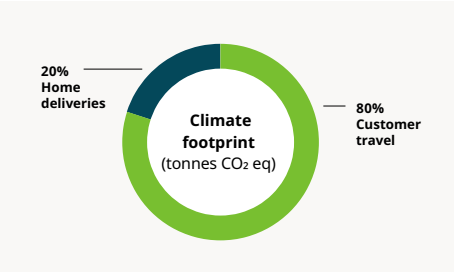
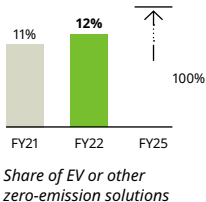


Goal FY30

By FY30, reduce the GHG emissions from customer travel and home deliveries by 50% in relative terms (per store customer) compared to FY16.²

Sub-goal

By FY25, aim for 100% of transport for customer deliveries and services to use electric vehicles (EVs) or other zero-emission solutions.²



The climate footprint of customer travel and home deliveries increased by 1% in FY22 compared to FY21. Compared to baseline year FY16, we've seen a reduction of 3%.

In relative terms per store customer, it decreased by 0.4% compared to FY21. The improvement is possibly due to smaller IKEA stores and studios opening in cities. This not only allows us to meet changing customer behaviours around the world but enables shorter distances travelled by customers. While the effect of this is still to be determined as it's currently not possible to follow up using the existing model to calculate the climate footprint from customer travel, it's still a positive movement.

A key enabler to reduce the footprint from customer travel is to enable travel with zero-emission vehicles, such as EVs. To support this, the IKEA franchisee Ingka Group is increasing the amount of EV chargers at IKEA stores – reaching 3,090 in FY22 and aiming for more than 5,000 in FY23.

The share of deliveries made via electric trucks increased from 11% to 12% between FY21 to FY22.² The climate footprint from home deliveries increased by 7% in absolute terms between

FY21 and FY22, due to an increasing number of home deliveries that is larger than the impact from converting to EV home deliveries. The increase is further due to the lingering effects of COVID-19 where the pattern of purchasing is shifting online, which has translated into more emissions from home deliveries. This year, we revised the model by taking into account the emission factor for well-to-tank (WTT) to ensure that we are fully capturing the emissions associated with the entire life cycle of a fuel. Read more about our footprint methodology on [page 37](#).

We also improved the model for customer travel and are now able to measure it for all IKEA markets, whereas previously we were only able to measure it for the IKEA franchisee Ingka Group, while estimating it for the other 11 franchisees. Going forward, we will explore a revision of the calculation model for customer travel to address the change in how we meet customers. Today, we're increasingly driving visitation to customer meeting points such as stores and planning studios, while a customer can make the purchase at another meeting point or at home instead. It's therefore important to calculate the impact from the number of visitors and how they travel, rather than customers. Similarly, there are more and more ways to get a product delivered, such as Click-and-Collect. Progress on this will be shared in next year's IKEA Climate Report.



➔ **Towards zero-emission home deliveries**

The IKEA franchisee Ingka Group has now deployed zero-emission delivery in 24 countries, compared to 22 countries in FY21, and 15 cities, including Amsterdam, Vienna, Glasgow, Nice, Oslo, Shanghai and nine other major cities in China. The aim is to reach 50 cities by the end of FY23.

¹ Scope: GHG Protocol, scope 3 emissions: Downstream transportation and distribution of Inter IKEA Group operations and IKEA retail part of our franchisees' business.

² Scope: Inter IKEA Group and the IKEA retail business of Ingka Group.

Product use at home

(13.7% of the total IKEA value chain climate footprint in FY22)

Climate footprint (million tonnes CO₂ eq)¹

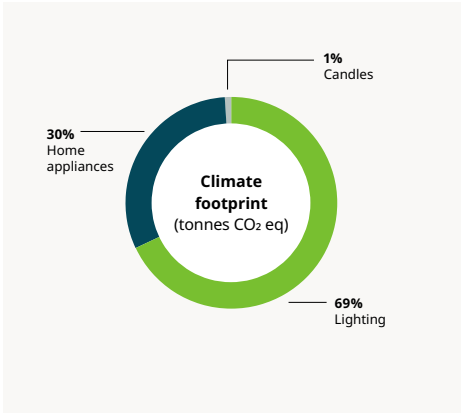


Goal FY30

Under development because the previous goal has been met and we're now assessing the impact of new EU legislation on energy efficiency.

Sub-goal

By FY30, phase out all fossil-based paraffin used for candles.



The climate footprint of product use at home decreased by 20% in FY22 compared to FY21. Compared to baseline year FY16, we've seen a reduction of 45%.

Almost all of the footprint is due to the electricity consumption needed to power products, such as lighting and home appliances. A smaller portion also comes from gas-driven hobs, refrigerants used for refrigerators and freezers, and the burning of candles at home.²

Since FY21, the climate footprint from product use at home decreased by 20%. The development is mainly driven by the significant improvement in the energy efficiency of lighting – primarily through the introduction of the LED bulb range SOLHETTA in October 2021. We also saw a small but important improvement in the energy efficiency of appliances – up 1% since FY21. Fewer lighting and appliances have also been sold – down 14% in quantity sold for lighting and 12% in quantity sold for appliances,

compared to FY21. As the number of products sold steers this footprint, it's more relevant to track sold quantity than the development in produced volumes used for footprints upstream in the supply chain.

Apart from our own development, the average amount of renewable electricity customers consumed across all IKEA markets has increased by six percentage points since the FY16 baseline and one percentage point since FY21. This result highlights the importance of engaging externally and advocating for policies and regulations that enable our customers to consume renewable electricity at home. With a stronger development in the share of renewable electricity in national power grids, the climate footprint in customers' homes would be significantly smaller.



¹ Scope: GHG Protocol, scope 3 emissions: Use of sold products and connected fuel- and energy-related activities (incl. transmission & distribution losses).
² Smart home products from IKEA are currently excluded from the footprint. We are developing the methodology to measure the climate footprint of smart home products from IKEA and it will be included in the FY23 climate report.

Lighting

The main contributor to the climate footprint of products used in customers’ homes comes from the electricity consumption of our lighting range.

The IKEA lighting range has offered only energy-efficient LEDs since FY15. We’re always looking for ways to make our products even better: more energy efficient, using fewer and better materials and more affordable. That’s why we’ve developed a roadmap with clear goals and actions to continually improve the energy efficiency of our range in terms of lumens per Watt (lm/W) by FY30, while maintaining a well-designed and affordable offer. Since FY16, the energy efficiency of lighting has improved by 76% and the climate footprint has been reduced by 51% – a huge achievement! That means for each kWh of electricity consumed, more light is generated and less energy is lost as heat. Compared to FY21, the energy efficiency (lm/W) has improved by 19%. A big contributor to this result during FY22 is the LED bulb range SOLHETTA.



➔ **SOLHETTA, our most energy-efficient LED bulb**

Launched in October 2021, SOLHETTA has now sold for almost an entire financial year, with the total sales quantity (total in packages) for FY22 at 35 million. The weighted average energy efficiency of SOLHETTA is 134 lm/W compared to the rest of the FY22 range, which has a weighted average energy efficiency of 82 lm/W. SOLHETTA has a rated lifetime of 25,000 hours, which is higher than the weighted average of the range it replaced (mainly LEDARE and RYET), contributing to an increase of 18% in average rated lifetime compared to FY21. Even so, the total energy consumption throughout the entire rated lifetime of the lighting articles has decreased in FY22 compared to FY21 due to its relatively higher energy efficiency, even if the decrease in sales quantity has made a significant contribution to the reduction.

Candles

Since FY16, the climate footprint from the burning of candles at home has decreased by 28%.

The reduction is mainly due to lower sales of candles (in terms of total weight) and, to a lesser degree, to the reduction of the use of fossil-based paraffin and the introduction of new renewable waxes. Since FY21, we’ve increased the amount of rapeseed wax in our range from 3% to 5%.

While the actual CO₂ emissions of burning candles are the same regardless of the wax used, the contribution to global warming varies depending whether it’s a fossil-based or a renewable wax (i.e. the global warming potential).

We’ve set a goal to phase out fossil-based paraffin by FY30. To understand the climate footprint of candles, it’s important to look at both the burning at home and the climate footprint to make the wax (i.e., the material). For the latter, it’s important to include the impact of the land use and land use change of the crop used for the wax, as well as the processing steps along the supply chain.

Finding suitable alternatives to fossil-based paraffin is challenging, and we will continue to actively search for and test replacements. Despite this, we’re continuously increasing the use of renewable candle waxes and we are moving towards more diverse sources of vegetable-based waxes from, for example, rapeseed and soy.

Home appliances



Since FY21, the climate footprint of IKEA home appliances used by customers at home has decreased by 21%. Three factors affected this result:

- 1. The energy efficiency of appliances has improved on average by 1% (kWh/year). The yearly energy use of dishwashers, one of the largest contributing product areas, has decreased by 6% compared to FY21. This is mainly due to relatively higher sales of the smaller LAGAN 45 (213 kWh/year) compared to LAGAN 60 (262 kWh/year). However, hobs, the largest product area, has increased the yearly energy use by 2% across the product range. There are positive movements to highlight, however, in the MATMÄSSIG family, where more energy-efficient induction hobs are replacing less efficient glass ceramic and gas hobs, contributing to an 8% decrease in yearly energy use in FY22 compared to FY21 for this product family.
- 2. The quantity of sales for the total range of appliances decreased by 12% compared to FY21.
- 3. The average share of renewable electricity consumed by customers increased from 37% in

FY21 to 38% in FY22. This caused a reduction of the average climate footprint of the consumed electricity by home appliances from the grids by 9%. For example, the biggest sales market Germany had a 14% decrease of the climate footprint for the average electricity grid compared to FY21.

As with our lighting range, we've developed a roadmap for FY30 with clear activities to improve energy efficiency. Due to alignment with new legislation for energy labelling, we are currently defining the overall goal. We will introduce more energy-efficient gas hobs, achieved through new technologies, over the coming years. Although gas hobs use natural gas – a fossil fuel – we believe it's important to keep this option in our range as limitations in local infrastructure do not always allow for electric alternatives.

One challenge we face in offering energy-efficient home appliances is the varying legal standards between markets on how the energy consumption of product use must be measured. This makes comparing products and providing clear information to customers difficult to do. For us, the cooling range (refrigerators and freezers) is the most challenging when it comes to reaching its specific

goals. However, with the updated [European Union's Ecodesign Directive](#) and the new energy labels for appliances (implemented in FY21), we're contributing to raising awareness about energy consumption and driving positive change by launching more energy-efficient refrigerator and freezer solutions.



Product end-of-life

(6.2% of the total IKEA value chain climate footprint in FY22)

Climate footprint (million tonnes CO₂ eq)¹

FY16: 1.7	Baseline
FY21: 1.7	+1% (vs FY16)
FY22: 1.6	-7% (vs FY16)

Goal FY30: Under development

The climate footprint of product end-of-life decreased by 8% in FY22 compared to FY21. Compared to baseline year FY16, we’ve seen a reduction of 7%.

The decrease in the climate footprint for product end-of-life is mainly due to a decrease in the total weight of products sold. Our current model is based on estimations of the weight of products sold and the national averages on end destinations of waste: recycling, incineration and landfill. During FY24 at the latest, the model to calculate the climate footprint will be updated to capture movements towards designing our products for recycling. Another needed improvement in the model that will be implemented is to move away from using national averages on end destinations for different types of waste and instead to specify the local infrastructure near each IKEA store.

As we transform into a circular business, we’re designing our products to be recycled from the beginning. Doing this, provides a better chance that products avoid ending up in landfills or being incinerated, which would increase the climate footprint. Instead, our products will be able to become a source of secondary raw materials.

We also want to increase the possibilities of prolonging the life of our products by supporting the development of responsible waste management set-ups, circular product loops and by creating work opportunities in neighbourhoods in connection to product care and recycling. That’s why we’re working together with communities and societies where we source, to do our part to enable an increased recycling infrastructure. Ultimately, we want to source back as much recycled materials as IKEA products generate at end-of-life.

If we manage to design all products to be recycled and enable recycling in our markets, then we’ll be able to, in principle, eliminate this climate footprint by FY30. However, the first step is prevention. We’ll encourage reuse and work with refurbishment and remanufacturing to ensure products last as long as possible and are recycled only as a last step.



In FY22, BILLY bookcase was redesigned to improve its circular capabilities. The new design reduces plastic use and shifts from veneer to paper foil and also has snap fittings on the back panel instead of nails, which makes it easier to repair and possible to disassemble and reassemble.



We’re increasing the use of recycled polyols in foam to drive industry change and move towards mattresses with recycled or renewable foam.

¹ Scope: GHG Protocol, scope 3 emissions: End-of-life treatment of sold products.

Air pollution

Clean air is part of a healthy and more sustainable life and cannot be taken for granted. We are therefore committed to actively reducing air pollutants.

Air pollution is the emission of gases and particles into the air that harm people and/or the planet. Because many of the most health-damaging air pollutants and greenhouse gases often come from the same source, there is a strong synergy between the actions needed to reduce emissions. One such example includes so-called short-lived climate pollutants (SLCPs), which include methane and black carbon.

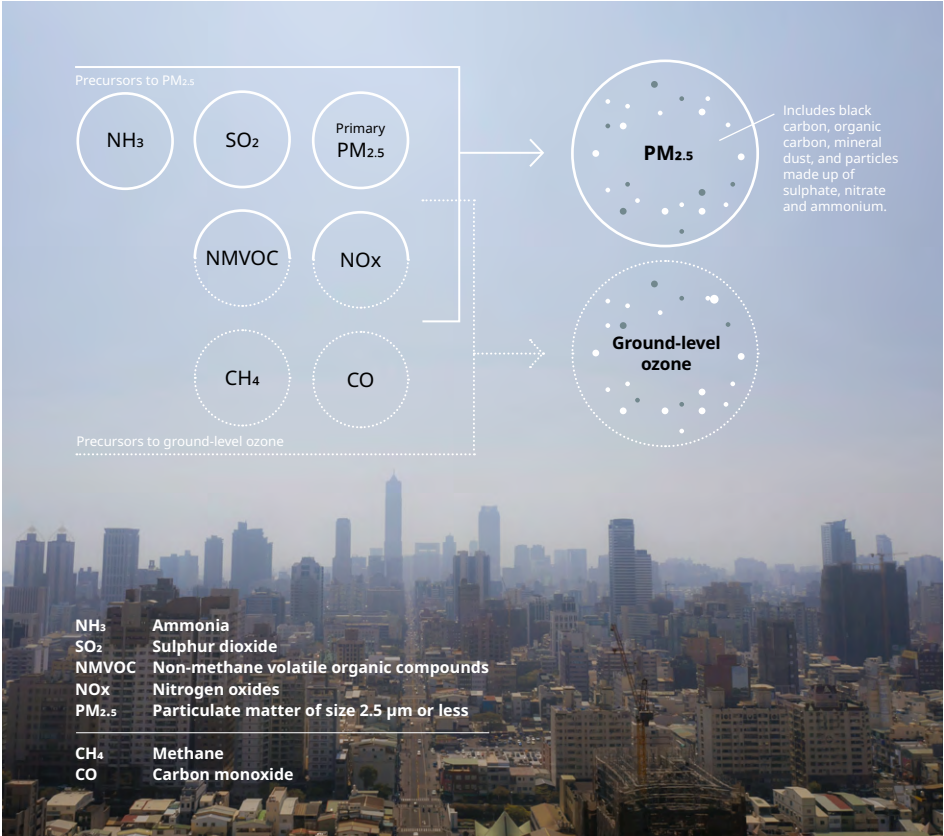
What has been missing for companies, when it comes to understanding their outdoor air pollution footprint, is a scientifically robust method that provides the appropriate approaches to quantify air pollutant emissions across their value chain.

To address this, Inter IKEA Group, together with the Stockholm Environment Institute (SEI) and the [Climate & Clean Air Coalition](#) (CCAC) developed the first-ever guide for business on measuring outdoor air pollution across value chains. The guide, “[A Practical Guide for Business: Air Pollutant Emission Assessment](#)” was launched for all companies at COP27 in Sharm El Sheikh, Egypt, after a year's pilot trial by the founding members of the Alliance for Clean Air by World Economic Forum and Clean Air Fund.

The guide is based on existing methodologies and standards used by countries in the development of their national air pollutant emission inventories. An important objective of the guide was to make it simple to use and avoid additional work, since much of the data already collected to calculate GHG emissions can also be used to quantify air pollution along a company's value chain.

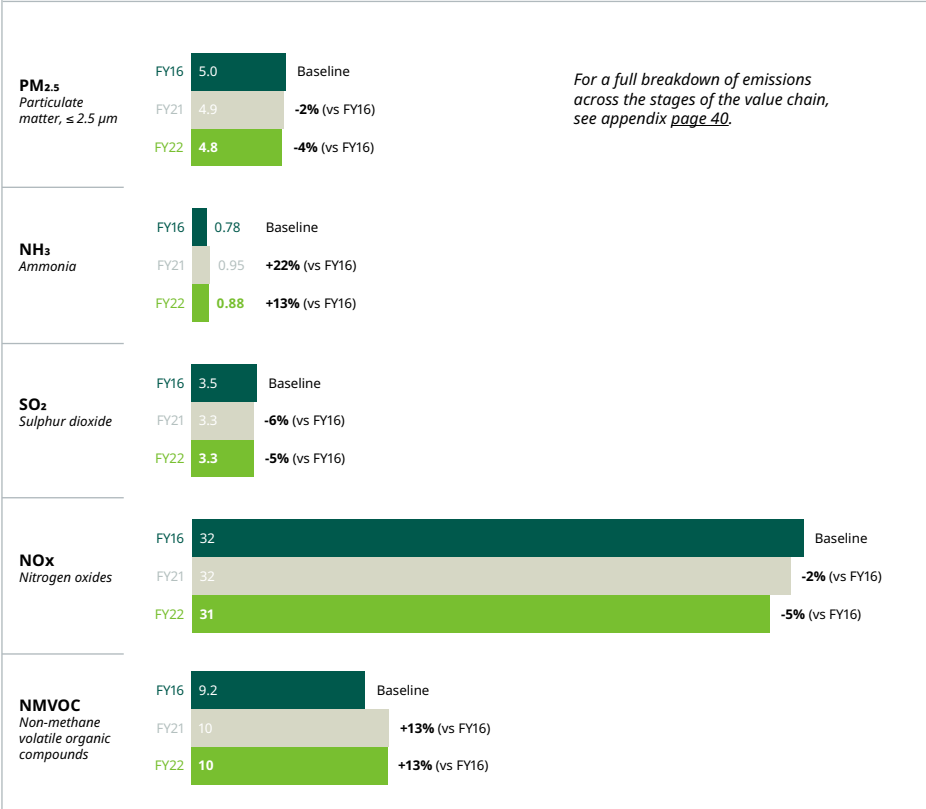
The main contributors to outdoor air pollution include the combustion of fuels (both bio- and fossil-based, e.g. coal, biomass and diesel), waste handling (landfills which generate methane or incineration or open burning of waste), and agriculture. Air pollution from agriculture comes from the generation of methane from livestock, the use of fertilisers, open burning of crop residues and deforestation, where forests and peat lands are set on fire to clear the land for agriculture.

This year, we are publishing one of the first-ever outdoor air pollutant emissions inventory of a business across a value chain. We're aware that key parts of the value chain are missing – especially materials and food ingredients – but we want to be transparent about the impact we can confidently disclose today, as well as raise awareness about the importance of disclosing and addressing air pollution. As we learn, and as the guidance further improves, the air pollution inventory will likewise improve. See more on [page 40](#).



Overview of the air pollutants with the largest adverse effect on health
Based on the impact on health, Inter IKEA Group, in alignment with the Alliance for Clean Air, has decided to track the following five air pollutants over time: NH₃, SO₂, NMVOC, NO_x, and PM_{2.5}, see [page 33](#). Methane (CH₄) is also important to track but is currently not possible to extract from the current greenhouse gas emission reporting. This will be addressed in the future.

Air pollutants tracked within the IKEA value chain - performance vs. baseline FY16 (thousand tonnes)



During next year, we will further analyse our air pollution footprint and define targets in line with the commitment in the IKEA People & Positive Strategy to "actively reduce air pollutants". These will build on the existing actions we are taking to reduce our GHG emissions and generate additional actions for reducing air pollution wherever possible.

Current movements that contribute to reducing air pollution include:

- Aiming towards only having electric and other zero-emission home deliveries by 2025 – reducing air pollution generated in populated areas.
- Only using zero-emission heavy-duty vehicles by latest calendar year 2040.
- Only purchasing zero-emission fuels for ocean shipping by calendar year 2040.
- Phasing out coal- and fossil oil-based fuels used in the production of IKEA products, where feasible, by FY25 at the latest.
- Investing in new, cleaner technology to generate electricity and heat on-site from wood waste with very limited emission of air pollutants, such as the technology by MEVA Energy.¹
- Increasing the number of plant-based options in our food range and agricultural management practices used (e.g., from livestock and fertilisers), reducing air pollution generated by agriculture.
- Only consuming 100% renewable electricity in IKEA retail markets and the top 10 supplier countries by FY25.
- The [Better Air Now initiative](#), aimed at turning rice straw – a traditionally burned rice harvesting residue that contributes heavily to air pollution – into new renewable material for IKEA.

Alliance for Clean Air

At COP26 in Glasgow, Scotland, the Alliance for Clean Air was launched – the first global corporate initiative to bring together leading businesses to tackle air pollution. The alliance was launched by the [World Economic Forum](#) in partnership with the [Clean Air Fund](#). Inter IKEA Group is one of the ten founding members, where the others include: Accenture, Bloomberg, Biogen, Google, GoTo, Maersk, Mahindra Group, Siemens and Wipro. Together with Siemens, Inter IKEA Group has been acting as the co-chairs in the alliance.

The alliance has three objectives:

- 1. Measure & reduce:** Establish air pollution footprints and set ambitious targets to reduce the air pollution emissions.
- 2. Champion:** Act as champions by raising awareness among stakeholders about the impact of air pollution.
- 3. Innovate:** Harness innovation capability to showcase and pilot pioneering projects that reduce air pollution.

To measure and follow-up the air pollution footprints, the alliance uses the guide, “A Practical Guide for Business: Air Pollutant Emission Assessment”, developed by Inter IKEA Group, Stockholm Environment Institute and Climate and Clean Air Coalition.

¹ In FY21, IKEA Industry signed an agreement for renewable electricity production with Meva Energy AB. The Meva Energy technology generates both electricity and heating from wood waste that's currently not possible to recycle and is incinerated.

Appendices



Greenhouse gas inventory: scope emissions 1, 2 & 3

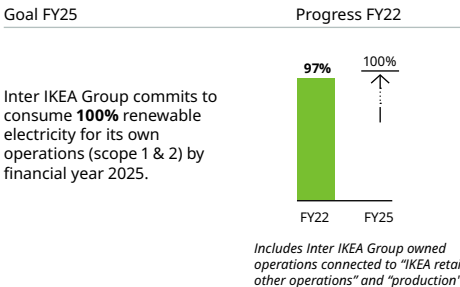
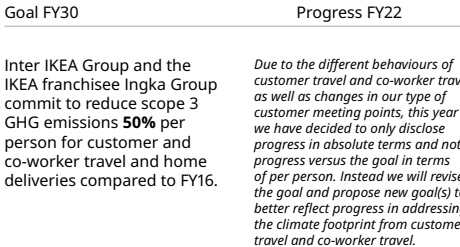
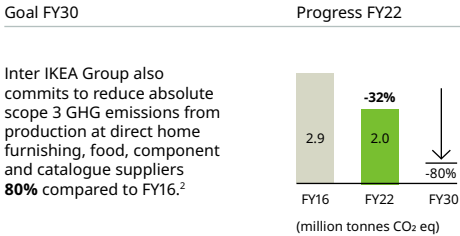
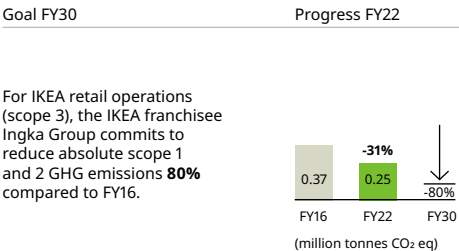
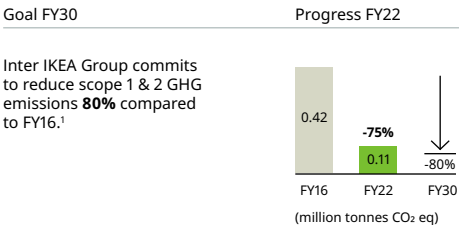
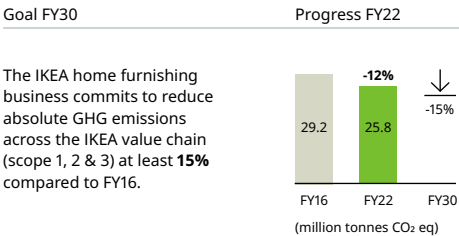
Sum of GHG emissions (tonnes CO ₂ eq)	FY16	FY17	FY18	FY19	FY20	FY21	FY22
Scope 1 On-site generation, fuel combustion and refrigerants	124,100	119,984	115,823	90,600	78,621	75,511	84,168
Scope 2 Purchased electricity & heating							
Location-based	437,521	446,061	475,131	493,996	464,337	429,616	456,110
Market-based	294,117	216,611	265,483	149,099	83,563	69,523	21,728
Scope 3							
1. Purchased goods and services	15,899,741	16,223,018	17,214,282	16,943,675	15,226,870	16,523,954	16,312,795
Food ingredients	864,085	899,309	974,772	891,476	721,033	700,534	806,427
Materials	12,104,912	12,292,274	13,238,396	13,087,259	11,835,942	13,639,662	13,477,895
Production	2,874,356	2,964,668	2,952,283	2,908,393	2,634,541	2,139,212	1,982,740
Retail equipment & co-worker clothing	56,389	66,766	48,832	56,547	35,354	44,546	45,733
2. Capital goods	199,633	193,558	348,943	316,464	188,116	126,622	114,448
3. Fuel- and energy-related activities	112,115	76,448	105,010	64,298	58,883	52,681	42,754
4. Upstream transportation and distribution	1,387,481	1,376,679	1,442,096	1,361,832	1,172,995	1,322,544	1,268,727
5. Waste generated in operations	53,190	79,700	103,207	87,552	51,432	46,654	36,179
6. Business travel	168,600	158,733	168,480	127,697	60,688	14,648	30,758
7. Employee commuting	161,925	166,186	170,032	177,013	134,509	183,026	168,564
8. Upstream leased assets	0	0	0	0	0	0	0
9. Downstream transportation and distribution	2,136,588	2,239,811	2,391,340	2,693,380	2,350,212	2,053,238	2,078,892
Customer travel	1,851,325	1,918,379	1,976,583	1,958,376	1,742,529	1,600,491	1,659,588
Home deliveries	285,263	321,432	414,758	735,003	607,683	452,747	420,304
10. Processing of sold products	0	0	0	0	0	0	0
11. Use of sold products	6,425,620	5,993,361	5,806,084	5,135,088	4,607,920	4,438,055	3,528,923
Appliances	1,427,665	1,404,463	1,421,986	1,405,648	1,221,947	1,319,171	1,046,560
Candles	71,946	68,051	66,232	58,792	53,269	56,031	51,614
Lighting	4,926,010	4,520,847	4,317,865	3,670,576	3,330,320	3,062,205	2,430,561
Home electronics	0	0	0	73	2,384	649	189
12. End-of-life treatment of sold products	1,730,626	1,720,994	1,748,457	1,725,503	1,589,999	1,742,439	1,602,307
13. Downstream leased assets							
14. Franchises	529,749	563,309	637,749	619,339	608,717	574,613	514,719
15. Investments	0	0	0	0	0	0	0
Grand total (For scope 2 emissions, the market-based value is used for purchased electricity and heating)	29,223,486	29,128,391	30,516,998	29,491,540	26,212,526	27,223,506	25,804,960
Outside the scopes Biogenic emissions (from on-site fuel combustion)	444,550	431,173	488,115	539,297	509,025	498,934	528,688

FY22 progress on external initiatives

The following is a summary of all IKEA commitments towards external initiatives. Based on the pre-defined scope of each initiative, the values could differ compared to those shared in the [IKEA Sustainability Report FY22](#) and [IKEA Climate Report FY22](#).

Science Based Targets initiative

The target boundary includes biogenic emissions and removals from bioenergy feedstocks. For greenhouse gas (GHG) emissions from bioenergy, the global warming potential (GWP) of CO₂ is assumed to be zero, while the GWP of CH₄ and N₂O are still included. See listed emission factors in the climate footprint calculation methodology, [page 37](#).



¹ Scope includes scope 1 & 2 emissions for Inter IKEA Group owned operations for IKEA retail & other operations and production (IKEA Industry and IKEA Components).
² Scope excludes production at IKEA owned factories of IKEA Industry and IKEA Components, which are reported in scope 1 & 2.

Cool Food Pledge³

The figures below are a summary of the progress versus the IKEA commitment for the Cool Food Pledge. The goal is to by FY30 aim for at least a 25% absolute reduction in food-related GHG emissions or a 38% relative reduction in food-related GHG emissions per calorie, compared to FY16.

Progress against 25% absolute target (million tonnes CO₂ eq)

	Agriculture supply chain emissions	Carbon opportunity costs	Total	% change since baseline
FY16	0.52	2.26	2.78	0%
FY17	0.54	2.34	2.87	+3%
FY18	0.52	2.23	2.75	-1%
FY19	0.50	2.12	2.62	-6%
FY20	0.39	1.66	2.05	-26%
FY21	0.35	1.48	1.82	-34%
FY30				-25%

Progress against 38% relative target (kg CO₂ eq per 1,000 kcal)

	Agriculture supply chain emissions	Carbon opportunity costs	Total	% change since baseline
FY16	2.8	12.2	15.0	0%
FY17	2.8	12.2	14.9	0%
FY18	2.6	11.1	13.7	-9%
FY19	2.5	10.6	13.1	-13%
FY20	2.4	10.0	12.4	-17%
FY21	2.2	9.4	11.6	-23%
FY30				-38%

³ The figures presented here differ from those in the rest of the IKEA Climate Report FY22 because its calculation methodology introduces concepts such as the Carbon Opportunity Costs. As this is reported in the beginning of each calendar year, the IKEA Climate Report FY22 covers the progress up until the calendar year 2021.

Climate footprint calculation methodology

Overall

Described here is a high-level summary of how the IKEA climate footprint is calculated. The scope covers the entire IKEA value chain. This includes the raw material extraction and processing for the materials or food ingredients used in the IKEA range, how they are produced at our direct suppliers or IKEA owned factories, and then transported to the IKEA stores and warehouses. It covers all IKEA stores, warehouses, offices and other operations, as well as co-worker commuting and business travel. All travel by IKEA customers to the IKEA stores is included, as well as any home deliveries, ordered by customers, of products from IKEA stores to their homes. The product use at home is mainly the electricity consumption needed to power our lighting and appliances products, as well as the GHG emissions released when burning candles. Finally, the climate footprint from the product end-of-life is included should a product not be recycled, but instead be incinerated or end up in a landfill. A few agendas are still developing. Until these are integrated into other climate footprints, they are categorised as "Other" for the sake of transparency.

The climate footprint calculations are conducted in line with the GHG Protocol and its guidance documents.

The calculation models are annually reviewed to reflect the IKEA value chain and its parts as accurately as possible. Updates could be made due to increasing traceability and gaining access to more supplier-specific information – moving away from qualified estimations – or that science and accounting standards are improved. Historical

data is always revised to ensure that all disclosed performance reflects progress and not a change in accounting.

Emission factors

For used emission factors, please see each separate entry.

We always strive to use the latest values for global warming potentials of reported GHG as defined by the Intergovernmental Panel on Climate Change (IPCC) in its Sixth Assessment Report (AR6). Due to a lag in updates in third-party emission factor databases and for the purposes of comparability, this can differ. As soon as these sources are updated with AR6 values, we will adapt to these and secure that IKEA climate footprint calculations are conducted in line with the most recent IPCC reports.

For GHG emissions from bioenergy, the global warming potential (GWP) of CO₂ is assumed to be zero, while the GWP of CH₄ and N₂O are still included.

The following type of emission factors may be referenced in the report, and are defined below:

- Well-to-Tank (WTT): WTT fuels account for the upstream scope 3 emissions associated with extraction, refining and transportation of the raw fuel sources to site (or asset) prior to combustion.
- Tank-to-Wheel (TTW): TTW emissions cover all the energy used once transformed. These are emissions occurring during the combustion of fuels by vehicles.

- Well-to-Wheel (WTW): WTT + TTW together make up WTW GHG emissions.

Materials

The climate footprint of materials is calculated as the cradle-to-gate footprint from raw material extraction and all processing steps and transport up until the gate of our tier 1 suppliers where the IKEA products are manufactured, which are covered under "production". The amount of material is multiplied with an emission factor specific to its recycled content, renewable content, sourcing country (if available) and material company (if available), using ecoinvent and other life cycle assessment (LCA) databases. The emission factors are based on sector averages, which are then modelled based on the amount of traceability and primary data we have available for the supply chain of that material. As more traceability is gained or more primary data is obtained from our material suppliers, the emission factors are continually refined to make them more specific to the IKEA supply chain.

For material amounts, measured data exists for all wood and paper because systems are in place to measure and follow up on at least a yearly level. These represent about three-quarters of the material amounts. For the other material areas, we currently lack systems to follow up and rely on close collaboration with our direct suppliers to estimate the amounts to the best of our knowledge. As we improve our ability to measure more materials, and have to estimate a smaller part of our material usage, the material footprint is subject to change.

However, historical data is always revised for comparability to ensure that any trend is due to improvements of the materials rather than the data quality.

The climate footprint is also subject to change as the emission factors in ecoinvent and other LCA databases are updated from one version to another.

Food ingredients

The climate footprint for food ingredients is calculated in a similar way as materials – from cradle-to-gate to the factory manufacturing the food products. For the amount of food ingredients, a system is in place to measure the ingredients per product for the global food range, and the majority of the market-specific range is currently estimated, as detailed recipe specifications are often missing. We continuously aim to reduce the degree of estimations in our data and therefore the climate footprint of food ingredients becomes more accurate every year. That is why it can differ from what's reported in one IKEA Sustainability Report compared to the next. However, all historical data is always revised for comparability to ensure that any trend is due to improvements of the food range rather than the data quality.

The climate footprint is also subject to change as the emission factors in ecoinvent and other LCA databases are updated from one version to another.

Production

The climate footprint of production is the final step in the supply chain where the IKEA home furnishing or food products, components or printed media is produced. It also includes the IKEA owned factories operated by IKEA Industry and packaging and distribution units by IKEA Components. The footprint is measured as the scope 1 and scope 2 emissions of each tier 1 supplier or unit, as well as any connected fuel- and energy-related activities (scope 3, category 3). All units provide their primary data on the consumption of energy sources and refrigerants, as well as any renewable energy attributes for purchased energy (electricity and district heating and cooling). The related GHG emissions for each energy source are calculated using emission factors provided by the GHG Protocol (combustion of fuels), UK Department for Business, Energy & Industrial Strategy (BEIS) (upstream emissions of purchased fuels and refrigerants), and the International Energy Agency (purchased electricity and heating).

- In FY22, we made the following updates to the methodology:
- Measuring the renewable electricity consumption and share through a market-based approach instead of the previous mix of location- and market-based.
 - Refined emission factors for upstream emissions of purchased fuels and refrigerants based on the latest available data in BEIS.
 - Included emission factors for upstream emissions of electricity (indirect WTT emissions related to electricity generation as well as transmission and distribution losses).

- Changed how the share of coal- and fossil oil-based fuels was calculated. It was previously calculated as the share of the total climate footprint (% tonnes CO₂ eq). However, due to the rapid increase of renewable electricity, it means that electricity is becoming an increasingly smaller part of the total production footprint – meaning that coal- and fossil oil-based fuels stand for a larger part of the remaining footprint, even if it's also decreasing. The change to measure the share in terms of energy consumption (% kWh) addresses this matter.

Product transport

The climate footprint of product transport is measured as any transport managed by IKEA Supply Chain Operations, IKEA Industry, IKEA Components and IKEA Marketing & Communication. In essence, this is all product transport from our direct supplier to any IKEA unit, as well as product transport between IKEA units. It is measured per shipment for each transport route and calculated in line with the standard EN 16258.

- In FY22, we made the following updates to the methodology:
- Increased scope of accounting in alignment with GLEC Framework by Global Logistics Emissions Council (GLEC). This accounts for the empty mileage linked to IKEA product transport. This led to an increase of +20% in the product transport footprint.

IKEA retail and other operations

The climate footprint of IKEA retail and other operations covers all IKEA operations (stores, warehouses, offices, etc.) by Inter IKEA Group and the IKEA retail business of each of the IKEA franchisees. It does not include IKEA owned factories by IKEA Industry and packaging and distribution units by IKEA Components, since these are reported in production.

The footprint is measured as the scope 1 and scope 2 emissions of each unit, as well as any connected fuel- and energy-related activities (scope 3, category 3). All units provide their primary data on the consumption of energy sources and refrigerants, as well as any renewable energy attributes for purchased energy (electricity and district heating or cooling).

The related GHG emissions for each energy source are calculated using emission factors provided by the GHG Protocol (combustion of fuels and refrigerants) and the International Energy Agency (purchased electricity and heating). The only exception to this is for the IKEA franchisee Ingka Group, where the GHG emissions from fuels are using emission factors by BEIS. Work is in progress to align the emission factors throughout the IKEA businesses.

- In FY22, we made the following updates to the methodology:
- Refined emission factors for upstream emissions of purchased fuels and refrigerants based on the latest available data in BEIS.

- Included emission factors for upstream emissions of electricity (indirect WTT emissions related to electricity generation as well as transmission and distribution losses).

Co-worker commuting and business travel

The climate footprint from co-worker commuting is based on the survey conducted for co-worker travel to stores and calculated for the IKEA franchisee Ingka Group. This climate footprint is then extrapolated for the other IKEA businesses based on the number of employees.

For business travel, the climate footprint is calculated by our travel agencies and their travel booking systems, which have integrated climate footprint calculations. All climate footprints are calculated using emission factors provided by BEIS.

- In FY22, we made the following updates to the methodology:
- WTT emission factors have been added in addition to the previous TTW.
 - Measured hotel data was added for the IKEA franchisee Ingka Group, which is now used to estimate hotel stays for the other IKEA franchisees, improving the accuracy of the total business travel emissions.

Customer travel and home deliveries

The climate footprint of customer travel is measured on the IKEA store level based on number of customers (transactions) combined with a survey through Brand Capital. The survey provides the average time travelled by customers to the store per mode of transport. The average travel time at the city level per mode of transport is converted into distance using Numbeo. Emission factors for each mode of transport are obtained from BEIS.

As the IKEA business is driving visitation to the IKEA customer meeting points, the methodology will be reviewed to better reflect our new way of meeting the customer and new ways to deliver products to customers' homes.

In FY22, we made the following updates to the methodology:

- WTT emission factors have been added in addition to the previous TTW.
- For last-mile delivery, in previous years, distance estimation was performed using the great circle approach; however, this has been changed to distance estimation based on clustering with real street distance. Clusters are based on stores and local service centres, delivery service type, time slot, delivery date and fuel type. Real-time clustering provides an accurate view on actual emissions from last-mile delivery.

- A fuel-based approach was used to arrive at last-mile emissions. The fuel consumption was estimated by using an average fuel consumption per kilometre. Data for certain franchisees was estimated where unavailable.

Product use at home

The climate footprint of product use at home is based on the energy consumption at home for lighting, home appliances and home electronics as well as the burning of candles. Smart home products from IKEA are currently excluded from the footprint. We are developing the methodology to measure the climate footprint of smart home products from IKEA, and it will be included in the FY23 climate report. The energy consumption is measured in line with the GHG Protocol as the energy consumption through the product's lifetime. Since, in principle, all energy consumption is electricity consumption, the climate footprint is calculated by multiplying the energy consumption with that of the national electricity grid for the specific country in which the product was sold. For candles, the climate footprint is calculated by multiplying the amount of wax (in terms of weight) with the specific emission factor for combustion for the specific wax (emission factors provided by the GHG Protocol).

To calculate the share of renewable electricity, a location-based approach is used since we cannot track the specific electricity contract of each customer.

Product end-of-life

The climate footprint for product end-of-life is calculated in a similar way as materials. The big difference is the scope, which is the grave (end-of-life) footprint, not the cradle-to-gate we use for materials. The weight of material in products sold is multiplied with an end-of-life emission factor specific to that material and the country's average waste handling in each IKEA market.

Currently, no consideration in the model is taken to how the product has been designed for recycling or the specific waste-handling infrastructure at the IKEA store level.

The climate footprint is subject to change as the accuracy for the amount of materials increase and the emission factors in ecoinvent and other LCA databases are updated from one version to another.

Other

In addition to the climate footprints above, there are areas currently not as actively addressed as the others. Until the agenda of these mature and they are integrated into the other climate footprints, they are kept under the category, "Other". This includes capital goods, waste generated in operations and material for retail equipment and co-worker clothing. For transparency purposes, these footprints are calculated and disclosed.

Air pollution inventory: emissions across the IKEA value chain

Air pollutants (tonnes)	FY16	FY17	FY18	FY19	FY20	FY21	FY22
Materials	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Food ingredients	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Production							
PM _{2.5}	1,757	1,724	1,854	2,019	1,755	1,518	1,510
NH ₃ (Ammonia)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SO ₂ (Sulphur dioxide)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NO _x (Nitrogen oxides)	3,785	3,798	3,858	3,870	3,532	3,076	3,154
NM VOC (Non-methane volatile organic compounds)	3,375	3,230	3,495	4,007	3,523	3,079	3,111
Product transport							
PM _{2.5}	775	769	774	733	638	727	742
NH ₃ (Ammonia)	26	25	25	23	21	21	15
SO ₂ (Sulphur dioxide)	3,271	3,245	3,262	3,098	2,682	3,067	3,124
NO _x (Nitrogen oxides)	13,125	13,023	13,104	12,393	10,827	12,350	12,477
NM VOC (Non-methane volatile organic compounds)	327	324	329	305	269	315	324
IKEA retail and other operations							
PM _{2.5}	47	48	51	51	48	49	53
NH ₃ (Ammonia)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SO ₂ (Sulphur dioxide)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NO _x (Nitrogen oxides)	577	593	640	625	587	579	580
NM VOC (Non-methane volatile organic compounds)	8	8	9	9	8	8	9
Co-worker commuting and business travel	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Customer travel and home deliveries							
PM _{2.5}	1,248	1,369	1,508	1,841	1,601	1,378	1,380
NH ₃ (Ammonia)	7	8	9	12	10	8	8
SO ₂ (Sulphur dioxide)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NO _x (Nitrogen oxides)	7,173	7,946	9,420	14,004	11,840	9,415	9,050
NM VOC (Non-methane volatile organic compounds)	2,037	2,223	2,618	3,772	3,191	2,640	2,898
Product use at home							
PM _{2.5}	506	505	509	482	449	437	390
NH ₃ (Ammonia)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SO ₂ (Sulphur dioxide)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NO _x (Nitrogen oxides)	5,011	4,743	4,621	4,106	3,681	3,531	2,829
NM VOC (Non-methane volatile organic compounds)	73	69	69	66	62	60	53
Product end-of-life							
PM _{2.5}	650	639	665	748	695	798	733
NH ₃ (Ammonia)	743	765	788	868	840	919	853
SO ₂ (Sulphur dioxide)	206	210	217	200	193	209	190
NO _x (Nitrogen oxides)	2,614	2,660	2,743	2,544	2,453	2,656	2,423
NM VOC (Non-methane volatile organic compounds)	3,370	3,361	3,528	4,016	3,744	4,324	3,962

Air pollution footprint calculation methodology

Overall

This year, we are publishing the first-ever air pollutant emissions inventory of a business across a value chain. We're aware that key parts of the value chain are missing – especially materials and food ingredients – but we want to be transparent about the impact we can confidently disclose today, as well as raise the awareness about the importance of disclosing and addressing air pollution. Each entry within this section will specify the scope and methodology used in the FY22 calculation. As we learn, and as the guidance further improves, the air pollution inventory will likewise improve.

The air pollution footprint calculations are conducted in line with “A Practical Guide for Business: Air Pollutant Emission Assessment” by Climate & Clean Air Coalition and Stockholm Environment Institute (hereafter referred to as “the Guide”), which Inter IKEA Group was part of developing.

The calculation models are reviewed annually to reflect the IKEA value chain and its parts as accurately as possible. This could be due to increasing traceability and gaining access to more supplier-specific information – moving away from qualified estimations – or that science and accounting standards are improved. At all times, all historical data is revised to ensure that all disclosed performance reflect progress and not a change in accounting.

There is currently no guidance on how to calculate the air pollution footprint using a market-based approach for renewable energy consumption. Therefore, the air pollution inventory is calculated

based on a location-based method, mainly relying on grid-average data.

Going forward, we aim to disclose the impact on both climate and clean air in the actions we take in our climate agenda, where feasible.

While the creation of this inventory is a very important first step, there were also three key limitations and challenges that we faced during this first year:

1. The Guide covers six key emitting sources that can contribute to air pollutant emissions across a company's value chain. These include electricity consumption, stationary fuel combustion, transport, industrial processes, agriculture and waste. Due to time and data constraints, the IKEA inventory currently covers four out of these six key emitting sources (e.g., all sources apart from agriculture and industrial processes).
2. Emission factors were not available in the European Monitoring and Evaluation Programme (EMEP)/European Environment Agency (EEA) Guidelines for some key activities that are part of the IKEA value chain, specifically for the processing of raw materials into materials. This means that not all air pollutant emissions could be covered under industrial processes of materials.
3. For transport, a simplified model was used to quantify emissions, which can introduce uncertainty in the air pollutant emissions occurring from this specific source.

As outlined in the best practices within the guidance for inventory compiling, these limitations and

challenges have been mapped and clearly identified by the team that has been working to quantify air pollutant emissions across the IKEA value chain, and we will be working to improve and further refine the existing inventory.

Emission factors

All emission factors used are provided by the Guide. The Guide's emission factors come from EMEP/EEA air pollutant emission inventory guidebook 2019. In addition to the emission factors provided by the Guide and EMEP/EEA, a few additional adjustments have been made to create the air pollution reference data used for the inventory:

- Electricity consumption: The inventory has been based on tier 1 emission factors on different types of fuel used to generate electricity provided in the Guide. To create country-specific emission factors for each air pollutant, fuel mix data for electricity output from International Energy Agency is connected with respective tier 1 emission factors to calculate a weighted average.
- Stationary fuel combustion: Air pollutants for this scope have been based on the tier 1 default emission factors for stationary fuel combustion provided in the Guide. No additional adjustments have been made, but only mapped to the respective fuels in activity data.
- Waste: Default emission factors for tier 1 different waste treatment methods from the guidance has been used for the inventory. These waste treatment methods have been mapped to the

treatment method share per country from “OECD: Environment/Waste/Municipal Waste – Generation and Treatment” to calculate country-specific emission factors.

Materials

Air pollution from materials is currently not included in our disclosure. The reasons are limitations in data available to measure the footprint sufficiently and accurately. Another is that not all industrial processes found in cradle-to-gate LCAs of materials used in the IKEA range are today covered by the emission factors provided by the Guide

As data availability within IKEA increases and the completeness of industrial processes in the air pollution guidance increase, it will enable us to also disclose the air pollution footprint from materials.

Food ingredients

Air pollution from food ingredients is currently not included due to limitations in data available to measure the footprint sufficiently and accurately.

Production

The air pollution footprint of production is the final step in the supply chain where the IKEA home furnishing or food products, components or printed media is produced. It also includes the IKEA owned factories operated by IKEA Industry and packaging and distribution units by IKEA Components.

The footprint is based on any on-site generation of energy and any purchase of energy (e.g., electricity, heating, etc.), corresponding to the scope 1 and scope 2 emissions in the GHG Protocol of each tier 1 supplier or unit. All units provide their primary data on the consumption of energy sources, as well as any renewable energy attributes for bought energy (electricity and district heating or cooling). The related air pollution for each energy source is calculated using emission factors provided by the Guide.

Product transport

The air pollution footprint of product transport is measured as any transport managed by IKEA Supply Chain Operations, IKEA Industry, IKEA Components and IKEA Marketing & Communication. In essence, these are all product transports from our direct supplier to any IKEA unit, as well as product transports between IKEA units.

It is measured per shipment for each transport route and calculated by using the EMEP/EEA air pollutant emission inventory guidebook 2019.

IKEA retail and other operations

The air pollution footprint of IKEA retail and other operations covers all IKEA operations (stores, warehouses, offices, etc.) by Inter IKEA Group and the IKEA retail business of each of the IKEA franchisees. It does not include IKEA owned factories by IKEA Industry and packaging and distribution units by IKEA Components, since these are reported in production.

The footprint is based on any on-site generation of energy and any purchase of energy (e.g., electricity, heating, etc.), corresponding to the scope 1 and scope 2 emissions in the GHG Protocol of each tier 1 supplier or unit. All units provide their primary data on the consumption of energy sources, as well as any renewable energy attributes for bought energy (electricity and district heating or cooling). The related air pollution for each energy source is calculated using emission factors provided by the Guide.

Air pollution from stationary fuel combustion is currently not included in our disclosure. While we have activity data for the scope of operations connected to this footprint, we still have some work remaining to be done to connect the applicable air pollutant emission factors.

Co-worker commuting and business travel

Air pollution has not been calculated for co-worker commuting as an accurate model has yet to be developed.

Customer travel and home deliveries

The air pollution footprint of customer travel is measured on the IKEA store level based on the number of customers (transactions) combined with a survey through Brand Capital on the mode of transport to the store by customers as well as distance and time travelled.

The total distance travelled per modes of transport to the store is multiplied by the respective air pollutant

emission factor. An occupancy rate has also been applied for the modes of transport. Air pollution from hotel stays has not been calculated. For emissions from home delivery, the air pollutant factor for trucks less than 7.5 tonnes from EEA is considered representative of the trucks the IKEA business uses, in case the euro class types are unknown the average is considered. Air pollutants factors for FY16-22 are based on EMEP/EEA guidebook. The distance per fuel type is multiplied by the respective fuel type per emission factor.

Product use at home

The air pollution footprint of product use at home is based on the energy consumption at home for lighting, home appliances, and home electronics. The burning of candles is currently excluded. Smart home products from IKEA are currently excluded from the footprint. We are developing the methodology to measure the climate footprint of smart home products from IKEA, and it will be included in the FY23 climate report.

The energy consumption is measured in line with the GHG Protocol as the energy consumption through the product's lifetime. Since, in principle, all energy consumption is electricity consumption, the air pollution footprint is calculated by multiplying the energy consumption with a country-specific emission factor. This is calculated using energy mixes provided by the International Energy Agency (purchased electricity) and energy source-specific emission factors for the generation of electricity provided by the Guide.

Product end-of-life

The air pollution footprint for product end-of-life is calculated in a similar way as materials. The big difference is the scope, which is the grave (end-of-life) footprint, not the cradle-to-gate we use for materials. The weight of material in products sold is multiplied with an end-of-life emission factor specific to that material and the country's average waste handling in each IKEA market.

Currently, no consideration in the model is taken to how the product has been designed for recycling or the specific waste-handling infrastructure at the IKEA store level.