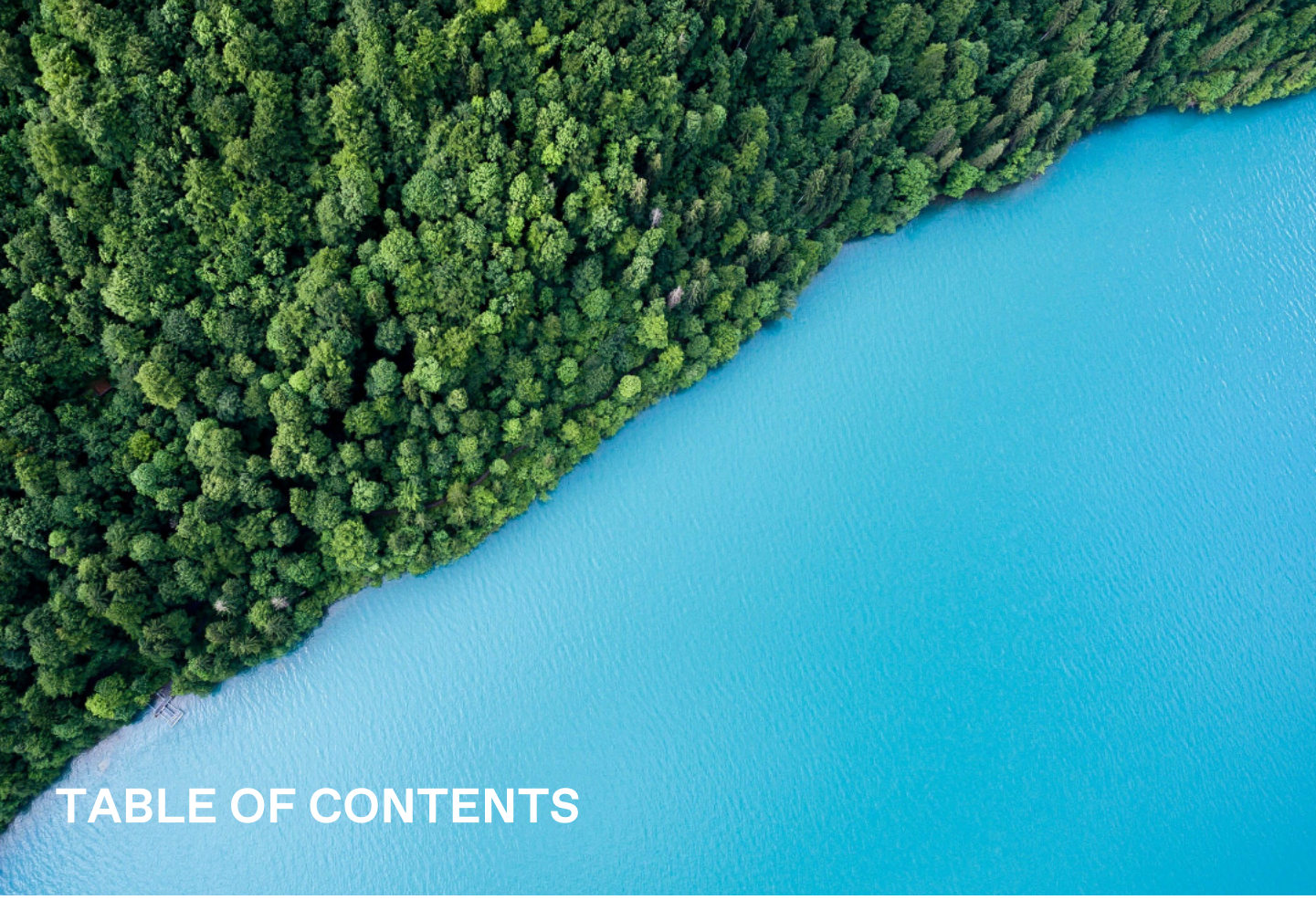
PANGAIA
2020 IMPACT REPORT



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OUR VISION

Dear PANGAIA family,

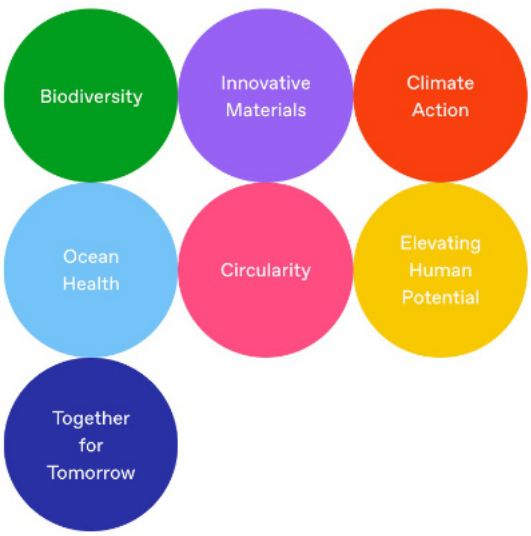
Welcome to our very first Impact Report. It takes a look back at our impact in 2020 and sets our vision for 2021 and beyond—with the goal to become an Earth Positive business that gives back more than it takes.

While 2020 has been an unpredictable year, we've achieved more this year than we could ever have imagined. We're still committed to constantly evolving and finding new ways to protect our planet. We want to thank you for choosing PANGAIA and joining us in this mission. Without you, none of this would be possible.

Here's to designing a better future, together.

The PANGAIA Collective

Our Impact Framework



Highlights of 2020

We introduced new material innovations into our collections, from **Seaweed Fiber, FLWRDWN™ and Grape Leather**.

We collaborated with the United Nations, Takashi Murakami, Costa Brazil and JUST to create **designs with a difference**.

Our **Bee The Change Fund** launched and raised over $46,000 to protect the bees.

We planted over 400,000 mangrove trees with SeaTrees and started our **Tomorrow Tree Fund,** which is in the process of helping plant, protect and restore over 160,000 trees.

We've raised and donated over $100k to organizations fighting for racial justice, Doctors Without Borders, Australian wildfires support, Covid-19 relief funds and many more.

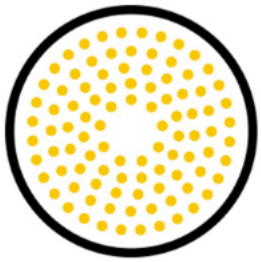
Highlights of 2020

We have started measuring our **environmental footprint**, from our collections to our business activities.

We're reducing our water pollution and conserving freshwater resources.

Our FLWRDWN™ was nominated for a Design Award by Fast Company and we announced a very exciting partnership with Kintra Fibers.

We created an industry first VR experience for FLWRDWN™, powered by AnamXR™ and in partnership with the Fashion Innovation Agency at London College of Fashion.



Our family grew to include more people from all parts of the world and all walks of life.

From the innovation behind our collections to those who wear it, we're here to have a positive impact on the world.

Here is our vision, in three goals:

1

Making our impact visible: we share our impact and outline our goals.

2

Working towards a better future: we close the loop on our resource use by improving supply chain visibility, striving to take less from the planet and keeping materials in circulation.

3

Becoming Earth Positive: our most ambitious goal, we become net-positive across every resource we use.

The Sustainable Development Goals (SDGs) give us a framework to define our vision and steer us towards our objective of designing a better future.

Our SDG engagement reflects the areas our business is best placed to address.

BIODIVERSITY

We're committed to protecting and preserving the biodiversity on Earth.

Our Innovative Materials and Climate Action pillars outline how we protect biodiversity by minimizing our environmental footprint. Beyond this, we are proud to have created two funds that support this cause.

Through the Tomorrow Tree Fund, we're planting, protecting and restoring trees with every product purchased. Through our Bee The Change Fund, we're working to preserve and protect vulnerable bees species around the world.

About Milkywire

Milkywire is a new digital platform and app that allows users to easily find, fund, and follow screened “impacters” – some of the best grassroots NGOs from around the world working to fight extinction, save oceans, clean the planet, protect and restore forests, and more. Milkywire powers our Bee The Change Fund and our Tomorrow Tree Fund.

Tomorrow Tree Fund

Powered by Milkywire

With every PANGAIA purchase, a portion of the proceeds are donated to the Tomorrow Tree Fund. We created the Tomorrow Tree Fund, powered by Milkywire, to support grassroots NGOs with a commitment to plant, protect and restore 1 million trees around the globe.

Why?

Trees are vital to us and our planet. We depend on them for the air that we breathe, and they also play a massive role in regulating the climate. Trees are carbon sinks, removing carbon from the atmosphere and storing it away for centuries. This process is crucial for preventing climate change and mitigating its effects. After oceans, forests are the largest stores of carbon in the world,[1] and as such, are a natural solution to the climate crisis.

1 "Forests & Climate", WWF, accessed December 21 2020, https://forestsolutions.panda.org/approach/forests-and-climate

Our Tomorrow Tree Fund is helping the following organizations:

SeaTrees

PANGAIA's very first tree-planting partner. SeaTrees are dedicated to restoring coastal ecosystems by planting and preserving mangrove trees. Research shows that 1 mangrove tree can store up to 1 ton of CO2 over its lifetime.[2] Read more about our SeaTrees initiative.

FoProBiM

This organization works with the restoration and conservation of mangrove forests throughout Haiti. These critical habitats are essential for the protection of coastal communities from the impacts of storms. They also provide training to local communities in activities such as apiculture and eco-tourism.

HAkA - Forest, Nature and Environment of Aceh

HAkA founder Farwiza Farhan is an award-winning Forest Conservationist, taking on the fight against illegal palm oil plantations and unsustainable exploitation of the unique Indonesian rainforest and its wildlife.

The Society for Preservation of Muriqui

This organization plants trees in the Brazilian Atlantic rainforest between non-connected forest areas to expand the habitat of The Muriqui (the largest primate of the Americas) and protect its unparalleled biodiversity. This area is considered to be among the top five hotspots for biodiversity in the world.

Arbio Peru

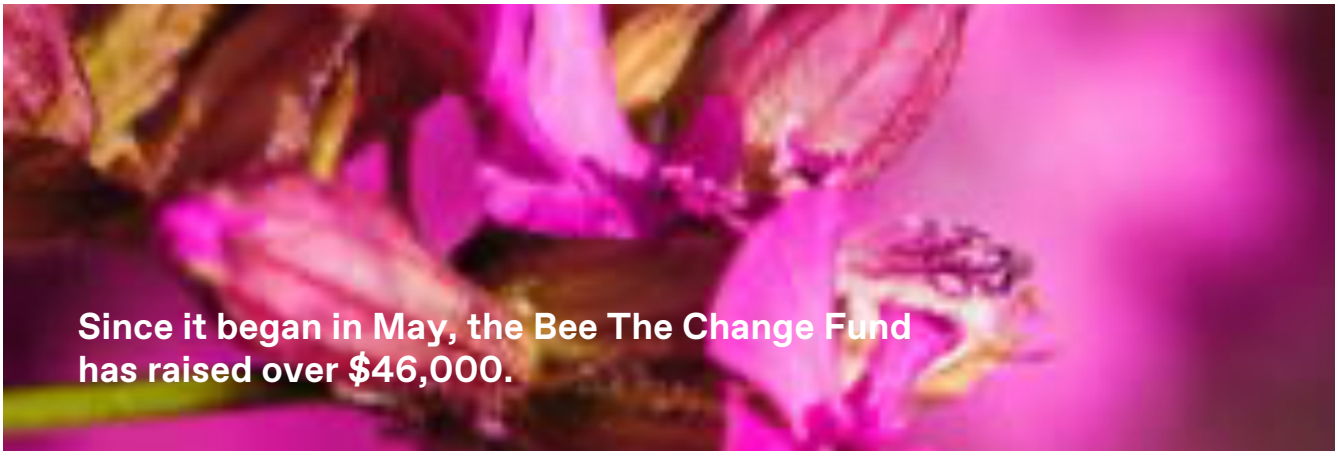
Arbio Peru collects data on Shihuahuaco trees, which are at risk of logging, and also on the extensive wildlife found in the region. They maintain a permanent presence of rangers to protect the trees from illegal logging and head community outreach programs to promote important Amazon conservation work.

2 Cameron, C. et al. (2019), 'High greenhouse gas emissions mitigation benefits from mangrove rehabilitation in Sulawesi, Indonesia', Ecosystem Services, 40, 101035

Bee The Change Fund

Powered by Milkywire

Bees play an integral role in the functioning of our ecosystems and are disappearing at an alarming rate.[3] We launched the Bee The Change Fund in May, powered by Milkywire. This fund supports grassroots NGOs working to preserve and protect species worldwide from extinction – and we're happy to report that all the projects we chose to support back in May are now fully funded!



Why?

Human survival depends on bees, as 75% of food crops rely directly or indirectly on bee pollination.[4] In 2020 we released two collections dedicated to this cause:

The PANGAIA x Takashi Murakami collection, featuring a unique bee design and flower prints with a thread that connects the two.

PANGAIA x Selfridges, a limited-edition collection featuring PANGAIA's Bee The Change message in Selfridges' iconic yellow.

3 "Bees and Other Pollinators", UN FAO, accessed December 21 2020 http://www.fao.org/pollination/background/bees-and-other-pollinators/en/
4 "The Assessment Report on Pollinators, Pollination and Food Production", IPBES, 2017, https://www.ipbes.net/sites/default/files/downloads/pdf/2017_pollination_full_report_book_v12_pages.pdf

Our Bee the Change Fund was distributed across the following organizations:

BugLife

B-Lines project (UK). Pollinators, including bees, are confined to tiny fragments of habitat and unable to move across the countryside as our climate and landscape rapidly change.[5] It has been predicted that 40-70% of species could go extinct if action is not taken,[6] which is why it is important to support the creation of B-lines.

Nordens Ark

Tag a Bee project (Sweden). The aim of this project is to tag 5000 bees with RFID chips (radio-frequency identification) to gain more knowledge of how, when and where they fly to collect pollen. Through this research project, we can gain knowledge that helps protect and informs the preservation of both domestic and wild bees.

Mpala Research Centre

People and Pollinators project (Kenya). Due to the use of agricultural pesticides and loss of natural habitats, bee numbers have declined dramatically.[7] At the Mpala Research Centre, Dino Martins is working with farmers in East Africa to raise awareness about the importance of pollinators and encourage the adoption of more sustainable farming practices that conserve the bees, boost crops and improve livelihoods.

Bumblebee Conservation Trust

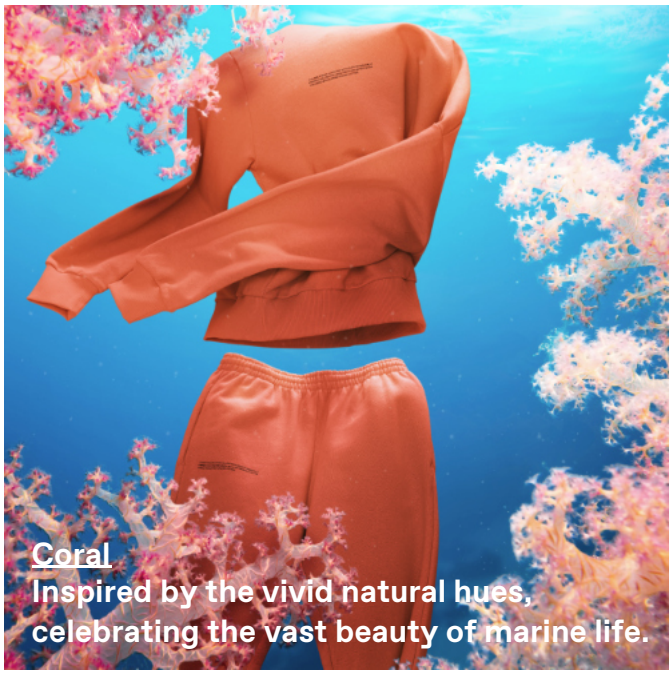
Short-haired Bumblebee Reintroduction project (UK). The short-haired bumblebee was last recorded in 1988 and declared extinct in the UK in 2000.[8] This species of bee is currently being reintroduced in the UK through this project, established in 2009. The team are working with farmers, conservation groups and other landowners to create flower-rich habitat within the release area.

5 "B-Lines", Bug Life, accessed December 21 2020, https://www.buglife.org.uk/our-work/b-lines/
6 ibid.
7 "The Assessment Report on Pollinators, Pollination and Food Production", IPBES, 2017, https://www.ipbes.net/sites/default/files/downloads/pdf/2017_pollination_full_report_book_v12_pages.pdf
8 "Short-haired bumblebee - (Bombus subterraneus)", Bumblebee Conservation Trust, accessed December 21 2020, https://www.bumblebeeconservation.org/white-tailed-bumblebees/short-haired-bumblebee/

Our Mother Earth collections

This year we launched our Mother Earth collections, designed to highlight the importance of protecting these fragile and endangered ecosystems. Taking influences from sand tones. Deserts are a vital part of the planetary ecosystem and cover around a third of the Earth's surface.

Ocean
Inspired by our big blue and released to celebrate World Ocean Day.



Coral
Inspired by the vivid natural hues, celebrating the vast beauty of marine life.

Desert
Taking influences from sand tones. Deserts are vital to the planetary ecosystem, they cover around 20% of the Earth's surface.

Forest
An ode to the beauty of forest ecosystems around the world in verdant tones.

INNOVATIVE MATERIALS

When it comes to materials science, we're committed to doing as nature does. Inspired by the natural diversity in our ecosystems, we pioneer and use materials that consider the delicate balance between sustainability, functionality and purpose.

Biobased Fibers

FLWRDWN™

Seaweed Fiber

Plant Fibers

Organic Cotton

Linen

Technical Fibers

Leather Alternatives: Grape Leather

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Recycled Cashmere & Wool

Treatments

PPRMINT™

Environmentally Friendly Dyes

Botanical Dyes

FLWRDWN™

Biobased Fibers

Discover the future of warmth.

We're incredibly proud of our patented FLWRDWN™ technology.

Made with biodegradable down-fill materials sourced from wild flowers and ten years of extensive in-lab research.

Responsibly sourced. Responsibly made.

FLWRDWN™ is hypoallergenic and cruelty-free.

Before FLWRDWN™, there were just two options for lightweight, thermal-insulating outerwear: animal feather and synthetic down. We believe that the commonly-used process of obtaining animal down is cruel, and the alternative synthetic fill - usually polyester - polyester, is made using non-biodegradable and finite petrochemical (crude oil) resources. So, we set out to create our own alternative.

While other vegetable-originated fibers for fill do exist, we are proud to present FLWRDWN™ as the very first loose-fill option.

How we make it

FLWRDWN™ is made with dried wildflowers, grown without any pesticides and hand-picked to ensure the highest quality.

The wild flowers grow naturally, without the need for watering. The presence of the flowers support the biodiversity of the local environment by helping to conserve species of local fauna and contribute to their habitat restoration.

The flowers have a down-like microstructure, so we combine them with a biopolymer (a naturally derived compound) to bring out their thermal-warming properties. Our biopolymer is produced from maize (corn) sourced from North America and is fully compostable.[9]

9 *Will compost in municipal/industrial facilities according to ISO, ASTM and EN regulations. Certified compostable: DIN CERTO, JBPA, US BPI.

FLWRDWN™

Biobased Fibers

The manufacturing of our biopolymer produces approximately 80% fewer greenhouse gases than the manufacturing of traditional polymers.[10] The third ingredient in FLWRDWN™ is our patented biodegradable aerogel. This is the first of its kind, taking our scientific partners over 10 years to develop. This added aerogel ensures our FLWRDWN™ products increases thermal insulation, performance and durability. They provide a lightweight strength, making them an important component in FLWRDWN™.

FLWRDWN™ Virtual Immersive experience

To celebrate FLWRDWN™ we teamed up with AnamXR™ to create an industry-first virtual immersive experience inspired by its unique qualities, all set against the backdrop of the Antarctic.

This invitation-only event was created in collaboration with The Fashion Innovation Agency at London College of Fashion, UAL and AnamXR™. AnamXR™ is the world's first web-based platform scaling virtual commerce which is accessible on any device and we're thrilled to work with the two.

If you are a company and would like to integrate our FLWDWN technology into your products, please contact us on flwrdwn@thepangaia.com.

10 Comparison between our biopolymer eco-profile data and PET & PS producer data (American Chemistry Council, 2011).

Seaweed Fiber

Biobased Fibers

Our seaweed fiber fabrics are made from a blend of organic cotton yarns and lyocell, embedded with seaweed particles.

Why we use it

Semi-synthetic fibers are biochemically processed to reconstitute hardwood tree cellulose (a sugar molecule that gives trees their strength) to create a functional, sustainable material. Although chemically identical to natural cellulose (like cotton and linen consist of), this innovative process allows us to harness the renewable properties that trees provide.

Our Seaweed Fiber is made using a patented process that embeds seaweed particles firmly within lyocell fiber.

Lyocell is a fabric that embodies complete circularity, beginning and ending in nature.

Our lyocell is 95% harvested from eucalyptus trees and the remaining 5% from spruce, acacia and beech trees. Eucalyptus grows quickly without irrigation, pesticides or fertilizers, and can be grown on arid land.[11] The lyocell is made through a closed loop production system, using a process that recycles water and reuses up to 99% of the solvent used.[12] This creates very little waste and results in a fiber that biodegrades in water, landfills and composting environments.[13]

11 "Sustainable Forest Management and Eucalyptus", Grupo Empresarial ENCE, 2009, https://ence.es/wp-content/uploads/pdf/Eucalyptus.pdf
12 Zhang, S. et al. (2018), 'Regenerated cellulose by the Lyocell process, a brief review of the process and properties', BioResources, 13, 2, 4577-4592
13 ibid.

Seaweed Fiber

Biobased Fibers

The benefits of seaweed

Seaweed grows abundantly in its natural habitat, and is harvested through a gentle, regenerative and sustainable process, leaving its ecological value retained. Saltwater seaweed is rich in essential substances like vitamins, antioxidants, amino acids and minerals.[14] It's also soft and offers moisture absorption, too.

The resulting fiber is completely biodegradable, made using methods that save energy and resources.

To make our seaweed innovation available and accessible we created a cotton-blended fabric, but our goal in the future is to offer 100% Seaweed Fiber products.

14 Tabarsa, M. et al. (2012) 'Fatty Acids, Amino Acids, Mineral Contents, and Proximate Composition of Some Brown Seaweeds', Journal of Phycology, 48, 2, 285-292

Organic Cotton

Plant Fibers

Plant fibers are natural, renewable, and inherently biodegradable.

We are conscious that relying on one plant fiber source can lead to over-reliance and promote the practices of monocropping. Monoculture plantations (monocropping) weaken the soil, deplete soil nutrients, reduce local biodiversity and increase the risk of pests.[15] This happens with cotton on a global scale. Because of this, we are actively working to incorporate a more diverse range of materials, to help reduce the world's dependence on cotton.

We use non-food crop fibers that are responsibly grown, without the use of toxic pesticides.

We recognize, understand and promote the importance of using alternatives to conventional cotton. Conventional methods of cotton production involve the use of toxic pesticides, which infamously contaminate the runoff water, causing severe harm to the surrounding ecosystems (including plants, animals, microorganisms, and humans).[16]

Why we're using cotton

We use organic cotton, meaning our suppliers uphold a strict set of production standards that keep the whole ecosystem in mind.[17] We acknowledge that growing organic cotton does require more water and land space than conventional cotton, however 97% of this water is rain-fed, which protects non-renewable groundwater and surface water resources.[18] We do not use virgin, non-organic cotton.

We're currently testing different fiber combinations to achieve a biodegradable and durable material, made exclusively from plants. Stay tuned—when this fabric is ready we'll let you know here, first.

15 "What's So Special About Organic Cotton?", Textile Exchange, accessed on December 21 2020, http://farmhub.textileexchange.org/learningzone/learning-journey/25
16 "Cotton", World Wildlife Fund, accessed on December 21 2020, https://www.worldwildlife.org/industries/cotton
17 "The Standard", Global Organic Textile Standard, accessed on December 21 2020, https://www.global-standard.org/the-standard
18 "Life Cycle Assessment (LCA) of Organic Cotton Fiber - A Global Average", Textile Exchange, November 2014, http://farmhub.textileexchange.org/upload/library/Farm%20reports/LCA_of_Organic_Cotton%20FiberSummary_of%20Findings.pdf

Linen

Plant Fibers

Linen is a natural plant fiber that comes from the inner bark of flax stems, called the bast.

The flax plants we use are grown in Belgium and require little or no irrigation, pesticides or fertilizers.

Our organic and carbon negative production employs less chemical processes (for example, the use of dew retting in place of water retting) and utilizes all parts of the plant.

The flax seeds and oils serve as a source of nutrition for both humans and animals, resulting in a zero-waste material that is vastly renewable, recyclable and degrades more readily than cotton.[19]

19 *Under soil-burial conditions. Park, C.H. et al., 'Biodegradability of cellulose fabrics', Journal of Applied Polymer Science, 94, 1, 248-253

Leather Alternative: Grape Leather

Technical Fabrics

Most vegan leathers on the market are made entirely from synthetic materials such as polyvinyl chloride (PVC) and more recently polyurethane (PU), both of which are made entirely from fossil fuels. PVC is a troublesome material, both in its petrochemical origin and its production, as it releases dioxins (toxic chemical compounds) into the environment.[20]

PVC-based leather additionally incorporates phthalate plasticizers, which are endocrine (hormonal) disruptors - both dangerous to humans and ecosystems.[21]

PANGAIA does not use any PVC-based materials.

Polyurethane is safer for humans than PVC, although it is still dependent on petrochemical raw materials. In order to make PU workable for a vegan leather it must be turned into a liquid using solvents.

Traditionally, PU solvents are high in volatile organic compounds (VOCs), which are harmful to both humans and the environment.[22] However, recent advances in chemistry have developed a less toxic process, known as water-based polyurethane or polyurethane dispersion (PUD),[23] which we use where necessary. This water-based process involves modifiers and other agents in addition to water, which means PUD is a less toxic and harmful process, although we are aware PUD still relies on petrochemical raw materials and does not biodegrade at the end of its useful life.

Our goal is to use petrochemical-free leather alternatives.

20 "PVC: The Poison Plastic", GreenPeace, August 18 2003, https://www.greenpeace.org/usa/wp-content/uploads/legacy/Global/usa/report/2009/4/pvc-the-poison-plastic.html

21 "FAQs: Phthalates & Polyvinyl Chloride (PVC)", Children's Environmental Health Network (CEHN), accessed December 21 2020, https://www.cehn.org/wp-content/uploads/2016/02/PVCandPthalates_Feb-2016.pdf

22 "Final Report: Isocyanate-Free Polyurethane Coatings", EPA, accessed December 21 2020, https://cfpub.epa.gov/ncer_abstracts/index.cfm/fuseaction/display.abstractDetail/abstract/10482/report/F

23 Garrison, T.F. & M.R. Kessler (2016) '3. Plant Oil Based Polyurethanes' in S.A. Madbouly et al. Bio-Based Plant Oil Polymers and Composites, p37-54

Leather Alternative: Grape Leather

Technical Fabrics

We currently use materials that are majority biobased and are produced under responsible conditions.

Most of the current plant derived leathers are a combination of materials, made by combining biomass waste with polyurethane dispersion (PUD) to improve the physical properties of the material. While the addition of PUD improves the properties of the final material, it stops the material from biodegrading fully, rendering the material more complicated to be recycled.

Here, the solid remains of grapes after pressing (grape pomace, including the skins, pulp, seeds and stems) are combined with vegetable oil and water-based polyurethane (PUD). This creates an eco-composite (a combination) material. This biobased material is then coated onto organic cotton, resulting in a leather alternative made of more than 70% renewable and recycled raw materials.

Vegea's grape leather utilizes and repurposes waste materials, thereby extending the utility of the grapes and making the winemaking process more circular. The base material is organic cotton, and it uses the most environmentally-responsible form of polyurethane on the market.

Unfortunately, the material is not yet biodegradable and is difficult to recycle. With that in mind, we decided to use the material in a product that is low-wash and long-lasting. We try our hardest to have a mindful approach to design, appropriately matching each material to a product that makes the most sense in terms of sustainability, functionality and purpose.

Our Stance on Synthetics

Technical Fabrics

At PANGAIA we are on a mission to eliminate the fashion industry's dependence on non-renewable resources, such as those used to produce synthetic fibers from fossil fuels.

We believe that using the materials and tools Mother Nature provides is the way to eliminate our over-reliance on non-renewable resources.

It is important to us that we consider the impact of our garments once they are in your hands.

Beyond their non-renewable origins, our concern with many of these materials is the associated microfiber or microplastic pollution and the fact that many of these materials do not biodegrade harmlessly.[24] However, we acknowledge that some synthetic materials offer unique functional properties that are essential for the performance of certain garments. We are actively pursuing solutions that align with these sustainability concerns, whilst preserving the unique functions and purpose that synthetic materials offer.

We're currently doing research on microplastic and microfiber pollution and the biodegradability of the materials that we choose for our collections. That's why we've joined The Microfibre Consortium, to help us navigate this tricky space. Once we understand more, we can design for end of use in the best possible way.

24 "The real cost of your clothes: These are the fabrics with the best and worst environmental impact", The Independent, August 19 2019, https://www.independent.co.uk/life-style/fashion/fabrics-environment-fast-fashion-eco-friendly-pollution-waste-polyester-cotton-fur-recycle-a8963921.html

Recycled Cotton

Recycled Materials

We know that using less-polluting virgin fibers, such as organic cotton, does not address the growing amount of cotton waste globally.

Our current solution is to use recycled cotton made from repurposed production scraps and retired textiles. Using recycled cotton saves 20,000 liters of water per kilogram of cotton and reduces the amount of energy use.[25] Sometimes these figures can appear greenwashed, as much of the reduction in water and energy exists because the fiber has already been processed once.

The real power in using recycled materials is in offsetting the production of new materials by restoring utility of materials already in circulation, and diverting fabric waste from landfill.

Mechanically recycled yarn tends to feel less soft than virgin organic cotton due to the shortening of the fiber in the process; ours are currently woven or knitted in with organic cotton yarn to maintain a quality feel, resulting in our ultra-soft blended fabrics.
Our highest blend is currently 50% recycled and 50% organic cotton. We are constantly reworking our blends to increase the percentage of recycled materials.

25 Claudio, L. (2007) 'Waste Couture: Environmental Impact of the Clothing Industry', Environmental Health Perspectives, 115, 9, A449-A454

Recycled Cashmere & Wool

Animal Fibers

When produced responsibly, animal fibers are inherently renewable and biodegradable and hold remarkable properties.

We strive to use responsibly sourced natural fibers, from both plants and animals. We do not support harmful and inhumane practices.

Wool

Sheep shearing is an essential practice to maintain the animal's health and hygiene as sheep are unable to shed their fleece coat alone. This must be done even if the fibers aren't used for yarns. If the fleece is too long, the animals are at risk of overheating, becoming immobilized and more susceptible to predation.[26]

We work with Responsible Wool Standard (RWS) sheep producers who care about the animals and practice careful shearing management.[27]

Cashmere

Cashmere goats produce a double fleece that consists of a coarse outer coat, called guard hair, and a fine, soft undercoat, commonly referred to as cashmere. The fluffy undercoat keeps the animal warm over the winter and then sheds in spring. As the fine fibers loosen they are able to be removed by hand combing, a process that is neither distressing or disruptive to the animal if done correctly and responsibly.

26 "Official Statement from the American Society of Animal Science Board of Directors", ASAS Board, accessed on December 21 2020, https://www.asas.org/taking-stock/blog-post/taking-stock/2014/07/14/there-is-no-such-thing-as-humane-wool-when-it-is-left-on-the-sheep-why-sheep-shearing-is-absolutely-necessary-for-sheep-welfare

27 "Responsible Wool", Textile Exchange, accessed on December 21 2020, https://textileexchange.org/standards/responsible-wool/

Recycled Cashmere & Wool

Animal Fibers

Unlike sheep, goats destroy the grasses they eat, pulling them up by the roots rather than grazing the tops, for this reason cashmere production has been criticized for having a detrimental impact on the environment. The high demand for cashmere has caused increased herd sizes, and has resulted in the desertification of over 70% of healthy pasture land in Mongolia, which results in increased local temperature and air pollution.[28]

Where we are at

We want to eliminate the clothing industry's dependence on unsustainable virgin animal fibers and combat global textile waste.

By using post-consumer materials like discarded garments (existing fabrics), rather than pre-consumer materials like production offcuts (unused virgin fabrics), we're able to give the fibers a second life, while also tackling the issue of unutilized garment waste. The reclaimed garments are mechanically separated to free the fibers which are then spun into yarns.

The recycling process results in shorter fibers, which often need to be combined with virgin fibers in order to maintain a high quality, soft product. Recycling pre-consumer materials results in longer fibers that need less virgin incorporation,[29] however, using pre-consumer waste directly supports virgin cashmere production.

Our decision to use post-consumer waste reduces the reliance on virgin resources, diverts waste from landfill and supports the transition to a circular economy.

Our Global Recycled Standard (GRS) certified recycled cashmere is currently made from 70% post-consumer recycled cashmere, 25% virgin cashmere and 5% virgin wool. The virgin wool is certified with the Responsible Wool Standard (RWS) and the virgin cashmere is sourced from nomadic herders in Mongolia. The Responsible Wool Standard is a voluntary standard that ensures the welfare of sheep and the land they're raised on.[30]

28 "Mongolia: Sustainable Cashmere", UNDP, accessed December 21 2020, https://www.greencommodities.org/content/gcp/en/home/countries-and-commodities/mongolia.html
29 Direct communication with supplier
30 "Responsible Wool", Textile Exchange, accessed December 21 2020, https://textileexchange.org/standards/responsible-wool/

PPRMINT™ Oil

Treatments

The average household uses over 34,000 gallons of water per year,[31] and one of the main reasons for this is washing our clothes.

There is a common misconception that all clothes need to be washed after every wear; this has led to a culture of over-washing, which has a negative impact on fabrics and the environment.

Laundry is water and energy-intensive, and releases chemicals into waterways, both from the treated garment and the washing detergents.

PPRMINT™ is a durable odor control finish and broad-spectrum antimicrobial treatment that enables our products to stay fresher for longer.

Treating our products with natural, plant-based peppermint oil neutralizes and prevents the growth of odor-causing bacteria.[32] Due to its antibacterial properties, you can wear clothing treated with PPRMINT™ many times before they need washing.

We use the Mentha Piperita plant for this; it's grown worldwide, with the leading peppermint cultivation found in America's Pacific Northwest. The peppermint essential oil is extracted by steaming and without the need for any solvents or other chemicals.

Many clothing companies use harmful treatments involving silver and other metals to control odor trapped in clothing.[33] While these treatments may reduce the need for excessive washing, they leach metals into our waterways that can be toxic for wildlife, humans and the planet.[34]

The antibacterial effect lasts as many as 50 washes, without impacting the material's texture, color or other physical properties. This saves you water, energy and time while protecting the planet in the process.

We have been piloting this treatment on a few styles, starting with our Seaweed Fiber T-shirts (as T-shirts are the most "high wash" pieces in our offering). Our plan for 2021 is to gradually add this treatment to the rest of our range.

31 *Average US household. "How we use water", US EPA, accessed December 21 2020, https://www.epa.gov/watersense/how-we-use-water

32 Singh, R. et al. (2015), 'Antibacterial and antioxidant activities of Mentha piperita L.', Arabian Journal of Chemistry, 8, 3, 322-328

33 "All Natural Odour Control for Textiles", Innovation in Textiles, accessed December 21 2020, https://www.innovationintextiles.com/all-natural-odour-control-for-textiles/

34 "Silver Leaching: A Report on Silver in Sportswear", Svenskt Vatten, November 2018, https://vattenbokhandeln.svensktvatten.se/produkt/silver-leaching-a-report-on-silver-in-sportswear/

Environmentally Friendly Dyes
Treatments

The dyes we use are Oeko-Tex® certified, meaning they are non-toxic and free from harmful chemicals.[35] The process is water-efficient and treats waste effluents, as well as capturing and reusing water during the washing processes. This process minimises the impacts from effluent release on the planet, whilst promoting low water consumption.

Our Oeko-Tex dyes are bright, bold, and most importantly, better for the future of our planet.

Botanical Dyes
Treatments

Using botanical dyes are safer for the environment as they reduce the amount of harsh chemicals and colorants that would otherwise enter into the planet's water systems. The Botanical colors are sustainably derived, renewable, harmlessly biodegradable, and non-toxic.[36] We use a water-efficient garment dyeing method and any remaining wastewater is non-toxic.[37]

These dyes can help transform the way we use colorants in everyday products and encourage the shift towards a more responsible system of production and consumption.

35 "Our Standards", Oeko-Tex, accessed December 21 2020, https://www.oeko-tex.com/en/our-standards
36 Direct communication with supplier
37 Direct communication with supplier

CLIMATE ACTION

Greenhouse gases naturally occur and are essential for making Earth liveable, keeping the sun's warmth from reflecting into space (the greenhouse effect). However, due to human activity—particularly fossil fuel burning and deforestation—greenhouse gas emissions have reached record highs, creating an imbalance and threatening life on Earth.

We see it as our responsibility to mitigate and reverse any contribution to the climate crisis that we may have. To do this, we're measuring and reducing our greenhouse gas emissions in an effort to exist more sustainably.

Our vision is to be a carbon-positive, regenerative business that gives back to the planet more than we take.

We have three phases in our climate action journey:

We accurately measure our environmental footprint and understand our impact (where, how, why) in order to change it. We currently offset some of our emissions; we know that offsetting isn't the solution. Offsetting can help us bridge the gap in the meantime while we focus our efforts on minimizing our impacts at the source.

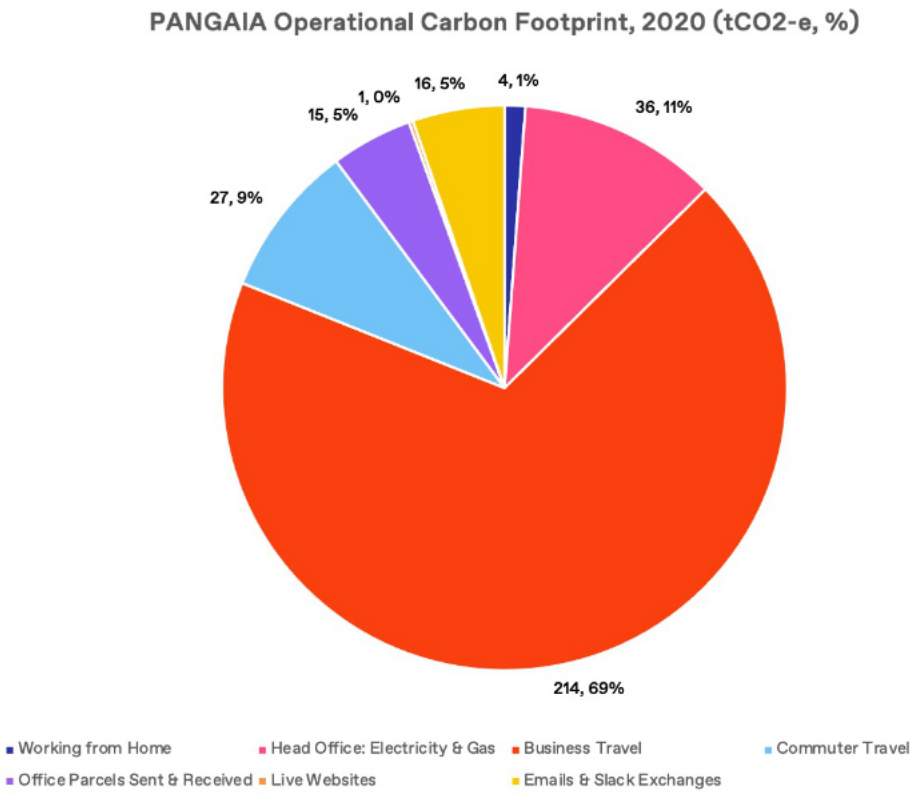
Our impact will inform how we reduce our footprint. Through expanding our circular business models and continuing to close the loop on resource use, we will improve our energy and resource efficiency to reduce associated greenhouse gas emissions.

Our long-term goal is for our business to be Earth Positive, where we give back more than we take from the planet.

We've started tracking our operational greenhouse gas emissions (GHGe) and our plan for the next six months is to expand our scope and improve our accuracy. Our challenge is that we've grown so quickly, changed offices and like most businesses, we've had to adapt around COVID-19.

See footnote to find where to read about our methodology[38] and view our operational offsetting certificates.[39, 40]

This year, we've accounted for and offset 313 tons of operational greenhouse gas emissions through certified SeaTrees Tokens that contribute to climate change mitigation and ocean protection by restoring coastal blue-carbon ecosystems. This is in addition to trees we plant, protect or restore for every product purchased.



38 "PANGAIA Carbon Emissions: Methodology, Assumptions & Exclusions", PANGAIA, December 15 2020, https://cdn.shopify.com/s/files/1/0035/1309/0115/files/PANGAIA_Carbon_Emissions_Methodology_Assumptions_Exclusions.pdf?v=1608303597
39 "SeaTrees Ocean Positive Verified Climate Netural+", Sustainable Surf, December 2020, https://cdn.shopify.com/s/files/1/0035/1309/0115/files/2020_Operational_Offsetting_Certificate_SeaTrees_PANGAIA.pdf?v=1608636741
40 "Certificate of Verified Carbon Unit (VCU) Retirement", Verra, December 17 2020, https://cdn.shopify.com/s/files/1/0035/1309/0115/files/2020_Offsetting_Verification_-_Operational.pdf?v=1608636723

We've teamed up with Green Story and worked closely with our manufacturing partners to measure the environmental footprint of our products through Life Cycle Assessments.

This helps us identify where we can improve our supply chain, and as we share this information, allows you to make more mindful purchases. We began with our recycled and organic cotton collections, which account for 66% of our product offering. Look out for these icons on our product pages.

Thanks to you choosing PANGAIA, instead of a conventionally manufactured alternative, this year alone we have prevented:

4,051,640
km of driving emissions avoided

282,466,842
days of drinking water saved

1,039,014
m2 of land saved from pesticides

306,026
t-shirts diverted from landfill

See footnote to find where to read about our LCA methodology.[41]

Through our Tomorrow Tree Fund, we plant, protect and restore trees for every product purchased. In 2021, we'll be looking for ways to reduce our product footprint, as well as offset the emissions (and more) through a verified program.

Whilst we're making the right steps, we don't believe that offsetting our footprint to neutral is enough. It's the changes we will make to our business operations and our individual behaviours that make the biggest long-term difference.

41 "Comparative Life Cycle Impact Assessment for Pangaia", Green Story Inc., December 2020, https://cdn.shopify.com/s/files/1/0035/1309/0115/files/PANGAIA_x_Green_Story_LCA_Report-min.pdf?v=1608319588

Our Logistics

We partner with DHL Go Green to deliver to over 120 countries, making sure that our deliveries are entirely carbon neutral.

How does this work?

1.We pay a little extra to get our products to you.

2.This 'extra' comes in the form of carbon credits.

3. These carbon credits are put towards initiatives, funds and projects dedicated to mitigating the impacts of greenhouse gasses, such as:

- Wind power projects in India
- Reforestation projects in Africa
- Biomass power plants in Vietnam
- The eradication of landfills in Chile

83% of DHL Go Green's electricity demand is supported by renewable energy sources.[42]

In 2020, we offset over 4846.24 tonnes of CO2 emissions through this program to cover the 1,206,409,896km we travelled worldwide to deliver PANGAIA to you (that's 30,104 times around the Earth this year)!

Whilst we are proud to have reached so many of you, next year we plan to work on improving the efficiency of our logistics, in order to reduce the amount of emissions that we need to offset.

Shopify

We're a member of the Shopify offsetting program.

This program is a verified carbon standard project that protects the existing forests. Shopify are currently supporting the Pachama Jari Parà REDD project, to avoid unplanned deforestation in the Brazilian Amazon.

Our offsetting efforts through Shopify have protected an estimated 4.7km² of forest, or the equivalent of 614,921 seedlings this year.[43]

42 "GoGreen action areas", DP DHL, accessed December 21 2020, https://www.dpdhl.com/en/sustainability/environment-and-solutions/energy-efficiency-and-climate-change.html
43 Direct communication with Shopify

OCEAN HEALTH

Healthy oceans are crucial to the overall health of our planet. We're helping to protect our oceans with water stewardship and restoration projects designed to enable aquatic life to flourish.

PANGAIA x SeaTrees

Prior to the launch of our Tomorrow Tree Fund in October, for every PANGAIA piece sold we planted a mangrove tree with SeaTrees.Between January and October 2020, we planted over 400,000 mangrove trees.

The SeaTrees project is restoring and protecting 26 hectares of degraded mangrove forest in the West Papua region of Indonesia.

Here, local villagers are employed to plant a diverse mix of mangrove species, creating jobs, healthy ecosystems and habitats. The region's current mangrove estuaries are 75% deforested, which is why restoration is so important.

Why mangove trees?

Research shows that one mangrove tree can store between 300kg and 1 ton of CO2 over its lifetime.[44] Mangrove forests are 5-10 times more effective at absorbing carbon than a terrestrial forest.[45] Mangroves create a crucial habitat for marine biodiversity, as birds, fish, invertebrates, mammals and plants find shelter in these forests. Mangroves help to prevent coral bleaching, as the shade they provide stops the surrounding water from heating above the coral's tolerance threshold.[46] Their stilt-like roots protect coastal land from erosion. This helps reduce the damage caused by hurricanes and tsunamis.[47]

44 Cameron, C. et al. (2019), 'High greenhouse gas emissions mitigation benefits from mangrove rehabilitation in Sulawesi, Indonesia', Ecosystem Services, 40, 101035

45 "Greening the blue: championing coastal climate solutions", UN Environment, accessed December 21 2020, https://www.unenvironment.org/news-and-stories/story/greening-blue-championing-coastal-climate-solutions

46 "Mangroves protecting corals from climate change", USGS, October 8 2014, https://www.sciencedaily.com/releases/2014/10/141008131601.htm

47 "Mangrove Importance", WWF, accessed December 21 2020, https://wwf.panda.org/discover/our_focus/oceans_practice/coasts/mangroves/mangrove_importance/

Preventing Water Pollution

One of the ways that we're limiting water pollution throughout our supply chain is by using non-toxic, biodegradable and less water intensive dyes, as well as promoting low-wash aftercare for once a product reaches your hands.

Environmentally Friendly Dyes
PPRMINT™ Oil Treatment

We're investigating other ways we can contribute to reducing water pollution and working on our chemical management program. When we find them, we'll keep you updated here.

TIPA Packaging

We ship PANGAIA products in TIPA® packaging, a part bio-based plastic alternative that is fully compostable in 24 weeks, as opposed to the approximately 1000 years that conventional plastic takes to break down.[48]

We have replaced over 1.5 million conventional plastic polybags with TIPA compostable packaging in 2020. That adds up to 39.2 tonnes of conventional plastic saved!
Treat it like an orange peel - it's designed to be disposed of in your home compost or an industrial compost facility along with your food waste.

Composting serves as a means of recycling TIPA organically, as the material cannot be industrially recycled. TIPA is currently made of 20% biomaterial derived from natural sugars and 80% fully compostable, non-renewable polymers.[49] Despite their different origins, both components are able to be digested by polyester-degrading microorganisms in an aerobic environment (compost conditions).

We would love to see the amount of biobased content in TIPA® packaging increase beyond 50%, by removing the inclusion of non-renewable raw materials, but we aren't there quite yet.

We believe TIPA® is the best packaging for us right now.

The TIPA bags act to protect your individual garments and enable us to label and sort these garments at our warehouse effectively. To get the garments to you safely and securely, we pack these TIPA bags into a cardboard box outer - composed of 70% recycled materials and are totally FSC Certified. We're working to increase the percentage of recycled materials in this packaging, so watch this space.

48 Kale, S.K. et al. (2015), 'Microbial degradation of plastic: a review', Journal of Biochemical Technology, 6, 2, 952-961
49 "FAQ", TIPA Corp., accessed December 21 2020, https://tipa-corp.com/faq/

CIRCULARITY

Circularity is a journey and we're just at the beginning of ours.

With each PANGAIA piece, we consider the environmental and social impacts across the entire life cycle.

By employing circular models, we want to minimise resource consumption, eliminate waste and extend the life of our products.

Re:think
We're rethinking our product design, operational processes, industry standards and our partnerships to ensure we are working in the most circular way possible.

Re:duce
We're improving our resource effectiveness, reducing our need for non-renewable energy and keeping our use of primary resources to a minimum.

Re:use
We want our products to find life after their first use and we're looking into how we can make that possible for you.

Re:vive
Borrowing from the Japanese Kintsugi concept of repairing broken pottery pieces, we value the art of upcycling.

Re:purpose
We're studying how our products and materials can be used multiple times beyond their first design.

Re:cycle
We're increasing our use of recycled raw materials to close the loop on our own product streams. Through this we turn our waste into feedstock for new products.

We're collaborating with Bristol-based collective WEAREHAIRYPEOPLE on our first ever upcycling project, launching Boxing Day 2020.

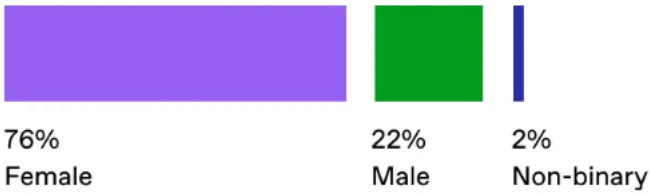
We have also worked with the London Waste and Recycling Board (LWARB) in refining our roadmap to circularity.

We have exciting projects in the works for next year. We are working with our manufacturers on a recycling project to repurpose waste materials and are partnering with Circular ID (EON) to facilitate the traceability of our garments. We can't wait to tell you more about these!

ELEVATING HUMAN POTENTIAL

Our collective is at the heart of everything we do. We are a global collective of individuals, enhancing each other and working together for a better future.

Our family grew to include more people from all parts of the world and all walks of life. We surveyed our team to understand more about the diversity amongst us.



We're from all over the world: 35 countries, speaking 19 languages, and counting!

Argentina	China	Hungary	Mauritius	Philippines	South Africa
Australia	Colombia	India	Morocco	Poland	Spain
Brazil	France	Ireland	Nepal	South Korea	Switzerland
Bulgaria	Germany	Israel	Netherlands	Romania	UK
Canada	Greece	Italy	Nigeria	Russia	USA
Chile	Grenada	Jamaica	Norway	Slovakia	

At PANGAIA

We are proud to celebrate the intersectional diversity already represented in our teams, but know that we can do better. Just like our name, PAN: All-inclusive, GAIA: Mother Earth, we're deeply committed to inclusion.
We stand against racism and discrimination of any kind. We stand for diversity and inclusion inside our four walls and well beyond. That's why we're 100% committed to hiring a truly diverse workforce into all levels of the company.

Internally we have set up a Diversity and Inclusion Council, a cross-functional independent body represented across all levels of the organization. Working alongside Creative Access and We are Pocc, the council implements plans and practices to increase diversity and representation.

We are also working with The Other Box to create on-going training programs on anti-racism and ally-ship for all of our employees.

Continuously Learning

We believe in the power of collective action at every level. We host Sustainability Workshops to empower our PANGAIA family to make knowledgeable choices towards building a better future, both at work and at home.

Every month, we gather as a company to harness our leadership, ideas and innovations to enable Earth Positive and sustainable change.

Town Hall

The PANGAIA family gathered across different countries at the end of 2020 in our first ever Town Hall - a complete family event, hosted digitally. As a young company, we celebrated our annual achievements, defined our values and connected with each other to discuss our exciting future product and material innovations coming soon!

TOGETHER FOR TOMORROW

Our Impact approach extends to organizations and causes that care for people and the planet. We've come together to support causes that are close to our hearts; particularly those that needed extra help this year.

We've raised and donated over $100,000 for causes close to our hearts; this year. We want to thank each and every one of you for making this possible.

Here are the organizations that, by choosing PANGAIA, you have helped:

Black Lives Matter

We have donated to the following charities and will continue to look for ways to support this movement:

Color Of Change
Black Lives Matter
ACLU
NAACP
Black Visions
Reclaim The Block

We have also taken the Juneteenth Pledge to make Juneteenth a recognized paid holiday for our team, as well as encouraging our employees to learn, reflect and work on continuous self-development and respect for all people and cultures. Awareness must be converted into action. We are taking the time to educate ourselves, in order to take the steps towards true allyship. Our practice in allyship has just begun, and we will continue to share the work we are doing as we go.

Protecting Wildlife

Wildfires in Australia - New South Wales Rural Fire Services. For 48 hours in January, we donated 100% of the profits of all PANGAIA online sales to the New South Wales Rural Fire Services - one of the organisations fighting the devastating wildfires in Australia.

Taronga Wildlife Hospital

In June, we launched the Protect The Species capsule collection, designed with artist Raku Inoue, to support the work of the Taronga Wildlife Hospital in Australia.

Taronga are working to protect and preserve vulnerable species, such as genetically unique koalas. They take care of around 700-1,000 animals each year, with a new breeding programme to bring animals back from the verge of extinction and release them back into the wild.

PANGAIA x COSTA BRAZIL

In October, we launched an exclusive collaboration with Costa Brazil and artist Nick Theobald to support the indigenous communities of the Amazon Rainforest.

We donated 100% of the profits from this to Amazon Forever, a campaign spearheaded by Conservation International and Brazil Foundation, to support indigenous communities that have been affected by COVID-19.

Often referred to as the lungs of the Earth, the Amazon Rainforest is one the most biologically diverse ecosystems in the world, home to millions of species of insects, plants and birds, many of which are still unknown to science.[50] While climate change and human activity threaten the Amazon Rainforest, COVID-19 threatens the vulnerable indigenous communities that live within it.
Protecting Mother Nature means protecting those who put Mother Nature first.

TOGETHERFUND x WJSFF

In July, we teamed up with JUST to highlight the importance of natural resources. JUST Goods, Inc. is a global consumer goods company dedicated to producing responsibly sourced products, contained in sustainable packaging. The company was co-founded by Jaden Smith and is a Certified B-Corp. With a shared value system to ours, JUST create products for a purpose, rooted in innovation and impact. The capsule collection we developed together included 9 of our most loved items in JUST's signature shade of blue.

Through this collection, we were able to raise funds for the TOGETHERFUND x WJSFF (Will & Jada Smith Family Foundation), a global fundraising campaign supporting critical racial justice work and global Covid-19 relief. This work aligns with the UN Global Goals; notably, Goal 10 - Reduced Inequalities, and Goal 16 - Peace, Justice and Strong Institutions.

50 "Biodiversity and the Amazon Rainforest", Greenpeace, accessed December 21 2020, https://www.greenpeace.org/usa/biodiversity-and-the-amazon-rainforest

COVID-19 Relief

Doctors Without Boarders

Throughout the early stages of the COVID-19 pandemic in Spring 2020, we donated part of our proceeds to Doctors Without Borders.

Doctors Without Borders/Médecins Sans Frontières (MSF) is the world's leading independent international medical relief organisation, managing medical projects across 72 countries worldwide. They focus on emergency medical and humanitarian relief, implementing medical programs in areas where no health systems exist or where health structures are overwhelmed.

We support Doctors Without Borders as they offer medical and humanitarian assistance to people based on their needs, irrespective of race, religion, gender or political affiliation. They observe neutrality in situations of conflict, and impartiality in the name of medical ethics.

Producing PPE

In March, we pivoted some of our resources to produce Personal Protective Equipment (PPE). Together with our Italian partner factory Beste, we were able to deliver vital PPE to a neighboring hospital in Prato, Italy. We produced EU standard certified gowns, treated with HeiQ Viroblock technology providing antiviral and antibacterial properties

Donating Masks

In April, we delivered 10,000 N95 surgical masks to the Mount Sinai Hospital in Queens, one of the hardest-hit boroughs in New York. This was a collective effort with our community, our partners and our friends at JUST, Bethenny Frankel and BStrong, among others.

United Nations

In September, we introduced a special capsule collection to celebrate the 5th anniversary of the Sustainable Development Goals (SDGs), also called Global Goals,[51] as well as the 75th anniversary of the United Nations.

The 17 Sustainable Development Goals, adopted by the member states of the United Nations, are an ambitious plan to eradicate poverty, fight inequality, and tackle the climate crisis. They have the power to create a better world by 2030, where no one is left behind.

Our approach to impact and sustainability has been informed by the SDGs since day one, with a particular focus on the following goals.

51 "The Global Goals", Global Goals, accessed December 21 2020, https://www.globalgoals.org

Designing a better future, together.