AWARD 2021

AWARD CATALOGUE

MOST
INNOVATIVE

MOST
PRACTICAL

MOST
BEAUTIFUL

BEST
INITIATIVE

SOLUTIONS TO REDUCE
SINGLE-USE PLASTIC

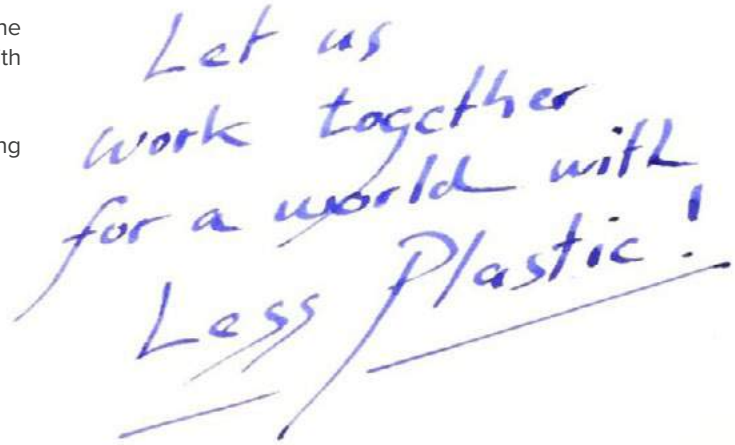
DEAR VALUED READER,

when we ran the BEYONDPLASTIC Award first time in 2020, we had no idea about the possible feedback in quality and quantity. Back then we nominated 85 awesome Award Entries, which motivated us to describe the projects, visions and solutions in the SO LONG, PLASTIC! book.

For the 2021 Award, we received 163 entries from all over the world, leading to 150 nominations contributing to a world with less plastic.

Thanks to everyone for making this happen. Enjoy browsing through the following pages!

Ulrich Krzyminski
Founder of BEYONDPLASTIC



THE AWARD

The BEYONDPLASTIC Award honors and celebrates the innovation & creativity in eco-responsible product & packaging design and initiatives with the goal to reduce single-use-plastic across the world.

The Award is directed towards students, designers, engineers, scientists, makers, creators, inventors, artists, journalists, teachers and activists. Everyone who has an idea, concept, project, initiative, prototype or even a solution already in market which supports less plastic packages is welcome to take part.

The Entries are judged by a Jury Panel which evaluates how well the following criteria are met:

Is it eco-responsible? To use? To manufacture? Is it reusable? Is it recyclable? Is it bio-degradable? Does it save resources and energy?

Is it useful? Does it work well? Is it easy to understand? Is it practical? Can it be manufactured well?

Is it beautiful? Is it elegant? Is it aesthetic? Is it clear & distinctive?

Is it interesting? Is the idea thought-provoking? Is it original? Is it unique? Is it innovative? Clever? Brilliant? Ingenious?

The online network for eco-designed product & packaging solutions BEYONDPLASTIC.NET is a global initiative dedicated to reduce the use of single-use plastic products in order to decrease plastic pollution which is littering landmass, entering water streams and presenting an increasing risk to human and environmental health worldwide. It was launched in 2019 as a politically and commercially independent online platform for environmentalists, packaging designers & engineers and companies to present and exchange ideas, concepts and products of eco-responsible solutions replacing plastic packages. It is initiated by Ulrich Krzyminski - entrepreneur, engineer & inventor who has an industry insight in the printing & packaging industry.

AND THE NOMINEES & WINNERS ARE ...

The following Entry texts were supplied by the Award Entrants. We have only made minor editorial modifications in some cases to correct syntax or enhance comprehensibility.

ENTRY TITLE OVERVIEW

MOST INOVATIVE APPROACH

MOST PRACTICAL IMPACT

ENTRY TITLE OVERVIEW

MOST BEAUTIFUL SOLUTION

BEST INITATIVE

Let us design and create
eco-responsible products & packages
and thought-provoking artwork.
Let us reduce single-use plastic and
start a product & material renaissance!

ENTRY WORLD MAP

MOST INNOVATIVE SOLUTIONS

In this category, we present solutions for a world with less plastic which are novel, clever, unique, brilliant, inventive, edgy, visionary, offbeat, creative, cutting edge, thought-provoking, ground-breaking, out-of-the-box, above & beyond, progressive, forward-thinking and trendsetting.

Device for the Removal of Microplastics From Water

GOLD AWARD WINNER

Fionn Ferreira, Netherlands
Stress Engineering Services (SES),
Andy Palsule, Anne Marieke, Christopher Matice,
Paul Errigo, Harbinder Pordal

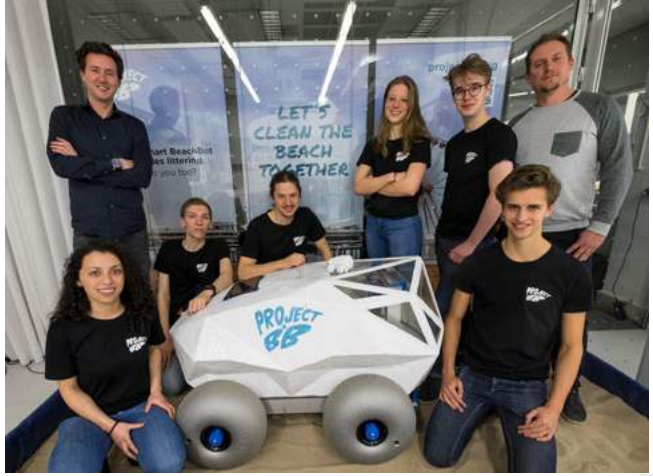
WEB

THE PROJECT Microplastics (MPs) are particles of <5mm originating from: (a) microbeads used as exfoliants in various products; (b) clothing microfibers; and (c) degradation of larger debris. MPs are increasing in global oceans, freshwater, soil and atmospheric environments. An estimated 15-51 trillion MP particles have accumulated in oceans. MPs threaten food safety and health as they pass through drinking water purification systems. Recent studies that collectively analysed 435 bottles of water and 40,000 litres of tap water all showed some level of MPs. MPs enter the food chain through particle-feeding organisms until they are finally ingested by humans.

We have engineered a liquid polarity-based approach to extract all forms of MPs from water, including nanoplastics and microfibers. Water enters our device and is poured through a plant-based oil phase. Due to the polarity of water and the non-polarity of both MPs and oil, the oil attracts and traps the suspended MP particles. The device maintains a constant water / oil level and can accept a large quantity of MPs (~100% of the oil mass). MP-saturated oil is replaced with fresh oil. The saturated oil can be reused after separation of MP particles.

The novel approach is fast, offering extraction rates >80% at a water-oil contact of merely 1-2 seconds; more contact with oil could yield higher extraction. It is flexible and can be deployed onto both freshwater and saltwater streams without the need for high pressure used in current practise. The absence of filtration grids or sieves means it doesn't easily clog. The device poses minimal environmental risk and does not interfere with other suspended solids such as in river water or wastewater entering coagulation plants, and oil losses are minimal.

ABOUT The inventor is a 20-year-old Chemistry student at the University of Groningen, Netherlands. His accomplishments include the Grand Prize Global at the Google Science Fair 2019; National Geographic Young Explorer; Forbes 30 under 30; and Straubel Leadership Award. He founded the startup Fionn & Co LLC in the US in 2020 with the commitment to solving the plastic pollution crisis through science and innovation. The company has been supported by grant funding from Robert Downey Jr's Footprint Coalition. He is passionate about solving the microplastic problem due to his childhood spent on the coastline of Ireland.



Human-Robot Interaction for a World Without Plastic Litter

THE PROJECT A human-robot interaction concept to stop waste leakage at the source. BeachBot (BB) detects small litter and needs your help to detect even more.

We present a swarm of robots that collaboratively hunt for litter. Originally called BeachBot and MAPP (www.project.bb) they are designed to operate in outdoor areas, like beaches and parks. Our robots are programmed with artificial intelligence which enables them to efficiently map and collect litter, detecting and acting at the same time.

By using our gaming application, anyone with a smartphone can contribute to improving the litter detection algorithm and basically make the robot smarter. The process is simple: the robot scans the area and collects litter images. Each raw image is then added to a database which forms the input for a labeling game where humans can match images with the right type of litter. This way, the initial detection is verified by a reliable (human) source.

A win-win formula since (A) the detection algorithm will be improved enabling the robots to perform their task autonomously over time and (B) increased human awareness on the effects of littering will contribute towards a changing mindset and stop waste leakage at the source. In a nutshell: a human-robot interaction concept and data management approach to bring true impact to the environment.

ABOUT Edwin Bos savored the idyllic scene: blue sea, brilliant sun, and his two small children frolicking on Scheveningen Beach. Popular with tourists and locals, the 4.5-kilometer stretch of the Dutch coast is filled with aquatic wildlife and grassy dunes. But for Bos, all that beauty quickly faded amid one tiny discovery. It happened as his son, then 4, dug into the sand and raised his hand to show his father a fresh find. “What do I do with it?” the boy asked. In his fingers, he held a cigarette butt. “Not good,” the father thought.

Turned out, cigarette butts littered the landscape. Bos instantly realized some things. First, cigarette butt filters won’t tear down and break down into microplastics. Secondly, beach visitors needed to change their ways if they thought stuffing used filters in the sand meant the nasty scraps were now harmless. Thirdly, he would find a way to help solve the problem. Two years later, Bos and fellow entrepreneur Martijn Lukaart have built a mobile, beach-cleaning machine that can spot cigarette butts, pluck them out and dispose of them in a safe bin. Bos and Lukaart are the co-founders of TechTics, a consultancy based in The Hague that works to resolve social issues with technology.

SILVER AWARD WINNER

Project.BB, Netherlands
Edwin Bos, Robin Lehmann, Martijn Lukaart, TU Delft incubator & RoboValley, supported by consultants, volunteers, interns and master students of TU Delft

WEB **INSTA**

LINKEDIN

Growing with Sprout

BRONZE AWARD WINNER

Patricia Mangulabnan, Philippines
Design Center of the Philippines (DCP)

WEB **INSTA**

THE PROJECT Sprout is an innovative environmentally-friendly packaging design that may contribute to the growth and flourishing of local plants in an area. The design is interactive; it can be planted after use, as well as can teach the consumer about different native flora. The concept also includes an interface/application (what the QR code is for), which guides the user on when, where, and how to correctly plant the used packaging depending on the seeds. The design of the interface would let people know where they have already made an impact by planting their Sprout, further challenging and motivating them to continue Sprout's mission. Due to its plantable feature, the packaging does not end its life right after consumption; its purpose continuously changes before, during, and after use.

The project is made possible by carefully researching and selecting (non-invasive) seeds, and embedding them in the Pinyapel material, a specialty paper made of discarded pineapple leaves (the result of an initiative led by the Design Center of the Philippines). Sprout packaging also includes a protective edible wrapper for the food inside, mainly using rice paper, making the entire product biodegradable and compostable. This helps address the issue of agricultural waste accumulating in the country, especially since the Philippines is one of the largest producers of pineapple fruit in the world.

Through the use of design, consumers can interact better with the product, giving them a sense of fulfillment and responsibility, as well as reinforce a positive behavioral change to further avoid littering and other harmful habits that contribute to the destruction of the environment.

ABOUT I grew up with a strong love for the environment. Even as a child, I felt the responsibility of having to care for and look after Mother Earth. There was a certain pull I had to nature and the outdoors, which further developed into me becoming much more curious and adventurous. I then started hiking and exploring some mountains in the Philippines.

Later on, I realized that my hiking trips were not only a form of leisure anymore but rather a mission. Encountering abused trails with littered trash happened more often and started to become more alarming. I was also able to conduct an interview with some mountain guides, who said that they had to gather and pick up the trash after each week or so. With proper research, I was able to come up with Sprout, a product that not only reduces unnecessary waste but also helps build a connection between the consumer and the environment.

Sprout may have started as a concept to help preserve Philippine mountains, however, the possibilities are endless. This project may further expand not only for outdoor enthusiasts but even to those at home. It could even be applied to groceries or fast food and help grow indoor plants and community gardens. Hopefully, it will be able to make a change in today's reality.

Bacterial Cellulose And Eggshell Snack Packaging

Made from abundant resources that would normally go to waste to create this beautiful packaging material. Learn more about the Brazilian project on page 103.

Biotic – A Growing Material Archive

Lionne van Deursen, Netherlands

WEB **INSTA**

THE PROJECT “Biotic” is an ongoing material research to the possibilities of a biologically grown material. In this project, microbes are used to grow a biological material that is made of bacterial cellulose. Bacterial cellulose is made using yeast and bacteria in a fermentation process. The bacteria are feed by sweetened green tea. During this process, bacteria spin nanofibers of cellulose and produce a layer on the surface. When this layer has dried, it becomes a solid material that has comparable properties to leather. The material, that living microorganisms create is biodegradable, strong, and has high flexibility.

During the growing process, nuances arise in the material which influences the translucency of the dried material. The thickness of the material is variable and can be easily changed during the growing phase. The material will be stronger and thicker by longer growth in the liquid.

The goal of the project is to show the possibilities of this material and design within the properties of the material. The material, in the wet and dried phases, has various material properties. For example, when the material is still wet, a texture can be applied and when the material has fully dried, the applied texture is still visible in the material.

The color can also easily be changed due to the high absorption of the grown material. After the growing process, the studio experimented with different natural plant dyes and dyes made from fruit waste, to see how these dyes can affect the color and texture of the material. The experiments resulted in a collection of fabrics with different colors, translucency, applied textures, and patterns.

ABOUT The beginning of this material research started during my graduation project. After my graduation in 2019, I started Studio Lionne van Deursen to develop this material further. The main goal of the studio was to develop sustainable products with materials that are not harmful to the environment. For this reason, I started a material study of this grown material made by living microorganisms.

As a designer, you have more responsibilities when it comes to sustainability. I wanted to use material from local resources, I could easily produce in my studio, so no other supplier was needed. In the studio this organically grown material is developed and each product is handmade. By applying new techniques, new materials can be created which can replace conventional materials.

It’s not only about sustainable materials but also about the use of a sustainable production process. During the design process, the material is used as efficiently as possible, leaving minimal waste of the grown material. The grown material is only dyed with natural pigments and dyes obtained from fruit and vegetable waste. Not only dyes from waste are used, but we also use dyes made from different types of fruit from our garden.

FōM With PolyRenew

THE PROJECT In September 2020, FloraCraft announced the first craft and floral foam product made with post-consumer plastic. FōM is the first true innovation in this market in more than 70 years. The new product saves hard-to-recycle plastics from landfills by using recycled garment hangers sourced from retailers across the country.

FōM was a result of more than a decade of research and development with significant multi-year capital investment, including the company becoming vertically integrated. FloraCraft now designs, engineers, and produces its own extruded polystyrene, or XPS, from its Ludington, Michigan headquarters, allowing it to maintain greater control over the quality of its products. During the process, the company added 42 new jobs. FōM enables the company to offer a “greener” product to its consumers, who have expressed a desire to use products that have been responsibly made. By using recycled materials, the company can still make the same amount of product it normally does, but takes out the equivalent of nearly 1,000 miles of plastic, or the distance between New York and St. Louis, per year. By producing its own XPS in-house, FloraCraft also reduces nearly 400,000 miles of truck traffic each year from its former supplier to its headquarters.

According to extensive consumer testing, the product is still the lightweight material crafters and florists love, only smoother and less brittle than the company’s legacy foam, making painting and cutting easier while producing less dust.

ABOUT As the industry leader, FloraCraft feels it has a responsibility to continually challenge the way things are done. The company has a long history of committing itself to sustainability by recycling more than 98% of its foam fabrication scrap. The scrap material is collected and reused in other FloraCraft products or sold to companies that utilize recycled materials. As an innovation-based manufacturer, FloraCraft is continually looking for ways to improve its sustainability efforts and remain an independent, locally owned, and operated Michigan company.

After more than 40 years of using STYROFOAM™ Brand Foam, the team set two goals: to harness greater control over the quality of its products and operations, relying less on suppliers, and being able to “control FloraCraft’s own destiny,” and to create a more sustainable craft and floral foam product with post-consumer plastic. Schoenherr, CEO Eric Erwin, and the FloraCraft team didn’t stop there. The company wanted to find a better way to produce its craft and floral foams in a more sustainable way. The company turned to Texas-based Americas Styrenics, or AmSty, a leading producer of polystyrene and styrene monomer, to develop the “recipe” for the new XPS product. After nearly two years of development, FloraCraft and AmSty engineers were able to create a new class of XPS by utilizing AmSty’s “polyusable polymer,” called PolyRenew, made from recycled plastic garment hangers from retailers.

FloraCraft, United States
Toni Swanson, Eric Erwin, FloraCraft’s extrusion team (lead by Phil Gable), the product development team at Amsty, Jamie Sutton, Amy Steidl Olson

WEB **YOUTUBE**

WaxCapx

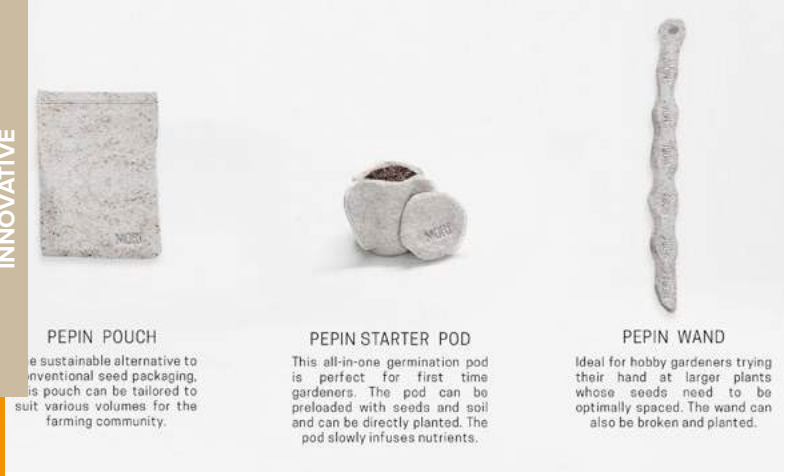
THE PROJECT My product is a reusable Tyvek fruit bowl that extends the life of your fresh fruit using the natural essence of beeswax. When the fruit ripens, it releases a gas called ethylene. Beeswax is a natural ethylene absorber, hence slowing down the degradation process of fresh fruit in a domestic environment. This product is based on the previous research about fruit and vegetable consumption increasing due to more visual exposure. The Tyvek and beeswax fruit bowl design is targeted at parents/guardians who do the food shop and want to encourage their households, especially their children, to eat more fruit and vegetables. This bowl will extend the life of the fresh produce they currently buy and allows users to visually keep track without overbuying, which in turn reduces wastage.

Alternatively, this product can also be applied to a commercial atmosphere (Sainsbury's/Asda/Lidl) and be used as an alternative to plastic packaging in stores, by helping to revert back to loose fruit and vegetable storage, instead of pre-packaged and pre-cut produce. The fruit bowl design can be used domestically or within a retail environment. In addition, the implementation of the beeswax pellets will also extend the shelf life of fresh produce, likewise how it extends the life of fresh produce at home.

ABOUT My initial research began with a range of observational testing and prototyping with different materials and playing with the beeswax. This was a research-led project about how natural techniques and materials can extend the life of fresh produce, in order to eliminate excess plastic packaging in stores. Also, by extending the journey of in-store packaging to domestic packaging all in one journey. I witnessed my mother using a kitchen "hack" to extend the life of her banana bunches at home by covering the stalks with foil or cling film, after unwrapping them from the plastic packaging. I wanted to break the divide between in-store packaging and at-home packaging, being two separate things. I wanted to combine them but also use a material that extended the life of the fresh fruit and veg all in one go. Through testing with biomaterials like Lugae, I came to the conclusion that this problem could be solved with a range of products from the same collection. That being I focused on one of those items being a postable Tyvek beeswax bowl which users could assemble at home and reuse multiple times to extend their fresh produce to make more use of their weekly shop and decrease excess wastage. I aim to continue this line and use my initial research to perfect the design even further.

Gurjit Choda, United Kingdom
Teachers/Mentors: Sam Johnson, Nadine Bennett, Erin Deighton, Andrew Mars

WEB 1 **WEB 2**



PEPIN – Pods Seeds Need

THE PROJECT Background about PEPIN – Eggshell-based seed packaging pods. The management of large amounts of eggshell waste annually produced in the world is problematic and this contributes to pollution, as it is disposed at landfills resulting in odor production and microbial growth. This bio-waste can be tapped into as a resource instead, and that is where our idea of creating a value-added product with eggshells came into existence. We intended to create a bio-based packaging material for vegetable seeds (therefore doing away with single-use material), which could store and protect different varieties of seeds from farm to consumer, and disperse desirable micro-nutrients in controlled quantities to help the seed/sapling grow well in whatever soil it is planted.

The process of making the pods involved the following steps: Initially, the eggshells were ground to fine particles and mixed with dehydrated and powdered garlic peels along with a natural binder. After the mixture turned pliable, it was poured in a mold, shaped, and then placed in the freezer. The pod was then removed from the mold and air-dried for 3 days. The final step involved coating the pod with a layer of plant-based wax which made it hydrophobic in nature, therefore enabling it to protect the seeds within from wetness/moisture.

How PEPIN works: The seeds can be packaged in the “PEPIN” pod and the user simply has to push it into the garden soil and add water. In a matter of a few weeks, plants will begin to grow. PEPIN degrades gradually in the soil providing the essential nutrients from the eggshells (rich in calcium carbonate) and the garlic peels (rich in potassium and magnesium). What is left behind is a beautiful set of healthy plants and absolutely no waste! This is what we describe as a truly circular solution!

ABOUT When a material researcher and two product designers met one day and shared our mutual love for Captain planet, we knew that we wanted to emulate the planeteers and save the world from plastic pollution! The answer of how-to came from our time spent in the kitchen during the pandemic, and we discovered the possibilities of using eggshells that otherwise would have landed in the bin. Since then, the MORF team has been on a relentless quest to innovate beautiful products that are not just made from eggshells, but which are also a real alternative to single-use plastics: versatile, non-toxic, and compostable. Our idea for seed packaging was born out of the need for a simple yet effective solution for home compostable packaging which is the most ideal end-of-life option. This gave rise to PEPIN seed pods, which is french for “seed” and is our humble attempt at trying to mimic seed “packaging” found in nature.

Trupti A Studio Vrrta, India
Trupti Arabatti, Namrata Cavale & Sushmita Charlu

INSTA

Meal Bag

THE PROJECT The Meal Bag is an edible food packaging, with ingredients that are similar to those of paper. It is airtight and to a certain extent resistant to moisture. In hot water the compound dissolves and can simply be added to meals. As one of its main ingredients is corn starch, it functions as a sauce thickener during cooking. Just like bread it is a supplier of fibre and energy. Therefore, the packaging becomes part of the food chain instead of a hazardous material. The material is edible, compostable, it weathers within a short period of time, it can be renewed and recycled. Therefore, plenty of possibilities to a closed cycle of materials are offered while at the same time being able to act spontaneously.

Alternative shop concepts, such as zero waste shops offer valuable guidance to a packaging free daily life. Unfortunately, for many people this concept cannot be easily integrated. It requires advance planning as well as bringing along suitable containers for loose foodstuffs. The Meal Bag steers a middle course. It dispenses, protects the content from external influences and is airtight. Due to the fact that it is edible, it can be exploited after its first use. Before being processed, it is simply washed, just like vegetables and hence, forms the basis e.g. for sauces. Consequently, sustainable consumption can be implemented spontaneously. The consumer decides on how to close the material cycle. Important is that the contained components can circulate after its first use for the growth of new material. The concept of the Meal Bag can contribute to a further rethinking of one's attitude to packaging as well as an increased appreciation of materials. The environmental awareness of those who cannot take the time for change can be increased.

ABOUT I did not have a specific goal. For me, the question of the matter and how we encounter it as people was decisive. The idea of the Meal Bag is only one of many conclusions. Thought models, material research, market research, as well as theoretical discussions with the subject matter helped me. My extensive research on the substances of the developed materials as well as the theoretical consideration of the concept of matter manifest themselves in the Meal Bag.

According to the Federal Environment Agency, in 2017 approximately 107 kilograms of packaging waste were accumulated per private person. Only 49,7 per cent of the plastic packaging was recycled. Despite, it seems that particularly in the food sector more and more plastic packaging has been used. Used plastic packaging made from fossil fuels is a danger to entire ecosystems. Although a part of it is recycled, the bulk is often incinerated or shipped, with the materials finding their place on huge mountains of rubbish or ending up in the sea. All too often packaging waste ends up carelessly in the nature and has a negative impact on the environment. Even in the case of materials, such as vaunted bioplastics (e.g. PLA) the complete decomposition in the wild can take up to 80 years. Only special bacteria cultures in industrial composting plants are able to exploit the substances quickly.

Amelie Graf, Germany
Mentors @ University of Arts Berlin: Prof. Axel Kufus, Prof. Holger Neumann, Prof. Dr. Kathrin Busch

WEB 1 **WEB 2**

INSTA **SPONSOR**

Eggshell Ceramic

Laura lives in the country that is the world's largest egg exporter. In her project she makes use of this valuable waste. Learn more about a material that looks like ceramic and weighs as much as cardboard on page 101.

Ohmie – The Orange Lamp

THE PROJECT Ohmie The Orange Lamp is the world's first desk light 3D printed from orange peels. By transforming Sicilian orange peels into a 100% natural and compostable lamp, this product combines design and sustainability in a totally Made in Italy supply chain. Born from a Circular Economy paradigm, each lamp addresses the problem of over-exploitation of natural resources, decreasing the amount of waste sent to landfills and the need to use virgin materials for the creation of new products.

Ohmie presents itself as the proof that design can be both, sustainable and high-quality, broadening as well the array of experiences one and can get from a lamp: Ohmie indeed is patterned with a unique texture and has a delicate smell of orange, reminiscing of natural sensations.

ABOUT Design and Eco-design have been running on two separate tracks for too long and in Krill Design we believe that there shouldn't be a difference anymore. Waste and climate change and two massive issues of our time and innovation is much needed, in order to re-think how we produce.

Ohmie promotes innovation of materials and production methods, thanks to 3D printing, the technique used to create The Orange Lamp, makes it possible to create products that are light, both visually and in terms of weight, and avoid any form of waste during production.

Ohmie is much more than a product: it is the symbol of a renewal that can bring greater synergy with nature into everyone's lives.

Ohmie, Italy
Ivan Calimani, Martina Lamperti, Yack H. Di Maio

WEB 1 **WEB 2**

INSTA **FACEBOOK**

Veil Stool

THE PROJECT Proposal: The Veil Stool is made from over 4,000 disposable face masks collected from the streets of London during the Coronavirus pandemic. On collection, the face masks were disinfected with ozone spray and quarantined in sunlight for 4 weeks. The stool was created on an experimental discovery that 3-ply face masks can be spun into a soft yarn as well as being melted into a dense polypropylene structure.

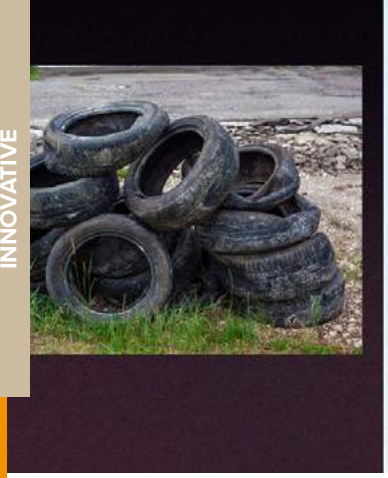
Design: The Veil Stool consists of a curved structure with a threaded yarn body that is knotted with a Smyrna technique, this sits on top of a base with 3 supporting legs; highlighting both the strength and softness disposable face masks can be formed into.

ABOUT Problem: The amount of plastic waste being produced due to the Coronavirus Pandemic is shocking. Despite reusable alternatives, billion's of face masks are being used each month; these are often ending up in landfills or littering our environment. According to National Geographic, Globally, we use 129 billion face masks every month. That translates to 3 million per minute.

I discovered I could make face masks into a yarn early on, so originally I aimed to make a rug. It was only later on in the process when experimenting with a heat gun that I realized face masks could also be melted down to make a very strong and dense plastic, that was when the entire project changed direction and into designing a stool that used the mask in both its soft form and solid form.

Joe Slatter, United Kingdom

WEB



Bando Jacket

THE PROJECT Developed to protect motorcyclists in traffic accidents, circulating discarded materials such as tires, inner tubes, truck tarpaulins and scraps of resistant fabrics such as Jeans and Jeans.

As a way of thinking beyond the obvious and reusing materials, giving new meanings to solutions and creating new concepts for old problems, Jaqueta Bando was developed to solve the real need for lack of protection for motorcyclists in a practical and cheap way. Impact protection points use car and truck inner tubes as well as wireless pneumatic rubber. The jacket also has luminous details on the arms and back, to give greater visibility at night.

ABOUT Where do old tires go? This was the starting point for the development of this project. At least 450,000 tons of tires are discarded every year in Brazil alone, a number that does not stop growing, as does the number of accidents suffered by motorcyclists.
Jaqueta Bando was designed to provide a sustainable, practical and direct response to these two major problems

Rafael Alves Monteiro, Brazil

WEB

Quenched Asbestos

THE PROJECT *What?* Insulating tiles and breeze blocs made of local clay and treated fiber-free asbestos.

Why? Asbestos is a naturally occurring silicate mineral. Before discovering its toxicity, it applied to several building sectors, especially for the high heat resistance. In the 90s, asbestos was officially banned in the EU, but still, nowadays, 30,000 people contract diseases linked to asbestos every year. Meanwhile, despite the adverse consequences of the inhalation of asbestos fibers, many developing countries still support its use. Only Russia produced approximately 790,000 tonnes of asbestos in 2020. The materials containing asbestos are dug in the ground, leaving dangerous toxic fibers in the landscape. Without treating asbestos, it stays the danger for the workers in the landfills and the people living nearby, while the landfill mining of wasted precious minerals is prevented. The costs of maintenance are way higher than the treatment of asbestos. Aiming to eradicate asbestos, in 2014, the EU parliament stated the urge to treat the material, defining the dumping as a mere postponing of the problem.

How? The material research repurposes the safe byproduct of the treatment of asbestos as a clay filler for architectural and design ceramic applications. On the one hand, it recoups waste coming from an unwanted stigmatized material; on the other, it decreases the amount of mined clay used in the paste by 50 %. After the treatment, asbestos partly keeps its heat resistance, adding insulating properties to the clay.

ABOUT The project originates from the potter's wheel. Used as a forensic tool to feel the clay, it was applied to investigate the origins and the processes of this common earthy material. The wide distribution of clay often makes forget the ecological consequences of its extraction. While exploring the controversial effects of making, I started looking for alternatives to lessen the amount of clay used for ceramic products in architecture – the biggest mining cause. As a result, I started researching the available landfill waste, discovering the wide past and present use of asbestos and the problems it causes in the landscape, even after being removed and dismissed. The research led me to discover the work done over the treatment of this deadly but fascinating mineral and to finally collaborate with a research center in Rotterdam to try out the possibilities of the safe byproducts of the process.

Benedetta Pompili, Netherlands
Henriette Waal, Marina Otero Verzier, Jesse Howard, Dick Van Hoff, Stephane Barbier Bouvet, Asbetter Acids, Wetering Clay Services, Sunday Morning EKWC.
Thanks to Design Academy Eindhoven and Luciana Coccioni for the support.

WEB **INSTA**

3D Printing from Coffee Grounds

THE PROJECT One of the most common plastics for 3D printing is PLA – arguably one of the most eco-friendly polymers to print from, as it can be made from entirely bio-derived sources while also being certified compostable. It is also readily mixed with other additives if they are ground into fine particles, which allows you to incorporate other waste products into the polymer matrix. One such material would be spent coffee grounds, which exist in massive quantities as coffee is one of the most widely consumed beverages in the world. I work for a company that creates machines that allow users to break down waste plastic and then extrude it into filament, which is the feedstock for desktop 3D printers. After finding a research article exploring the use of SCGs in PLA, I decided to use our machines to try making my own, using the spent coffee grounds from our office coffee maker. After successfully creating filament, I used one of our 3D printers in the lab to make a variety of objects, including espresso tamps, planters, and a watering can. The PLA with SCGs is about 20 percent coffee by weight, reducing the overall amount of plastic being used in the printing process and replacing it with another waste product. It smells like coffee while the print is in process, and creates a beautiful, organically variegated texture and color in the finished product. As a feedstock for 3D printers, the possibilities for end-use are more or less endless, as anything you can model you can print!

ABOUT As someone who is employed within the industry of additive manufacturing, I am constantly amazed by the possibilities presented by this technology, but simultaneously painfully aware of the ways in which it is an industry that needs to be transformed to be eco-friendly. Currently, the vast majority of 3D printing uses virgin polymer as feedstock, which only increases the amount of plastic waste in the world- however, the technology already exists to transition entirely to utilizing the staggering amount of waste present and return it back to usefulness. At the same time, you could incorporate alternative waste streams such as spent coffee grounds or wood dust into your regrind print material. I would love to see the world of 3D printing revolutionized into an industry of eco-friendly practices through a widespread embracing of recycling practices and technologies.

Sean Miller, United States

This work was inspired by research done at Washington State University on the viability of SCG (spent coffee grounds) mixed with PLA by a team of researchers including Yu-Chung Chang, Yao Chen, Jialong Ning, Cheng Hao and others.

WEB **PAPER**

Peel Pressure Made Us Do It

Caracara Collective from Finland turns bio-waste into functional objects and created a first orange collection of hand-crafted lampshades made of prange peel. Learn more about the team's techniques and story on page 56.

Make Sustainability Sexy

THE PROJECT The car Luca is completely made out of waste materials and therefore also different kinds of plastics are made with interesting techniques to make strong materials. Luca is a fully functioning car, designed and built to show the world what is possible with materials that are considered as “waste”.

ABOUT TU/ecomotive is a student team from the University of Technology in Eindhoven. Almost every year a new team of enthusiastic students gets together to build a vehicle with a new innovation.

TU/ecomotive, Netherlands
Jop van Aken & Team Luca

WEB

Close The Loop-of-Life

THE PROJECT We are on a mission to restore nature. We invented the world's first living coffin, the Loop Living Cocoon. With this coffin, made of mushrooms, we enable people to enrich the soil and allow for new seedlings to thrive. Mycelium, the root structure of mushrooms, is known as nature's biggest recycler and it is the driving force in the earth's end-of-life cycle due to its ability to recycle organic matter and toxins into key nutrients for new seedlings to flourish. Over 92% of all plant species rely on mycelium for their survival. And the best part is that we can grow this coffin in only 7 days! The end result is a strong & reliable product that when it touches the soil reactivates and biodegrades within the ecosystem within 45 days, in which it will recovery toxins from the human body and soil and thereby increase biodiversity. Life after death. You can decide if you would like to become a flower or a huge sequoia tree. We are here to restore nature by bringing humans back into the cycle of life in the most natural way. Are you waste or compost?

ABOUT Even when we die we leave a scar behind: our current deathcare processes result in large scale material-depletion, CO_2 emission, and soil pollution. We see ourselves as waste, but aren't we supposed to be beautiful bags of composts? Yet unfortunately not right now. Because the World Health Organization stated that humans pollute the earth when they die. Due to our modern lifestyle, our body contains 219 chemicals. Research even has shown that our cemeteries need to be considered as landfills, while nature's cemetery is a healthy forest. Shouldn't it be ours? Therefore we have grown the World's First Living Coffin made from mycelium, which enables humans to no longer pollute the earth but actually feed the earth.

A coffin that is completely biodegradable in only 45 days. Within the soil, it will reactive and will recover toxins from the human body and soil and thereby increase biodiversity. From Landfill to Forests.

Loop Of Life, Netherlands
Allard van Hamersveld, Bob Hendrikx,
Iza Bergman, Charles de Monchy

WEB **INSTA**

ARTICLE **FACEBOOK**

Building the Future With Shit

THE PROJECT Dung-se = made with Dung is Hindi. Dungse is a regenerative company that has innovated biobased composite materials with cow-dung. We use cow dung as a raw material to design and develop new materials and applications for different markets. We combine indigenous knowledge about cow dung with systemic design, material research, and modern techniques to create new alternatives for the markets that use scarce natural materials, emit greenhouse gases and have a big negative impact on our (natural) environment.

ABOUT Cowdung is becoming a big environmental problem in the Netherlands and the world. In the Netherlands, there is annually approximately a surplus of 30 million tons of cow dung from the dairy farms. Next to other emissions that are directly produced by the cows, this surplus is responsible for emissions of greenhouse gasses, ammonia, pollution of soil and water streams. Dungse uses cow dung as raw material to design and develop new materials and applications for different markets. This creates possibilities to utilize the surplus in big amounts and contribute to lowering the negative impacts of the surplus cow dung.

In 2019 Studio Carbon and Studio Lindey Cafsia started tinkering with different possibilities to use this raw material with a great ancient history for a modern design application. This resulted in the creation of 16 different potential composites, each with 50% or more Dung as raw material, creating alternatives for plastics, virgin wood, and stone materials. This makes Dungse composites a great alternative material to be applied in product design, interior design, and construction.

Apart from using an available material that doesn't require any energy to mine, cow dung also has great properties such as lightness, hydrophobicity, and insulation capacity. These are very desirable properties for the markets, making it even more interesting to be used as a futureproof material.

We've showcased Dungse in different exhibitions in the Netherlands and abroad and learned that contrary to our thoughts, cow dung has a big social acceptance among consumers. So we are ready to build a future business with Shit!

Dungse, Netherlands
Studio Carbon & Studio Lindey Cafsia

WEB

BetaWare

THE PROJECT BetaWare is a material made of sugar beet cellulose and molasses, which is vegan and honestly compostable. These are by-products of sugar production, so no additional land is used for the consumption of goods. After intermediate use, the material can be returned to a natural cycle. The material was developed through intensive research and a large number of trials, including successful injection molding tests. Products were designed that are versatile and demonstrate processing methods. In the context of resilient, honest, and sustainable design, a future-oriented design approach was created.

ABOUT BetaWare consists entirely of renewable raw materials, can be honestly composted or energetically recycled in a biogas plant and then used as fertilizer on the field. Series production, adapted to the available quantity and with low-complexity tooling, should reduce costs. Injection molding is a very interesting process for these goals and opens up many possibilities. Transport distances are minimized and renewable mono-material is used. Through an intermediate use, coupled production can save energy and resources, be produced regionally, and be returned to further use after consumption. it was important to me that many of these points are fulfilled, such as regional, compostable and recyclable. So that a sustainable approach can emerge.

Lara Weller, Germany
Advisor: Katrin Krupka, Sarah Böttger

WEB **INSTA**

DELEREX – Waste Lenses Made Into Glasses

THE PROJECT The eyewear industry produces a huge amount of hidden waste. Unlike the fashion industry, in eyewear very little is told about the pollutive production and supply process.

In the past couple of years, I have been building a system to turn eyewear waste into new eyewear. In addition to the practical challenges of taking waste and recycling it I had to face a closed, relatively small industry where most of the power is centered around people whose interest is to keep these facts hidden from consumer and regulator eyes.
I am delighted that after countless searches and attempts I was lucky to meet industry figures who were brave and realistic enough to collaborate with me and support me in finding solutions to some of the most wasteful steps in the supply chain of eyewear.

ABOUT Soon after I started to design eyewear I witnessed the amount of waste the process of making and selling glasses involves. Not many people know how much plastic is being thrown away before they get to take a pair of spectacles home from a shop. For me, the most shocking wastage happens around the lenses. For several reasons, each pair of glasses on display for sale has clear non-prescription demo lenses in it. Once the pair is sold these demo lenses are replaced with bespoke lenses made for the client. All the demo lenses, all over the world, find their way to the landfill. On a national and global scale, this is an enormous amount of virgin plastic that contaminates the environment. For me, it's free material to work with. I set up a collection system, working with local opticians, to bring those demo lenses to my studio (using zero or low emotion transportation) where I turn them into DELEREX™.

Developing DELEREX™ sheets was a 2-year process that started in 2018. DELEREX™ is a translucent white material, shot with iridescent blues, greens, and pinks. It is made entirely from discarded lenses, using no glues or bonding agents. The iridescence comes from the lens's anti-glare coating, which is split in the production process. This precise process involves repetitive, and accurately measured techniques. And to close the loop, I make my new eyewear frames from it.

Yair Neuman, United Kingdom
My beautiful partner Caroline Jacob

WEB 1 **WEB 2**

INSTA

The Dissolving Bottle

Bottles for hair. Bars for the body. By changing a simple shape, a team from the Philippines wants to change the consumer mindset. Here comes The Dissolving Bottle for your hair. Learn more on page 102.

Surfing on Seaweed

Charlie Cadin, United Kingdom

INSTA

THE PROJECT About 45 kilos of sea lettuce was collected from the low-tide mark, washed in fresh water, and left in a rocker mold to dry. More was added and compressed, producing a paper-mâché-like material. From these sheets, the deck, rails, bottom, and skeleton were cut out. The stringer and ribs were slotted together, then bonded to the bottom sheet of the board. The top of the ribs was shaped with a curved top to allow for a convex deck. Rails were cut, shaped, and fitted to the board and the deck was strapped to the board. As the sea lettuce dries it turns a translucent-white color, creating an effect similar to that of a stain-glass window, only using sea lettuce. To prevent the seaweed from dissolving when in contact with water, the board was glassed using the standard 6+4 6 schedules used on all fish/mid-lengths around today. The finished board comes out at 6'4 x 21" x 2.3/4" with a weight of 4.2 kilos. With a subtle concave transitioning to a vee in the tail and soft rails flowing into hard, the board flows smoothly down the line and goes from rail to rail comfortably. We did a huge amount of testing with the board, and it worked a lot better than expected. The board is about half a kilo heavier than the equivalent normal board, but that provides more drive in the water. It has a very high volume and is really buoyant as it is full of air. The board paddles really nicely, and performs really well in the water.

ABOUT The island of Jersey sits 100 miles south of the UK, with the most southerly surf break in the British isles stretching 5km along the west coast, St Ouen's beach. With swell arriving on the north and south coast as well, there is almost always a wave breaking somewhere. Covered from tip to toe with tourists and holidaymakers in the summer months, the beaches lay empty in winter with only a handful of surfers in the water. However, from May to September the Island has a significant problem.

Sea Lettuce, an invasive species of seaweed, covers the entire beach from the water's edge to the sea wall. The lettuce cloaks the local seagrass, disrupting the ecosystem in the bay. As the tide retreats it dries, producing Hydrogen-Sulphide gas, which has been linked to injuries across France in the disposal of the seaweed. I wanted to see if it was possible to make something constructive and positive out of it. Through shaping boards from polystyrene I have seen how much waste is produced, almost the same amount of material as that which goes into the board. Instead of taking a large block of material and carving and shaping down, the aim was to build up from scratch, only using the minimum amount of materials required. Polyurethane foam- the core material of 97% of modern surfboards is made from petrochemicals; a non-sustainable resource. In the manufacturing of a normal surfboard, approximately 250kg of carbon dioxide is produced, which would take a single tree over 40 years to offset. The Sea Lettuce completely replaces the harmful foam made from essentially burning oil, and has the same amount of fiberglass as a normal board.

Pinetastic Fare

THE PROJECT Rural hands pick pine needles = sustainable products = reduce forest fires

We address the burgeoning problem of forest fires in Indian Himalayan regions that cause vast destruction and loss of precious flora and fledgling fauna. We lift pine needles from the Himalayan region via micro self-help groups and convert them into raw material grades and then into products for tableware, hygiene, horticulture, and decor use. We have discovered that pine needles have antimicrobial properties. Our soil degradable product applications are very popular and are attracting B2B packaging applications as well. We are deeply committed to the idea of bringing sustainability into everyday use and are using all possible channels to turn the tide.

Our work has been appreciated by the Government of India for preventing the destruction of charismatic plants, loss of soil quality, displacement of animal communities & massive emissions and was showcased at the Change Now Paris Summit 2021.

ABOUT Growing up in Himachal Pradesh/Uttarakhand in India, I have been witness to many forest fires which are caused by the volatile compounds within the pine needles shed from the genus pinus roxburghii. It occurred to me that if there were industrial viability to the act of utilizing pine needles in everyday products, there would be automatic economic traction and hence the minimum layer of dry inflammable needles would be extirpated from forest sites and it would bring employment to the bottom of pyramid classes and other people, that would be paid to pick these high altitude pine needles by hand.

Abhinav Talwa, India
Bhoomi Thakkar

WEB 1 | WEB 2

INSTA | YOUTUBE

Poseidon’s Pill Packs

THE PROJECT Poseidon’s Pill Packs from Blistr are home compostable, ocean-friendly blister packaging made from seaweed and plant materials. The material composition of the “blister well”, including alginate and agar, allows the packs to be thermoformed and mass-produced. The “blister film” is currently demonstrated by cellulose acetate and can be closed with a biodegradable bonding paste, but the intention is to source the film from a third party (for example Natureflex from Futamura) improving and testing the “blister well” first, to develop a proprietary film later. The barrier properties and tensile strength of the current combination are currently untested, but current research shows that seaweed-based bioplastics of similar composition can provide sufficient protection for pills with less demanding criteria.

Whilst bioplastics usually can’t compete with the strength of traditionally used PVC packs, the strength of the Blistr offering is increased by the innovative design, with two triangular well columns interlocking when facing inwards, to combine into a simple truss frame which also allows for smaller packs, less outer packaging and less bulk when shipped. When the material properties have been developed, the 250 µm triangular units will interlock completely and rigidly resulting in a strong, dense, and efficient packaging looking very similar to a truss bridge.

ABOUT The world is working hard to drastically reduce or eliminate single-use plastics from everyday life. Before Blistr was founded, we thought that there was an acceptable exception to this – medical waste. As Directors of The London Animal Hospital, we saw first-hand the amount of plastic sent for disposal every day and we realized – a tiny change made every day, in every hospital, could make a massive difference. We looked for something small but ubiquitous – that was commonplace in medical settings and at home – as a start point to tackle the medical waste behemoth. So, we thought: Blister Packs!

With this idea, our innovative truss design, and initial materials research, I won a place on the Cambridge Institute for Sustainable Leadership Accelerator last year and have since had offers to invest in the company, to buy the finished product, and to help develop the product. We don’t yet have an investable company, so we are still trying to find some pre-seed money, or any sort of traction to further that aim. This will enable us to go back to our lab partners in Scotland and conduct the R&D to become investable, and then to develop the product that the buyers have said they want.

Blistr, United Kingdom
Matthew Cuffe, Jonathan Cuffe, Poseidon (Muse)

WEB **INSTA**

TWITTER

A Case of Trash to Treasure

THE PROJECT UBQ Materials bends the linear model into a perfect circle by upcycling landfill-destined waste into a valuable resource. UBQ is the world's first bio-based raw material made of unsorted household waste. A revolutionary way to divert residual waste from landfills and transform it into a substitute for oil-based plastics.

Unlike traditional recycling, UBQ Materials uses the entire unsorted waste stream, including items often deemed "unrecyclable" – everything from mixed plastics, food waste residues, cardboard, paper, and even dirty diapers. For every ton of UBQ produced, 11.7 tons of CO_2-eq are prevented from polluting the environment, leading sustainability and LCA auditors Quantis to designate UBQ as "The Most Climate Positive Thermoplastic Material on the Market".

UBQ is a seamless drop-in material, compatible with most of today's standard manufacturing processes and materials. By substituting even small quantities of oil-based plastics with UBQ, manufacturers can offset and even reverse the carbon footprint of final products. As dictated by circular economy requirements, UBQ™ is a fully recyclable material. UBQ™ has the potential to not only address the waste pandemic, valorizing waste so it does not pollute — it also provides a renewable alternative material resource for the global trade market. UBQ Materials has found a solution to feed the growing demand for materials by using landfill waste, preventing emissions of harmful methane, and avoiding the extraction of finite natural resources.

ABOUT Humans discard approximately 2 billion tons of waste every year, a number that keeps growing annually. Aside from depleting natural resources, this waste – when buried in landfills – is responsible for a significant amount of global greenhouse gas emissions. UBQ was founded with a mission of answering the question, "What if there was a way to put all this waste to good use?" Coming from an entrepreneurial background and being involved in multiple clean energy projects gave Tato Bigio, UBQ's Co-Founder and Co-CEO, the appetite to come up with more novel clean technologies. Tato realized that waste is an untapped, virtually unlimited resource, and wanted to approach the challenge of how to unlock that value in a scalable way.

UBQ's motivation is to rethink the notion of waste and turn it into something good by providing a sustainable solution for manufacturers – enabling them to make environmentally sound decisions without any additional economic burden. In diverting landfill-destined waste and converting it into a novel, climate-positive material, UBQ prevents methane emissions, conserves finite resources for future generations, and directly meets the growing problem of waste buildup. By substituting plastics, concrete, minerals, and wood with UBQ, it is now possible to offset and even reverse the climate footprint of final products, and to ultimately create a world free of waste. With UBQ, waste is not the end – it's only the beginning.

UBQ Materials, Israel
Shani Jaffe, Albert Douer, Jack (Tato) Bigio,
Gil Felus, Gadi Stahl, Rachel Barr

WEB | FACEBOOK

LINKEDIN | TWITTER

Sneature – Waste-based Footwear

Emilie Burfeind, Germany
Prof. Dr. Markus Holzbach, Modus Intarsia

WEB | VIMEO | INSTAGRAM1 | INSTAGRAM2

THE PROJECT At present we live in a time when the resources of our planet are being transformed into products at a speed far exceeding the natural rate of self-renewal of the biosphere. The consequences of excessive production and consumption can be seen in the impact on our global climate. Sneakers are also among the clothing products that are often discarded after a short lifespan. The complicated construction and the use of different materials make it almost impossible and unprofitable to disassemble and recycle a pair of trainers after use. Therefore, it was examined which materials, design tools, but also manufacturing processes could be implemented to develop a sustainable trainer that is reduced to minimal components. The result of the design project is “Sneature”, which is a portmanteau of the terms “Sneaker” and “Nature”.

To conceptualize a solution, a fundamental factor for the ecological properties of every product, the material was explored. Various biomaterials were examined for their application in textiles. Based on this practical research, a biological material cycle was developed, in which the materials and production methods are integrated. The final prototype consists of a 3D-knitted membrane made of canine hair (Chiengora), a transition area made of natural rubber, and a 3D-printed sole made of mushroom mycelium. The focus was on the use of natural, renewable raw materials, the integration of functional requirements for a shoe, and the possibility of individual customization (through parametric design), engaging the user in the design process within the developed framework. The digital manufacturing processes such as 3D knitting or 3D printing enable integration into local production processes (“Microfactories”) with the lowest possible energy consumption. This also allows scalable production on demand. After its use, Sneature can be disassembled, repaired or industrially decomposed and returned as nutrients to the natural material cycle.

ABOUT In my studies with a focus on material design, I have been exploring biological materials and their implementation in products for the last few years. For me, it is an essential task of designers to develop visions for future sustainable products and to demonstrate possible solutions. This also means developing innovative material concepts that above all question current resource use and show sustainable alternatives.

Since the production of textiles contributes to environmental pollution and thus also to climate change, I felt the need to investigate alternative resources for use in textiles. Through experimental material research, I investigated different biological waste materials such as corn leaves or hair waste and considered how these could be integrated into a complex product like the sneaker. I aimed to consider different factors that are essential for the design of a sustainable product, e.g. the use of local raw and waste materials as well as rethinking production in a more flexible and decentralized way and enable participation in the design and fabrication process.

Say “Pasta La Vista” to Plastic Straws

In July 2021 the EU put plastic straws onto the list of forbidden single-use items. And here is one of the wonderful alternatives. Learn more about the pasta straw on page 66.

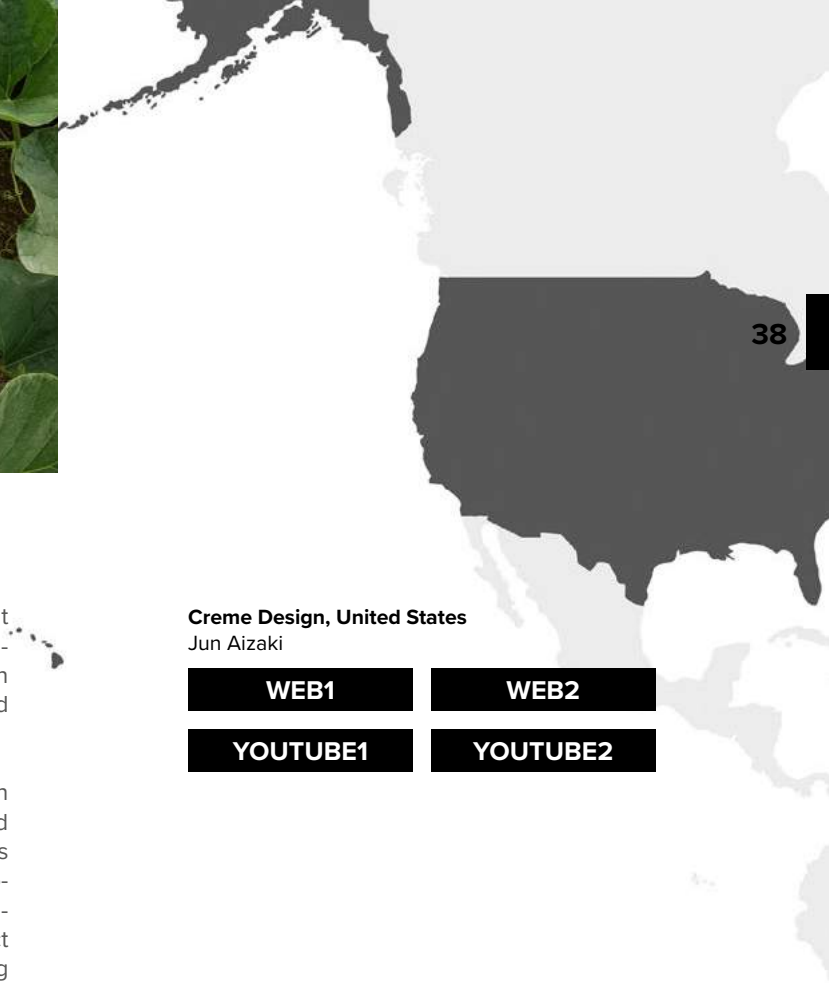
The Gourd Project

THE PROJECT What if aside from being a material resource, nature could also provide a solution for this worldwide issue? Along with the exploration that this thought initiated, CRÈME identified gourds as a fast-growing plant that bears robust fruits each season, developing a strong outer skin, and fibery inner flesh. Once dried, gourds have traditionally been used by ancestors as receptacles like cups. CRÈME explored this centuries-old craft, using molds to grow gourds into functional shapes, such as cups and flasks to create sustainable, renewable, and compostable products without waste.

ABOUT We are in an urgent need to shift our current cradle-to-grave paradigm. Take-away cups and packaging are a standard of everyday life but they produce an incredible amount of waste that ends up in landfills and contaminates our precious waterways and landscapes.

Gourds are fast-growing plants that bear robust fruit each season. Once dried, the gourds' strong outer skin and fibrous inner flesh become watertight – so these crops have been used for centuries across the globe as decorative or functional vessels. CRÈME is exploring this centuries-old craft through a modern lens to create a product that we believe can be mass-produced while maintaining its sustainability. Through the use of 3D-printed molds, we can grow gourds into customizable functional shapes, such as cups and flasks that can be composted instead of filling up landfills like the plastic alternative.

"In Japan watermelons are grown in little boxes so that they become square. It looks quirky and weird, but it makes them easy to stack and transport. The idea is giving nature a little bit of a nudge to form it into shapes that would be more functional." – Jun Aizaki, principal of CRÈME



Creme Design, United States
Jun Aizaki

WEB1 **WEB2**

YOUTUBE1 **YOUTUBE2**

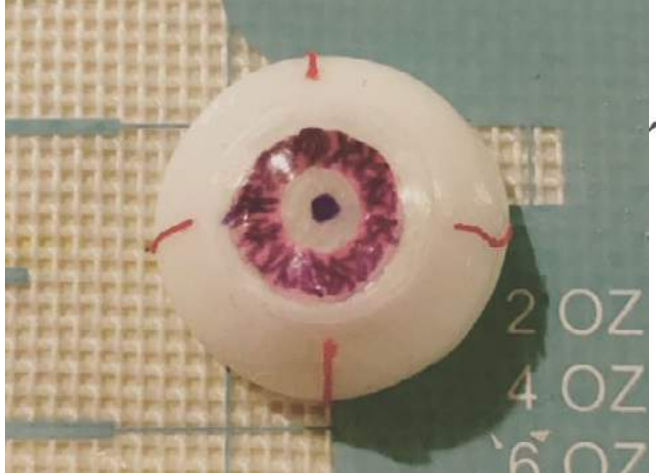
Wealth from Waste

THE PROJECT What if I told you that the clothes that you wear! The paper you throw away and the masks that you dispose of can be converted into plants!

ABOUT To arrest the dangerous dumping of hazardous used masks, an Indian green startup has come up with a unique idea: Handmade seed masks that grow into herbs when planted after use. Embedded with Marigold and Holy Basil seeds, these masks could turn into Plants.

Seed Paper India, India
Roshan Ray

INSTA **YOUTUBE**



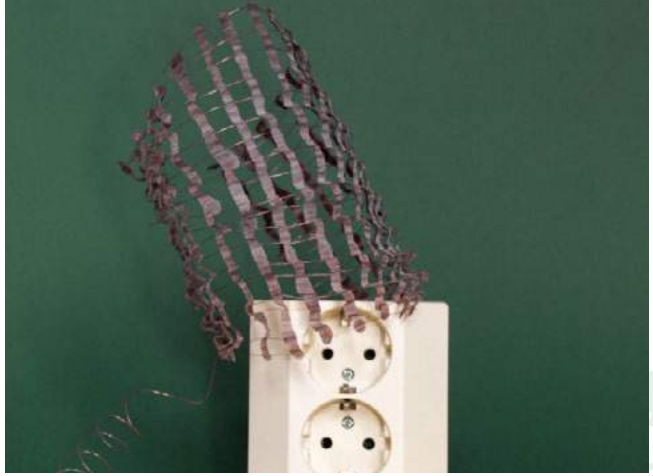
An Environmentally Healthy Alternative to Medical Education

THE PROJECT I create biodegradable human tissue and organs. What makes these ideas novel and important are the conversations and decision-making surrounding them where traditionally the manufacturing of synthetic products has been through the use of petroleum pollutants.

ABOUT I've worked in the healthcare field for over 20 years. I've seen a lot of medical waste processed through large facilities, most cannot be recycled due to medical biohazards. During my time as an educator of the medical sciences; we used petroleum-designed products to teach learners. At the end of these courses; the plastic and silicone tissues were thrown in the trash. I began to think about what happens to this waste and how I can be an agent for change.

Mark Wyn, United States
Yating Lian, FabTextiles, Materiom,
Margaret Dunne & Anastasia Pistofidou,
Dr. George McNamee

INSTA



Between_Spaces Ver. 2

Magdalena Sophie Orland, Germany
Laura Clèries, Seetal Solanki, Dr. Valentina Rognoli

WEB1 **WEB2**

INSTA

THE PROJECT My source material for the MaDe workshop was lace. For this purpose, I have mainly dealt with the specific properties of lace and, based on this, have made material experiments with natural latex. The experiments are divided into 2 groups: Pouring and extrusion, plus processing with wire.

The material natural latex is extracted from rubber plants. With a few additives it becomes an extremely elastic and resilient material. Natural latex is pourable and extrudable which makes it particularly suitable for the production of contemporary lace. For the textile and fashion industry its strong elasticity is a positive aspect. In combination with other natural materials latex offers a wide range of experiments that allow the typical appearance of latex goods to be skipped and visually redefined. Due to its transparency lace is a material that has a lot of expression and inspires the observer to make his/her own associations.

Natural latex is a purely biological product. It is CO_2 neutral, biodegradable and free of harmful substances. Thus the circularity can be guaranteed. It dries translucently and can be dyed well. The short drying time allows a quick processing. The main countries of origin are Malaysia, Indonesia and Thailand, which is a disadvantage from a transport point of view. European spurge plants could be investigated in the next step and similar properties could be generated.

ABOUT The practical master project is based on a theoretical examination of the progressive digitization of society. Their consequence in relation to the handling of textiles, as well as their development, were studied in detail. The emerging need for haptic experience and individuality has been particularly highlighted. In order to connect the scientific research with the changing textile design, the topic was mirrored on the example of lace and thus metaphorically transferred to a textile medium. Through its self-contained filled and empty spaces | Materiality and immateriality | Analog and Digital the material is a textile prime example of the actual state of digitized yet analogue society.

The understanding of lace requires an extension of the traditional rules of definition. Existing gaps in literature have been filled by those examinations and similtaniously the concept of lace has been enhanced and its significance has been strengthened. An experimental material investigation, in which the defined limits were also tested for practicality. Classic textile manufacturing processes have been expanded by the development of new constructional techniques. Temperature and pressure played a major role here. In connection with novel materials whose properties were additionally linked together, a textile hybrid form was created. The experiment gains in its strength and expressiveness through the conceptual framework of the project and is groundbreaking for the future of design.

SeeTang Collection

THE PROJECT As a result of my master's project at Kingston School of Art, I invented new biomaterials and created a collection of products ranging from the design departments packaging, fashion, and food.

The material SeeTang was designed sustainably with the intention to introduce newly invented biomaterials such as bioplastic and seaweed leather. Focused on marine conservation, these products are sourced from the sea to raise awareness about their importance to our climate and planet. What makes this biomaterial unique is its attributes of being 100 % biodegradable, 100 % edible, 100 % recyclable and 100 % sustainable.

The first product I designed with the material SeeTang is an instant dish. The packaging is zero waste and zero plastic. While cooking the dish part of the packaging for sauces and spices is cooked alongside the main ingredients as the biomaterial is 100 % edible and dissolvable in water. The outer packaging is either recyclable/reusable or can be put in the compost where it will biodegrade just after 6 days. In addition to the collection, I manufactured bags with bioplastic which was infused with homemade saffron dye. The goal is to raise awareness about the usage of "vegan leather" in the fashion industry which is mostly plastic.

ABOUT This project started with in-depth research about climate change and its impact on our oceans. Problems like ocean acidification, coral bleaching, CO_2 pollution and plastic pollution have been one of the few topics I chose to specialise on. During my research period, I realised how much the unsustainable material plastic causes harm to our land, water, air and overall health. It has been mind-boggling to me how us human can live in the present with such backwards unsustainable ways of designing, manufacturing and living. I built up such disklike to plastic that the only way for me to fight the problem was to create an alternative material that could completely replace its toxic precursor.

The design departments packaging and fashion were to me the most polluted areas with urgent need of change. Especially the new marketing lie of calling plastic "vegan leather" has caused an increase in plastic products manufactured and sold. Unfortunately, many consumers are not aware of what they are buying and what it means for the environment.

In addition, I was inspired to tackle the problem of plastic packaging in form of a completely biodegradable instant dish. During the 2. Lockdown I fell in love with ramen instant dishes however I always felt bad after opening its package which reveals several ingredients individually packaged in plastic. All packaging found inside my instant dish SeeTang is completely dissolvable in water and edible. The outer packaging can either be recycled at home or put in the compost where it will biodegrade after just 6 days.

Jana-Aimee Wiesenberger, United Kingdom

INSTA

Roots & Hoots – An Online Zero Waste Solution

More than 650 grocery, personal care, and cleaning products in returnable packaging are delivered in an emission-free vehicle. Learn more about Brighton's first-of-its-kind zero waste online delivery service on page 154.

IXIM Bioproducts – Off The Wall

Daniel Gonzalez, Canada
Noor Ur-Rahman Shaikh

WEB **INSTA**

YOUTUBE

THE PROJECT The Mayan culture used the term Ixim to designate what was related to corn. Named as such, this project proposes to compose walls from bricks, blocks and panels or any other shape depending on a predetermined mould made from natural fibers blended mixtures. This new material draws its resources from agricultural and wood byproducts products — high quality sawdust, corn stover, coffee husks, or bean pods mixed with fishery waste for the binder. Currently IXIMBIO products are targeting building products for interior purposes. However, the materials and process, are energy efficient and adaptable to available resources, support a circular economy and makes use of local workforce to target innumerable ways of forms including packages as supplementary products.

The IXIM materials are both compact and resistant, with good insulation capacities and do not emit bad odors. These new trends of materials in the low-carbon industry opens up to an aesthetic of elegance through understatement for the reduction of plastic and mineral aggregates in bio based materials compositions to encourage a completely 100% biobased technologies.

ABOUT The world is going green, and nowadays from an industrial perspective protecting the environment by better managing the natural resources is an urgent task. On the other hand, the current definition of “ecological building materials” remains uncertain and has generated new waves of products that have taken in their behalf, 100% sustainable and green eco labels, when some of them are not real sustainable at all. This occurs, especially because certain new technologies of composite materials have been designed with high content of natural fibers accounting at the same time with considerable amounts of plastic or mineral aggregates, which although promote circular economy principles, they still rely on the on the use of raw materials difficult to eliminate at the end of their life cycle. Not to mention the intensive energy process required to recycle such types of aggregates, which exacerbates some impact indicators as for instance. global warming potential.

Accordingly, with the aim to mitigate land degradation, caused by soil exploitation, and reduce GHG emissions that mineral or plastic biobased composite materials entails to ecosystems; such as climate change exacerbation, poverty increase and loss of biodiversity. IXIM byproducts was created to produce 100% natural bio-composite materials taking advantage of agro-industrial waste and a natural polymer from fish waste used as the binder to develop unique and innovative blended mixtures that can be tamped in removable forms to create such as blocks, panels, veneers and even more, including packages or furniture!

Coffee Coffee Cup

THE PROJECT Coffee, as a material, has never exhibited itself in the world as that of anything other than a vessel in which to hold chemical materials for our consumption. Perhaps it is because of our detachment with coffee, as a commodity for consumption rather than plant and bean, that we often perceive coffee grounds as material waste. The focus is so large on the end result, on that perfect cup of coffee, that we have become detached from all its embedded cultural, economic, physical, and environmental footprint. In 2020 alone, we consumed and produced 21 billion pounds of coffee grounds. To get an idea of scale – if we were to replace the Empire State Building's concrete with coffee, we could build roughly 5000 Empire State Buildings in a year. All of this is a revelation that perhaps we understand very little about the power of such a commodity. Because if we did realize its power – as commodity, culture, and drug – we would realize that coffee is a huge waste, a missed opportunity as grounds for reuse.

Coffee Coffee Cup challenges notions of consumer waste streams through the invention of a 3D printed reused coffee ground material, subsequently printed as a functional coffee cup. The interest of this project largely stems from the creative reuse of a material otherwise treated as trash, Coffee grounds. We love coffee as a drink, it's our drug of choice, however, as soon as we consume it the grounds instantly become waste. In such a way, the creation of objects out of this waste, formally a cherished material, directly confronts us with our relationship to materials and their life within the built environment.

ABOUT Alex Schofield is an Oakland-based architectural designer who focuses on innovative technology research for the fabrication of spatial making through his practice Objects and Ideograms, a design workshop. Scaling from objects to architectural components, to large-scale assemblies, his work rethinks spatial making with an emphasis on materiality. Alex's previous work and projects explore these material possibilities through research and proposals such as "A Caffeinated Architecture" and the "future of making things". Alex seeks to facilitate research and conversations which enable future designers, architects, and makers to think more creatively about material use through processes of manufacture and design.

The invention of 3D printed reused coffee grounds began as a long-time obsession (and addiction) with coffee. I have long researched our history and culture of coffee across time and came to realize that coffee has arguably altered and shaped the world we see today. Such a material with great importance and impact is ripe for a reconsideration of our material world. Coffee Coffee Cup, is in direct response to rethinking material waste by focusing on my most cherished material – Coffee. The subsequent project, materials, and methods for fabrication seek to reject the status quo of prepackaged materiality in favor of a more conscious understanding of what we build with and why.

Alex Schofield, United States

WEB **INSTA**

The Future Is Circular Packaging

THE PROJECT ReZorce Circular Packaging for beverage cartons is a fully recyclable mono-material, with barrier properties that meet or exceed all food industry standards and is the first viable alternative to composite barrier packaging. ReZorce sandwiches microcellular foamed layers of HDPE with solid ones to optimize barrier performance and it looks, feels, and folds like current cartons (or liquid packaging board – LPB). This means that from both a consumer and a brand standpoint, ReZorce looks and feels the same as current cartons. It's made with up to 70% recycled polymer and could reach full circularity in the future when food-grade recycled polymers become available. ReZorce is a roll-fed sheet material, which feeds into existing print and packaging processes and machinery making for a seamless transition for brand owners.

Zotefoams commissioned an independent Life Cycle Analysis (LCA) study, which compared three types of ReZorce – incorporating 12.5%, 25%, and 50% recycled HDPE. The results show that it takes five times less energy to produce, fill, and transport a 1L ReZorce carton, compared to conventional LPB cartons. ReZorce requires 11 times less water to produce and – provided it is recycled – has a 50% lower global warming potential overall.

As ReZorce is made of a mono-material – HDPE – and the cap, pack and closures are also made of the same material, recycling is a breeze and is easy via post-consumer waste collection. Once recycled, ReZorce may come back as the same material repeatedly, solving the carton crisis and closing the loop on circularity. It's a truly simple message: put the empty carton in the plastics recycling bin and you'll see it again, and again.

ABOUT Liquid packaging board (LPB), typically used for drinks cartons, is not circular. LPB contains multiple layers laminated together – paperboard (73%), polyethylene (24%), and sometimes, aluminum (3%). These materials need to be separated before recycling, which is complex and costly. The remaining recyclate is only suitable for downcycling. Over 250 billion cartons are consumed globally annually and a large proportion of these are not recycled, this is a huge sustainability challenge for the food and beverage industry.

Zotefoams has already received many expressions of interest in ReZorce from manufacturers and brand owners who recognize that current technology cannot meet impending sustainability targets. Beverage cartons are just the beginning and Zotefoams is collaborating with European partners on future applications including food pouches and trays.

While many companies are moving away from plastic packaging on environmental grounds, Zotefoams believes in optimal material solutions, and in this case, the benefits of a mono-material – albeit plastic – clearly outweigh those of liquid packaging board when it comes to achieving circularity.

Zotefoams, United Kingdom
Charlotte Griffiths, David Stirling,
Neil Court-Johnston, Rosemary Alton

WEB **YOUTUBE**

The Skin Series

THE PROJECT The skin is the largest organ of the human body, serving as a primary defense, a sensory and an excretory medium. Its semi-permeable nature plays an important role that coordinates functions of our whole body. Therefore, what we put on and next to our skin has a direct impact on our bodies. As such, our health is shaped by our environment.

"Skin Series" explores the interaction between our clothing and the skin. Company founder Rosie Broadhead looks to nature to inform her focus on garment development that provides health benefits to the skin with less impact on the environment. The seaweed material developed, explores the benefits of encapsulating naturally derived or active ingredients into the fibers of clothing. Seaweed is rich in vitamins, minerals, and amino acids, which have known therapeutic benefits to the skin and body. Such properties can improve the immune system of your skin, encourage cell renewal, and holds antioxidant capacity. These benefits can in turn help treat skin conditions such as neurodermatitis and psoriasis and inhibit the formation of free reactive oxygen species, which can alter cell membranes and attack the genetic material of cells. The focus is on observing what is natural on our bodies to explore how we can create sustainable yet functional clothing and replacing the need for toxic chemicals used in the production of textiles and garments. Skin Series aims to highlight the body's intimate relationship with the skin as a permeable membrane covering the body. By exploring the current and future possibilities of these therapeutic materials, it becomes possible to view clothing and the body as one entity.

ABOUT The skin microbiome and more recently the textile microbiome has gained a lot of interest within the sciences. There has been a fundamental shift in our understanding of the innate chemistry of the body and the role the microbiome plays in shaping it.

My ongoing research as a Textile Scientist at Ghent University has led to my interest in the surface between the body and clothing and how we can influence this space with biotechnology and materials. The focus of the work is on observing what is natural in our bodies to explore how we can create sustainable yet functional clothing and replacing the need for toxic chemicals used in the production of textiles and garments. Chemicals commonly used in textile manufacturers such as antibacterial, waterproofing, antiwrinkle use ingredients that have a negative impact on our bodies' microbiome, and other organs, they are also harmful to the environment. "Skin Series" explores the current and future possibilities of therapeutic clothing, as an alternative. The research and designs focus on the body's relationship with clothing as a permeable membrane.

Rosie Broadhead, United Kingdom
Dr. Chris Callewaert, Chris Deloof

WEB **INSTA1**

INSTA2

Weedware – SeaweedCircle

THE PROJECT Studio Klarenbeek & Dros developed Seaweed based biopolymers that restore ecology, stimulate biodiversity while boosting social production and economies, thus breaking with the current destructive cycle of production based on the exploitation of people, organisms, and resources. Through Research and Design, education and collaborations, the studio has developed both CO_2-binding biocompatible materials, processes, and products, setting up a new closed-cycle production chain The Seaweed Circle with their strategic partners, varying from seaweed farmers to bio-pioneers in the field.

Algae are extremely suitable as a replacer for fossil and land-based resources: Firstly because of the versatile properties and secondly because of their efficient carbon sequestrating capabilities. Enabling them to convert massive amounts of CO_2 into biomass and oxygen, without the need for land, fresh water, and fertilizers; Which they do from the beginning of evolution, providing most oxygen produced on our planet (> 60 %), more than all trees.

The Seaweed Circle is embedded within a range of 25 km from their Studio, striving for environmental remediation of both water and land (organisms); Lab-propagated native Seaweeds are cultivated (and purify) the Dutch river delta. The harvested algae are processed into roughly two streams; wet and dry: The wet mineral-rich residue has been successfully used by several farmers for four years now, providing in Circular Agriculture. The remaining dry biomass is then converted by Klarenbeek and Dros into Weedware, a thermoplastic biopolymer which they've optimized for several applications, such as 3D printing, Injection molding, and Robotprinting, enabling local manufacturing and applications varying from compostable plant pots that boost plant growth while decomposing to Robot Printed bioreceptive green Facades, which they're currently realizing.

ABOUT The journey started more than 7 years ago, when they learned about the potential and possibilities to cultivate algae from a petri dish, how it can be brought to scale and how it can contribute to restoring ecology. As social and technology-driven designers using and expanding their knowledge and facilities of biopolymers and composites, such as their 3D printers and cleanrooms for their Mycelium project, which became known worldwide back in 2013 for their algae research. This resulted in many cooperations over time, with a long list of partners. The first "algae glass" prototypes are currently in collections of museums worldwide, such as Design Museum (London), MoMA, Cooper Hewitt (NY, USA), Boijmans (NL), and Centre Pompidou (Paris, F). That was the starting point for implementing the Seaweed Circle, bringing the technology to scale, showing and striving to reach actual impact beyond lab scale, and having continuity in production. They are working on a variety of projects, and explore possible applications, from agricultural to interior and exterior projects, to 3D-Robot, printed green walls and facades.

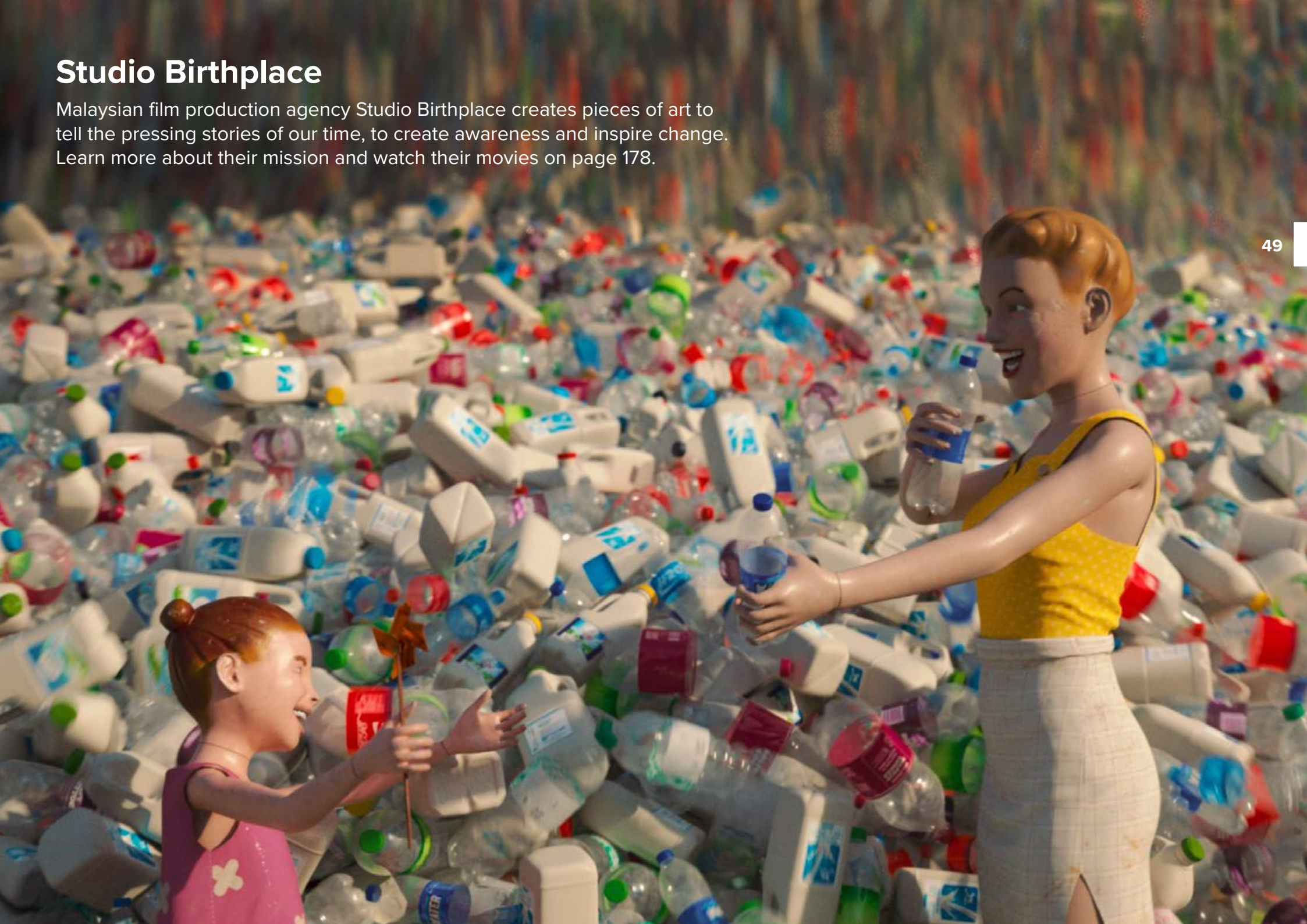
Eric Klarenbeek, Netherlands
Klarenbeek & Dros 2021

WEB1 **WEB2**

WEB3

Studio Birthplace

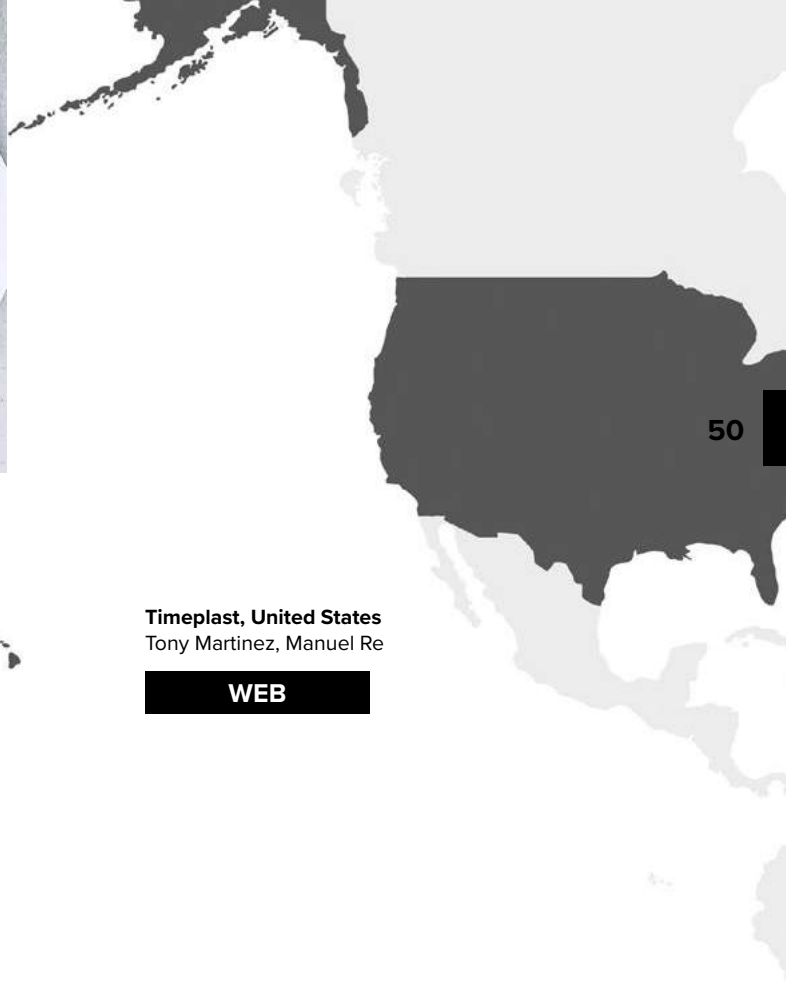
Malaysian film production agency Studio Birthplace creates pieces of art to tell the pressing stories of our time, to create awareness and inspire change. Learn more about their mission and watch their movies on page 178.



In a World Covered With Water, Why Are We Trying To Bury Our Problems?

THE PROJECT Our copolymer expands the ability as a society and allows us to have a material that performs, looks and feels like conventional plastic, but which will disappear within 60 hours after its desired use in the presence of water, just like sugar. This new material is called Timeplast, and it's the first US fully patented (U.S. patent number 10,947,332) and ASTM certified bio-based, water-soluble programmable plastic that can substitute the uses of fossil-based polyolefin's. There is a reason our planet is 70% water. This is why our materials follow the principles and laws of hydro solubility as being the highest environmental standard.

ABOUT Several water-soluble plastics have been designed in the past. None of them, however, include a copolymer composition that is an environmentally friendly homogeneous mixture with programmable water solubility, allowing the copolymer to maintain its shelf life stability, market-expected quality, and stability in the presence of moisture or liquids for a predetermined length of time. Further, the copolymer composition's obsolescence time is manipulated through water solubility programmability by changing the amount of non-water-soluble up-cycled resin in the copolymer chain, which improves the usability and functionality of the copolymer. Additionally, the copolymer composition avoids the typical miscibility issues when combining two polymers. Miscibility issues may arise when combing two polymers by molecularly disguising one of the polymers as a polyethylene (PE) wax through a previous process of depolymerization that lowers the particle size and molecular weight of low-density polyethylene (LDPE) enough to allow for it to be homogeneously mixed while maintaining adequate molecular weight for it to be polymerized again into the LDPE during manufacturing, as a copolymer. The final amount of LDPE being minimal such that the majority of the copolymer composition remains water-soluble and environmentally friendly.



Timeplast, United States
Tony Martinez, Manuel Re

WEB

Most Beautiful Solution

Sydney Winfield, United States

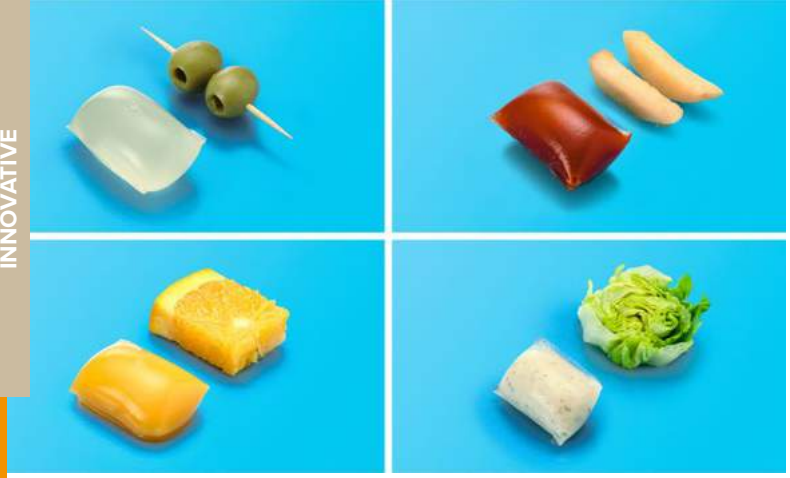
INSTA

THE PROJECT The beginning of Celvett was approached at the art of growing textile for garment making. I began experimenting with bioplastics and living organisms. The study began with the comparison between Molecular Gastronomy and Haute Couture. I wanted to imitate the dimensions of nature and create a 3D texture on a 2D textile surface. After a year of research, trial, and error three experiments have successful results. My first experiment created PVC vinyl using the mother culture, SCOBY, and sustainable epoxy coating. The process consists of 0 waste and is biodegradable. My most fascinating bioplastic is a Bio-yarn, useful for knitwear using Alginate. A cell found in seaweed. The Alginate is activated by Calcium Chloride creating translucent yarn. The Alginate is hypoallergenic and useful for human skin. My third and most successful project was Activated Charcoal Leather. The material is water and stain-resistant. To maintain the quality of the Charcoal Leather simply used the product as if real leather.

The recipe is simple. Glycerin, Activated Charcoal, and an additive. The mixture is heated, cooled, cured, and dried using the sun's Ultraviolet light. After 24 hours of drying the material is ready to de-mold and with all-natural wax.

My Bioplastic journey has allowed me to become closer to nature and appreciate the organic aspect of life. Earth will always regenerate as long mother Nature is given a chance to.

ABOUT My art is inspired by nature. Ninety percent of planet Earth is incased with cellulose fibers. Cellulose fibers are an organic substance found in bacteria and plant structures. These fibers are responsible for insulation, and without Cellulose, the Earth won't be able to digest the harmful chemicals introduced in the atmosphere by the second. Factors such as Avocado, charcoal, living organisms, and even Mycelium can be used to create useful and beneficial goods safe and healthy for public use. Due to the Climate change crisis, the Plastics made from oil are corrupting the ecosystem causing global catastrophes affecting millions of people. My motivation is to get creative and use the resources all around us to eliminate waste.



Notpla – Making Packaging Disappear

THE PROJECT It's not exactly common practice to define a brand by what it isn't. But when what it isn't is one of the world's biggest problems – plastics – then, that's OK. Particularly when what it is, is seaweed. Unlike many other packaging companies that use bioplastics, which behave like, and are technically still plastics, Notpla has fully moved away from using synthetic materials altogether.

Since its launch in 2019, Notpla has produced more than 300,000 sachets. The brand was trialed at major international events such as the London Marathon with Lucozade, and London Cocktail Week with Glenlivet. Notpla also partnered with Just Eat and Unilever to provide more sustainable packaging solutions across the takeaway sector.

ABOUT We have a plastic problem. Every year, 8 million tonnes of it are dumped in the oceans. It's clear that current packaging habits simply can't continue. We need to change the world's behaviors when it comes to single-use plastic.

But in the oceans lies the solution. Enter Notpla: a revolutionary, seaweed-based material that naturally decomposes in weeks (700 years for plastic). A sustainable packaging start-up on a mission to make packaging as we know it disappears, naturally. Seaweed is one of nature's most renewable resources. It grows fast, is globally abundant, and is readily available. It doesn't compete with food crops for land, nor does it need freshwater or fertilizer to grow. It actively sequesters CO_2 and de-acidifies the oceans. Notpla is a low-carbon material that generates 96% less carbon emissions. It is an edible, tasteless, biodegradable material made from plants and seaweed. It can be used directly to replace plastic cups at sporting events, festivals, and private parties, as well as sachets for condiments, and can be made into thin films or a coating for cardboard to create a wide range of products. Superunion joined its design engineers and backers to deliver a name and identity that would leave people in no doubt about its potential value in the world. The new name, Notpla (An abbreviation of "Not Plastic") would work as a material name to a leading household name that signifies fully natural packaging, and a brand at the forefront of environmental sustainability.

Superunion, United Kingdom
Emily Scullion, Mark Wood, Ilaria Celata, Nicola Bennett-Cook, Pierre Paslier, Rodrigo Gonzalez, Lise Honsinger

WEB1 **WEB2**

VIMEO **INSTA**

The Cai Modeling Materials

THE PROJECT The Cai Modeling Materials are recyclable and biodegradable materials made from waste products like junk mail and used plaster. They provide a cheaper alternative to plastic-based modeling foam and Sculpey. These commercial products are expensive for creatives to purchase and for every living creature to be exposed to the microplastics they release. Cai Board is a replacement for modeling foam. Cai Clay is an alternative to air drying clays; it can also be used as paint. With free DIY recipes that utilize common household and studio waste, the Cai Modeling Materials are affordable, accessible, and they don't release microplastics. These materials reduce habitat destruction from plastic production and extend the life cycle of the waste materials used to make them. And when utilized in a classroom setting, they can help inspire students to work more sustainably in their professional lives. That is why people can learn how to make the basic Cai Modeling Materials for free on DesigningWithWaste.com, and they can also purchase the "Pasta Water for Designers" book. I wrote this book to provide detailed guidance on using the materials, including extensive advice for making, recycling, and experimentation; production and afterlife considerations; and extra recipes, including recipes that utilize the wastewater leftover from making pasta and water leftover from making boba. The book is called "Pasta Water for Designers" because home cooks often throw out pasta water while chefs use it to flavor and thicken sauces; we need to be more like chefs who turn what seems like waste into valuable materials.

ABOUT I developed the Cai Modeling Materials for my Master of Design Industrial Design thesis while working remotely during the pandemic. Drawing upon my background in art and craft, I used paper-making techniques to develop the Cai Modeling Materials. I named them the Cai Modeling Materials because the invention of paper is attributed to Chinese court official Cai Lun in 105 AD. The name not only honors my heritage and the history of paper but connects prospective paper makers to its millennia-old history. To remind us all that if we want the human race to survive for millennia more, we need to embrace regenerative technologies, be they historical or brand new. I began my experiments by trying to create a paper-based replacement for synthetic clays that were both plastic-free and allergy-friendly. After months of failures, I reassessed my experiments and realized that they could serve as a replacement for modeling foam, which turned into a series of recipes for Cai Board. Each recipe offers the maker a way to customize the material properties to fit their needs. One day, months after I had given up on making paper clay, I accidentally made a plaster mold with an undercut. When breaking it apart, I wondered what would happen if I added the set plaster to the Cai Board recipe. This quickly led me to a clay-like material. With minor tweaks to the recipe, I was able to create an alternative to plastic-based clays, the recipes for which I named Cai Clay. Like with the Cai Board recipes, each clay recipe offers the maker different material properties.

Mari Miller, United States

WEB **GITHUB**

eBOOK

SLAM! A Sludge Bioplastic, Apples to Apples

THE PROJECT SLAM! (Swedish for sludge) is a concept that transforms wastewater sludge from the cider factory Kiviks Musteri in the south of Sweden, into bioplastics. This project started with What matter_s 2.0; a group of designers paired with manufacturing companies based in southern Sweden, with the task of developing new sustainable materials from their industrial waste. We chose to focus on their wastewater sludge which is a big challenge to work with, very wet and extremely smelly. We experimented with this and we found that from this sludge it is possible to produce a biopolymer; PHA. This specific polymer type is called PHBV and is unlike most bioplastics completely biodegradable. With Kivik's apple orchards in mind, we have designed a collection of cultivation objects, like pots and plant clips. In this project, we worked with a cider company, but the process could potentially be used by other industries that produce a lot of wastewater and bio sludge. Our closed-loop system starts as a fruit on the orchards, passes through the stages of juice, sludge, bioplastics, and lastly soil — apples to apples.

ABOUT Wastewater sludge is produced in enormous amounts, it's a type of biomass that is usually deposited. PHA is produced from renewable biomass, most often from an agricultural source grown solely for that purpose, like corn or sugar cane. This makes it an expensive kind of plastic, and less sustainable when produced that way. We simply connected the dots between wastewater sludge and biomass and came up with the concept of using the sludge as the source.

We highlight the possibilities of transforming wet waste material into resources, and we want to inspire industries to view their waste as something valuable. We wanted to connect the design proposal to the material's origin. Inspired by the origin of the waste, we designed products related to agriculture or gardening: planting pots, trellis systems, and plant clips. As sludge plastic is both biodegradable and durable, we wanted to make products with a longer life cycle than single-use. The products are designed to be treasured and used over and over, but if they break or disappear outdoors, there is no harm done.

Henriksson & Lindgren, Sweden
With help from Bioextrax and Promiko for expertise around PHA, and Perstorp AB with help making prototypes.

WEB **YOUTUBE**

MOST PRACTICAL SOLUTIONS

In this category, we present solutions for a world with less plastic which are pragmatic, effective, clear & simple, useful, practicable, constructive, viable, functional, rational, no-nonsense, applicable, nuts & bolts, both feet on the ground, commonsensical, straightforward, user-oriented and purposeful.

Peel Pressure Made Us Do It

GOLD AWARD WINNER

Caracara Collective, Finnland
Aleksi Vesaluoma, Aleksi Puustinen, Richard Sullivan

WEB INSTA

THE PROJECT Creating biodegradable products from organic waste – that is our calling. Caracara Collective has spent the last years experimenting with different recipes and techniques for turning bio-waste into functional objects. Our first collection includes hand-crafted lampshades made of orange peel, but we aim to implement our technology into the packaging solutions of the future. With our binder made from 100% natural ingredients, almost any type of organic by-product of agriculture and industry (fruit peels, coffee chaff, you name it) can be turned into new materials and products. Furthermore, the diversity of the world's organic waste creates a beautiful color palette to work with, adding a special characteristic and story behind each product.

Our long-term aim is to share our techniques open source so that people around the world can utilize their waste to create solutions locally. Years of experimentation have proven that these materials and techniques are highly adaptable, scalable, and easy to produce. One could create a low-budget and low-tech setup for recycling bio-waste into artisan products, or a whole factory for producing large batches of biodegradable packaging. Our goal is to create a global impact through local initiatives.

ABOUT The story starts in the summer of 2015 when designer mates Aleksi Vesaluoma and Richard Sullivan started playing around with orange peel in their kitchen in London. Then they encounter an event that leaves the Tate Modern's Turbine Hall full of orange peel. After a chat with the organizers, the Groundnut, the guys walk out with as much orange peel as they can carry, which starts a new passion and a journey of material development. Alongside their industrial design studies in London, the guys keep testing new recipes and techniques for working with peel and their project becomes titled Peel Partners. In early 2017 they form Mandin Collective together with four other design friends. In February 2018 Aleksi is invited to join a new company called Biohm as Material Development Manager, bringing his research to form the backbone of their new materials for the construction industry.

In September 2018 Aleksi moves back to his hometown Helsinki and starts Caracara Collective with designer Aleksi Puustinen. In January 2019 the first real studio space is found for continuing the biomaterial research (no more kitchen experiments). Over the months the space becomes a hybrid between a workshop, kitchen, laboratory, recycling station, and an urban farm. Since then, the two Aleksis have been cooking up all kinds of biomaterials, crafting new techniques, and producing design installations at their studio in Helsinki. Most of their raw materials come from the orange juice machines of their local supermarket and pine needles fallen from discarded Christmas trees. The next stage in their journey is to travel to different places in the world to start sharing their knowledge of working with local biomaterials.

Solo Packaging

THE PROJECT Solo is a delivery package made of only one material: the dry palm leaf. The packaging doesn't require resins, glues, or any kind of chemicals, being naturally biodegradable and compostable. Besides that, the container can go in the microwave, oven, and freezer.

Palm leaf is composed of natural fibers (hemicellulose, cellulose, and lignin) which are proven to have excellent properties to be used in delivery packages, like retaining heat. Additionally, no palms are ever cut or damaged to obtain the raw material. Only dry leaves are ideal for production, so we must wait until they fall naturally. They fall during the whole year and each one can make two containers on average.

Putting botany and design together, Solo keeps the convenience of a disposable package whilst making no harm to nature. This material has equal or even better characteristics compared to the polymer ones, maintaining the food temperature, not absorbing liquid in short term, and having no smell or taste.

We are designing two alternatives of packaging: a rectangular one and around one. The first one has a locking system between the container and the lid. The lid also has a little slope to pile other packages and make a safe delivery possible. The second one is composed of two identical fitting parts. Both of the alternatives come with a seed paper belt to ensure proper sealing and to inform the properties of the container.

ABOUT It all started when Ana (co-founder), a Product Design student, researched about using palm leaves in products and presented a fictional project to a subject in university. Mateus (co-founder), a Product Design student and botany lover, was there and fell in love with the idea.

He spent months just studying and testing this material and realized how good the idea was. After that, he called Ana and they started to make it happen. Nevertheless, they still needed someone to help with all the machinery and to model the product, so they called Yago (co-founder), a Product Designer, and invited him to be a part of the team.

SILVER AWARD WINNER

Mateus de Freitas Viana, Brazil
Ana Clara Argento, Mateus Viana, Yago Bunim

WEB **INSTA**

YOUTUBE

MEDLAstic

THE PROJECT Agostina Laurenzano aims to create a simulation of a fully circular economy. To make this possible, she had to repeatedly research different renewable sources in the area where she lives. However, there is another very important condition she wanted to fulfill, that it should be an agricultural waste. She is not interested in working with resources that are potential food, or anything derived from the animal kingdom. The fact that she identified a very rich source of starch at the bottom of her garden, thanks to the collection of Japanese medlar seeds, allowed her to identify the great abundance of this resource in the closeness of her neighborhood. After this, she has devised a production system specific to the area, opening up new job opportunities. The way of extracting handmade starch is very simple. It will always be the same ancestral recipe that has been applied to other tubers, such as potatoes. Once the starch was available, several tests were carried out to obtain the recipe for cooking the best version of a bioplastic. Resistant to traction and elongation, suitable for thermofusion. Two prototypes have been developed. The first is a bowl, logically 100% biodegradable, made from starch and silicate. Silicate is of mineral origin, the second most abundant chemical element in the earth's crust. It is incorporated in the recipe to increase the resistance to humidity, it reduces the affinity of the material with water. For this reason, the bowl can be used more than once and is resistant to washing. For decorative purposes, real dehydrated vegetables are used to create a more romantic result. The second prototype is a disposable sachet of virgin olive oil, made from starch, with heat-sealed edges.

ABOUT In 2017 Agostina Laurenzano was given the opportunity to attend the laboratory of the Faculty of Biology at the University of Barcelona. This eventually happens thanks to some friends who were doing a biotechnology scholarship there. She takes advantage of the circumstances to cover all her doubts and curiosities, thus building up her own portfolio of research in natural polymers. Then, she chose to put all her knowledge into the development of her initial work proposal applied to contemporary jewellery. After a couple of years of constant work in this discipline, she felt the need to manifest herself on a more exponential and functional level, and this is why she satrted with packaging design. She has also been a finalist in the "Premy Catalunya D'Ecodisseny", 2019 version, organised by the Agencia de Residuos de Cataluña. She has given an orientation talk at Institut Les Salines (April 2021), participated in the FabLabYucatan round table to celebrate its anniversary (May 2021), and has given a workshop at Casa de Cultura Girona (June 2021).

She currently gives workshops at an exponential level and with monthly frequency, through the online modality, which allows her to reach all over the world. In the last month of June she has been asked by the journalist and curator Lujan Cambariere to give a Masterclass on bioplastics with her. Her future promise, to be part of the Massana Permanent workshops programme within the Escola Massana (Barcelona), for February 2022.

BRONZE AWARD WINNER

Agostina Laurenzano, Spain
Mentors: Asociación Fem La Volta, Lujan Cambariere
Teacher: Jesús Angel Ramirez Perez @germen_arqt

WEB **INSTA**

FACEBOOK

Biotic – A Growing Material Archive

This solid material is made of bacterial cellulose and has comparable properties to leather. The material that living microorganisms create is biodegradable, strong, and has high flexibility. Learn more about the project from Lionne van Deursen on page 14.

Sustainability Without Compromise

THE PROJECT Oliver Co. is a sustainably progressive accessories brand that through transparency and innovation, creates unique, highly functional products that cause as little environmental impact as possible.

Our collection of vegan wallets, cardholders, passport holders and key-rings are crafted from apple leather; an innovative eco-material that takes waste from the Italian fruit juice industry and turns it into a soft, durable, leather-like material.

We are also a direct to consumer brand, meaning we are able to cut out the middlemen associated with traditional retail. This allows us to spend more money on high quality materials and ethical craftsmanship, whilst still selling at a competitive price.

ABOUT 4 years ago, when looking to shop more sustainably, I found myself unable to connect with any of the new eco conscious brands. I felt there was a real lack of desirability and products often felt too bohemian or “eco” looking. I didn’t want to have to compromise on the beautiful products

Having studied sustainable design and previously worked in high-end watch design, I wanted to apply both my skills to create a responsible brand with the same level of detail and craftsmanship. I wanted to change people’s perceptions of sustainable design and, through utilising new fabrics innovations and working with high-end manufacturers, create minimalistic functional designs with minimal environmental impact.

Oliver Co. London, United Kingdom
Matt Oliver

WEB **INSTA**

The Pebble Dining Kit

THE PROJECT The Pebble dining kit by OTHERWARE (a collaboration between design and technology company Pentatonic and i am OTHER, Pharrell Williams' creative collective) represents a huge leap forwards in saying goodbye to single-use plastic, while its production from materials already in circulation is a perfect demonstration of the circular economy in action.

The Pebble's case is made using recycled CDs (rPolycarbonate), the handles of the cutlery from recycled food packaging (rPolypropylene), and the tips from anodized titanium-coated steel, giving it the unique color. The set contains a knife, fork, spoon, straw, and chopsticks, and weighs 175 grams.

We wanted to provide a safe and sustainable solution to eating and drinking while on the move, which is desperately important in modern times. The Pebble, launched in summer 2020, offers the peace of mind of avoiding communal sources of cutlery.

We wanted to take action, and we did so in the form of a relevant, fun dining kit that comes in a range of colors. We encourage people to recycle their Pebble when they have finished using it so that the material can be repurposed.

ABOUT I am the Marketing Assistant at Pentatonic, a design and technology company that is pursuing a circular economy. We design and create consumer products and goods that enable a more sustainable, responsible way of daily life and can be recycled over and over again.
Pentatonic's vision is a world that captures all the materials that are currently in circulation and keeps them circulating across a wide range of industries. Last year, we partnered with Pharrell Williams' creative collective i am OTHER to launch OTHERWARE, to create a sustainable product that would benefit the world.

It was important to us to make sure the Pebble was visually appealing so that, regardless of their intentions for purchasing it, people would enjoy taking the Pebble out with them. The original version featured a mash of pop colors, and we have since released a sleek black version, an all-yellow edition, and a grey monochrome iteration with New York design pioneers Snarkitecture.

One of the reasons we feel the Pebble was necessary was to allow people to dine safely and sustainably while outdoors or on the go, and we're excited for the return of outdoor events and group gatherings so that people can enjoy a picnic or camping trip with their friends and family once again.

This year we are also launching a trade-back scheme for the Pebble so that we can repurpose the material and make new things.

OTHERWARE, United Kingdom
The Pebble was a collective effort by the entire OTHERWARE team. This entry is submitted on behalf of them.

WEB **VIDEO**

INSTA

Sea & Summit's Plastic Free Natural Sunscreen

THE PROJECT Working as an ocean kayak guide and lifeguard off the coast of Santa Barbara, California, I discovered a need. This need was for effective and safe sunscreen that didn't harm me or the marine sanctuaries I was working and playing in. Spending eight-plus hours a day under the sun in addition to being a fair-skinned ginger sent me searching for alternatives. It also sent me looking to create plastic-free alternatives that looked good and functioned properly. This has been the mission and execution of it since day one.

ABOUT Working as an ocean kayak guide and lifeguard off the coast of Santa Barbara, California, I discovered a need. This need was for effective and safe sunscreen that didn't harm me or the marine sanctuaries I was working and playing in. Spending eight-plus hours a day under the sun in addition to being a fair-skinned ginger sent me searching for alternatives. I personally hate single-use plastic and chemicals and care deeply about the outdoor places I live to play in.

Sea & Summit, United States
Ryan Kell, Emily McDonald,
AnnaMai McDermott, Liana White

WEB

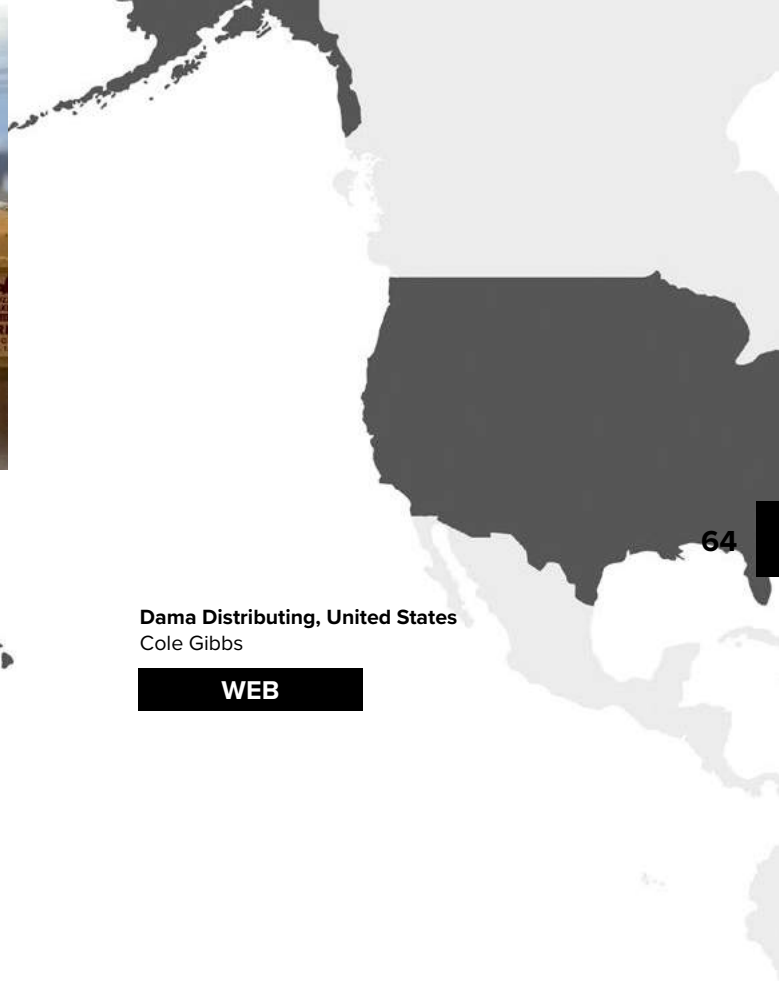
Eco Tube

THE PROJECT Paper is the ultimate eco-package material because it is infinitely sustainable – comes from life and feeds life. Over 6 billion plastic lip balm tubes are used and discarded every year – a literal mountain of unnecessary plastic waste that is toxic to life. Our invention, a paper lip balm tube, and cap, ultimately simple and elegant, is made of two pieces of printed (100 % post-consumer waste) paper and food-grade casein. Easy to use, and lasts long enough to deliver its lip balm, and when finished the package can be composted with kitchen scraps (takes 2-4 weeks) or recycled with household paper. This package is currently on market in the UK with the Organic Essence brand and others.

ABOUT A juvenile sperm whale washed up on our local beach. She had starved to death with a stomach full of plastic. Seeing her this way broke our hearts, she was over 10 meters long and just getting going in life. My wife, Gail, and I resolved then to stop using plastic packaging for our organic body care products, but when we went to the big packaging trade shows to upgrade our packaging, all the eco they had on offer was plastic packaging made in factories powered by wind turbans and solar cells. So, we had to invent it ourselves! When we realized how important this can be to the world, we began offering our packages to other brands. We envision replacing almost all non-liquid-containing plastic consumer goods packaging with functional paper packages. To date, we have over 15 issued patents worldwide but haven't even scratched the surface of all the possibilities. The sea of plastic filling stores worldwide can be affordably be converted to sustainable paper with all the convenience and durability consumers have come to expect.

Organic Essence, United States
Ellery West, Gail M. West

WEB 1 **WEB 2**



Sustainable Hemp Plastic Packaging

THE PROJECT Dama Distributing is a locally owned and operated company, based in Colorado. We are pioneering the development of sustainable, home compostable, and compliant packaging for a variety of industries. With only 9% of all plastic recycled worldwide, the plastic waste problem is growing out of control. That is why we work with recycled materials, glass, bamboo, and hemp plastics. To help solve this ever-growing problem. We believe that all of our clients deserve the highest level of service, and we are committed to providing just that.

Our Mission

- To eliminate petroleum plastic waste across the globe, by offering sustainable and plant-based packaging solutions.
- Together we can leave the Earth a little greener for future generations.

ABOUT Cole's concern for the overwhelming amount of plastic waste clogging our seas and damaging soil is what challenged and motivated him to take action. Over the last three years alone, Cole and his team have made a massive impact on the world today by preventing over 100 tons of petroleum plastic from entering our environment.

As he looks to the future, Cole believes his years of research in the area of sustainable hemp plastic packaging, combined with hundreds of relationships in business and industry, will prevent thousands of tons of petroleum plastic from damaging our planet.

At Dama we care about the world we live in and strive to make the world a better place for us all. That's why Dama Distributing is on a mission to eliminate single-use plastic waste. Revolutionizing the plastic industry with the world's first and only and truly sustainable hemp bioplastic solution.

Dama Distributing, United States
Cole Gibbs

WEB

Veil Stool

A very contemporary piece of work – how many of them could have been produced already? A stool made from over 4,000 disposable face masks collected from the streets of London. Learn more about Joe's project on page 21.

Say “Pasta La Vista” to Soggy Paper and Harmful Plastic Straws With Stroodles

THE PROJECT Stroodles waves goodbye to single-use plastic, with its fun range of (edible) Eco-Tableware! Our entire mission as a brand is rooted in sustainability, creating eco-friendly alternatives to everyday items and this is why we take it seriously. Stroodles is therefore not just a company. Stroodles is a Movement!

Known for our famous pasta straws, with our range of eco-tableware products, we are determined to make a real and uncompromising change by inspiring the world, how easy it is to do good with one pasta straw, edible spoon, edible cup, or plate at a time. With Stroodles, sustainability can be fun and actionable! All our products are 100 % biodegradable and fun to use.

We strongly believe that we need millions of people doing sustainability imperfectly vs. a few thousand doing it perfectly. Hence we want to show that sustainability can be fun, uncompromising, and actionable!

ABOUT Stroodles was born in December 2018, created by founder and current director Maxim Gelman. This idea grew out of Maxim’s realization that there was a gap in the market for a more sustainable alternative to plastic straw. Maxim, as a passionate advocate for sustainability, went through some trials and errors until Stroodles emerged; an edible, vegan, 1 hr strong, flavorless, and 100 % biodegradable pasta straw made out of two ingredients: wheat and water.

Maxim went on to showcase this product on Dragon’s Den leading to a wave of viral attention from the likes of LadBible, BBC Good Food, UniLad, The Economist, and many more.

We want to keep up this momentum and eventually gain global recognition for our product, becoming a household name and extending our product portfolio to transform the whole tableware category. We are proud to be marked as the trendsetter, first-mover, and synonym for pasta straws, but this isn’t a blip nor a short-term spectacle – Stroodles is in it for the long haul. As we continue this journey and as our Movement grows, we plan to expand our product range. We have recently launched edible spoons made from biscuits, edible cups made from wafer, edible plates and bowls made from wheat bran, and some other exciting eco-items!

Stroodles, United Kingdom
Maxim Gelmann, Kiki Barrow, Andrew Harvey, Peter Donnelly, Tom Simmons

Board of advisors includes:
Andrew Allen, Nick Hassall, Simon Taylor

WEB **INSTA**

FACEBOOK **YOUTUBE**

Dental Lace Refillable Floss

THE PROJECT At Dental Lace Inc. we are on a mission to rid the world of harmful plastic dental floss. Dental Lace Refillable Floss is the first zero-waste dental floss on the market today. At Dental Lace Inc. we've made saving the planet a fashionable endeavor with our stylish container designs.

It's an easy switch from harmful conventional floss. Our 100% compostable silk floss cleans teeth and gums effectively. Sold wholesale in 40 countries, Dental Lace is becoming the go-to floss for sustainable consumers everywhere.

ABOUT We're Dental Lace. A sustainable refillable dental floss company on a mission to rid our planet of plastic floss. Our founder Jodi used her passion for oral hygiene, sustainability, and research to craft a brand that eliminates the need for waste in everyday oral care. When it occurred to Jodi that floss lacked an eco-friendly floss alternative and well-designed zero waste container for people to use, she and her husband decided to get to work. After many late nights researching and collaborating with friends, family & their local community – they developed a product that would positively benefit people's smiles and the planet.

"For every person in the U.S. who flosses their teeth according to ADA recommendations, just the empty floss dispensers alone would fill a landfill the size of a football field six stories high." – source: www.viajaryamar.com. This shocking statistic drives us to continue spreading awareness about the large environmental impact one small habit like flossing can make. When you decide to take the step to eco-friendly flossing, you are making a mindful purchase that positively impacts people and our planet.

Dental Lace Refillable Floss is a zero-waste, refillable, and eco-friendly dental floss. Choose from either 100% silk or plant-based vegan floss options both of which are biodegradable. Each silk or vegan floss spool is beautifully wrapped and sealed in either a minimalist glass container with a 100% stainless steel cap or certified compostable refill bags that contain each refillable floss spool. Our green branded packaging that contains our products is made from 100% post-consumer paperboard. All glass floss containers are meant to be reused & refilled. Sign up for our Subscribe & Save floss refill options to easily opt-in to eco-friendly floss refills shipped to you when you need them. When you Subscribe to our Refill Floss options you go 100% zero waste.

Dental Lace Inc., United States
Jodi Breau, Alan Shaver, Emily Brackett, Jim Morra, Lewis Fitts, George Webber, Sara Anagnostis

WEB **INSTA**

WeTKare. Do You Want TKare With Us?

THE PROJECT WeTKare is an eco-friendly and sustainable home cleaning product. Thanks to biotechnology we have boosted the degreasing and sanitizing power of the enzymes to develop safe, efficient, and easy to use products in concentrate formula for maximum efficiency.

WeTKare Multi-Surface and Floor-Cleaner minimize the plastic and water waste, CO_2 and help to avoid to transport tones of water. 1L of Multi-surface provides up to 100 bottles of other cleaners for windows and furniture or up to 50 bottles to clean the kitchen and bathroom among other uses. The Floor-cleaner with 250ml provides up to 250 cleaning buckets.

ABOUT My name is Javier, and I am the owner and founder of WeTKare born and raised in Madrid. I started recycling paper and glass, but the more I read and inform myself about pollution and climate change, the more I realized that changes needed to happen more urgently!

I am convinced, simple changes have a big impact on our environment, which will improve our health and life quality. Because to be ecological isn't all, I want to inspire everyone to reduce waste and switch to a mindful consumption habit through manageable sustainable alternatives while protecting our planet.

WeTKare was created with the intention to unify sustainable products and services but in my research, there was only ecological household cleaning product, however, I had the opportunity to find a great laboratory with a presence around the world with the same mentality, so with their experience, I decided to start with WeTKare household cleaners.

Javier Otero, Spain
WeTKare is a small business that with the huge help of friends, family, and a lot of people, who want to keep the world as a great place to live.

WEB **FACEBOOK**

INSTA **TWITTER**

DigitalGift – Eliminating Gift Card Plastic

THE PROJECT DigitalGift delivers digital gift cards built around patented technology via a mobile application available for use on Apple and Android devices through the App Store and Google Play. Currently, the company represents over 250 national brands and growing. The company continues to build on the technology to provide highly customized and personal gift-giving solutions.

ABOUT The gift card is the most requested Gift in the US and yet in an age of digital, the Gift Card industry is antiquated and impersonal. 70 million tons of plastic waste a year can be attributed to gift cards. In 2019, the Founders of DigitalGift set out to change that by launching DigitalGift with the goal of eliminating the need for plastic gift cards altogether. DigitalGift is more personal, more available, and plastic-free.

DigitalGift, United States
Doreen Morgan, Jim Clark, Les Adkins & CodeTank Labs

WEB

NATURAL COSMETICS. VEGAN. NOT TESTED ON ANIMALS

HOLY PIT! The Deodorant Revolution

THE PROJECT We are a young startup from Austria that is turning the deodorant market upside down. We want to support people to feel confident and comfortable in their skin. Our first step towards odorless sustainability, was a concentrated deodorant packed in a small sugar cane tube. After over a year of development, we are proud to present to you our heartfelt project: The smart REFILL DEO. A refill system that aims to reduce plastic waste in the deodorant sector to zero.

THE CASE – reusable instead of disposable:
From already discarded single-use plastic, we make a reusable case that can be used for years. If it does end up in the trash at some point, it is recyclable and can be reborn as a new product. Recycled. Recyclable. Reusable.

THE REFILLS – paper instead of plastic:
Our cartridges are made of 100% paper. In a complex process, they are mechanically processed in such a way that they become grease-repellent on the inside and thus do not need a plastic coating. That makes them a natural product that is even compostable. Since our REFILL DEO is concentrated, you don't need much of the product. One refill cartridge is enough for 8-10 weeks.

THE DEO – Unique:
HOLY PIT creates an alkaline environment. For stinky bacteria, a no-go. For the armpits a blessing. Because the unpleasant smell is suddenly gone. In addition, our products are vegan and have not been tested on animals, but on sweaty armpits. Our deodorant complies with the highest natural cosmetics standards and comes completely without aluminum and microplastics.

Refill? – Very simple!
Changing the refills is very easy, intuitive and quick. You can easily push the deodorant upwards with your finger. With this simple, minimalist approach, we save unnecessary parts, unnecessary packaging and thus resources!

ABOUT Everyone knows the problem. Whether after a workout or a long day at work, at some point the smell of sweat spreads. It was the same with us. Since we did not find a satisfactory solution on the market, we informed ourselves about the development of sweat odor. We found out that sweat does not stink but is odorless. However, bacteria form under the armpits and decompose the sweat, forming foul-smelling butyric acid. And this is what we perceive as the "smell of sweat". So, we had the idea to stop the bacteria formation. Because no bacteria, no decomposition, no stink. Together with a German laboratory we implemented this idea and developed as a first step our All natural Deocreme.

With HOLY PIT we are setting new standards. Our vision is a world without unnecessary single-use packaging. We replace products of everyday life with smarter ones, inspire people and want to create a more livable world.

Holy Pit, Austria
Branka Puljic, Asmir Samardzic, Merima Samardzic, Max Hausmann

WEB | INSTA | FACEBOOK | YOUTUBE

More Water, Less Plastic!

This is the scribble of a smart hydration station to provide water refills in outdoor spaces across the EU. The start-up MYWATER redefines public access to drinking water while on the move. Learn more on page 153.

How Are You Fed?

THE PROJECT Sacred Tools for Conscious Consumption:
- Personal Utensil kits, solid brass (hand-poured),
- handmade hemp napkins,
- chopsticks,
- stirring straw.

I do direct-to-garment printing onto the napkins. This allows me to collaborate with other companies, festivals, etc. through co-branding. I print their logos, messages, graphics, etc. onto the napkins along with my branding. This shows their commitment to the leave-no-waste movement.

Also, I created wall-mounted, custom- built vending machines to dispense the product. The machines have video screens for sharing vital messaging and graphics.

ABOUT 25 years ago I read a story about a Tibetan monk that entered a monastery. He was issued 1 wooden bowl for life. The entire act of eating and caring for the bowl was a ritualistic ... a prayer. He washed the bowl in the river, scrubbed it with sand and dried it in the sun. He then stored it in a pocket in his robe sleeve. I wept when I read this and began shifting my life around this lifestyle; of turning routines into rituals, of choosing this lifestyle.

I am not here to save the earth. I am here to honor, love and respect her. My role is to share this lifestyle with my customers and offer them beautiful tools that they can carry for a lifetime.

1 person only needs 1 bowl.

fed, United States
Dawn Prokop, Jaz Davis,
Holliraja Vibration, Plant Medicine

WEB | INSTA

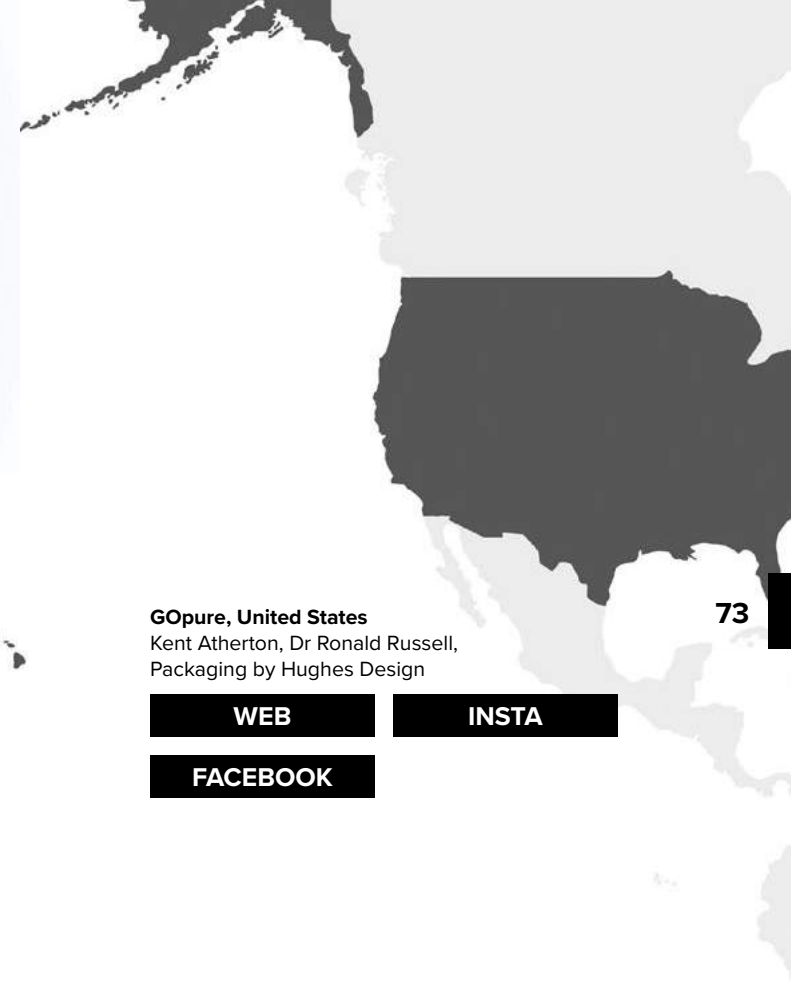
FACEBOOK | ETSY

GOpure Pod Portable Water Purifier

THE PROJECT Bloc Enterprises designs products to improve people's lives with innovation, technology, and solutions to everyday health and environmental challenges. Bloc strives to be a good steward of the earth, building awareness for sustainability principles and reducing our ecological footprint. This begins with water. There is a drinking water problem in the US, from decades of reckless farming using toxic contaminants leaching into our nation's water supplies. Compounding the problem is 1/3 of the population do not trust their tap water so instead of buying alarming quantities of single- use plastic water bottles, which is now causing a massive plastic pollution crisis from the 35+ billion plastic bottles discarded each year. Bloc's solution is the GOpure Pod, a portable purifier the size of a wine cork with the power to purify tap water everywhere. The Pod works continuously to purify up to 264 gallons with zero plastic waste, so each Pod is helping eliminate 2000 plastic water bottles from reaching our oceans.

Our award-winning package design uses recycled paper certified by SFI and a fully sustainable borosilicate glass vial with a cork stopper. The Pod's core is biodegradable/compostable and the casing is recyclable (category 5) or may be returned to Bloc Enterprises.

ABOUT There is not been any real innovation in water filter technology since the activated charcoal filter was first introduced over 50 years ago. These filters are designed for water to flow through once and are generally used in point-of-use pitchers, faucet-top devices, and refrigerator or under-the-sink filters. None of these products offer portability so consumers have been left with the option of buying plastic water bottles when out of home at work, school, sports, travel, etc. Bloc Enterprises was motivated to discover an innovative technology to purifier water in a small, portable and inexpensive device that can be taken everywhere to improve the quality and taste of potable water. A product that is brand agnostic so it could be used in any water container and in multiple ways. Moreover, to develop a technology with the power to continuously adsorb contaminants like heavy metals, fluoride, or microorganisms that carbon filters miss. By solving the first big problem of making tap water safe to drink everywhere and taste great, Bloc understood this would make an incredible impact on the second big problem of reducing plastic pollution on our planet by eliminating the need to buy single-use plastic water bottles.



GOpure, United States
Kent Atherton, Dr Ronald Russell,
Packaging by Hughes Design

WEB **INSTA**

FACEBOOK

Soisi – Plastic-free Exercise Books

THE PROJECT “Plastic-free exercise books” cut down on material to avoid waste in the first place. In order to assign the uncolored white exercise books to the various subjects, the corners of each book can be painted in any color. Thus, all colors are available and the additional cover is omitted. The exercise books are made in an environmentally friendly printery in Germany and contain 100 % recycling-paper (Blauer Engel). The cover is designed subtle with the exclamation “I don’t need a plastic cover”.

ABOUT Having five school kids, every summer we were looking at a huge pile of plastic waste from the passed school year. The largest part of that pile were plastic exercise book covers used for color-labeling in schools. We thought to ourselves: that can’t be state-of-the-art in the 21st century. So we sat down together and designed the solution: the soisi exercise book that doesn’t need a plastic cover. The soisi exercise books are printed in an environmentally friendly printing house and are made of 100 % recycling paper, “Blauer Engel” certified. Not needing a plastic cover, the soisi exercise books bring schools one step closer to a plastic-free learning environment.

Soisi exercise books are available now at Greenpeace and many other shops.

soisi, Germany
Team soisi = Britta Kratz & Elke Leipf

WEB **INSTA**

India’s First Paper Bottle

THE PROJECT Kagzi, born in 2016, is a subsidiary of Table-Bandi LLP, a packaging solutions company. We were conceived out of the motivation to provide an alternative packaging solution for businesses seeking ecological ways to package their products. Our highly skilled team has designed a paper bottle that is made of waste paper pulp and is 100 % compostable. These bottles can be used to pack toiletries like liquid soap, shampoo, lotions etc.

Our founder Samikha Gareriwal is passionate about the environment and has worked closely with the Kagzi’s research and development team to create India’s first paper bottle. The sophisticated technology we have used ensures that every bottle is waterproof, durable and of high quality.

We also invest in developing new and innovative eco – friendly packaging solutions for a better future. Our vision is to create a healthier planet for our future generations.

Kagzi is located in NCR, India with a branch in Hyderabad, India.

ABOUT 220 million plastic bottles are produced every day. 80 % of them end up in landfills. It takes 450 years for each bottle to decompose. Every plastic bottle we ever used is still somewhere on the planet.

These numbers and the toll single use plastic bottles have on our planet drove our founder Samiksha Gareriwal to find an innovative solution. She was acutely aware that every time she bought something in single use plastic containers, she was choking the planet even more. The market had no eco – friendly alternative. This motivated her to create an alternative – paper bottles that are 100 % compostable.

The journey to reach this stage was not easy and was marked with immense challenges. However, due to the faith of our partners in the concept, we have manged to come up with a bottle that is durable, compostable and a home-grown solution to single-use plastic bottles.
I come to Allday as someone who has seen the terrible issues of plastic in the food supply chain and want to raise awareness and educate other people of this. I hope my knife becomes a talking point at the table of the issues we face and how we need to collectively work together to improve our situation.

Sunny Tanwar, India
Samiksha, EV Digital

WEB

ÖLOBOX Smart Pack Snack

THE PROJECT ÖLOBOX is a healthy snack in an innovative package with a pocket for shells inside which allows to eat natural snacks anywhere.

It is a smart package for snacks that need shelling before eating. The husks section is inside, it opens after the pack is opened. When you finish eating it's very easy to close the pack with shells and throw it to a litter bin.

ÖLOBOX is a new culture of healthy snacks eating and attentive attitude to customers which requires a fresh approach to design implementation. Our audience eat rationally, they are responsible in their snack choice and garbage utilization.

ABOUT I would like to make the world a little cleaner.

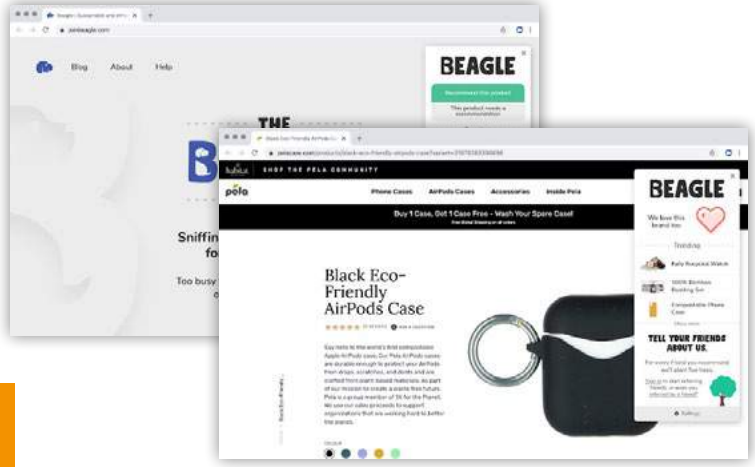
First of all, it's very important to tell the customer how to use the new package. We have found the inspiration in the symbol of recycle. The main idea of the design of ÖLOBOX's pack is based on the instruction there with the arrows being the key elements. They show the sequence of actions for the consumer: 1-2-3.

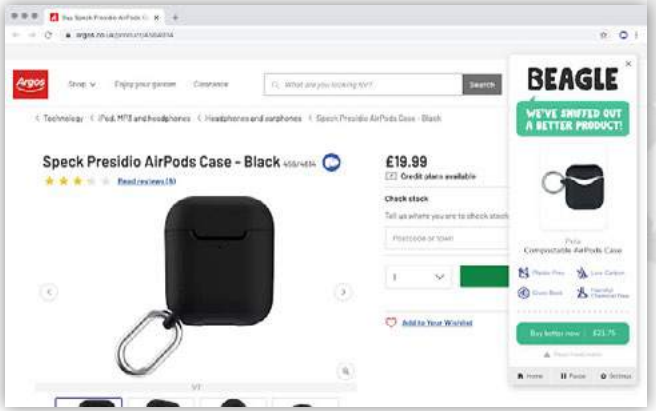
Olkas Voron, Russia
Nikita Bulgakov, Aleksey Koler, Viktoriya Epanyan

WEB **INSTA**

Twine

This futuristic, modular furniture piece is 3D printed and made of waste from medicinal settings. The studio HagenHinderdael seeks new sources of post-consumer or post-industrial material types for their elemtens and installations. Learn more on page 125.





The Beagle Button

THE PROJECT The Beagle Button is a browser extension that helps users shop more sustainably online. Whether it's plastic-free, recycled, vegan, ethically sourced or any other of our carefully selected metrics, we'll find users recommendations for better alternatives as they shop online. You simply install the extension, shop as usual and we'll look pop up with helpful recommendations. We use machine learning and natural language processing to understand what you are shopping for and suggest a sustainable alternative from our database of thousands of planet-friendly alternatives. For example, you might go to Amazon to purchase some disposable masks, we would pop up with a sustainably sourced, reusable alternative.

ABOUT For me, The Beagle Button story starts with a new years resolution to reduce my consumption of single-use plastics. I had an image that I couldn't get out of the mind of my personal waste mountain that my life had generated so far. My resolution led me to totally change my life, leaving the corporate world in a bid to reduce my impact on the planet. Each of us as founders had a personal moment of realization there this was both a consumer and an environmental need for this company. We would find ourselves in regular conversations where people expressed a desire to shop more sustainably and feel guilty when they don't yet they still struggle to fit it into their routine. We know first hand that there are great sustainable brands out there, and wanted to know why our friends weren't shopping with them. When we explored further we realized it wasn't just our friends; 73% of people want to shop more sustainably. Despite this desire, 38% of consumers don't shop sustainably because they can't fit it into their routine, and 48% because of a lack of awareness of eco-friendly options.

We knew we needed to build a tool that could make people aware of sustainable alternatives at the right moment when they are browsing online.

The Beagle Button, United Kingdom
Daniel Hemsley, Dave Henry, Tara Button

WEB **EXTENSION**

NomNom

Philipp Hainke, Germany

WEB **INSTA**

THE PROJECT NomNom is an ecological cutlery set with a biological coating. All pieces are completely plant-based and 100 % biodegradable. Its innovation is a purely biological coating of bio waxes that makes the objects water-resistant. It also gives the material a smoother surface, reminiscent of plastic, which feels much more pleasant on the mouth and lips than conventional products without a coating. Unlike other waxes, the melting point of the mixture used lies over 80°C. This is not only important for use in contact with hot food but also allows the usage for hot beverages, such as Tea or Coffee.

The innovation of NomNom lies in its surface: a purely biological coating of plant waxes makes the objects water-resistant. It also gives the material a much smoother surface, reminiscent of plastic, which feels much more pleasant on the mouth and lips than conventional products without a coating. Unlike many other biological waxes, the melting point of the wax used in NomNom is over 80°C. This is not only important for use in contact with hot food but also allows it to be used in hot beverage applications, such as Coffee or Tea. The wax infiltrates deep into the wood pores and seals the surface permanently. The coating makes the surface not only water-repellent but also more durable, which is particularly beneficial for the knife's cutting edge. The extremely resistant coating results in the possibility to clean the cutlery and re-use it several times. The cup is joined with an ecological adhesive based on lime and casein which makes it extremely resistant to moisture.

ABOUT By 2021, disposable plastic cutlery will be banned in the European Union. Current users, for example, fast food or larger festivals, depend on such consumables and will need a replacement. NomNom is an ecological cutlery set with an innovative biological coating that makes it significantly more durable than conventional eco-alternatives. All objects are completely plant-based and 100 % biodegradable.

The ecological crisis in which we find ourselves can no longer be denied. NomNom is a straightforward project that concretely tackles one acute problem. It offers an applied solution that can be scaled for industrial production and could help to rethink our current material steams. By awarding NomNom you will help to promote the project by presenting it to a wider audience and to shift our economy towards more sustainability.

We Put Soap In Cans

THE PROJECT KANKAN is a modern personal care brand committed to the values of a circular economy. Designed from the get-go to have an impact as it grows, KANKAN provides an elevated, plastic-free alternative for your bathroom essentials.

In simple terms, we put soap in cans. Why cans? Firstly to make refiling at home a nice, convenient solution. But also, because cans are infinitely recyclable and use pre-existing waste streams that are commonplace in the world. They are also lightweight, transport well, and be able to be used for all liquids that we use in the bathroom. Whilst consumers are wanting to reduce their plastic use (69% of us this year – making this the number one sustainable commitment overall) we are still wanting liquids the foam, smell nice, and make us clean. Because of this, we see our products as a bridging product that helps people transition from what they currently use to a better solution all around.

ABOUT After watching Blue Planet 2 it was hard not to look at our lives and see what changes we could apply to our lives. Although there were some obvious quick wins, in the form of reducing our packaging, and where we shop, there were some items we couldn't find great alternatives for. Personal care and beauty were a real problem – whilst there were alternatives, they all presented a compromise that we struggled to reconcile – either inexperience or use. We really thought there ought to be a simple like for like that could also IMPROVE user experience, and also provide a positive impact to the world. We wanted the daily activities to be of impact. And so, KANKAN was born.

KANKAN, United Kingdom
Eliza Flanagan, Mary McLeod

WEB **INSTA**

FACEBOOK

Powder To The People

THE PROJECT At Ethosa, we're revolutionizing how people think about personal care products by giving them the power to make a difference with their beauty purchases. We bring environmentally friendly, refillable, powdered personal care products that are tailored to people's body skin needs. Sustainability is no longer a trend. It's essential for our future. Our mission is to make a difference in the way people consume their beauty and personal care products. We believe our throwaway, live-for-the-moment culture has gone too far and that a revolution is due in how we produce, buy and consume our beauty and personal care items. That's where Ethosa comes in. We've turned things upside down with waterless products that have the power to positively impact the future. Our first product, Sablé de Bain, is a powder-to-gel body wash that activates with water within seconds and that goes into a beautiful lifetime refillable bottle.

ABOUT Ethosa was born as a result of two passions – the environment and personal care products. Having worked in direct connection with the beauty and personal care industry I've seen firsthand the true and often horrifying impact that this sector has on our planet and health. Armed with sound knowledge about the industry and a passion for preserving and protecting the environment, I knew there was a better way to do things. Ethosa encapsulates my vision to disrupt the industry in an innovative way and set new standards and expectations that center the environment and empower consumers to make confident planet-positive choices.

As well as revolutionizing personal care products my mission with Ethosa is to promote a radical change to how we consume beauty products and create a space for a conversation about how we can all work together to safeguard our future. Ethosa is about more than high-performance personal care products, it's a movement that's designed to inspire, support, and create an environmentally resilient future that we can all be proud of. I may be only one person, but I believe that together, we all have the power to create lasting change.

Ethosa, United Kingdom
Gaelle Chatelard, Lisa Mallinson

WEB **INSTA**

FACEBOOK **LINKED IN**

Clean Home, Clean Conscience.

THE PROJECT How many plastic bottles of different cleaners do you have at home? What if you could eliminate most of them with one? Neatly is a multi-purpose cleaner that is a concentrated jelly. You take a jelly, drop it into hot water, mix and spray away to a clean home. The best part is that we do not use plastic anywhere, not in packaging or in the formula. The cleaner works wonders on many surfaces such as glass, marble, granite, wood, and appliances. The package contains 4 jellies, each one to be dissolved in 750mL of water, which means that 48g worth of jellies turn into 3 Liters of cleaner. The package itself is made of cardboard and a metal lid, to keep jellies fresh.

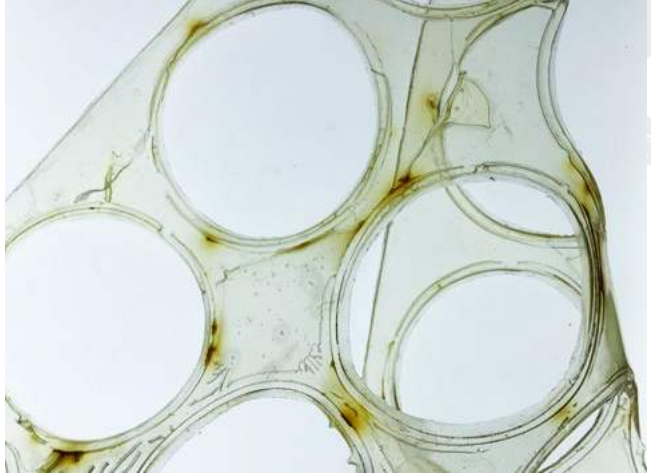
ABOUT I worked as a formulation chemist for a decade, specializing in industrial cleaners. My job was to take existing heavy-duty cleaners and reformulate them to make them eco-friendly and less hazardous. This experience in formulations meant that I took a critical eye to household cleaners that I used every day. I told myself: “There must be something better than hauling multiple bottles of cleaners home just so each bottle cleans one area.” I began working on the design of the perfect household cleaner as I saw it – zero waste, no plastic, and biodegradable. A year later, my vision became a reality, and Neatly is available for consumers.

Iryna Rosetti Pacheco, Canada
Bruno Pacheco, Emily Bassett

WEB **YOUTUBE**

Seed Paper From Austria – Even Bees Love It

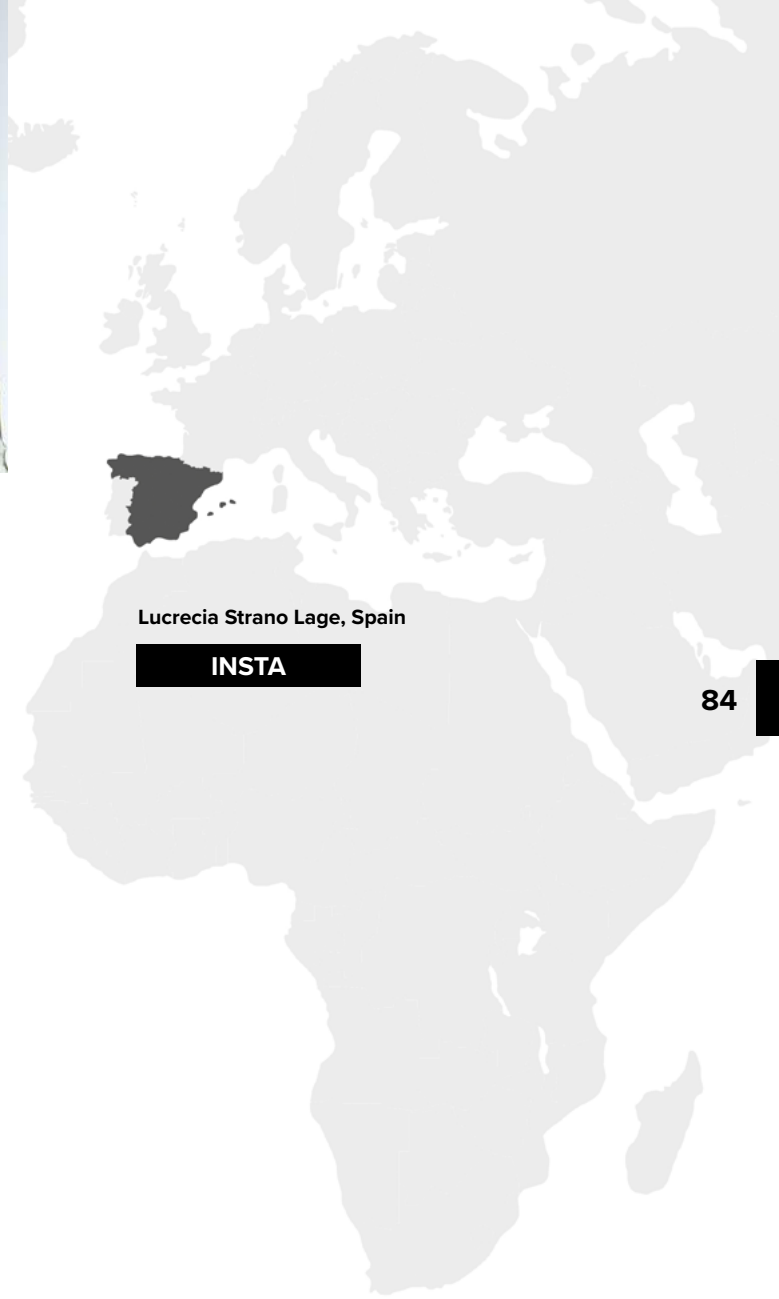
This Austrian made paper turns paper products into blooming flowers. Learn more about this pretty product that even bees love on page 126.



Circular Rings

THE PROJECT CIRCULAR RINGS is a sustainable package ring made from 100% biobased materials. It is 100% compostable and biodegradable, designed to replace plastic rings that hold together multi-packs of canned drinks. It's a flexible and rigid biomaterial, resistant to the weight of cans. It would biodegrade in less than a week in the ocean, and instantly in warm water. Also, it is toxicity-free fish food.

ABOUT My research begins at the intersection of biology, textiles, and technology, from which strano microfactory project was born. A research/educational space on sustainable materials alternatives with its main focus on design. CIRCULAR RINGS, is one of the infinite projects that can come up because the applications of biomaterials are as infinite as the ways that exist to manipulate them. As a designer I feel a huge commitment to nature, how necessary are the things that we give birth to in the world?



Lucrecia Strano Lage, Spain

INSTA

Eat Your Bowl

THE PROJECT With the aim of reducing single-use plastic waste in food containers for deliveries and take-away, we have developed an alternative, made of natural materials and both edible and home compostable.

We have designed a salad takeaway container made of wheat husk for the base and PHA or Polyhydroxyalkanoates (bacteria-based composite) for the lid. The base is edible, but most importantly can be composted as food waste, without the need for any special infrastructure or industrial composting facility. The lid is not edible, but PHA is a material with properties similar to plastic but can also be composted without any special facility, and if accidentally goes into the ocean it will fully decompose within 1-3 months, without any microplastic left behind.

ABOUT My parents had a small farm and used to work the land until I was 3 years old so I grew up with a close relationship with our natural environment. As a designer, I am always interested in agricultural processes, materials, by-products to see how we can live more sustainably. The idea of using wheat husk as a building block for these containers came about as I had a conversation with a salad store owner. She was looking for an alternative to plastic bowls for takeaway and at the same time were testing a few breadsticks to serve with the salad. I put the two things together and design an edible bowl that you can break the edges and use as breadsticks!

Gustavo Maggio, Singapore
Forest&Whale

WEB 1 **WEB 2**

INSTA

Back to Basics!

THE PROJECT Clay water containers have been there for centuries but in order for them to be accepted and adapted in the current world, they needed some revamp of design, making it aesthetically pleasing and user friendly at the same time. Kandy bottle is a blend of Clay Structure, Cork Cap, and Jute Packing making it an all eco-friendly alternative to plastic bottles. The weight of the bottle is 40 % lesser than the traditional designs and the evaporative cooling mechanism maintains the temperature of the water inside between 23-25 degrees Celsius and pH at 7-7.5 making it ideal for drinking. Apart from the benefits to the environment, the manufacturers who are the artisans of India in the rural areas are benefitted by improving the livelihood conditions and also reviving the dying craft.

ABOUT Evaporative cooling is an interesting phenomenon that is present in nature but not widely made use of. As a recent graduate back in 2016, I was quite fascinated by this idea and why it is not widely used and thus understood the problems of weight and improper designs. Also upon research came to know the health benefits of the same which are ideal temperature, alkaline pH level, and a mixture of various minerals from the soil. Which gave birth to this idea and eventual prototype, development, and sales of the Kandy bottle with a motto Stay Cool, Stay Healthy. And as per the market demand and feedback, we have also designed a smaller version of 650 ml along with the 950 ml version.

KandyEco, India
Sandeep Kumar Gangaram, Ravi Teja,
Centre for Social Innovation & Entrepreneurship,
Nirmaan at IIT Madras

WEB **INSTA**

Oka Biotechnology

THE PROJECT Replace polluting or life-cycle disposable packaging with negative impacts. Our material is based on cassava starch, a renewable raw material found throughout the tropical region of the planet, of clean production, low water footprint, and compostable after use, and can be used as animal feed after use.

Cassava bio packages are ovenable, withstand up to 200 degrees Celsius and freezing, are anti-impact and thermal and water-soluble insulators. Bio packaging is non-toxic, edible, and has a closed production cycle. One of the uses of this technology is to generate capsules that act as succession seed pumps for reforestation. It can contain nutrients and conditions necessary for life to thrive, such as preserving moisture, such as a uterus and its placenta. Bio packaging can transport food, technical products, but also regeneration.

The Oka matrix is responsible for launching new products, prototyping, the scale is distributed and interconnected, both in industrial plants, as in communities, cooperatives, or other social models, and also in partners who wish to generate scale and distribution in Large Centers. Our equipment is modular. In addition to machines, it is possible to supply a complete mobile unit in a container. Our model proposes distributed and networked production, with a fractal model, inspired by biomimetics and maintenance of life on earth.

ABOUT Oka was born from a search to find a compostable material to apply in organic solid waste collectors for a project I developed in 1999. Since then I have found in cassava a solution that allows the development of fast cycle products and I dedicated myself to improve the process, biomass, create new designs and applications. I mixed fibers and natural dyes and now I intend to start licensing production within industries to solve specific demands for technical packaging; in communities, to meet local demands and opportunities, and in partnership with entrepreneurs to generate scale and supply the packaging market that does not stop growing and is now responsible for most of the planet's pollution.

I always had the impulse to implement a work where the entire production cycle was positive, which would improve the lives of the people involved in the process, both those directly involved as partners, suppliers, and consumers, and which would inspire changes in behavior, worldview, and awareness. Had the simple and the natural as the north.

Oka Biotecnologia, Brazil
Marney Cereda & team, Juarez Neves, Luiz Montanari, Érika Cezarini Cardoso, Erika Cardoso, Felipe Rocha, Olivia Yassuda, Eduardo Martin, Natália Del Gaudio, Fernanda Dantas

WEB **INSTA**

LINKEDIN **FACEBOOK**

Glo-box: A Reusable To-Go Box!

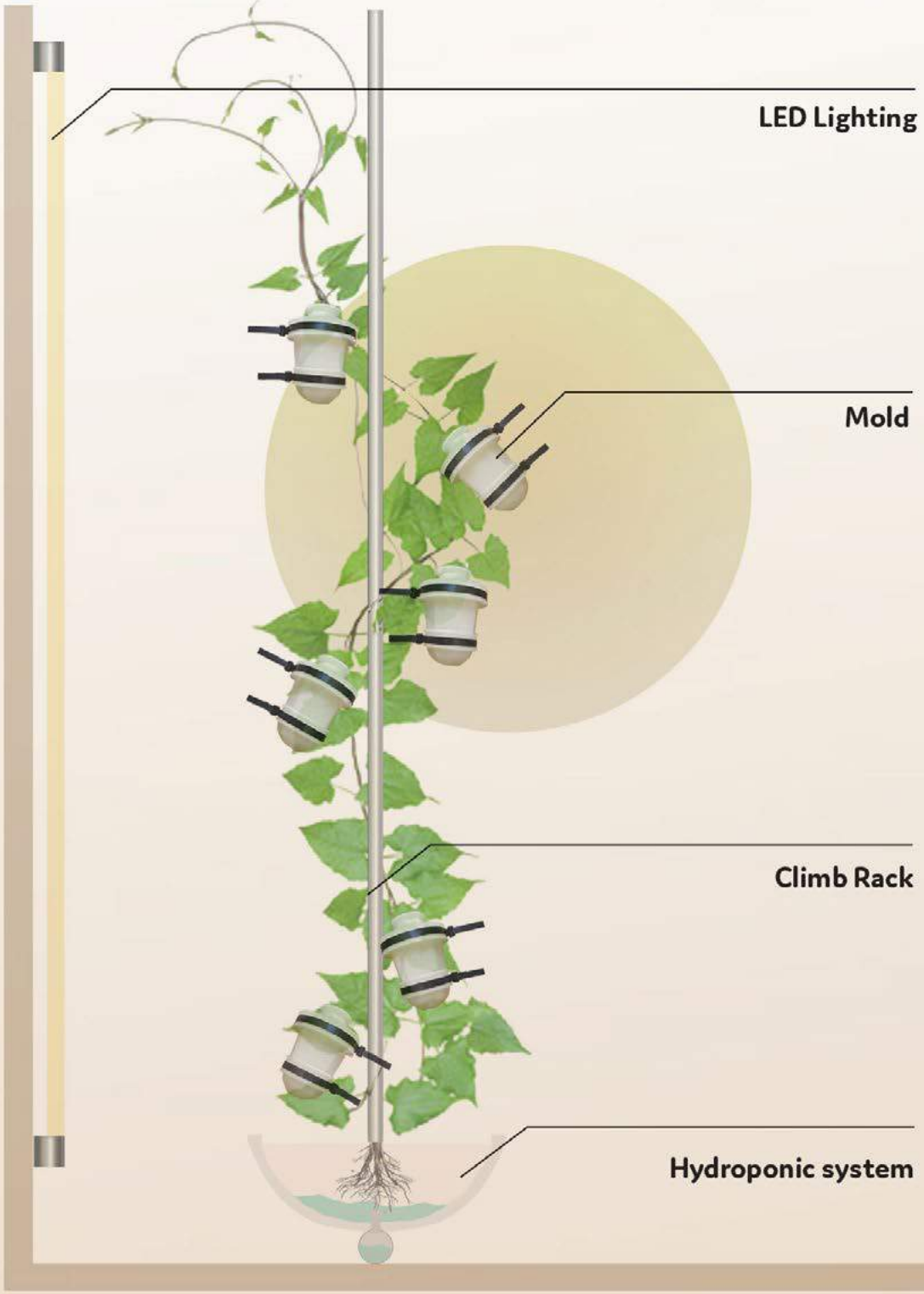
THE PROJECT For the past two years, we have worked with the Global Co Lab Network, the Smithsonian Conservation Commons, and the D.C.-based company, Plastic Tree, to design a reusable takeout container program. With a $25,000 grant we received from Amazon, we've started a pilot to work with restaurants to provide reusable containers for takeout orders which customers will then return to drop-off sites. The containers are cleaned in a commercial kitchen and returned to restaurants for reuse. This closed-loop, circular economy-inspired environmental initiative will divert thousands of single-use styrofoam and plastic containers from the Potomac River and other waterways around the DC metro area.

ABOUT We are from the Eco Teen Action Network's Plastics Hub, which is part of the Global Co Lab Network. We all share a passion and goal of creating a global community of teen changemakers by taking action towards reducing waste by inspiring community participation and partnerships to eliminate single-use plastics, improving recycling programs, and encouraging thoughtful consumption through teen-led initiatives. Our project has been receiving recognition from the Washington Business Journal along with funding from Amazon whose new headquarters will be located in the National Landing area. Our goal is to implement a system that is mutually beneficial for restaurants, customers, and our environment.

Sumya Abida, United States
Lara Ilao, Linda Staheli, Plastic Hub Teens

WEB 1 **WEB 2**

INSTA 1 **INSTA 2**



The Gourd Project

What you see here is the scheme to grow gourds – a fast-growing plant that bears robust fruits. Letting those fruits grow in moulds, turns them into functional shapes, such as cups and flasks. Interested? Learn more on page 38.

The Friendly Soap

THE PROJECT Manufacturers of biodegradable, plastic-free, natural soap, shaving, shampoo, and hair care bars. Skin-friendly, animal-friendly, and earth-friendly.

ABOUT We're a wee bit obsessive at Friendly, and putting ethics before profits underpins everything here. That's why our products aren't just vegan, or cruelty-free, or made by people paid a living wage, without using plastic, preservatives or sulfates. They're all of these things!

Potential containers removed from the plastic pile by Friendly Soap customers ... 2,598,564.

Friendly Soap, United Kingdom
Tony Beddows & team of approx. 30,
Geoff Kerouac & Rob Costello

WEB **INSTA**

FACEBOOK **LINKEDIN**

PRACTICAL

Natural Fork Is Only the Beginning

THE PROJECT Refork is not just one solution. We are a Czech technological start-up that combines waste and natural resources to create materials and products to replace single-use plastic. Our first iconic product is the fork, but for us, the fork is only the beginning.

We have developed a new material based on sawdust, waste from wood processing banded with natural polymers PHB(V). Thanks to our patented blending technology Mechanical Thermodynamic Mill (MTI), we can mix up to 60% sawdust with natural binders. The material is made from resources that are not just compostable in-home compost but also biodegrades in nature without leaving behind micro-plastics. Moreover, we have developed a new process that allows us to process our material on conventional plastic technologies such as injection or extrusion molding. Thus, our solution is easily scalable. In addition, these technologies are highly efficient and allow for zero-waste manufacturing. Everything from material development to final production is done locally in the Czech Republic.

We have been producing over a million cutlery per month since January. In September, we moved to a new factory to scale production to 20 million pieces per month. We already have more than 10 large buying customers in France, Austria, Slovakia, Germany, and the Czech Republic.

ABOUT It all started with the idea of replacing plastic in everyday products with more sustainable material. Drawing from previous experience with manufacturing, our founder Josef Homola spent several years looking for a solution in the small workshop garage of his family. In 2018, the team discovered how to bind wood flour to natural substances. That is how our pioneering fork was born.

In 2019, we founded Refork. To achieve our mission, we decided to establish our Research & Development Centre in Prague to find our new material used for the mass production of cutlery. The journey hasn't been easy as we spent two years looking for the right ingredients when we tested over 2,000 different materials to find the final solution.

In January 2021, we started our first pilot production of 1 million pieces per month. In October, we are planning to open a new factory to scale our production even more. It has a capacity of 20 million pieces per month, and it includes a fleet of injection molding machines, extrusion lines, and packaging lines. We have successfully raised over 10 million euros. Our current plan is to continue developing new materials that are entirely made from natural industrial waste. We are also working on the extension of our product portfolio. For example, we are developing a toothbrush for the dental market to launch early next year. So, for us, the fork is truly only the beginning.

Refork, Czech Republic
Dan Beseda

WEB **INSTA**

FACEBOOK **LINKEDIN**

I’ve Canned the Cans

THE PROJECT SPRAY – THE EVERLASTING ARTIST ECO SPRAY PAINT SYSTEM

SPRAY
An ingenious little device made from aluminum that turns (almost) any plastic bottle into an eco aerosol spray can!

ONE SPRAY TO RULE THEM ALL
For years, people have been asking us to make spray versions of Stuart’s paints. Rather than do that – we’ve re-invented the spray itself, now you can spray anything with SPRAY!

EVERLASTING NOTHING LESS
We wanted to create a device that you could transport, use how you like, with what you like. Simple, eco, and powerful. In an ideal world, we’d love it if you never had to buy a nasty aerosol ever again! As a bonus, you get to re-purpose plastic drinks bottles again and again. And when we, because of the great work that you are doing, run out of plastic drinks bottles to use, any sturdy bottle with the correct thread will do.

ABOUT Our motivation has always been to democratize art. Stuart is famous for, amongst other things, for standing up to the bad guys who have tried to exclude others. Think the Pinkest Pink, the Blackest Black, Happy Clouds, campaigns against hostile design, and many other campaigns, artworks, and inclusive initiatives.

He woke up one morning with an idea to free up the spray can. A few years later, having overcome many design challenges we have made this a reality. Along the way, we have realized that everything that anyone has ever sprayed from an aerosol has been determined by a manufacturer. Think about it for a moment. Any fragrance, any color, any cleanser, any deodorant, any household product, and anything that you have ever sprayed has been put into a sealed, single-use unit by a manufacturer.

A few others have given you ways of pressurizing their containers. But for the first time ever, you can achieve spray can performance with whatever liquids (even some gases) you can imagine while repurposing what was initially designed and manufactured as single-use bottles.

Jeff Lynn, United Kingdom
Stuart Semple

WEB1 **WEB2**

The Ocean Umbrella

Dri Umbrellas, United States
Deirdre Horan, Eric Bird

WEB **INSTA** **TWITTER**

THE PROJECT At Dri, we are building a line of durable, fashionable, and eco-friendly rain umbrellas from upcycled ocean-bound plastic. Local fair-wage community workers gather the plastic from the coastlines of Thailand, then put it through an extensive recycling process. The PET is ultimately shaved into flakes, then pellets, finally turning from pellets into polyester yarn. We use that yarn to create sheets of recycled polyester fabric, which are cut and attached to an umbrella frame. We have taken extra measures to ensure our umbrellas' durability and environmental impact by building the umbrella frame from recyclable stainless steel and adding a bamboo handle. Dri is creating the world's most sustainable umbrella, from top to bottom.

We're also creating a "send back" program in which clients can return any damaged umbrellas and we will disassemble them, then reuse any undamaged pieces in the next round of umbrellas. Our ultimate goal is to give this material as many life cycles as possible.

We are beginning our product line with rain umbrellas as they are an extremely common consumer product with a significant environmental footprint. However, we do plan to expand our product line beyond umbrellas in the coming years. We will create other weather-protecting products to safeguard ourselves against the unpredictable weather patterns caused by climate change, while also increasing our impact on coastlines around the world.

ABOUT A while back I watched a documentary on the ocean plastic crisis. The documentary left me shocked and absolutely horrified. I couldn't believe humanity had let our oceans get to this dire state, and more importantly, that our behavior is only getting worse. I did further research, hopeful that somebody was acting out against this enormous problem. Our plastic production is projected to increase too drastically. I felt compelled to act – I just didn't know how.

About a week after watching this documentary, I was commuting to work when my rain umbrella flipped inside out and snapped. Frustrated and aware that umbrellas aren't recyclable, I threw it into a nearby trash can. I began walking away, then stopped short. I had had that cheesy, cliche entrepreneurial "Ah-ha!" moment. I walked back to the trash can and checked the tag on the umbrella canopy, It was made from 100 % polyester. Could we possibly protect our oceans by making these canopies out of recycled PET yarn? It turns out the answer is yes. So, that's exactly what we're doing.

Through many hours of research, I've learned that over 1.1 billion umbrellas are carelessly discarded every year. Today's umbrellas are made from virgin polyester and fiberglass, which further perpetuate our massive plastic problem and drive climate change. We are building a stronger version of an everyday product desperately in need of an environmental facelift.

Spruce Refillable Cleaning

THE PROJECT At Spruce, we believe that refill systems are the future, as reliance on recycling alone will not be enough to meet the UK's goal for net-zero emissions by 2050. At Spruce, we offer sustainable cleaning products, consisting of infinitely refillable aluminum bottles that our customers simply refill using our concentrated plastic-free refills and tap water.

Where competitor eco-cleaners use plastic or glass we use aluminum – more than 80 % of which is recycled worldwide. We opted for aluminum to minimize our carbon footprint and maximize longevity, as it is a lightweight and durable material as well as widely recycled. Additionally, the packaging for our refills are not only 100 % plastic-free but completely compostable, alongside being compact and light (weighing 140 times less than a typical cleaning product in a single-use plastic bottle containing 90 % water) to minimize the footprint of deliveries.

Furthermore, the cleaning formulas we have developed at Spruce are 100 % non-toxic. Unlike most of our competitors, they are free from harmful chemicals. All our products are completely vegan and certified cruelty-free. Nevertheless, this has not been a trade-off for quality in the slightest. Our products still meet extremely high standards for both performance and quality – they are tough on grease, dirt, soap scum, and limescale, while also having a pleasant fragrance; one of our customers described them as the "Jo Malone of cleaning".

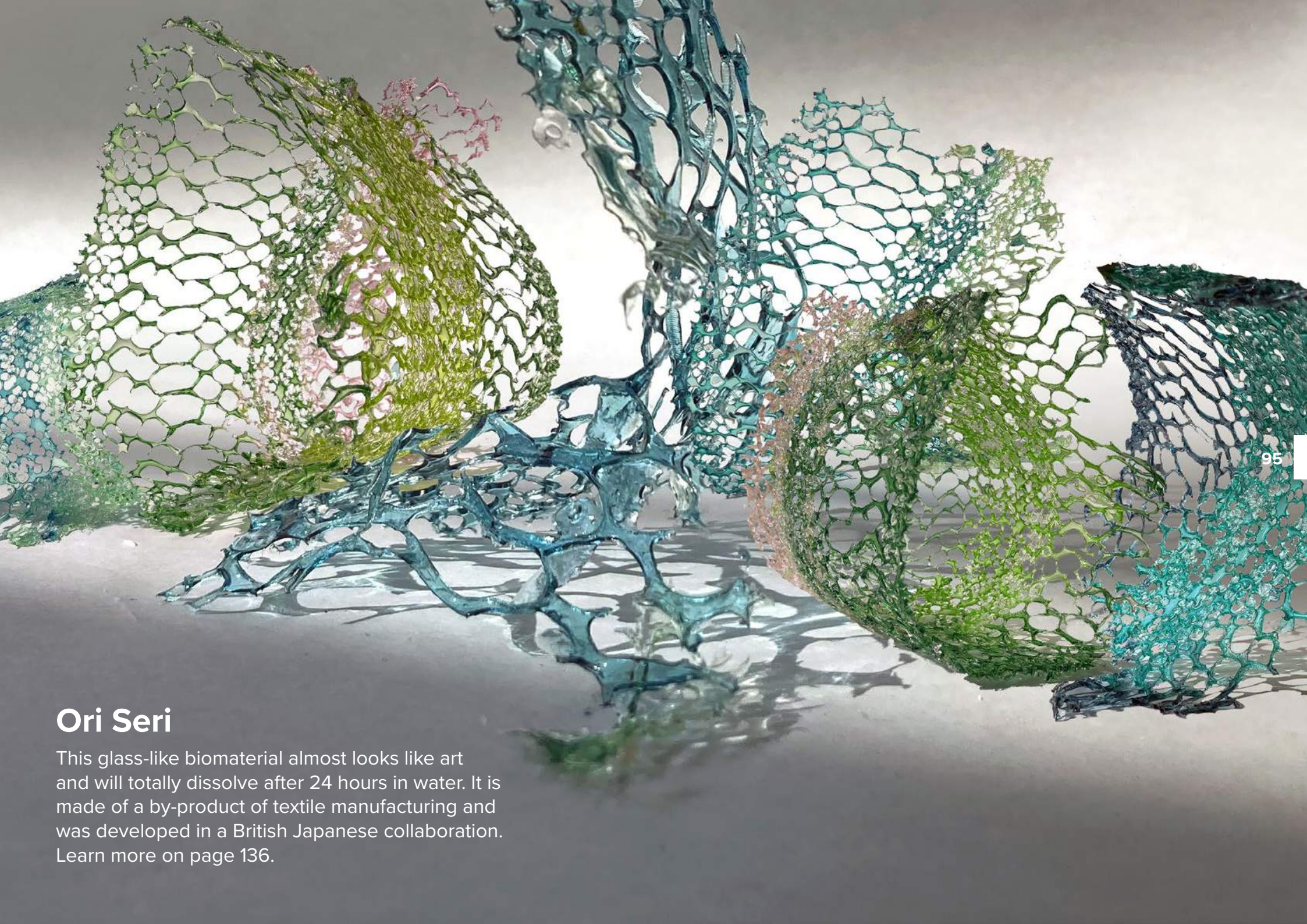
Despite only launching earlier this year we have plans to expand our range and reach in the near future. Additionally, we have ambitions of not just being a cleaning brand, but, through increased brand awareness and online content, becoming more of a lifestyle brand, promoting clean, sustainable, and healthy living among our audience.

ABOUT Spruce was born as a result of our founder Mahira Kalim's personal health issues that led to a clean living journey, aiming to cut out toxic chemicals and plastics present in everyday products. Having suffered from ten years of fertility-related issues, she became aware of the adverse consequences for our health caused by our extensive yet often overlooked exposure to harsh chemicals through cleaners and other household items and made it her goal to try and reduce this impact.

Since launching, we have gone from strength to strength, spreading across the UK in a number of online and brick-and-mortar low-waste stores. Notably this year, we debuted on the shelves of Planet Organic stores, who have recently doubled their order. Our customers rave about how they love cleaning, spraying our cleaners as room fragrance, and calling them "life-changing". As a pending B-Corp, we have demonstrated our commitment to prioritising good for people and the planet over profit. Overall, our initial journey has been a success, and we are confident that we are on the up.

Spruce, United Kingdom
Mahira Kalim & her team

WEB **INSTA**
FACEBOOK **TIKTOK**



Ori Seri

This glass-like biomaterial almost looks like art and will totally dissolve after 24 hours in water. It is made of a by-product of textile manufacturing and was developed in a British Japanese collaboration. Learn more on page 136.

GROW-ON – From Bauble To Bud

THE PROJECT GROW-ON is a compostable Christmas decoration set that promotes fun and meaningful decorations, without the worry of waste. This kit was designed for children with sustainability in mind. Decorations are made from recycled seed embedded pulp paper; packaging is recyclable and multiuse and everything can be drawn on with the natural festive candy cane crayons! No more broken baubles or wastes worries. This fun activity kit ensures quality time with quality eco results. After the baubles are done being presented as masterpieces on a Christmas tree, they can be planted into the soil to become something new. Flowers!

To enhance my USP and to fulfil my own criteria of implementing the origins of Christmas, I felt that the best way to do this was to develop something new from something well known. By this I meant that instead of creating a slightly less plastic bauble, I created an 100% plastic free bauble alternative. The pulp baubles are embedded with winter flower seeds (as GROW-ON would be bought or used during winter months) so that families would be able to plant their baubles after use. This not only creates a nice bonding moment for buyer and user, but it also allows exciting room to see decorations bloom from something users created personal art on. In turn I hope this creates a good association with sustainable alternatives to plastic so that consumers will eventually start to replace their usual one trick plastic baubles, for my eco-baubles with a fun twist.

ABOUT I focused on using existing Christmas products as inspiration so that product waste would be kept to a minimum rather than introducing a whole new unfamiliar product. Utilising pre-existing perceptions on how Christmas products can be used and stored with sustainability at the forefront of the solution was the main objective. GROW-ON was inspired by the origins of Christmas trees. Initially seen as a sign of “new life and hope” I wanted to create a similar story for the Christmas decorations we throw away so easily today. By combining the connection between life and hope, it was only natural to make sustainability my focus when creating GROW-ON.

My journey towards sustainability is still ongoing. The more I learn, the more I realise there is more everyone can do to help our world. Keeping this in mind, choices towards creating an eco-friendly future are not always easy, affordable or attractive. This is why with GROW-ON, I was determined to keep the allure of what makes Christmas special; the tree, the decorations, families coming together and of course traditions. Keeping the same momentum of decorating the tree and making GROW-ON retain that festive feel was key to ensuring that sustainability was something that was accessible to all. GROW-ON is simple, fun, easy and its pretty great for the environment too. My intention for this product was not only for children to just go on to have great Christmas experiences, but for them to GROW-ON to eventually be environmentally conscious adults.

Rezma Jusna, United Kingdom

INSTA

Our Shoes Are Trash

THE PROJECT D'BRIS comes from the word debris, meaning scattered pieces of trash and we make shoes from trash. Based on the principle, the less raw materials the better, we use repurposed or recycled materials wherever it's possible to make a more environmentally friendly shoe.

The main materials we use in our shoes are car tires for the sole and a mix of ocean plastic and recycled plastic canvas for the upper part of the shoe. We are extremely proud of the fact that about 8-10 % of the plastic used in the upper canvas comes directly from the oceans. The majority of this ocean-caught plastic comes from local fishermen who unfortunately are catching more and more plastic in their fishing nets every day. We are hoping as we develop and expand as a company to begin to include more ocean-caught plastic in our shoes. On the inside of the shoe, we have added cotton to increase the comfort of the shoe. The cotton is 50 % recycled and the other 50 % is certified organic cotton. The insoles are made from PU, EVA, and cork, all recycled.

All our main materials besides some natural rubber are sourced locally in Spain, where our factory is located, reducing the carbon footprint on the supply chain. D'BRIS shoes help preserve natural resources and keep the oceans cleaner.

ABOUT It all began at a skatepark in 2018 while complaining over a broken shoe and the lack of more sustainable options on the market. At first, we just wanted to go on a mission to see who was making the best-recycled shoe in the skate and surf community. It was clear early on that a recycled shoe that fitted our taste, style, and environmental consciousness did not exist. Then delving deeper and looking at the so-called market leaders of recycled shoes in the fashion industry, we soon discovered that their products were hidden by a facade of market tactics that made their products seem "green" and "environmentally friendly", which is commonly referred to as "greenwashing". Clear concerns resonated with us here, so we set out on a mission to see if we could make a recycled shoe, with recycled materials, in a factory that had fair work and trade practices. Simple right?

In fact, this was no easy task. We crisscrossed our way across Europe seeking suppliers and ethical manufacturing for eco-friendly or recycled shoes. At one tradeshow event in Milan, we were laughed at by fashion suppliers who said an affordable, recycled shoe was impossible! We asked 100's industry leaders why there aren't more recycled shoe options on the market? No one had a clear answer, which only fuelled our commitments to bring this project to life. Our mission continued into 2019 as we continued to gather small leads, until we eventually nailed a supply chain local to an ethical factory, with fair workplaces in Spain. Since then, we have managed to make a competitively priced, handcrafted shoe made from ocean plastic and car tires, which we launched on Kickstarter in late 2020, to be able to fund the production of our first batch of shoes.

D'BRIS Shoes, Denmark
Magnus Ekermann, Joseph Newcombe,
Sam Shearer, Sean Sandoval

WEB **INSTA**

Carbon Negative Mushroom Packaging

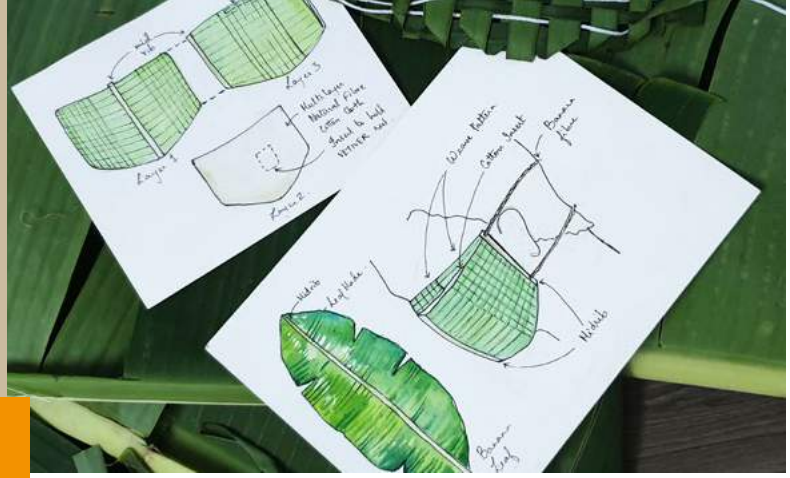
THE PROJECT We believe a world without plastics by next generation is possible and our packaging is a manifesto to share this vision.

ABOUT We launched the Packaging with an art exhibition and art installation that has been touring around the world in Paris, Germany Galerie Kernweine, FRIEZE NYC, DESIGN MIAMI and MET Chairman private art foundation.

AMEN CANDLES, Uruguay
Rodrigo Garcia

WEB1 **WEB2**

WEB3



The Banana Leaf Mask

THE PROJECT The proposed design includes a three layered mask with a cotton insert that can be washed and reused.

- Banana leaves rich in antioxidants with many medicinal properties can keep the skin moist. Commonly used to serve food, it has grooves along which it can be cut easily without the help of tools
- Vetiver (Khus Grass) with its signature aroma counteracts the stench of sweat, has antibacterial and antifungal properties, acts as a natural air purifier, relieves insomnia, fatigue, and stress
- Tightly woven cotton that is stretchable, soft, lightweight, and breathable also allows for repeated usage after being washed in hot water.

All parts are biodegradable and require minimal skill to make and the design allows for easy adaptation to various regions, utilizing available resources

ABOUT In recent weeks, I've come across countless people that do not have the luxury of buying face masks and hence manage with a piece of cloth in the southern tip of the Indian mainland. To start, I zeroed in on resources available in plenty – banana plants, cotton fabric, and vetiver. Almost every household would have these plants on their property and cotton fabric is widely used in the tropics where the summer heat is unrelenting. All parts of the banana plant are edible widely cultivated as well. The skill gathered from countless Palm Sundays filled with weaving palm fronds into artifacts came in handy, helping weave the leaves together.

Evelyn Rachel Suresh, India

INSTA

MOST BEAUTIFUL SOLUTIONS

In this category, we present solutions for a world with less plastic which are aesthetic, appealing, lovely, eye-catching, elegant, exquisite, artistic, marvelous, musing, ravishing, exquisite, pretty, divine, desirable, enticing, fascinating, well-formed, picturesque, striking, colorful and breathtaking.

Eggshell Ceramic

THE PROJECT 10 billion eggs a year are produced in the Netherlands, which makes the country the largest egg exporter in the world. An egg produces a valuable material which is often seen as waste; his shell. Luckily not all 10 billion eggshells are wasted, it's often used as soil improver in agriculture. "Eggshell Ceramic" is a circular material derived from this industry to show new possibilities with this material. This project shows that we can also use the material one more time before it is given back to nature. I developed a biodegradable but strong material out of eggshells which can be a sustainable replacement for single use products. The material has the look of ceramics but the weight of cardboard, which makes it a versatile material. At the end of its life it still can be used for agriculture. The project creates an extra "dot" in this materials lifecycle. The discarded eggshells are coming from a Dutch chicken company that sells its eggs to supermarkets. A part of those eggs are broken in the process from egg to packaging, which provide waste and useless material for them. Currently I'm working on further product development of the material and its recycling process.

ABOUT As a designer I'm inspired by nature and the effect nature has on human. I try to connect people to nature in different kind of ways. With my project Eggshell Ceramic I want show the possibilities of a food waste we all know, all over the world. Tell the story of this material and all its beautiful benefits. The material can be a nutrient for several plants after its use. It can easily be recycled in cold water, the material breaks down and what's left is calcium rich water. This water can be food for plants. For this reason I'm designing a collection of single use plates with the material. I try to adres the issue of food waste and I try to reconnect its user to nature. Nevertheless, the product can be a replacement for single use plastic plates.

GOLD AWARD WINNER

Laura van de Wijdeven, Netherlands

The start of my project is co-funded by the Creative Europe Programme of the European Union, Matter, Elisava and Politecnico.

WEB

The Dissolving Bottle

THE PROJECT We redesigned a shampoo bar into the shape of a bottle to make it more intuitive. A 3D-printable mold was developed for easy replication, along with a Dissolving Font to push education on sustainability. We partnered with an FDA-approved supplier to produce shampoos with our molds. We marketed it as a “Dissolving Shampoo Bottle” and sent these out to hotels and influencers around the country for small-batch testing.

ABOUT The Philippines is commonly called a “sachet economy”. This is how most people purchase their toiletries, with little education on the impact of single-use plastics on the environment. And due to inadequate waste management, we are the third-largest ocean polluter in the world. A terrifying statistic for a country located at the center of the marine ecosystem.

Solid shampoo bars are a great and simple solution to this problem. But after 32 years of existence, most people still think it’s a bar of soap. It’s not appealing for the hotel industry or home consumers to use. Bottles for hair. Bars for the body. So by changing its shape, maybe we can change the consumer mindset.

SILVER AWARD WINNER

Karen Go, Philippines
David Guerrero, Federico Fanti, Rachel Yulo, Liz Castañeda, Choi Co, Meda Cruz, Ernest Pascual, Roshan Nandwani, Al Salvador, Vhilma Mhagsino, David Wright, Carl Graham, Sarah Arrogante, Dianne Sibal, Denise Galoyo, Leslie Tan, Lex Nocheseda

WEB VIMEO

Bacterial Cellulose And Eggshell Snack Packaging

THE PROJECT We designed a snack packaging and developed a compostable material made out of eggshell and bacterial cellulose (old SCOBYs from Kombucha producers). Both materials are abundant resources that would normally go to waste. They are low-cost and easy to process, which contributes to making its manufacturing process feasible. The bacterial cellulose and eggshell biocomposite are home compostable and, since eggshells contain macronutrients that are essential for plant growth, the packaging can also be torn down into small pieces and used as fertilizer.

In order to manufacture the material, the eggshell and bacterial cellulose were washed, boiled, and ground. They were mixed together forming a pulp that was then dried between two fabrics, using as reference the manufacturing process of papermaking.

Not only the planet needs it, but also consumers are asking to have more sustainable, practical, and beautiful products available. In order to make a product with these characteristics, we developed a compostable, foldable, rigid, light-colored, printable material that enables good contrast with almost every color. The shape and structure of the packaging were designed to facilitate the daily lives of consumers, with its practical opening and closing flaps. The Brazilian Modernism artistic movement inspired the visual concept. These characteristics are portrayed in the product in its organic silhouettes, vibrant colors, and the exaltation of local resources.

ABOUT This packaging was designed by Julia Correia Campos in fulfillment of the requirements for the Bachelor Degree of the School of Design at the University of the State of Minas Gerais (UEMG), in Brazil. The material was created together with Ponto Biodesign, which is an experimental laboratory that develops materials with bacterial cellulose and local food waste. Our aim was to create a solution that had less negative environmental impact compared to the traditional single-use plastic food packaging. At the same time, we wanted to create a practical product for consumers that have busy schedules but still want to stop causing so much damage to the planet and want to support local initiatives.

BRONZE AWARD WINNER

Julia Correia Campos, Brazil
Ponto Biodesign, Caroline Pagnan, Elena Amato,
Universidade do Estado de Minas Gerais

WEB **YOUTUBE**

Ohmie – The Orange Lamp

This sustainable, high-quality desk lamp is 3D printed. It not only offers a beautiful design, but also a delicate scent as it is made from orange peels. Learn more about “Ohmie” on page 20.

Butterfly Pea Bag

THE PROJECT The “Butterfly Pea Bag” was handmade with home food waste turned into leather-like biomaterials.

ABOUT In the UK, 6.7 million tonnes of food is wasted per year which totals to costs of £10.2 billion each year (c.2021). Using food waste as a natural source to extract beautiful colors and quality of that like an actual man-made material is really impactful. Not only does it drive conversation about how design can save our future but how we can start thinking and changing the system through outsourcing from our own backyard/waste. We were able to gain colors from our foods such as Cognac and Butter Pea giving our product a special touch and by playing with the quantity of the ingredients, we achieved our desired thickness and sturdiness to make our handbag durable for use. The process of making this handbag thinking ethically through every detail was very rewarding. We hope you enjoy it!

Tahiya Hosain, United Kingdon
Fabiola Soavelo

WEB

The Buzzy Plastic Wrap Alternative

THE PROJECT SuperBee is one of the longest established beeswax wrap brands on the market, making the highest quality and longest-lasting Wax Wraps. The wraps are made from organic cotton, coconut oil, and tree resin (all locally sourced to reduce our carbon footprint), while the beeswax is sourced from a local beekeeping cooperative. We only use the wax that builds upon the outside of the frames, so as to disturb the bees as little as possible.

We have since expanded our assortment to other reusable, sustainable products for around the home, including our Hexawash Laundry Detergent Replacement (using magnesium to clean), Dentos Toothpaste Tabs (plastic-free), and Eco Kitchen Roll (endlessly reusable). Our materials are sustainably and ethically sourced and, where possible, organic.

ABOUT SuperBee is a family-owned social enterprise based in the mountains of northern Thailand supporting plastic-free living through sustainable, ethically made eco-homeware.

Our founder, Antoinette Jackson, started making beeswax wraps in her kitchen after a discussion about plastic waste and traditional food storage. The company, BeeConscious, was founded in 2016 and grew rapidly thanks to our first video going viral! Last year we expanded our product range offering reusable replacement products for many single-use household items.

As a social enterprise, we put the environment and our community first. We help to reduce single-use plastic waste by producing high quality, effective replacements, and educating others in the fight against plastic. We provide jobs, especially to women, in an under-served, rural area. It's important to us that we provide fair working conditions and wages, and a safe, happy working environment, which we believe results in an exceptionally well-made product.

Our entire process is ethical and sustainable, from ensuring the cotton we use is GOTS certified (organic and made in fair working conditions), our beeswax comes from local farms and is harvested so no bees are disturbed, and we never use any plastic in our packaging!

Chris Schalkx, Thailand
Antoinette Jackson, Lutz Schaffranek,
Apinya "Nan" Saeao

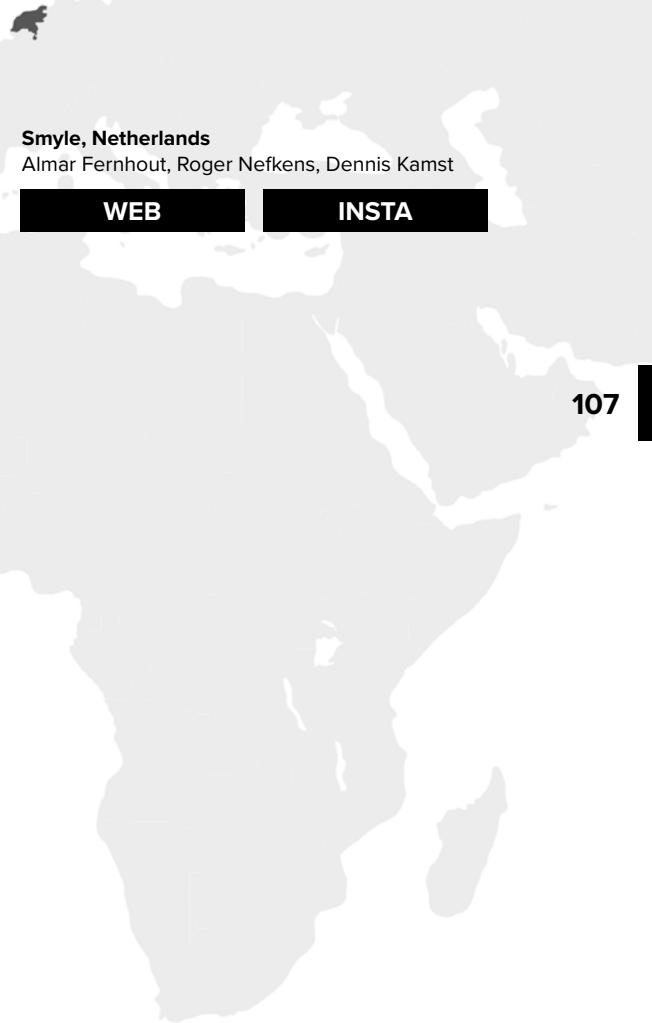
And, of course, our wonderful team of craftsmen and -women from the surrounding villages.

WEB 1

Smyle – Excellent Toothpaste Without the Waste

THE PROJECT First of all, our Toothpaste Tabs are completely natural and incredibly cute. The ingredients we use are healthy for your teeth and don't harm the environment. This makes Smyle the best choice for your teeth and the planet! In The Smyle Factory, we mix natural ingredients such as eucalyptus and peppermint into a unique formula until we have the perfect mix. The result is a Toothpaste Tab that is pleasant to use and delivers amazing results! We are super excited about our own Toothpaste Tabs but don't take our word for it. Listen to our rapidly growing group of satisfied users! To make sure we keep making and improving the best Toothpaste Tabs in the world, we regularly have them tested by the Amsterdam Academy of Dentistry. Using exclusively natural ingredients is a good start. But we went a bit further. Our Tabs travel in recyclable paper packaging. Once arrived, they stay fresh in your glass refill bottle. Because they're so small and light, the mints travel by regular mail. This is completely CO_2 neutral, making it more sustainable than buying toothpaste in a store. Our all-natural Toothpaste Tabs keep your teeth healthy, strong, and minty fresh. All-natural means Toothpaste Tabs without bad chemicals or micro-plastics because those unnecessary and unsustainable ingredients hurt the planet. The glass storage bottles for our Toothpaste Tabs are cute and sustainable at the same time. They last forever but can also easily be recycled. Our refill packs contain 125 Toothpaste Tabs. They're made of cardboard that is compostable and can be recycled up to 5 times. Take that, plastic tubes!

ABOUT Each year 1.5 billion plastic toothpaste tubes end up in our landfills and oceans. We – Almar, Dennis, and Roger – are ready to end this madness. In our previous ventures, we found that blending sustainability with entrepreneurship is the key to a sustainable future. Now we're combining forces for maximum impact. It's time to start a toothpaste revolution! We want to contribute towards making our bathrooms plastic-free now and in the future. Our first step: the incredible Toothpaste Tabs. No plastic, no chemicals, no bullsh*t. We want to connect with Bathroom Pioneers all over the world. Each year 1,5 billion toothpaste tubes end up in our oceans and landfills. It turns out that reducing the amount of plastic tubes being used by 1 million can create the same CO_2 reduction as planting 25,000 trees.



Smyle, Netherlands
Almar Fernhout, Roger Nefkens, Dennis Kamst

WEB **INSTA**

Better You, Better World

THE PROJECT Livity Yoga is a black-owned and female founded yoga products brand that to use the art of Yoga to instill change throughout the world by giving back to the earth with every product sold. Through durable and sustainable materials, our customers are able to pay it forward – as they grow themselves and enhance their health and wellness, they can give back to the world all at the same time.

Livity Yoga distributes eco-friendly, high-quality made yoga products. All the company's products are sustainably sourced, constructed of natural, biodegradable, and recyclable materials, and contain no plastic or harmful PVC.

ABOUT Livity Yoga's story began in 2016, when I took up a daily practice of yoga to help me recover from endometriosis but was devastated to learn that yoga mats were made of toxic materials and harmful plastics. I had a common concern for the environment and in particular, the vast amounts of plastic-based yoga mats that end up in our landfills and oceans every year.

I realized that there was significant potential in developing a high-quality consumer product whose story was built on strong environmental values. I had seen how many of my peers had begun to turn away from brands which were content to pay lip-service to the subject, while taking no real action. So, I spent over a year extensively researching healthy, sustainable materials, including face-to-face meetings with key players in the environmentally sustainable industries. It struck me that a significant gap existed with sustainable products that were more long-lasting.

This led to the formation of Livity Yoga in 2019, which donates 1% of sales with every product sold to environmental non-profits through its partnership with 1% for the Planet. I was able to ramp up production of its high-quality yoga mats in Portugal, as well as introduce a line of yoga products that combine durability with functionality, while also caring about the environment to a much wider audience. Now, my vision for Livity is so much more than yoga mats. I plan to build a wellness company and continue the remarkable journey.

Livity Yoga, United States
Renee Manzari, Pamela Kaur

WEB **INSTA**

Giving Plastic A Second Life

THE PROJECT Allday is a kitchen knife company. We are on a mission to educate cooks of the plastic issues by creating conversation at the dinner table.

The handles of our knives are made entirely out of plastic waste from the food chain. Our blades are made in a fourth generation family forge in Sakai, Japan (the sharpener is 83 years old and has been at the forge for 65 years!).

We sell our knives in batches every 3 months, because that's how long they take to make. Each batch we feature a different blade and a different plastic source. In Batch 3 we ventured to Northern Scotland to clean beaches and use the ocean plastic in our handles.

ABOUT I used to work as a chef in London and I couldn't believe how much plastic waste was coming out of the kitchen. It was shocking to see. I vowed to create something that would help to improve this.

When lockdown struck and restaurants shut, I was forced to look for new opportunities. With a huge rise in people spending more time at home cooking I saw a gap to create a beautiful knife that could last forever, didn't cost the earth and had real lasting environmental benefits.

Having no prior experience working with plastic, I spent six months learning, listening and speaking to whoever I could. I joined whatsapp groups, online forums, slack channels and zoom calls, meeting some fascinating people all around the world doing incredible things. I have ventured to Brighton, Wiltshire, Lancaster and Northern Scotland to meet other plastic recyclers and learn more from them.

I come to Allday as someone who has seen the terrible issues of plastic in the food supply chain and want to raise awareness and educate other people of this. I hope my knife becomes a talking point at the table of the issues we face and how we need to collectively work together to improve our situation.

Allday, United Kingdom
Hugo Worsley & his brilliant mentros:
Yusuke, Julian, Martin, Michael, May La Manna

WEB **INSTA**

Sowing Circularity

As an alternative to the technocratic and top-down Western perspective of the circular economy, Kiera & Matt founded an initiative to indentify local waste streams and turn them into new economies through grassroot research and design. Learn more about the initiative right in the bustling city of Johannesburg on page 148.

Smell Lekker Sustainably

THE PROJECT The Lekker Company produces products that are all-natural and made from everyday, simple ingredients. There are no nasty chemicals or hidden secrets used in the process of making Lekker skincare, what you see is what you get. The Lekker Company is 100 % certified vegan and plastic-free.

Our packaging is playful and clean, everything including the pot itself is plastic-free, made from pulp, and colored using plant-based dyes. We are proud to channel a positive, quirky, and bold brand image to the world of natural skincare.

100 % natural ingredients
100 % plastic-free
100 % vegan

ABOUT Dewi founded The Lekker Company at her kitchen table because she was looking for cosmetics with ingredients she could understand. She started making her own scrubs, lip balms and deodorants with ingredients consumers could basically eat.

Years later, we continue to reform the cosmetic industry by producing skincare products that are kind to your skin and have a low impact on the environment. Our entire product range is designed and developed with a sustainable mindset from the ingredients used to the packaging itself. Don't let your skincare routine be at the cost of Mother Earth, let's change the game and get everyone making wiser choices more easily.

Our mission is to make natural cosmetics the norm, and the bathroom a plastic-free place.

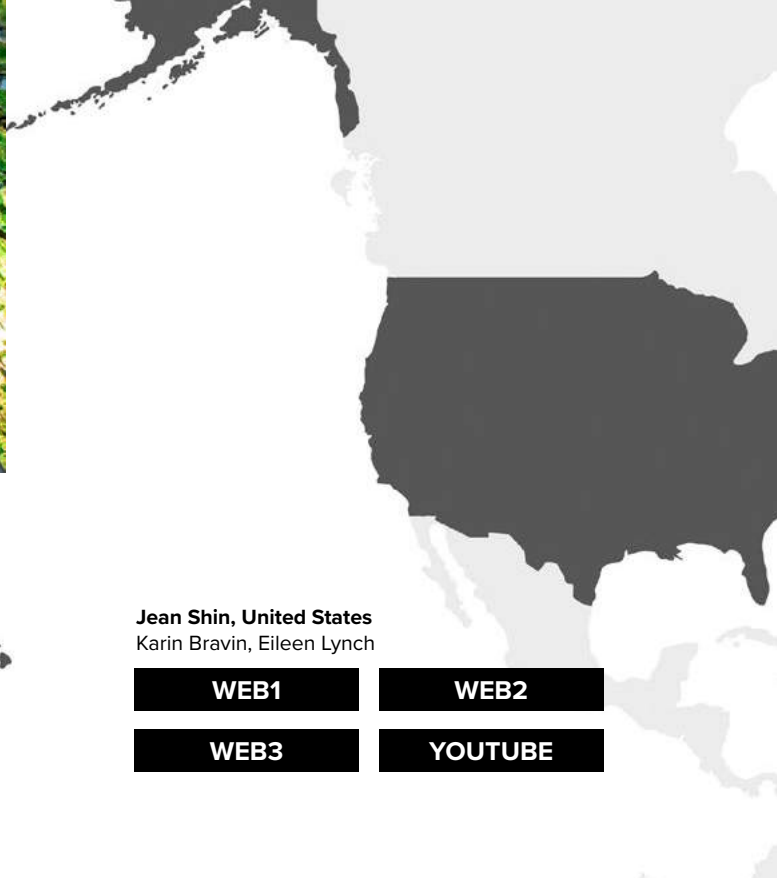
The LEKKER Company, Netherlands
Dewi van de Waeter, Feddo, Erika, Tjeerd, Nenita, Daan & Dewi.

WEB **TED TALK**

Invasives

THE PROJECT This large-scale outdoor public art installation is made out of thousands of Mountain Dew Soda Bottles recycled and assembled into what appears like an organic invasive plant growing over the boulder. Single-use plastic waste is rapidly taking over our landscape, destroying critical habitats on which our ecosystems depend. While appearing natural and convenient, plastic soda bottles have a double threat because they contain addictive high fructose corn syrup harmful to the body's health and the environment's biodiversity. Juxtaposed with the boulder's geological time, the work Invasives confronts the growing problem of plastic pollution. Is this the lasting legacy the consumer-driven culture will leave behind to mark the Anthropocene?

ABOUT My latest installation Invasives is made out of the leftovers plastics, a byproduct of an even larger immersive public artwork MAiZE, inspired by the vast farmed landscape of the American heartland. During the creation of MAiZE, I had workshops with 800 members of the Iowa community, where children and adults would come to transforms salvaged Mountain Dew bottles into sculptures. The bottom ends of the bottles were saved to generate new work. These installations made from single-use plastic bottles speak to the growing plastic pollution problem and the devastating impact on the landscape. Composed of thousands of repurposed green plastic soft-drink bottles, the artificial "cornstalk" sculptures form an elaborate maze at the Art Museum. In addition to demonstrating the power of artmaking and community collaboration, the project engaged visitors in a dialogue about plastic waste, food choices and environmental stewardship. The majority of plastic in this country is not recycled but instead ends up in landfills, rivers, oceans, and other natural areas. The sheer mass of plastic in the installation encouraged visitors to consider plastic waste and its detrimental effects on the environment. The empty bottles, once filled with soda containing corn syrup, illustrate the issues of overconsumption and the harmful effects of processed foods on our health. I presented Floating MAiZE in 2020 in New York City's Wintergarden.



Jean Shin, United States
Karin Bravin, Eileen Lynch

WEB1 **WEB2**

WEB3 **YOUTUBE**

Truthbrush – The Beautiful Bamboo Truthbrush

THE PROJECT Our beautiful oral care range was designed on Dartmoor. We wanted to make a stylish and sustainable product that would inspire people who might not otherwise try an eco-product.

Our signature Truthbrush comes in a palette of nature-inspired colors. The unique ergonomic handle design is crafted from sustainably sourced, organic bamboo, which is naturally antibacterial and is finished with a coat of natural plant oil to make it smooth and water-resistant. It comes with a small head and plant-based bristles.

We have since developed the Truthbrush bamboo electric toothbrush head. Taking over 2 years to produce, our copyrighted design uses precision-engineered, sustainably sourced bamboo to create the world's first solid bamboo electric toothbrush head, which fits a Philips Sonicare* brush, so there is no need to buy a new toothbrush base.

All our brushes have 100% castor oil bristles, are made from FSC-certified bamboo, come in fully biodegradable packaging (hand wrapped in tissue paper and a fully recyclable pillow pack) the cardboard of which is also FSC certified, and we carbon offset shipping from our factory to us & on to our customers. We also donate 1% of our total sales towards environmental non-profits creating positive change, through 1% For The Planet.

Truthbrush is not affiliated or endorsed by Philips Sonicare

ABOUT Back in 2017 one of Truthbrush's founders was given a plastic toothbrush whilst staying in an eco-friendly hotel. It was flimsy, made to be used and disposed of, and seemed so incongruous with their ethos. It got us thinking that there must be a better alternative and so we met once a week over coffee to design that alternative. A year later Truthbrush was launched!

We have since developed a bamboo electric toothbrush head as nearly 12 million people in the UK have switched to an electric toothbrush in the last 5 years and around 2 in 3 adults (34 million people) now use an electric toothbrush (reference The Oral Health Foundation). With dentists recommending that we change to a new brush every 3 months, 136 million plastic brush heads are being thrown away each year in this country alone. We always wondered why no one had developed a solid bamboo electric toothbrush head. We can only imagine it is due to the skilled handling of natural materials and precision engineering involved. We were lucky enough to work with the amazing Fab Lab in Plymouth to make it a reality!

We both have young families and still have other jobs but we fit the business around this, which makes for a lot of late nights! We are both passionate about environmental issues at home and within our community and, particularly with young families, want to be able to help make a brighter future for this beautiful world we call home.

The Truthbrush, United Kingdom
Catherine Western, Cat Beech, Ben Mundy

WEB 1 **WEB 2**

YOUTUBE **INSTA**

Tide + Seek – Kinder To The Plant Swimwear

THE PROJECT Tide + Seek is a sustainable swimwear brand that is filled with youthful prints, athletic-inspired cuts, retro silhouettes, and feminine detailing, each item in our collections is infused with recycled plastic waste. Tide + Seek strives to make ethical, responsible, and conscious choices every day which helps protect and preserve what we are passionate about. That is definitely the case when it comes to our swimwear. In an effort to reduce the impact of raw materials sourcing, we have partnered with Repreve; a brand of recycled fiber that is made from 100% recycled post-consumer plastic bottles that would otherwise end up in landfills or in our oceans. Since launching Tide + Seek has helped recycle the equivalent of more than 10,000 plastic bottles that have gone to find a second life in our swimwear, leggings, and hair accessories.

Bringing responsible consumerism to the swimwear market, our unique, fun, and vibrant prints are not only beautiful but have UPF 50+ sun protection and are 100% chlorine, saltwater, and sunscreen resistant. We package our swimwear in bags made from cassava starch (which is bio-degradable) plus our shipping bags are compostable and reusable.

I personally design all of the pieces in Cornwall and currently, the swimwear is manufactured in Bali at a factory where I have visited and spent lots of time. To reduce our carbon footprint even more I am currently in conversations with factories in Portugal and the UK to move everything closer to home.

ABOUT Having a sustainable swimwear brand has been a passion and lifetime goal of mine for as long as I can remember. After studying sports technology and swimwear design whilst interning at Adidas and Nixon, it was only a matter of time and resources I launched my own brand.

Tide + Seek was founded in 2018 and it was obvious to me from the beginning that it needed to be sustainable. As an avid surfer, I have been fortunate enough to have visited some of the most beautiful and remote parts of the world. I quickly started to notice the amount of rubbish and plastic waste in our oceans and along beaches. I wanted Tide + Seek to offer environmentally improved products that would make use of plastic waste found in the world seas and along shorelines. During the early stages of Tide + Seek, I spent three months visiting different swimwear factories in Bali. From the start, it was crucial that Tide + Seek would work with a manufacturer that had good working conditions for employees. I wanted to use a factory that valued its staff and created an enjoyable working environment.

For me, sustainability is a lifestyle and I want to set an example for the younger generation. We all have a responsibility to our planet and I believe the key to sustainability is education. We need to create a network of like-minded individuals and businesses that want to work together towards a common goal: protecting the future of our planet.

Tide + Seek, United Kingdom
Samantha Thomas

WEB **INSTA**

Roux

THE PROJECT This is a fox I sculpted from discarded plastics and other various found items. When you step back to look at her she reads as a fox, but if you look closely you're able to make out all her individual pieces. Things like: forks, plastic toys, Tupperware, and six-pack caps.

ABOUT I've been making animals from trash for about 4 years now. Out of the 100 + completed works, Roux is one of my absolute favorites. I started this journey when I quit my job. I was becoming increasingly unhappy and all at once, I decided to try and be a full-time artist. I had very little money though. The solution is was junk. Plastics come in every shape and size imaginable and are thrown out every single day by everyone I know. I started collecting their trash to make art with.

Stephanie Hongo, United States

WEB **INSTA**

FACEBOOK

SeeTang Collection

100 % biodegradable, 100 % edible, 100 % recyclable and 100 % sustainable. Focused on marine conservation, the material for this bag is sourced from the sea. Learn more about Jana-Aimee’s fight against plastic in the packaging and fashion industry on page 42.

The World's First 'Hemp Eyewear'

THE PROJECT When it comes to products in the optics industry, there is an expediential level of plastic waste and pollution. It is estimated that making one pair of eyeglasses produces 10.5 pounds of CO_2-equivalent. Our approach bypasses such environmental damages and is supported by our use of hemp as our primary material.

We offer one of the greenest and sustainable eyewear options on the market. We have created a collection of frames that look beautiful while also being beneficial to the environment. Hemp is one of the most sustainable materials on the planet. It is carbon-negative and as it thrives even in poor soil and with little water, it has been used globally as a rotational crop due to its ability to replenish the soil with valuable nutrients. This super crop is then further processed in house by our manufacturing team who have pioneered a leading-edge sustainable technology that forms the hemp fibre into strong and lightweight shapes. The machining process that is as clean as it can get. Out of the whole process, the only by-product is water vapour.

The wearer can feel secured with their option in frames, and we offer lifetime "hemp care" with all our products. This means that the user will receive lifetime of free repairs – encouraging the customers to prolong the lifespan of their frames and means a reduction in waste. We want to spread our motivation and desire to do better and act kinder to the environment around us.

ABOUT At Hemp Eyewear, we are passionate about eliminating plastic and unsustainable chemicals from our process, as we continue to push the boundaries of sustainable design by getting back to natural roots. Everything we do is driven by our passion for the environment, and how we can turn the super crop, hemp, into the highest quality eyewear frames. We are proud of our mission and our high-quality products that showcase the beauty of one of the world's most sustainable materials. You will see that the randomly aligned fibers in combination with the process of our highly skilled and in-house craftsmen result in frames that are identical in shape while all being completely unique.

Further, through analyzing trends and demand within sustainable solutions, we can see where we can evolve as a company, and one day we hope to launch our Hemp Design Studio. We realized that there are still so many unexplored uses for hemp and as pioneers in the hemp industry, we feel it is our duty to be trailblazers. A design studio will allow us to better peruse the mission to bring hemp in various forms to the public, showcasing the super crop and raising awareness of its many benefits- through products like chairs, mirrors, and light fixtures. The journey doesn't stop there, as we keenly look forward to being a part of creating a green society.

Hemp Eyewear, United Kingdom
Sam Whitten, Will Walters,
Fiona Williams, Marija Gorbacevica

WEB **INSTA**

Tempera Series

THE PROJECT In Korea, due to COVID-19 people have started to pay even more attention to their health and well-being. As a result, the pharmaceutical and supplement industry scaled up during the pandemic. In this project, WKND Lab focuses on duck egg yolk discarded by the pharmaceutical industry. Just from one factory, more than 39,000 eggs are being thrown away quarterly which results in over 156,000 eggs per year.

The Tempera Series is a designed product made out of discarded duck egg yolk, inspired by the ancient "Tempera technique". The pigment is mixed with the yolk. This is an old way of painting murals, a method that had been around even before oil painting was invented.

The series acknowledges the economical and environmental value of discarded duck egg yolks. They consist of a high level of proteins, minerals, and natural oils which can be transformed into a valuable biomaterial that is either molded to make 3D objects or simply used as a painting material just like tempera.

Duck egg yolk is collected from a factory in Gimhae, Korea. The raw material is boiled, dried, and stored right away. We grind it into smaller and even particles. After adding color, natural scent, and binding material, the yolk is ready to be molded. Every piece is hand-built, so each one has a different pattern created by the duck egg yolk granules.

The main idea for this project is to showcase the texture and natural beauty of unfamiliar material, that is duck egg yolk. To do so, we decided to create objects that people commonly use in their daily lives such as trays and candle holders to make them more approachable. To emphasize the natural texture that the material forms, we keep the shapes simple whilst aiming for a sophisticated look.

ABOUT Our goal is to develop materials that biodegrade under any circumstances and our journey of experimenting with materials still has a long way to go. But we believe that the Tempera Series is a meaningful start.

We are living in an era where everyone needs to participate in making the earth greener. Hence why we cannot just naively think that reusing existing materials is already enough. It is crucial to also pay attention to ignored and/or undiscovered wasted materials which could be a life-changing addition to bioplastic/biomaterial. This is why we jumped into developing duck egg yolk biomaterial and created our concept, the Tempera Series which is degradable under any circumstances – landfill, sea, or wherever it may be.

It is no longer possible to separate sustainability from design. The time has come for the proposition that design must be sustainable in all fields of industry.

WKND Lab, Republic of Korea
My beautiful partner Caroline Jacob

WEB **INSTA**

Straws That Don’t Suck!

THE PROJECT EQUO delivers 100 % plastic-free and compostable solutions to replace single-use plastic. We’re starting with drinkings straws made out of natural materials you can actually spell: grass, rice, coconut, sugarcane, and coffee. Our products decompose in months, not centuries. They are so easy to use and so convenient to switch to you don’t have to change your lifestyle or behavior – no washing, no carrying around. And they help to promote a circular economy by diverting waste from landfills in order to produce them. Now you can use it once, throw it away – without any of the worries and none of the guilt.

ABOUT Marina Tran-Vu, a proud Vietnamese-Canadian, had the idea for EQUO in 2019. Her journey started when she went to Vietnam to help her family. In a country that is known for its coffee, she explored one of the multitudes of cafes in the city, and that’s where she happened upon the first product in the EQUO lineup: the Grass Straw. With the inspiration of trying to bridge the gap between Vietnam and the rest of the world, building a sustainable future for her newborn nephew, working to support local economic growth and job creation from her parent’s hometown, and the desire to raise Vietnam’s profile as a global leader in sustainability and innovation, she decided to venture on her own to bring to the world truly eco-friendly solutions through the sustainable brand, EQUO.

EQUO, Vietnam
Marina Tran-Vu

WEB | INSTA
YOUTUBE 1 | YOUTUBE 2

Coconut Clutch – A Tarzan and Jane Essential!

THE PROJECT The Coconut Clutch is my favorite product to create. It's handmade from a biologically sourced coconut. During the bag-making process, I use every single bit of the nut. After using sandpaper to remove the outer fibers and after making a hole in the shell, I will be rewarded with a few ml of topical liquid. It gives some energy to cut the shell in half and start digging the white flesh. One coconut gives about 350 grams of coconut meat that serves my breakfast bowls for about a week. Yummy! This bag is a real Tarzan and Jane essential!

ABOUT My name is Hilde Hoving. I am a urological surgeon in training and a fashion designer wannabee. No kidding! Making Coconut Clutches gives me good vibes. It calms me down after a day of page buzzers and breaking bad news. Next to this, it might be an "extraordinary marketing concept". Surgical knotting and stitches are included in every item! Who can say their bag was made by a surgeon?

My label's name is Ticket from the Tropics. Each handmade item represents a ticket from the tropics actually. The items bring you good vibes that you might have experienced during traveling and they make you long for a new ticket to the tropics!

At the moment the coconuts for the Coconut Clutch are bought at a local supermarket. However, I keep dreaming about making the bags at the source. Palm tree heaven Thailand for example! Here, the shell most often and up in landfills or are brunt. Hell no! How cool would it be to train people on a remote island on how to make these clutches and earn an extra income? Of course they can use the coconut water and vegan coconut meat to enrich their curries and desserts too!

Hilde Hoving, Netherlands
Marina Tran-Vu

WEB **INSTA**

The Sustainable Cork Dock

THE PROJECT The MAJEE dock is a product that transforms your iPad into an eco-friendly mobile workstation. It combines the functionality of the Magic Keyboard and Magic Trackpad 2 with the versatility of the iPad. All within a soft-to-touch, hard-wearing dock made from sustainably sourced cork.

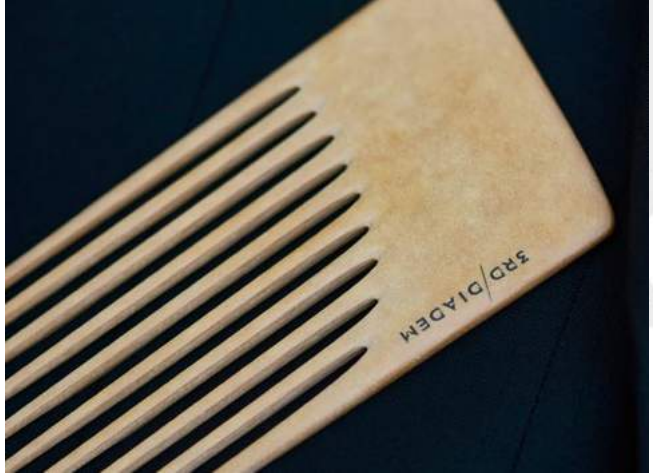
ABOUT I've worked in the design industry for over a decade and currently work as a Creative Designer for one of the leading electrical and tech retailers in the UK. The MAJEE dock was an idea formed from a desire to do something about the lack of sustainably led products in the tech industry.

Shane Marshall, United Kingdom

WEB **YOUTUBE**

BetaWare

Fancy some honestly compostable products made of sugar beet cellulose and molasses? These beautiful hangers follow a future-oriented design approach and can be returned to a natural cycle after intermediate use. Learn more on page 29.



DAPPE: The Comb Has Evolved

THE PROJECT DAPPE is a considered approach to re-define the comb for the post-plastic age; to improve upon form and function, as well as to encourage a re-examination of what is commonly seen as a “disposable” object. DAPPE is a sustainably produced alternative to plastic combs; a considered, durable design object that is made to treasure and to keep.

Available in two models, designed for straight and curly textured hair types, DAPPE is an evolution in both the form and function of contemporary plastic combs. The spacing and length of the teeth have been optimized to provide an effective styling tool, whilst minimizing the damage caused to the hair itself.

The organic, gently curved form of the DAPPE is designed to fit snugly into the palm of the user’s hand. The naturalistic surface of the finished material has a satisfying smoothness, like a highly buffed pebble. Satisfyingly tactile to hold, the higher density of Richlite makes DAPPE feel more luxurious than a standard wooden comb.

Richlite is an incredibly durable and highly sustainable material made from resin-infused paper. Composed of approximately 65 % FSC®-certified or recycled paper content, the material is naturally oil and water-resistant, making it well suited to the task of combing through dry, wet, or dressed hair. Richlite is also non-static, with a smooth, grainless formation that is gentle on the structure of the hair shaft.

Each DAPPE comb is packaged in a minimal, subtly designed kraft paper box. The high-quality design is intended to encourage the purchaser to keep and re-use the packaging. The packaging is also fully recyclable, at the end of its life.

ABOUT Tsuyoshi Tanaka (a.k.a “Gow”) was born in Japan, 1973. After training as a hairdresser, Gow came to the UK in 1997 and carved out a name for himself as a highly respected session hairstylist. The DAPPE comb was originally conceived as a hair tool to meet his technical needs but developed to become a design statement as well as a solution to some of the sustainability issues concerning the use of plastics within the fashion industry.

Drawing upon his 25 years of experience working in the fashion industry and his deep understanding of the principles of hairdressing, Gow has also taken inspiration from his cultural heritage. The exquisite attention to detail and artisanal handcrafting found in traditional Japanese design has been an important influence throughout the four years of development taken to create the current iteration of DAPPE.

DAPPE is a considered approach to re-define the comb as a luxury object; a challenge to our preconceptions towards the original mass-produced “disposable object” of the plastic age.

Gow Tanaka, United Kingdom

WEB **INSTA**

Circular Candles

THE PROJECT Every year, around 2000 million tonnes of waste are generated through economic activities and households across Europe, with just under 40 % going to landfill or not having proper waste management treatment. Of that waste, cooking oil makes up a significant amount, and every liter of used cooking oil that is disposed of improperly can contaminate up to 1 million liters of water, damaging the environment. In addition, much of our economies rely on harvesting natural resources from our already fragile ecosystems, instead of using what's already in circulation.

We believe in reducing our footprint through re-use and repurposing, and that luxury products shouldn't be made at the cost of the environment. Hand-poured in small batches, our candles are made from transformed waste cooking oil and turned into sustainable and eco-friendly wax that delivers a clean and long-lasting burn.

Every candle saves 170 ml of oil that could have otherwise have gone to waste, up to 165,000 l of water in rivers and seas from being at risk of contamination, and 275 g of natural resources from being used across our wax and packaging.

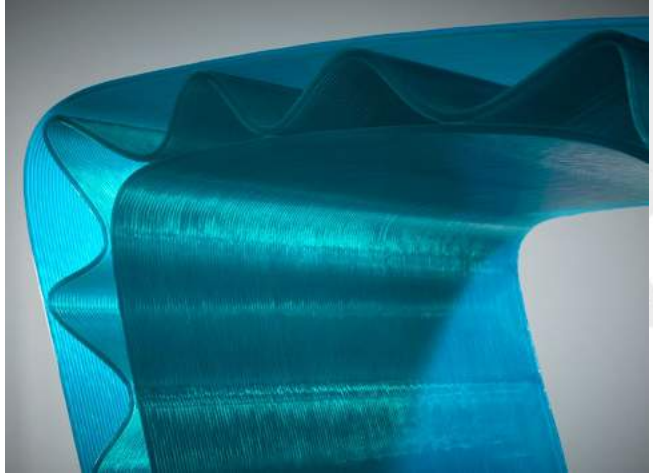
We apply our sustainability ethos to the rest of our product, using only glass, recycled cards, and paper throughout our packaging materials, and our glass candle jars can be recycled endlessly and easily through normal schemes.
Not wanting to compromise on quality, we only source 100 % cotton wicks and natural essential oils for our fragrances — these possess therapeutic benefits and natural, mood-boosting powers. The result is beautifully crafted aromatherapy candles that contribute to the circular economy and the future of luxury.

ABOUT I founded Phena London in 2020 when I started to increasingly think about the pressure the world puts on natural resources.

With an interest in sustainability, wellness, and the restaurant industry, I developed my idea to turn waste cooking oil into a luxury product in the form of natural candles, extending the lifecycle of waste oil and closing the loop on the use of raw materials.

Phena London, United Kingdom

WEB **INSTA**



Twine

THE PROJECT Designed for the third edition of Rossana Orlandi Guiltless Plastic campaign, Twine is an urban public furniture piece that takes waste from medicinal settings and transforms it into functional and playful modular seating elements through robotic fabrication. Twine pushes the boundaries of additive manufacturing – merging innovative technology with conformal 3d printing and bespoke design.

In its design, the sculptural form of Twine has been developed to encourage play. Available as a seat or elongated bench, its edge allows endless combinations with an overall wave-like form that creates varying ways to sit amongst or within the piece. This playful interaction is further enhanced by the natural transparency within the materiality itself, allowing light to protrude in dynamic ways. We invite users to assemble the elements as individual components or flip and combine them into longer configurations providing new discoveries at every turn.Driven by the concept of merging sustainable technologies with play and interaction, Twine is the result of a cognitive and extensive partnership where we seek new sources of post-consumer or post-industrial material types discarded by other industries which can fulfil meaningful long lasting or closed loop applications. The result is an eco-responsible design that is both functional and re-uses resources that would otherwise end up in landfill. The elegant form of Twine is enhanced by a structural integrity that is celebrated showing users how its made and asking us to see closed-loop applications in a new way.

ABOUT As a studio, HagenHinderdael pair product design with art to produce elements and installations that push the boundaries of engineering whilst bearing the incentive of a continuous afterlife. Twine is our latest urban outdoor furniture piece. The journey began as an exploration for how to upcycle medicinal waste, often seen as hazardous and unusable, into a functional form. The material itself is extruded by Reflow, a sustainable material development team who work in collaboration with leading recyclers in the EU to extensively test and match discarded material streams to specific design applications. In the process, Reflow melts and pulls shredded rPETG plastic granulates until the medical tray waste can be winded into filament for high performance, large-format 3D printing. The filament is heat resistant, weatherproof, and durable for the usage of indoor and outdoor furniture. Taking this filament, we worked with technology pioneers Ai Build to create conformal toolpaths to print atop a bespoke mould. As the filament feeds through the robotic system, TWINE is created. The system itself can carry up to four varying filament streams, enabling a gradient of transparencies within the elements and unlocking a rich spectrum of colour from the recycled material.

In our future steps, we are exploring how to take medicinal waste one step further- closing the loop through the upcycling of day-to-day face masks – turning the plastic into filament and the strings into packaging.

Lisa Hinderdael, United Kingdom
HagenHinderdael, Reflow, Ai Build, Anders Gramer

WEB

Seed Paper From Austria – Even Bees Love It

THE PROJECT A situation we all know: We finally found THE gift and we wrote a pretty card to top it off. In our mind's eye, we can already see the joy we will bring. But there is a catch in it: Tons of wrapping paper find their way into the trash only minutes after the gifts are unwrapped. Just in Austria around 900 tons of waste is generated like this every year.

YOU HAVE GOT SOMETHING NICE COMING. SEEDPAP, the handcrafted seed paper from Austria, turns wrapping paper, cards, and other paper products into blooming flowers and herbs, creating important habitat for wild bees and other insects. Our innovative, handmade paper is made out of the pulp and produced with local high-quality seeds. With SEEDPAP-products your gift combines handicraft with a sustainable benefit – and something beautiful blooms for the recipient!

EVERY PIECE OF SEEDPAP IS UNIQUE. Our SEEDPAP-products range from blooming wrapping paper over gift boxes, cards, and letter paper to gift tags. For companies, we also produce individual products for their clients. For a few months now we have also been working with a printing company that is specialized in sustainable, environmentally friendly printing. This enables us to offer our customers advertising material in the form of folders or postcards that can do more than just convey an advertising message.

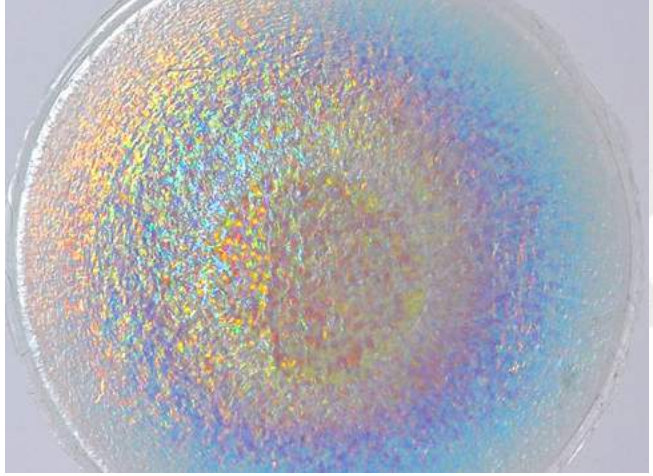
PLANTING INSTRUCTIONS
If you want to turn your SEEDPAP into plants you have to wet the paper and place it on the moist potting soil. Then put some soil on top to lightly cover it. Keep it moist, so the seed can shoot and come through the paper. Now have fun watching the paper "grow"!

ABOUT Every year, especially before Christmas, I was annoyed about greeting cards from companies that contained nothing except a loveless form and happy wishes for Christmas. These cards didn't even make the way from the post box to my house but were disposed of straight away. That made me sad but also angry because I see it as an extreme waste of resources. I also thought it was a shame for the companies because it didn't make me happy, it was exactly the opposite. The money that was spent on this advertising was wasted. So I began to consider what alternatives there might be – the paper should have another use, so I came up with the seed paper idea. After being a passionate beekeeper myself, it quickly became clear to me that the seeds I use also had to be carefully considered, because I wanted to use my product to draw attention to the problems of bees and, above all, of wild bees. Another very important aspect: it should also be visually appealing and that the craft components should be shown. By chance, I got to know a papermaker who not only gave me a lot of valuable tips but from whom I could also take over the complete equipment of his workshop. Only then was it possible for me to offer Seedpap in the current quality. We are constantly striving to expand our product range and are very pleased that the response to Seedpap has been so positive.

SEEDPAP, Austria
Marion Peternell

WEB **FACEBOOK**

INSTAGRAM



Bio Iridescent Sequin

THE PROJECT In an UK Christmas festive season, 33 million plastic sequinned garments are bought and 1/5 will end up in landfill after only 5 years. The raw materials from which sequins are derived (including PVC additives) and the waste created by the short-term use of long-lasting plastic are an environmental concern.

The Bio Iridescent Sequin is created through bio-technologies that are capable of harnessing naturally abundant materials, to create natures most vibrant structural colors. Made from cellulose, the wood originating matter is highly renewable, abundant, compostable and can work within a biological circular economic model. The Bio Iridescent Sequin shimmers vibrantly due to its microscopic structure which is able to refract light into a colorful metallic shimmer, removing the need for adding petrochemicals, synthetic pigments, metals or minerals. Through my company Radiant Matter, we are envisioning an entirely new way to approach color and finishes within the fashion and textiles industry. Working towards a cleaner industry, free from micro plastics and one where our color and materials are not only biodegradable but also recyclable.

ABOUT I am an interdisciplinary designer, material researcher and the founder behind the Bio Iridescent Sequin. I see it as my mission to create sustainable materials and align the systems that contextualize these materials, bringing innovation to the fashion and textiles industry. My work brings together my admiration for nature, the opportunities that open up with scientific advancements and design thinking. I strive to make high performance material solutions in a way that is fit for the world we live in today and for generations to follow.

My previous career experience was in the Fashion Industry, working for Ready-to-Wear, Luxury and Haute Couture fashion houses. Whilst working in their design studios I would also travel to production sites in India, China and Italy. In this way I gained a rounded insight into the operations of the Industry's fragmented supply chains and through first-hand experience I started to understand how global environmental implications link to design choices. Within embroidery in particular, there is only a very small amount of sustainable materials that reach the industrial scale and I felt limited by the choices I had. This exposure to how the industry currently functions drove me to interrupt my career and allow time to study the material landscape that our future could hold. The Bio Iridescent Sequin became a means to re-envision color for the fashion industry at large. I am dedicated to developing natures brightest colors for a circular textiles economy.

Elissa Brunato, United Kingdom
In collaboration with Research Institutes of Sweden & Claire Bergkamp from Stella McCartney

WEB1 | WEB2

TWITTER | INSTA

Surfing on Seaweed

The Island of Jersey has a signicifanct sea lettuce problem from May to September. This innovative idea transforms a problem into something constructive, positive and beautiful. Learn more about this sustainable surf board on page 32.

Pong

THE PROJECT Made from recycled HDPE plastic.

We knew that the material on its own was going to make the product stand out, but we still wanted to apply our design aesthetic and come up with a unique design.

We saw the opportunity to rethink the traditional ping pong paddle design and improve on it as we decided to challenge ourselves by moving away from the conventional 3-layer construction and produce the paddle from a single piece removing any parting lines. This allowed us to explore forms that felt better in the hand and resolve surface transitions that are traditionally compromised.

ABOUT What started as a weekly design challenge weekend turned into a desire to make the render real. Like many designers, we have been intrigued by terrazzo recycled plastic and wanted to explore the material further to understand what it is like to work with it.

During lockdown, we filled many days playing ping pong on the kitchen table, until one day we realized the simple but fun ping pong paddle would be a great product to explore manufacturing with recycled plastic.

Cristina Borras, Australia
Sam Weise, Cristina Borras Guardiola

WEB **YOUTUBE**

INSTA

Feminised Protein

THE PROJECT The Feminised Protein project, developed by Tessa Silva in 2016, is a study into the use of milk proteins as a natural material. Surplus milk is sourced from a raw organic dairy farm in Sussex, UK – skimmed milk being a by-product of the butter-making process. The farm rejects the factory model of farming and instead has a very small herd that is individually named, grass-fed, and milked 50 % less than the average dairy cow.

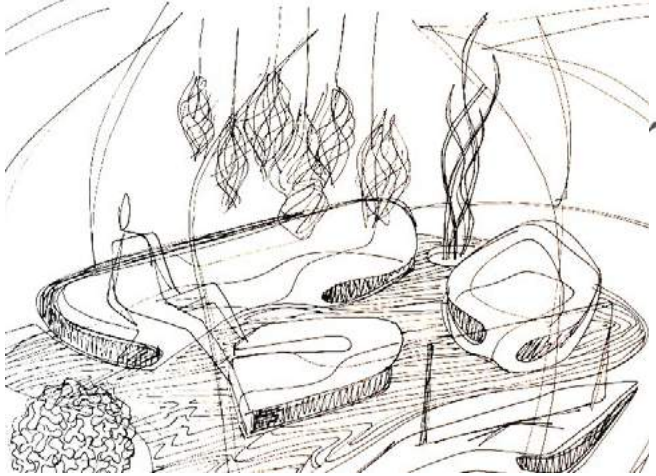
Milk and milk products have helped shaped cultures and western civilization as we know it, with some of the earliest human artifacts including vessels containing residues of cow's milk. Working predominantly with a unique, but historically originated formula of surplus milk to create a sculpting and manufacturing material free from synthetics, Tessa utilizes a valuable raw material that would otherwise be wasted. The project celebrates the history and mythology of milk and aims to create a dialogue around our culture of waste and the farming industry. "Feminised Protein" is a term used to address the exploitation of female animals' reproductive cycles to produce food on a mass scale. Agriculture is a predominantly male profession, with men tasked with the ultimate care of mothers. Tessa's work embodies the notion of Feminised Protein by giving tangible form to milk imagery. By turning this fraught liquid into solid form, she produces a completely natural material as an homage to the femininity, beauty, and tension of milk. Natural pigments derived from vegetables, berries, flowers, and plants are used to dye the material, with all pieces handmade by Tessa in London.

ABOUT The project originated from an interest in ancient methods of production, particularly the processes used to create materials prior to the mass-manufacture of synthetics, and utilizes milk as a material for the production of bespoke interior surfaces and fine objects.

Tessa's research and exploration prompt the inspection of our material culture retrospectively and prospectively, using design as a tool to explore the relationship between humans and animals; particularly the female mammal's role in a patriarchal social and cultural structure. The project aims to assign value to a discarded and disregarded material, but also present it as a catalyst for discourse. The "take, make, dispose of" model is a dated one that needs to be turned on its head by rethinking design principles and priorities. Terms such as "sustainable" and "eco-friendly" are regularly misused – too often exploited in order to satisfy requirements rather than solve problems. The Feminised Protein project is an endeavor to understand how the development and application of novel materials can affect actual change on both local and global levels. The project hopes to contribute to the recalibration of our relationship with materials from an impatient and unapologetic one, back to a more nurturing, appreciative, and regenerative model of existing.

Tessa Silva, United Kingdom
Thank you to women and mothers everywhere.

WEB **INSTA**



Krill Collection

THE PROJECT The Krill Collection by Karim Rashid is an ecological step towards holistic design. The Krill Collection is part of the Circular Ocean Plastic project of Solaris Community, underneath a United Nations program “Closing the Loop”. Inspired by the program Karim was driven to create a sculptural more comfortable world, but with smarter ecological materials.

The Circular Ocean Plastic Project explores innovative solutions for repurposing the world’s marine plastic litter into premium long lifecycle products. Utilizing state-of-the-art technology that encourages cross-sectoral collaborations, leans into sustainable circular economy models, and helps standardize a global green supply chain. The technology used, from the breaking down and pelletizing of the plastics to 3D printing, can produce superior materials that, as seen here, can be repurposed for nearly anything and stand the test of time.

ABOUT I have so much respect for Solaris and their mission so to develop rapid prototyping objects not only save the earth via the collection of plastics from the ocean but also is manufacturing on demand. MOD is the way of the future, so we don’t overproduce. When someone ordered an object it is produced so no need for exerted wasted energy with producing and warehousing products or even retail shops. No middlemen, less expensive overhead, and we don’t create the surplus of manufactured goods.

Design is not about a form or shape, but it is a cultural critique, a cultural shaper, a faction of social, political, and economic life. Design must answer to all the issues of use, behavior, aesthetics, manufacturing processes, material’s ecological issues, marketing, dissemination, etc. The more in tune we are with the commercial world the more relevant our work is. Design is about creating the physical utopia of our everyday life. Designers must humanize our physical and virtual worlds. Through the use of soft flowing curves and organic shapes a sense of comfort and security is immediately established. I believe something is well designed when it is not overly adorned or embellished. If you take the embellishment away from an object and the object still functions then it is more style than design. If an object is well designed then no part is inseparable from the form. And with new technologies, I can create new sensual and organic shapes that never existed before in history.

Karim Rashid, United States
Solaris Community, United Nations ESCAP, Tide Ocean Material, Nagami

WEB

Mycelium Lights

THE PROJECT This project is a result of an ongoing material research in mycelium – the vegetative part of the fungus – resulting in the design of table lamps collection.

Inside a mold, the mycelium consumes organic and synthetic waste as it grows under controlled conditions. The way mycelium consumes waste could have highly significant implications on the way we can dispose of synthetic waste. When lit, the light project on the mycelium from below and glows back as soft natural light.

ABOUT This project is a collaboration between Nir Meiri Studio and BIOHM – a London-based startup working on developing sustainable solutions for the built environment.

Our biggest motivation is to reduce the amount of plastic we use by offering a high-end product that can compete easily with industrial similar versions. Using mycelium for us is a future of plastic replacement and by “beautifying” this material we try to draw a better sustainable future for our domestic environment.

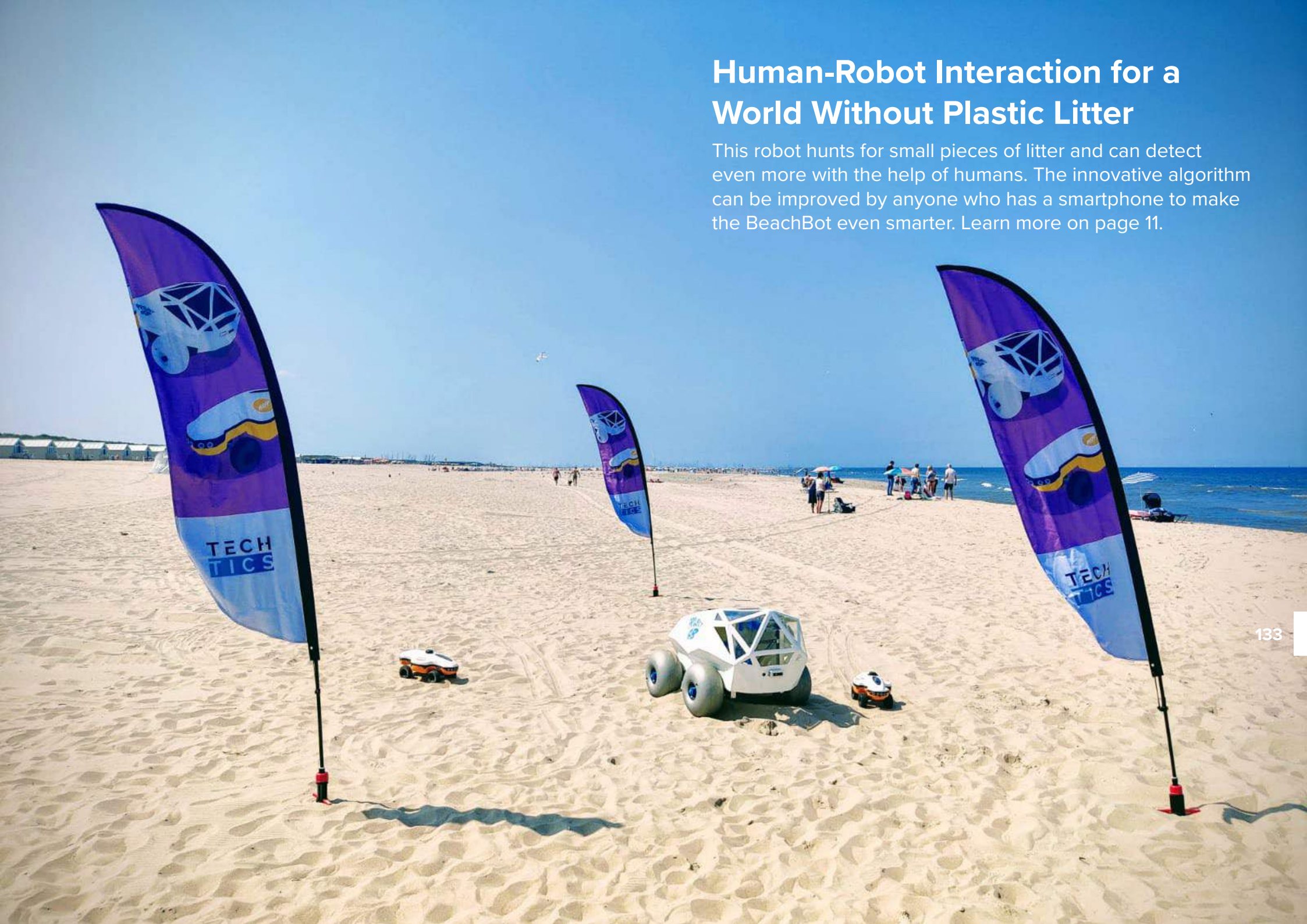
Nir Meiri, United Kingdom

WEB **INSTA**

FACEBOOK

Human-Robot Interaction for a World Without Plastic Litter

This robot hunts for small pieces of litter and can detect even more with the help of humans. The innovative algorithm can be improved by anyone who has a smartphone to make the BeachBot even smarter. Learn more on page 11.



Algae Bioplastic Vessels

THE PROJECT The objective of this self-initiated project was to develop functional, yet aesthetically innovative vessels using bioplastic recipes and techniques. The purpose of this research being: to extend the material outcomes of algae-based polymers so that they are significantly stronger than many bioplastic recipes and aesthetically refined. This work was experiment-based and significant research was done into developing a means of moulding this material. This research has been independent and largely self-guided and self-funded. The material outcomes of this project have the potential to provide a real solution to widespread petrochemical waste, particular single-use plastics. This tableware utilises waste products as a pigment and substrate and is truly recyclable in a home kitchen, in a regenerative closed-loop cycle. The same material can be made and remade infinitely.

This solution is not only a collection of tableware but also a body of material and process research that has far-reaching applications. The material from which this tableware is made, is composed of completely organic, renewable ingredients. It is non-toxic, safe enough to eat (though it is not intended to be food) and – most importantly – it can be recycled at home in a simple process. This is already being rolled out in commercial settings to replace petrochemical plastics. In one instance, the material I have generated forms part of an exhibition's design, which can be returned to my studio to be remade anew for the exhibition's next iteration. Previously, these would have been petrochemical-based and replaced entirely for each install.

ABOUT I specialize in working with algae-based polymers to produce algae-based bioplastics, which contain only organic, renewable ingredients.

In early 2020, I spent six weeks in Morocco researching the supply chains for the algal polymers I use. Through contact with independent marine researchers, harvesters, industry professionals and directors, and lab technicians at the processing plant that produces more than half the world's supply, I established confidence in the sustainability of its harvest and growth, as well as understanding the controls in place to maintain it. I dedicated the majority of 2020 to developing recipes and processes to achieve molding using this material – resulting in the ability to significantly increase the strength of the final product.

In 2021, I launched Other Matter, an experimental studio working with algae-based bioplastics, in response to demand for a practice where I could share skills and knowledge in working with these materials.

In 2022, I will be representing Australia at the 23rd Biennale of Sydney. I am also working with the Biennale's exhibitions team to replace unsustainable and non-recyclable exhibition materials. As part of this work, the material will be assessed for its carbon contribution. This will allow me to estimate the carbon impact of using this material.

Jessie French, Australia
Photographer Pier Carthew

WEB1 **WEB2**

SiLiglam PURE BIO SPARKLE

THE PROJECT Our goal is to offer a guilt-free glitter to our friends, families, and the world. SiLiglam PURE BIO SPARKLE is the first 100 % plastic-free, vegan glitter, that biodegrades in water and has the same appeal as standard glitter. SiLiglam PURE Bio SPARKLE is of natural origin from sustainable forestry/cultivation. It is free of heavy metals and GMOs.

Easy to use, easy to apply, and easy to remove. Just sparkle!

ABOUT We want the world to sparkle on – guilt-free. Iridescence, glitter, and sparkle have fascinated mankind forever and for more than 160 years we have been producing all different kinds of glitter here in Germany. After seeing all the festivals, carnivals, and beach parties dropping glitter into the environment, we realized that plastic film is no longer a good solution for these types of applications. After five years of development, and several products we came up with an outstanding new biodegradable glitter range: SiLiglam PURE BIO SPARKLE. It is home compostable and fulfills DIN EN 13432, ISO 14851, plus OECD-Guideline 301b, which means it biodegrades in water covering all biodegradable standards. It also meets EN71-3 requirements. We have a good color range and various standard sizes. We also offer plastic-free packaging options, from bulk quantities to small pack units.

So no need to deny future sparkling moments, our glitter can be used without conscience for all celebration and party moments. Keeping the fairytale alive in children's eyes, when they see the magic that glitter brings.

The journey has just begun. As a family-run medium-sized company, our goal is to leave behind a livable environment for future generations. Thanks to state-of-the-art photovoltaic systems, we are now able to produce more than a third of our energy requirements through renewable energy.

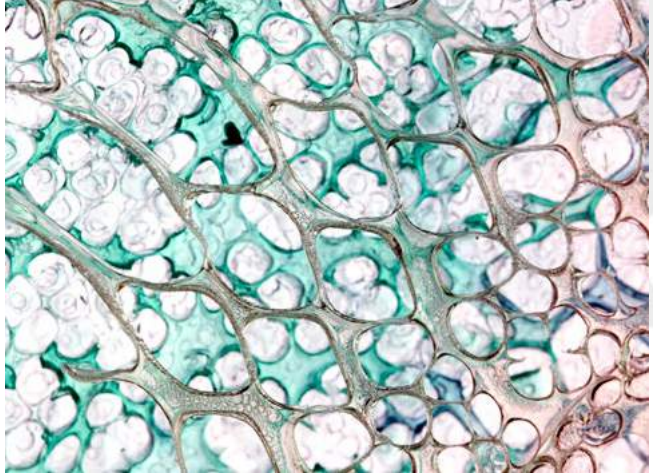
We are proud to be making an important contribution to the greater sustainability of our planet's finite resources. Our products and services are made with future generations in mind and are constantly monitored for further improvements.

Our push for sustainability is also expressed in our management systems according to ISO 50001 for energy (certified since 2016) and ISO 14001 for the environment.

SiLi, Germany
Kathrin Benecke, Stefan Trassl, Erwin Pschierer

WEB1 **WEB2**

INSTA



Ori Seri

THE PROJECT As a result of intense experimentation and development in a laboratory, the final outcome is a glass-like biomaterial crafted from algae extract and silk cocoon protein (an otherwise wasted by-product of textile manufacturing). This sensitive, reactive material is environment-responsive and is able to fully biodegrade in water within 24 hours.

The Ori Seri biomaterial is composed of two main elements:

1. Algae extract – red seaweed as a base material which, as a fairly ubiquitous saltwater-grown coastal crop, significantly helps to reduce excessive land use, transport, waste, and deforestation.

2. Silk cocoon protein – “sericin” as a biowaste is commonly discarded in the industrial wastewater from textile manufacturing. It is not recycled within both European and Asian traditional silk productions. Designer Scarlett Yang realized its repurposing potential during a research trip to traditional Japanese textile mills in the town of Kyotango, Japan in 2019. The first-hand insights were transformed into the iterative design development process.

ABOUT The unsustainable nature of the consumer product sector is urgently in need of systemic changes, starting from the core of materials, to fabrication and consumption. Ori Seri material serves to consciously minimize waste with radical hybrid design solutions in bio fabrication and generative design. During the designer’s past experiences working in the textile sector, she came to realize how much material waste is generated during traditional textile production processes. The vast majority of conventional design materials on the market are non-recyclable or ineffective in real-world product integration, which is the main motivation for this project to offer a feasible solution through a hybrid bio/digital material. Inspired from textiles, the material could also be implemented in the packaging industry for a variety of applications.

Besides drastically reducing physical material waste, the design process also adopts a digital approach using 3D technologies, optimizing the energy usage and supply chain circularity. This project demonstrates my keen interest in materiality and highlights how an exploration of natural processes (and combinations between them) can lead to a more sustainable design future, disrupting contemporary manufacturing and offering hope for new methods.

The project process has connected collaborated with academic research labs (Kyoto D Lab), sustainability foundations (LVMH Maison/0, The Mills), and innovation incubators to further accelerate the innovative solution Ori Seri. The existing traction, as well as its actional impact, has currently been expanding exponentially, aligning with the core motivation of the project which is collaborations and synthesis of industry knowledge, for the social good.

Scarlett Yang, United Kingdom
Supported by Tango Open, Japan

WEB1 **WEB2**

Plastic Waste To Wear

THE PROJECT At Ochoa we hand make jewelry from microplastic and fishing gear waste. Our jewelry is made in collaboration with OceanKindHi who sources all her microplastics and fishing ropes from the beaches of Hawaii and handpicks the pieces for each ring and bracelet. By reusing these wasteful materials in our designs we hope to spread awareness and remind people of the harmful effects of fishing gear and plastic waste on the environment.

Microplastics make up about 94% of all plastic waste in the Pacific Ocean Garbage Patch and fishing gear make up 46% of all waste in the patch. By repurposing these wasteful materials we clean up the world's beaches and make them visible to people around the world.

ABOUT Ochoa was founded by Jennifer Marcos and Louis de Bruijn in 2020 from their home studio in New York City. They study architecture at the Parsons School of Design where they were taught about the harmful effects of the fishing industry and plastic waste on marine biodiversity. This awareness made them want to create architectural pieces to wear which would teach people about sustainability and repurposing plastic waste. The fashion industry is a leader in global plastic waste and Ochoa aims to make sustainability accessible and stylish. We also want to educate younger generations and that is why we partnered up with planet.e a non-profit in Miami which facilitates different programs for children interested in fashion. In these classes, we give talks and make sustainable fashion items for the children to see the benefits of shopping sustainably.

Ochoa, United States
Louis de Bruijn, Jennifer Marcos, OceanKindHi

WEB **INSTA**

Disposable Fashion

THE PROJECT Disposable Fashion. It's what everyone has been talking about over the past few years as we try to reckon with the damage the fashion industry has caused to the global community and the planet. "How are we going to change consumer behavior and stop the endless supply of fast fashion?" And, "when will consumers learn that less is more and disposable fashion is killing our planet?"

Has anyone considered that Disposable Fashion might actually be the solution? This project is reclaiming the term Disposable Fashion and rebranding it as a positive movement toward a circular and sustainable fashion industry.

Utilizing the research done by Ecovative on mycelium-based biodegradable materials, Disposable Fashion is a made-to-order concept in the early stages of development. Unique and fashion-forward accessories partially grown out of mycelium combined with stainless steel elements that will remain intact long after the bio-based materials decompose offers consumers a chance to engage in the transformation that will take place. Over time, the mycelium will decompose (either naturally or purposefully by the wearer) and the owner will become an active participant in the impermanence of fashion in a much more real and responsible way. For this stage of the project, I have utilized supplies purchased from Ecovative to grow the mycelium structures, mixed with hand-made stainless steel jewelry and gelatin-based home-cooked bioplastics. The goal is to continue working with these types of designs while expanding the research and experimentation with mycelium and other bio-based materials that are truly biodegradable and compostable. Wear-testing, documentation of the transformations, and small batch production are among the next steps already underway.

ABOUT The fashion industry is a major contributor to climate change and we as designers have an enormous responsibility to change this because up to 80% of a product's lifetime impact on people and the planet is determined during the design phase. Developing new materials that make use of bi-products and naturally regenerative resources will put us on a path to a more circular design model.

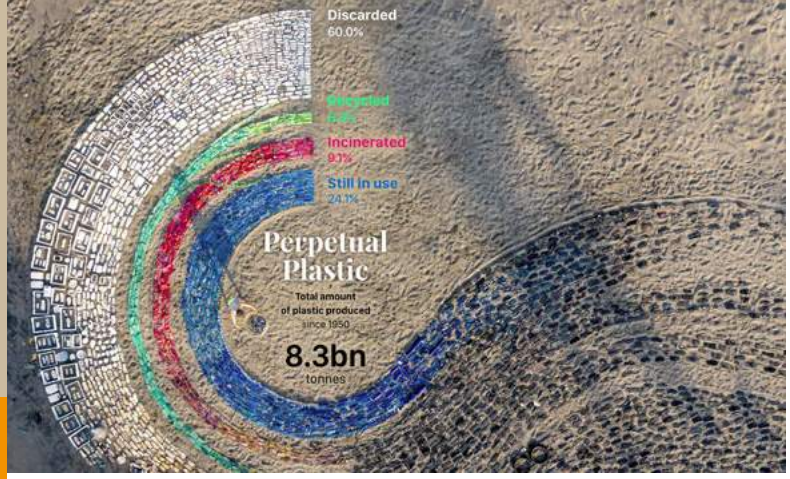
The focus of my research is to think about the material innovations currently being developed in combination with consumer behaviors as they are today. Instead of assuming that it is the materials that will revolutionize the industry's negative impact, should we not be considering how the designs themselves can elicit a positive impact? While some trailblazers focus their attention on long-term and highly scalable solutions, shouldn't others of us focus on the consumer habits of today? How can we lean into the impermanence of fashion using material innovation right now?

Elizabeth Quinn, United States
Muses: Ecovative & Alice Potts

INSTA

Carbon Negative Mushroom Packaging

What looks like a delicious piece of french Camembert is actually sustainable candle packaging from Uruguay. Find out more on page 98.



Perpetual Plastic

THE PROJECT “Science gives us new knowledge about the world. Art gives us new perspectives on how to see the world. Merging the two has tremendous power.” says German artist Liina Klauss. She teams up with marine scientist Skye Moret from the United States and data visualization specialist Moritz Stefaner from Germany to create the data sculpture Perpetual Plastic.

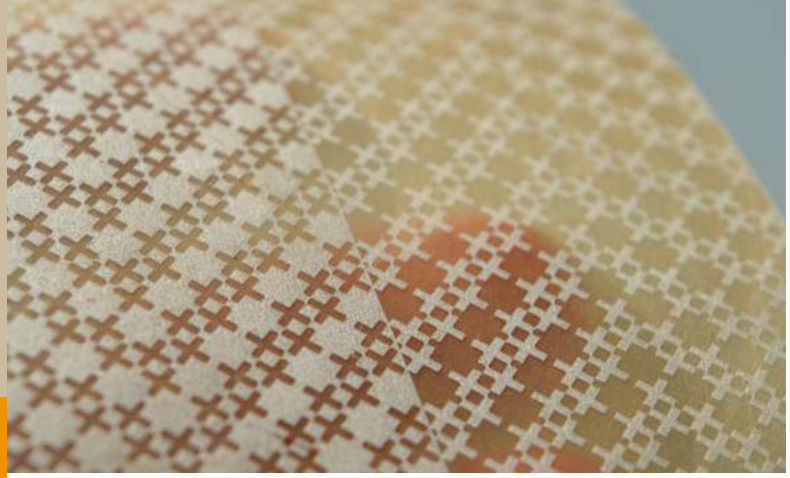
Perpetual Plastic is a physical dataset painted on sand using 4760 pieces of marine litter. It was realized with a team of 50 volunteers who collected floating plastic waste in a series of beach clean-ups in Bali. Instead of looking for waste, the collection is done by colors, shifting the perspective away from negative associations of waste to creative action. Each color of the diagram represented the fate of the 8.3 billion metric tons of plastic waste that has been produced since the 1950s. Namely, it becomes discarded, recycled, incinerated, or some of it is still in use. The black section represents all plastic ever produced, black then fade into different colors and splits up into separate streams: the white stream shows discarded plastics, meaning disposed in a landfill or unmanaged in the landscape or ocean; green is recycled plastics, red incinerated and blue still in use plastics. The width of each stream is proportional to the statistical number.

ABOUT Liina Llauss’ practice of turning rubbish into rainbows was initially born in Hong Kong in 2011 when she found overwhelming amounts of plastics washed ashore on beaches. She started to create beauty from despair, turning to overwhelm into positive creative action. Exposing the uncomfortable truth about ocean plastics – our role in it – has become her overriding mission. Her work is propelled by a deep-rooted love of nature, forcing the ugly reality to the surface: “Beauty is only the bait. Real change happens when you see, touch and feel the pollution on a personal level.” Over the past ten years, Liina has created over 50 environmental art installations with the help of hundreds of volunteers in Hong Kong, Malaysia, Taiwan, Thailand and Indonesia, each painted with colorful plastic trash over a canvas of sand.

Perpetual Plastic was realized with a team of 50 volunteers who collected the plastic debris needed in a series of three beach clean-ups, all picked up along Bali’s West Coast. These beach clean-ups are called Make Waste Not Art: instead of looking for waste, the collection is done by colors, shifting perspective away from negative associations of waste to creative action. While the artwork itself took 12 hours to layout, it was up for only 36 hours and disassembled within 6 hours. All of the flip-flops will be reused in either upcoming installations or recycled in collaboration with the footwear brand Indosole. Other recyclable materials have been handed over to the waste management company EcoBali. Non-recyclables like fishing nets and toothbrushes will be deposited in land-fill.

Liina Klauss, Indonesia
Skye Morét, Moritz Stefaner

WEB



Biological Textiles

THE PROJECT The project addresses the development of bio-leather of bacterial origin, to offer a sustainable alternative to animal leather and synthetic leather having linear production processes with unfavorable environmental and social impacts. Surveys carried out in the vicinity of the tanneries double or triple the natural values in the concentrations of heavy metals, 70,000,000 barrels of oil per year are used to produce polyester, 23 kg of greenhouse gas are released to produce 1 kg of fabric. Today the leather industry kills 4 billion animals and exposes tannery workers to respiratory, skin, and cancer conditions.

The proposal projects new manufacturing methods linked to the concepts of zero waste and biodegradability, considering it relevant to do with a focus on processes. It appeals, not only, to design the textile but also its final disposition, thus designing its cycle. We work at the intersection of design and science. It is relevant to ensure sustainability in production systems that contribute to the maintenance of ecosystems. The development of the project aims at a responsible and transparent management model guaranteeing traceability.

ABOUT I am Emilce Cesarini, an Argentine textile designer, graduated from the University of Buenos Aires. I collaborated in material research projects and integrated the teaching staff of the Faculty of Architecture, Design, and Urbanism. My research takes place at the intersection of design and science with a transdisciplinary approach. I research the biological development of textile material, focused on bacterial culture as an alternative to animal and synthetic leather.

During my academic training, it generated changes in my consumption habits, which allowed me to have a greater awareness and record of my daily actions. Understand that what we call normality or norm, is the result of a process and context, something that we could call and already in relation to design as materials and situated processes. I became a vegetarian and began to investigate how to supply animal leather and the unfavorable consequences of the livestock industry. My critical side continued to deepen so I began the search not only to supply animal leather but also the unfavorable impact of the textile industry and from the design of the material I jumped to the creation of the material itself. This is how I came to my Biotextiles venture in which I am developing material of bacterial origin, with which I aspire to reconfigure the current fabric production process.

Emilce Cesarini, Argentina

INSTA YOUTUBE

Parjas Wearable Wrap

THE PROJECT Parjas, a wearable wrap, uses fabric scraps as a sustainable aesthetic solution to single-use plastic. Instead of letting these fabric scraps contribute to the problem of textile waste, they are artistically pieced together to form a square-shaped cloth that can be folded into packaging, or clothing.

Every Parjas has its own personality. Unique patterns are created out of diverse fabric scraps from factories of ready-to-wear clothes.

Parjas' function goes beyond what plastic packaging is capable of. Using different folding techniques, Parjas can accommodate different items (groceries, gifts, books, bottles, boxes, etc.), no matter how irregularly shaped they may be. It is also reusable, easy-to-wash, and store. Adding to its charm, it can also be folded into different kinds of clothing, and accessories.

It is a simple yet versatile product that enables people to creatively expand their experience of it. Therefore, prolonging its life cycle.

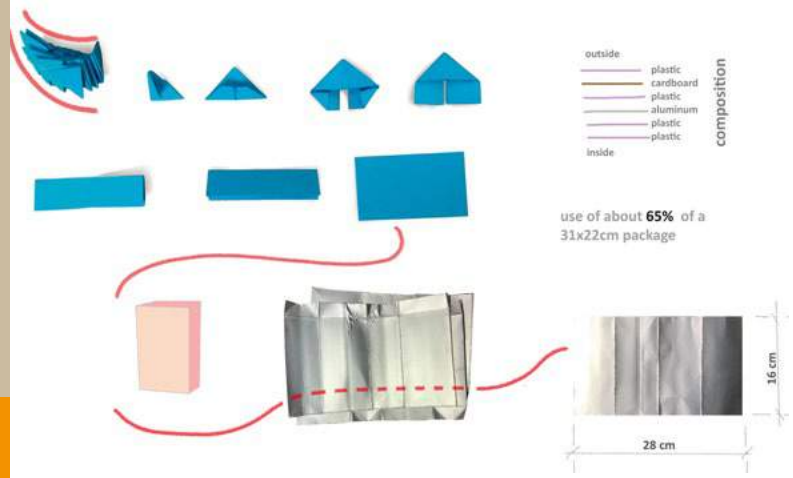
ABOUT In our hometown, Parjas means unwanted fabric scraps. Manufacturers of ready-to-wear clothes produce a significant amount of fabric scraps, contributing to roughly 92 million tonnes of textile waste created yearly, on a global scale.

But for us, these fabric scraps are not mere wastes; they just have wasted potentials. They could have played a part in the lives of people. Maybe, a favorite dress of someone's mom, anyone's lucky shirt, or a perfect birthday gift for a loved one. We don't want them to end up in a landfill. With that, we created Parjas to give them a second life.

Inspired by the art of Japanese fabric wrapping or "Furoshiki", we upcycled fabric scraps to make wearable wraps that can be folded into multiple forms of packaging, or clothing. In contrast to mass-produced plastic packaging that people discard mindlessly, we hope that through Parjas, people will be encouraged to become hands-on in the process of creating packaging of their own.

Christine Gamboa, Philippines
Catherine Gamboa, Darlenne Mae Rivera

INSTA



asa

THE PROJECT Asa (“wing” in Portuguese), the folding chair, arises from the reflection on the possibilities that the oriental art of Origami is able to contribute to the design field, as well as the intention of thinking about a production of low energy consumption and socio-environmental damage. Thus, Tetra Pak packages are used on the seat/backrest, a highly resistant material, which, associated with origami, produces a unique aesthetic and suggests a constructive awareness of the materiality and existing knowledge.

With a folded rebar structure, a material that can be found in building demolition waste and ropes where the glued Tetra Pak element is supported, the chair exudes lightness, simplicity, and sophistication.

ABOUT In the book The invisible cities (1972), by Italo Calvino, Marco Polo tells us about the city of Leon, characterized by constant renewal, where what is no longer new is discarded without precedents, without questioning its fate and effects. The project presents itself as a tactic of resistance to the process that became naturalized in Leonia and our visible cities. In a cruel way, the covid-19 pandemic has exposed the need for deceleration, an act that has made us think and see gestures, experiences, and practices from a different perspective and at a different speed. In this process, while observing my past experiences, I saw the potential of reusing Tetra Pak packaging as a raw material for the construction of furniture through origami. My history with origami dates back to my childhood and my learning process. At the age of 13, I was introduced to the 3d origami technique by my math teacher, Cleide. At school, we made swans on a small scale. From conventional swans to abstraction, knowledge of the technique was expanded, but always accompanied by reflection and revisiting the first exercises, as well as this project; how not to remember the swan’s wing?!

In addition to affection, the look at the productions of Brazilian artist Lygia Clark and Italian-Brazilian architect Lina Bo Bardi is an integral part of this design practice. Lygia Clark expands the possibilities of building forms from plans and Lina Bo Bardi expands the ability to look around and at cultural and personal experiences.

Davi Luis Galindo dos Santos, Brazil

WEB

CArrelé – The Calcium Brick Collection

Elaine Yan Ling Ng, China
Project owned by Nature Squared

WEB 1 | WEB 2 | WEB 3 | WEB 4

THE PROJECT CArrelé by British-Chinese textile designer and weaver Elaine Yan Ling Ng for Nature Squared (NSQ) is a new collection of multi-purpose wall and floor tiles composed of eggshells.

The project is part of NSQ's long-term commitment to transforming natural waste into useful materials through a circular design approach. The "egg-loop" ecosystem not only adds practical value to the material, it also provides a practical application for a natural material that would otherwise be discarded as a landfill. Approximately 250,000 tons of eggshell waste are produced annually worldwide, and most go into landfills, producing odors and attracting flies, therefore more sensible use of this bio-waste would contribute towards methane reduction in landfills.

Ng's extensive research on transforming sustainably sourced bio-waste combined with NSQ's heritage artisan skills and technical expertise form the first range of products, CArrelé, handmade eggshell tiles, for The Calcium Brick Collection.

Ng developed a new composite formula base design extracted from eggshells using an "egg-loop" ecosystem that adds practical value to the material. First-time eggshell tiles have been made commercially available, with a complete supply chain. Each square meter of CArrelé uses over 3,000 eggshells, which are combined with a carefully selected bonding agent that fulfills standard industry specifications.

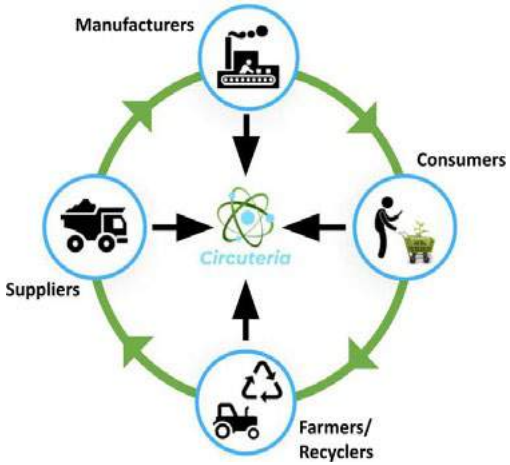
CArrelé comes in square and rectangular shapes making it infinitely versatile in contemporary interiors. Toasted has earthy tones ranging from cream to dark toast brown, while Natural Dye tiles feature hues achieved with indigo, chlorophyllin, and madder. Hybrid tones are obtained through a combination of natural dying and toasting.

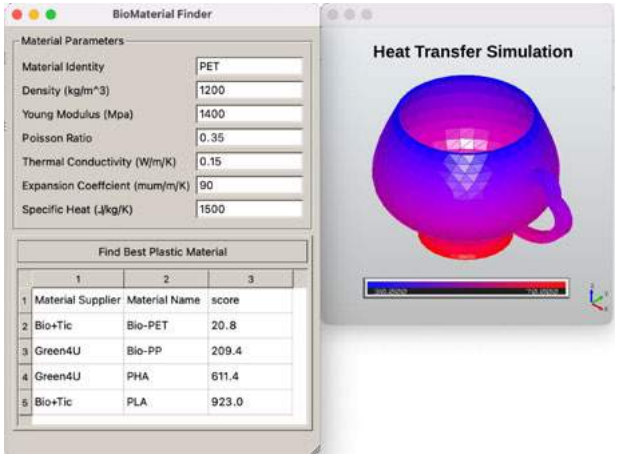
ABOUT This new development takes nature's architecture as a literal inspiration as well as raw material. Eggshell is widely available, and Ng is the first advocate of moving away from the current linear economy, which "takes, makes and wastes" to one that reuses, recycles, and repairs. This is also the world's first instance of transforming eggshell waste into a commercial product, developed and manufactured in Southeast Asia. The Philippines has many pressing national issues of social sustainability, landfill, and employment, and should this product be successful, it will demonstrate how a challenge can be turned into an asset. There are many social and environmental benefits, and CArrelé is a solution within the entire supply chain.

Ng and NSQ are currently developing a portfolio of other innovative materials. For instance, the next material will utilize seashells as they share very similar characteristics. The techniques already developed by Ng can be extended. This allows NSQ artisans to perfect their existing skills, and the market to accept further applications of natural waste.

BEST INITIATIVES

In this category, we present solutions for a world with less plastic that are inspiring, educational, informative, ambitious, energetic, adventurous, enthusiastic, fresh, venturesome, quick-witted, memorable, thrilling, excellent, insightful, wise, wild, provocative, and uncomfortable truthful.





	1	2	3
1	Material Supplier	Material Name	score
2	Bio+Tic	Bio-PET	20.8
3	Green4U	Bio-PP	209.4
4	Green4U	PHA	611.4
5	Bio+Tic	PLA	923.0

Circuteria – Let's Go Circular

THE PROJECT We could replace up to 90% of fossil-based plastics with bio-alternatives, enabling a circular bioeconomy in which biomass is treated and traded as a valuable resource. However, a general lack of information paired with a lack of economies of scale still hinders us from taking action. Therefore, we develop Circuteria, a smart and sustainable online platform that efficiently connects and advises all stakeholders along a circular bioeconomy to produce, use and recycle sustainable materials and products.

With Circuteria, we apply smart match-making and simulations (AI) to provide buyers and sellers of bio-alternatives with the right information they need. For example, manufacturers can easily find the best bioplastic material from a supplier to replace their currently used fossil-based plastic, using our BioMaterial Finder: First, a manufacturer uploads all necessary information about their currently used plastic and tests with a simulation the use of different bioplastic alternatives on their product (avoiding production errors, overengineering, ...). For each finding, Circuteria then also takes important life cycle parameters of a material into account, including CO_2 emissions and the relative amount of recyclables. In principle, this prototype is applicable to many other interactions along a circular bioeconomy, for example, to convey biomass between farmers and suppliers.

In our BioMaterial Finder prototype, manufacturers but also consumers can type in their currently used plastic ID ("PET") and obtain information about the best bioplastics alternative offered by a supplier (ordered along with similarity "score"). In an extended version of this prototype, the user can optimize and visualize with simulations for the best biomaterial used in a particular product. As a next step, our Finder also considers different fields of application, and material mixtures (polymer compounds).

ABOUT The idea emerged a couple of years ago while one of the founders was working in the business development of the 3d printing industry, where she learned that companies have a great interest in sustainable materials, but not enough insights to compare their technical capabilities and sustainable impact. In 2019, she met her co-founder at a Berlin hackathon so together, they developed 3d-Ident, a search engine prototype for 3d printed biomaterials. In 2020, they further refined this prototype into the more general yet product-specific BioMaterial Finder of the Circuteria platform. Circuteria is currently in a TRL 3 development stage with first validations and feedback from beta testers.

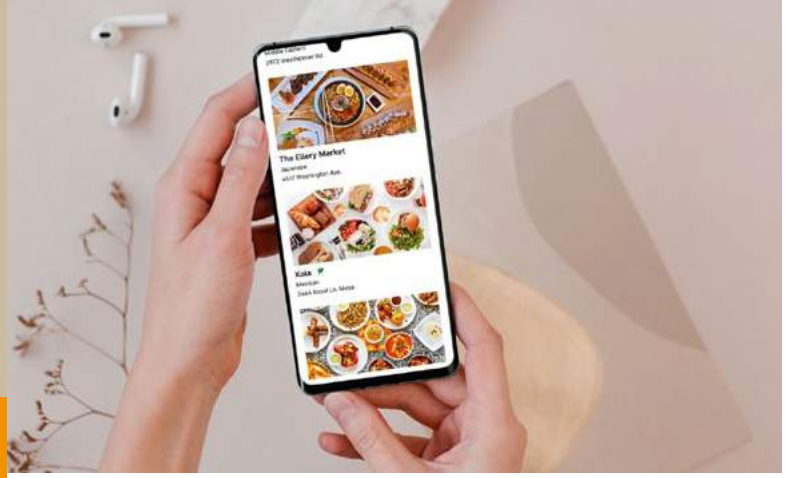
Our motivation to develop the Circuteria platform is to disrupt the traditional (analog) process of plastic purchase because product manufacturers should no longer be limited to a personal (often fossil-based) material selection. With our BioMaterial Finder, they can instead choose to buy among many different bioplastic suppliers, who themselves get in touch with better-informed customers.

GOLD AWARD WINNER

Circuteria, Germany
Gesa Schneider, Dr. Sebastian Stolzenberg,
High-TechSeedlab, European Bioplastics

WEB1 WEB2

YOUTUBE1 YOUTUBE2



Suppli: The Future of Sustainable Takeout!

THE PROJECT Suppli is a reusable takeout container service that uses an innovative approach to eliminate single-use plastics from the takeout and delivery industry. Female-founded and based in Toronto, Suppli partners with local restaurants to provide reuseable containers so customers can enjoy takeout without the waste. In 10 months, Suppli has signed up almost 2,000 consumers and 25 partner restaurants and saved 8,500 single-use takeout containers from landfills (for context, that's 8 minivans worth)!. After launching and refining the service in Toronto's downtown east end, Suppli's on an exciting growth path building an app to expand city-wide (and beyond!) in the coming years.

ABOUT Single-use waste has been a problem weighing on us for years. While at a dinner party 6 years ago, our CEO, Megan, floated the idea by a group of friends with no takers. Everyone went on to talk about how convenient single-use products were. The market was not ready. Fast forward to 2019, the same group of people we're lamenting about the excess amount of packaging that comes with meal kit deliveries! Megan floated the idea of a reusable takeout container service again, and this time, it was a hit. The market was ready!

Globally, we extract an unsustainable amount of resources from the Earth to produce single-use items that are used for a mere 10 minutes and then spend the next 400 years negatively impacting developing countries, nearly 700 species (especially seabirds), and our oceans. Locally, Toronto serves approximately 39M takeout meals per year, which conservatively means we are tossing 78M pieces of waste each year! What's worse, only 9 % of what we place in our recycling bins actually gets recycled.

SILVER AWARD WINNER

Julianna Greco, Canada
Megan Takeda-Tully

WEB | INSTA | FACEBOOK | LINKEDIN

Sowing Circularity

THE PROJECT Based in the lower-middle-income community of Lorentzville, South Africa in the bustling city of Johannesburg, Big Circle Studios is seeking to create new economies of waste through grassroots research and design. What this means is engaging with the knowledge, habits, businesses, and lives of local community members to envision a new way to valorize organic waste.

This work is done by researching and identifying local waste streams from businesses in the area, creating biomaterials using those waste streams, and developing products using those materials. At each stage, the information learned is packaged and shared through open-source mediums that are accessible to those within the local community and those on the outside seeking to learn more. This creates the opportunity for people to learn, create work, and build businesses that are centered around sustainable materials at all levels of the supply chain (e.g. one person could build a business creating eggshell powder for its chemical properties of calcium carbonate, and another could create a business making a light from a provided prototype design). The main aim of this grassroots approach is to make the final outcomes as accessible, low-tech, and low-cost as possible in order to accelerate the way in which people engage with circularity and create more sustainably. To ensure this information is clear and approachable, free workshops are conducted where participants are walked through each stage of the material and product development process, enabling them to go home with a biomaterial product that they have created.

What this work hopes to accomplish is a localized, decentralized organic waste economy in South Africa that builds upon the existing knowledge and practice of waste management in the community whilst providing a value add of research, design, and skills development to those BCS has the opportunity to engage with.

ABOUT In the midst of the pandemic, we (Kiera & Matt) founded Big Circle Studios in the hope of reimagining and reshaping the narrative of how green, circular, and sustainable economies exist in the world. Through separate experiences, we became aware of how technocratic and top-down Western perspectives of the circular economy are, and how ill-equipped the solutions provided by these development-minded bodies are for the people and land that we call home – Johannesburg, South Africa.

A year ago this month, we officially founded our studio and began working on a materials library and low-tech plastics recycling workshop funded by the British Council. As we built momentum, we received funding for an informal waste economy mapping project and a biomaterials workshop funded by the Goethe Institut. Since then we have been expanding our expertise in biomaterial creation and working to further our mission of grassroots development of the circular economy with support from the South African government.

BRONZE AWARD WINNER

Big Circle Studios, South Africa
Kiera Crowe Pettersson, Matthew Edwards

WEB **INSTA**

MEDLAstic

This eye-catching bowl is made of starch from the garden, silicate and decorative, dehydrated vegetables. Interested in joining a workshop on bioplastics? Learn more about Agostina Laurenzano on page 58.

Bye Bye Plastic, Hello ECOFILTRO

THE PROJECT Ecofiltro is a 100 % natural biodegradable water filter, that can filter any water source except for saltwater. It is made out of the following natural materials: Clay, which creates the microns within the filtering unit of 0,8 microns, not allowing most contaminants to trespass, sawdust which converts into activated carbon, eliminating the bad smell and taste of the water, and colloidal silver, which acts as a 100 % natural antibacterial, protecting the outer layer of the filtering unit.

ABOUT Ecofiltro was invented during the early 80s in Guatemala, CA by a Guatemalan scientist named, Dr. Fernando Mazariegos who along with the support of the Inter-American Development Bank created an ecological, and efficient way of filtering water in Guatemala. The number 1 cause of deaths in Guatemala is mainly due to the lack of potable water in the country which causes gastrointestinal diseases, making kids sick which results in early death, and adults too sick to be able to work and provide for their families. Ecofiltros' mission has always been to provide healthy drinking water to all human beings especially in the rural areas of the country where there are few resources, and where they needed it the most. So a major part of the project has always been to figure out the most sustainable way of being able to provide these filters to the rural area families and to continue the correct usage of the filter. Now, after almost 30 years, Ecofiltro has not only had a strong social impact, reducing water caused diseases, but also an environmental impact, since now the families don't need to chop wood (causing deforestation) in order to boil the contaminated water to purify it, and also reducing significantly all around the country and world the usage of plastic water bottles. I worked for the company for 4 years, carrying out the sales and marketing strategies, but then due to personal reasons I had to move back to Europe and seeing that the problem of potable water wasn't only an issue in Guatemala or developing countries, but also in Europe, I decided together with my partner to bring Ecofiltro to Europe, in order to stop the usage of plastic water bottles, which only contaminates our environment, and has a horrible social and environmental impact. Now thanks to Ecofilttro, all Europeans also have an ecological, efficient, and economical solution for their drinking water. We use 0 plastic, and once the life expectancy of the filter is over (2 years), you can either use it as a flowerpot or throw it away and it's 100 % biodegradable.

ECOFILTRO, Spain
Ariana Pizzatti, Guillem Bordas Gimenez, Philip Wilson

WEB

Our Ocean Is Not a Garbage Can

THE PROJECT SAVING TALLY is an engaging picture book that addresses the issue of plastic pollution and how it impacts our oceans and sea life. It's a story that speaks directly to kids showing what plastic pollution can do to wildlife and sea creatures. The book also includes a separate section with "facts" about plastic pollution to help parents improve their knowledge on the matter.

I write books for young children that have the future of our planet at their heart. I believe that children are our last chance to improve our ecosystems, find solutions to major climate problems, and save the planet.

I also believe in the importance of reading to children from an early age, and hope that my books engage children (and parents!) and inspire them to believe in a better future.

ABOUT I'm a writer, English teacher, and environmentalist.
I write books for children concerning the future of our planet. I hope my stories will encourage future generations to be aware of and engage with environmental issues.

According to United Nations Educational, Scientific and Cultural Organization (UNESCO), there are four reasons to provide children with environmental education:

1. To make them more aware and conscious of environmental problems.
2. To boost their interest in caring for and improving the environment.
3. To enhance their ability to learn about their surroundings.
4. To broaden their ecological knowledge in subjects such as landscapes, air, water, natural resources, and wildlife.

Serena Lane Ferrari, Italy
Giorgia Vallicelli (Illustrator),
SANA MARE (non-profit organization)

WEB **AMAZON**

YOUTUBE 1 **YOUTUBE 2**

YOUTUBE 3

Save a Fishie

THE PROJECT Save a Fishie runs regular beach cleanups with school and youth organizations in order to educate, inspire and motivate our youth to make the necessary changes back at home and at their school but doing all they can to eliminate single-use plastic. By them SEEING first-hand the effects of pollution in our oceans they are more likely to want to make a difference starting at home.

ABOUT I started doing beach cleanups when I was 10 years old. Seeing the same plastic culprits on the beach made me want to make a difference, so I started Save a Fishie doing beach cleanups and distributing eco-friendly products. I was doing a cleanup between the rocks a few years ago and I took a plastic bag from between the rocks, filled with water and it started moving. I poured the water out and a little fishie went swimming out of the bag! That little fish would have died had it not been for me removing that bag that humans put there! And that's how Save a Fishie was born because that day I saved a fishie and I want to teach everyone that by making just one small change, they too, can save a fishie!

Zoe Prinsloo, South Africa

WEB **FACEBOOK**

More Water, Less Plastic

THE PROJECT MYWATER is a smart water startup, reinventing public taps and redefining public access to drinking water while on the move. We developed a smart hydration station to provide water refill service in outdoor spaces. It is an IoT-based water refill station, designed for outdoor spaces and smart cities, enabling them to reduce the use of single-use plastic water bottles and reach SDG goals.

ABOUT The way we hydrate has changed and access to drinking water in public outdoor places is limited, user-unfriendly, and hard to find. Access is so limited that in the EU alone, we buy and throw away over 10 million plastic water bottles each hour. MYWATER focus on a huge impact. We planning to deploy 10.000 units within the EU (or 450 million refills per month) in the next 7 years. We also partner with Solar Impulse Foundation to bring more water and less plastic worldwide.

MYWATER, Slovenia
Robert Slavec, Aljaž Slavec, Sara Slavec,
Tomaž Facija, Erzhan Mamyrov

WEB **INSTA**

LINKEDIN **FACEBOOK**

Roots & Hoots – An Online Zero Waste Solution

THE PROJECT I have launched a Brighton first-of-its-kind zero waste online delivery service where we supply more than 650 grocery, personal care, and cleaning products in returnable packaging to our customers in an emission-free vehicle. Once the customers return the packaging we wash these and reuse them for the next delivery thus eliminating any packaging wastage and we don't have any plastic in our whole delivery system.

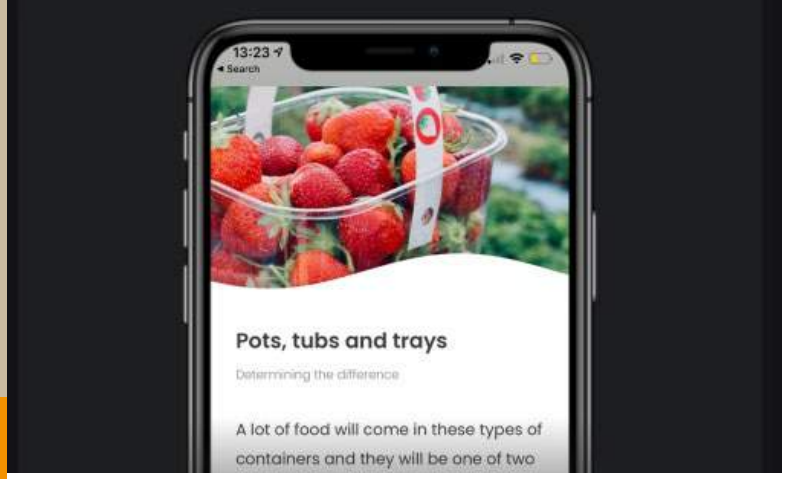
ABOUT The concept of a zero-waste shop has always fascinated me as that helps reduce so much of this single-use plastic. But as a personal user I realize that it is not easy to lug around the heavy bags that I can have on some days, it doesn't have to be very expensive from traditional supermarkets and there should be a wide range of products available so that I could do all my shopping from a single place. Also, it's not technically zero-waste as there are paper bags wasted if I don't carry my pots to the shop. to resolve this issue I started roots and hoots where we don't have any wastage in our cycle and absolutely no plastic in our whole ecosystem.

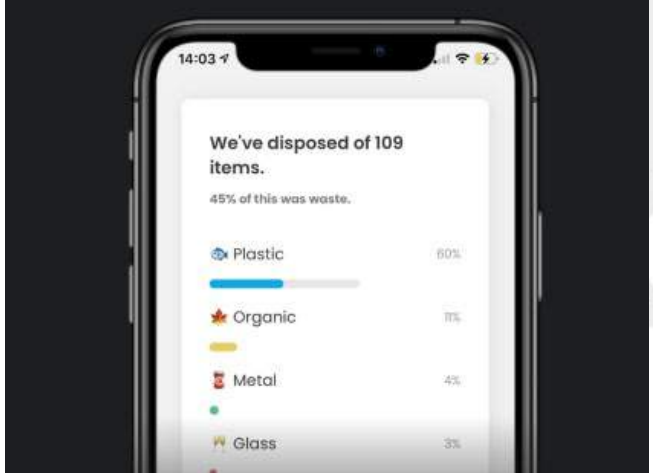
Roots & Hoots, United Kingdom
Shiv Misra, Ram Krishnan

WEB **INSTA**

Weedware – SeaweedCircle

An art exhibition? A laboratory? This is a studio where harvested algae are processed and used for several applications, varying from Circular Agriculture purposes, to the creation of thermoplastic biopolymer used for 3D printing, compostable plant pots, and many more. Learn more on page 48.





Horizon – The Recycling Instructions App

THE PROJECT Horizon is a mobile app focused specially on reducing plastic waste through education, accurate recycling instructions and raising awareness. Our app enables our users to crowdsource packaging information for products. We then combine this data with information of local recycling capabilities to give users accurate, product and location-specific recycling instructions. So far in our first year, our community has submitted packaging information on over 20,000 products and we support over 300 local authorities in the UK. Our users can also track how they dispose of their packaging. The can see how much single-use plastic they use each month as individuals and as a community. In addition to tracking, we also teach our users how to recognise the different types of plastic and learn about their local recycling facilities. By helping people become conscious of their waste, we believe we can empower them to reduce it. Horizon is built to do just that.

ABOUT Only 10 % of plastic waste is effectively recycled and the UK is one of the biggest sources of plastic pollution in the world. Due to the sheer volume and variety of plastic on the market the problem is not easy to solve. There are over 300 different local authorities in the UK with different recycling capabilities. Therefore manufactures alone cannot print accurate recycling instructions for every area. Local authorities cannot provide instructions for every product. The result is that consumers are left confused. Only a solution that combines specific product packaging data with local recycling information can offer truly accurate and clear instructions. Horizon does just that. Having built apps for over 10 years for corporate companies, in 2020 I decided to use my technical skills as a force for good in the fight against climate change.

Horizon, United Kingdom
Vickesh Solanki, Jamie Curnow, Chris Owen

WEB **TIKTOK**

Tiny Tote

THE PROJECT Tiny Tote is a 501(c)4 nonprofit organization with the mission of reducing plastic bag waste in the United States. We accomplish our goal through education, outreach, and advocacy to reach all populations of people. We believe that one small change can make a big difference, and encourage people to bring reusable bags to the grocery store to avoid single-use plastic. We have distributed over 2,500 reusable bags, “tiny tote” keychains to remind you to “B.Y.O.B.” (Bring your own bag!), and stickers to raise awareness. We also sponsor community clean-ups, the largest of which had over 150 participants. Tiny Tote has advocated in 37 of the 50 States, and continues to grow! Additionally, Tiny Tote has campaigned statewide and presented at the City Council in Colorado Springs, CO in support of a single-use plastic bag tax in the summer of 2020. Tiny Tote recently celebrated a win with House Bill 21-1162 signed into law by the Colorado Governor on July 6th, 2021, imposing a tax on single-use plastic bags and polystyrene food containers. As a grassroots organization, we extend our reach by partnering with Keep America Beautiful and America’s National Teenager Scholarship Organization to host litter clean-ups and to proliferate knowledge and awareness about the impact of single-use plastics.

ABOUT Tiny Tote was founded by Wendy Martin, an Army aviation officer with a passion for the environment. While stationed at Fort Carson, Colorado, she observed the tremendous effects of plastic bag waste when a training flight was canceled in her Unit due to a plastic bag being sucked into the spinning rotor blades of a helicopter. Tiny Tote was founded in the principle that any person, regardless of age, gender, ethnicity, or ability, can make a big difference by making a small change. This organization was created to supplement ongoing efforts and organizations, as plastic waste has a negative effect everywhere, not only in coastal communities.

Tiny Tote, United States
Wendy Martin, Kathryn Carter, Raquelle Allen

WEB

plastic free RESTAURANTS

86 the plastic

plasticFREErestaurants.org

We Pay Restaurants and Schools To Stop Using Plastic

THE PROJECT PlasticFreeRestaurants.org is a new US non-profit that eliminates single-use petroleum-based plastic from restaurants and schools by subsidizing the cost difference between the plastic they were using and the reusable alternatives they agree to use moving forward.

There are no contracts to sign or forms to fill out; we merely ask to see recent invoices showing single-use plastic items purchased, and current/future invoices showing their reusable replacements. We research the SKU's on the invoices to verify the source materials of past and future items, we do some math on the cost difference between old and new items, and then we send a check in the mail. It's as simple as that.

We are entirely volunteer-run, and pay zero salaries or rent, so our overhead expenses are less than 5 % of the money we raise. We are funded primarily by private donations, which are tax-deductible under the US income tax code due to our non-profit status. Ergo, we're essentially using tax dollars to eliminate single-use plastic!

ABOUT I went to a friend's newly-opened takeout shop, to buy a burrito and show some support, and noticed that half of his containers were plastic and the other half were plant-based/compostable. When I asked him why he hadn't gone 100 % compostable, he told me that having Yelp.com change his "$" designation to "$$" (i.e., categorizing his shop as slightly more expensive) would lose him ten customers for every one customer he gained by "going green". He feared that he might end up in that higher "$$" tier if he purchased more expensive food ware and passed the costs on to his customers. I then asked him what the price difference between the plastic and compostable products would be for a full month, and he pulled out some invoices so I could do the math. It came to about $ 350.

The possibility of eliminating an entire restaurant's plastic output for a month with just $ 350 got the wheels spinning in my head. From there, it took many months to navigate the US government qualification process for a 501(c)(3) non-profit organization, recruit a Board of Directors committed to raising funds for this idea, and launch a website. Our subsidy program initially focused on switches from single-use plastic to single-use compostable products, as we didn't see the necessary infrastructure or opportunities for most restaurants to go "reusable". However, we quickly learned of countless reusables programs and companies whose work we could support, and we simultaneously educated ourselves about the vagaries of compostable products (PFAS, varied certification standards, uneducated distributors, unmotivated consumers, etc). As a result, our Board recently voted to change our subsidy program to 100 % reusable solutions.

John Charles Meyer, United States
Our volunteer Board of Directors is comprised of 17 dedicated individuals from across the United States.

WEB **FACEBOOK**

INSTA

The Rolling Oats – A Mobile Refill Shop

THE PROJECT We stock a growing range of household essentials, such as dried foods, nuts, and dried fruit, herbs and spices, tea and coffee, environmental cleaning products, and UK-made toiletries all plastic-free.

Customers use our compostable paper bags or bring their own containers to fill up with their goods without all the unnecessary packaging. We travel to different villages and markets, (the benefit of being mobile meaning we are one vehicle traveling to a village, rather than lots of people getting in individual cars to go shopping!) we meet many interesting, open-minded and caring people. We bring a sustainable, simple plastic-free solution to people all over Buckinghamshire – and people love it!

ABOUT Chris (business partner) and I have lived in a community collectively for nearly 30 years so are used to buying food in large paper sacks – it always comes as a nasty surprise when visiting shops that the “norm” is tiny little plastic and mixed material packaging! We bonded over grief (we both lost our partners recently, Tony 32, Chrissie 40s) and wanted to do something positive for the planet to focus our energy on. For me, after suddenly becoming a young, single and pregnant mum, purchasing plastic-free food was very difficult and expensive. I wanted to make it affordable, easy, and accessible for as many people as possible – everyone can do their bit for the planet.

The Roalling Oats, United Kingdom
Millery Wheeler, Chris Schmidt-Reid, Redfield Community, Eco Conscious People In Buckinghamshire

WEB **INSTA**

FACEBOOK

Facts & Cures – The Plastic Plague and How to Halt it

THE PROJECT Facts and Cures is a two-tiered wake-up call for those who haven't yet fully comprehended the severity of the plastic problem and a guide for those already understanding the problem, yet not knowing how to change their daily habits. Taking the shape of a carefully designed and thought-out book, this guide endeavors to be handed down to the next eager reader. By using materials such as unplasticized paper and a cover made of recycled paper, the sustainable component is meant to become tangible.

The book is made up of two sections, the Facts, and the Cures. The Facts take the shape of double pages with blunt facts about plastic. Designed with playful irony, they are meant to shock the viewer in eight chapters. To compensate for this emotionally engaging component, each chapter begins with an encyclopaedically designed text offering a deeper insight into the dressed issues.

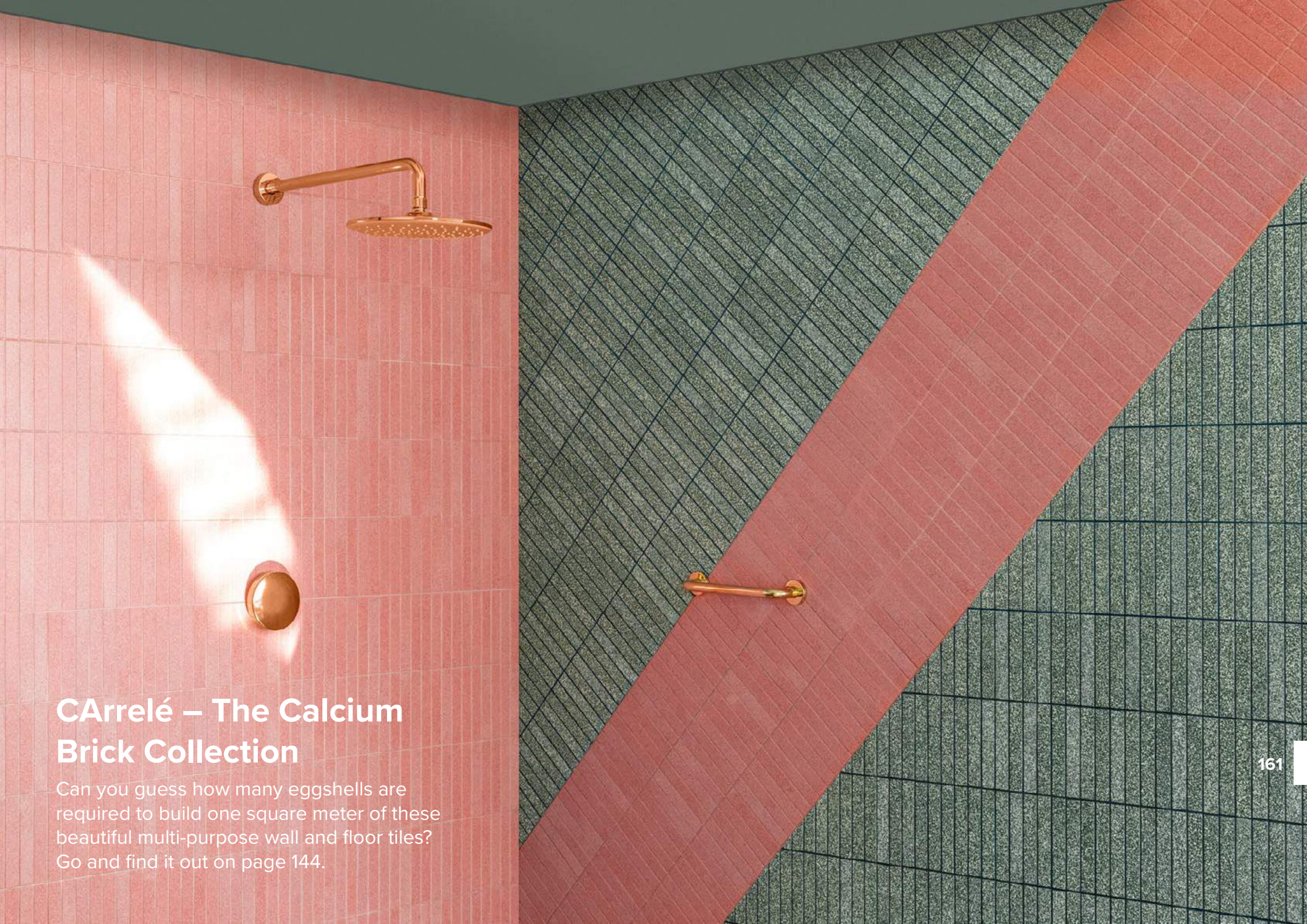
After the emotionally devastating facts about plastic, the book offers a ray of hope: The Cures contained in the second part. They take the shape of a carefully curated glossary of selected alternatives to our most used everyday plastic items in two categories: Kitchen & Cleaning and Bath & Beauty.

The unique point of the book is this: in the span of cover-to-cover it hopes to drastically change the mindset of the viewer. And rather than simply encouraging the viewer to switch out the everyday plastic products polluting the environment, the book offers tangible solutions with specific products. By becoming a handy glossary, it enables the viewer to make immediate and long-lasting changes to their everyday habits.

ABOUT Our planet and its oceans are quite literally drowning in plastic waste. More than 8 million tons of plastic are dumped into the oceans every year. Yet look around you and you'll find many people and throwaway cultures are using disposable plastic without a thought to its devastating consequences.

In an age of information overload, I asked myself how I could draw attention to the plastic crisis in a compact and sustainable way and counteract it? The problem extends beyond the lack of awareness of the enormous extent of litter, to our invisible plastic addiction. And even if people are aware of their use of plastic, our busy lives do not permit most people to actively search for alternatives to their use of plastic which tends to simplify their lives. This is how my idea of a multi-stage "wake-up call" came about: a book that creates awareness and at the same time offers a tangible cure to the plastic plague. I wanted to create a solution that was easy to use and at the same time offer a high aesthetic value to the reader, making it an object that adds value to a person's possessions. the planet.

Mirella Goldstein, Germany
Many thanks to my professors, Prof. Manuel Trüdinger and Prof. Hendric Wilke and the Academy of Design and Fashion in Munich, as well as my Muse Irina.



CArrelé – The Calcium Brick Collection

Can you guess how many eggshells are required to build one square meter of these beautiful multi-purpose wall and floor tiles? Go and find it out on page 144.

Two Sisters on a Mission To End Single-Use Plastic in the Bathroom

Plaine Products, United States
Lindsey McCoy & Alison Webster

WEB **INSTA**

FACEBOOK **YOUTUBE**

THE PROJECT In aluminum bottles that can be sent back and refilled time after time. Here's how it works: Customers order their preferred products from our website. When their bottles are running low they return to the site to order refill, or they can subscribe and we'll send the refill bottles automatically. When the refills come simply switch the pumps over and send back the empty bottles in the refill box, Plaine Products covers the cost. Then we clean the bottles, refill them and reuse them. Reuse doesn't end with the bottle. We have set it up so customers reuse their product pumps with refills; we reuse our shipping boxes, (closing them with paper tape so they can be recycled eventually); we have designed the boxes to eliminate the need for fill, and we use labels where the backing can be recycled.

Based in Cincinnati, OH, and founded in 2017, Plaine Products is BCorp and a member of 1% for the Planet. All of the products are vegan, non-GMO, cruelty-free, biodegradable, color-safe, hypo-allergenic, and free of parabens, sulfates, and toxins, good for the body and the planet.

ABOUT For 10 years I lived in the The Bahamas doing environment education work. While I loved living there, it wasn't all rum drinks on the beach. On a small island there's no first world infrastructure to insulate you from the piles of plastic we are creating. You see plastic bags, bottles and flip flops on the beaches, in the water, spilling out of the landfills, along the side of the road. There's even a place so full of plastic its called Junk Beach. The message that plastic last forever, no matter how long we use it, is much more obvious living there than it is here.

I wanted to start using less plastic in my life. I started taking action: carrying a reusable water bottle, reusable grocery bags, skipping the straw at restaurants and bars. I looked for other ways to use less plastic. But I couldn't figure out how to get those plastic bottles out of my shower. I couldn't find any alternatives that worked for me and my hair.

As my family contemplated a move back to the United States, I realized that I might be able to solve my own problem. Even better, I might be able to help other people use less plastic in their lives. I pulled in my sister, Alison Webster, who has a design degree and strong opinions about the quality of her products. Together we spent two years working hard to making it easier for people to get quality products without having to buy single-use plastic bottles. Plaine Products was founded in February 2017 to help minimize single-use plastic and reduce waste in bathrooms across the country. Since then we have eliminated 300,000 plastic bottle from the waste stream by providing a reusable alternative.

Refuse If You Cannot Reuse

THE PROJECT In four years, since 2018, I have delivered measurable change for the environment. I have eradicated 26 million single-use plastic items from the hospitality industry through a door-to door campaign and as environment head at school I inspire peers through e-awards to give up three single-use items and get five more to follow suit. I chose to focus on the fourth R of the waste hierarchy "REFUSE"... if you cannot re-use; tackling the problem at the source, advocating to establishments to replace single-use plastics with environmentally friendly alternatives.

During the lockdown I continued my campaign online reaching out to 100s of youth with the goal of giving up single-use plastics. Inspiration to my peers and my success of my approach was recognised by school that awarded me "Innovator of The Year" twice – grade 9 and this year in grade 12. My measured documented personal success has become the standard in my school, with them using it to help others track success. I have addressed two major industry chambers (CII and FICCI) on my subject and been an honorary advisor to a major Indian industrial group (JSW Steel) in their mission to be single-use plastic free. My environmental work has been recognised globally through extensive media coverage. For all this and more I received the Diana Award 2021 and Atmanirbhar award by India.

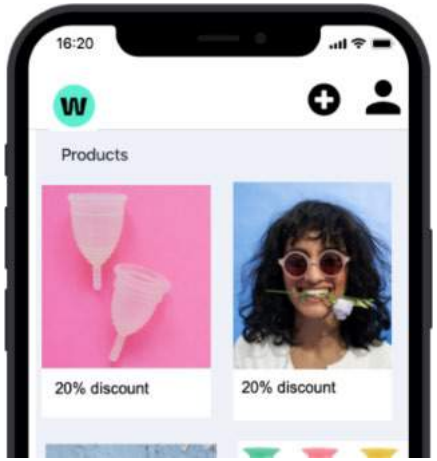
ABOUT My inspiration for my work on the environment has been my excellent academic record. I believed I must make measurable impact through my initiatives. My motivation to arrest use-at-source of such items came from seeing a YouTube video of a distressed turtle with a straw in its nostril. I researched the plastic pollution problem and approached Chintan, India's leading NGO in waste management, to understand the issue; deciding to choose plastic straws as my first point of intervention, going door to door in the hospitality sector. Each establishment convinced by me, after many trips and conversations, was a boost to my belief that no effort is too small when it comes to saving the environment. Establishments approached me with issues that they wanted to change, but didn't know where to source product from. Through my research, helped connect them with manufacturers of such products, expanding my efforts to other single use plastics. I didn't want lack of access to product, to block the change.

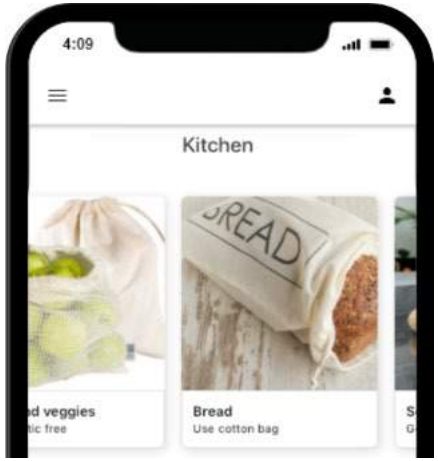
I track the number of single-use plastic items replaced by eco-friendly alternatives, by establishments approached enabling claim eradication of over 26 million plastic items. I broadened my impact by initiating "Forests of Hope" to inspire youth to plant and nurture urban clusters of 195 trees (one tree of the children of each country) as a message of hope. In every activity I set a target in consultation with experts, and then with fierce determination I beat my own targets. My ownership of activities is best evidenced through an official three-day awareness drive in Delhi's Khan market which I continued on my own for 9 months, succeeding in making over 90% of the eateries in the market single-use plastic free.

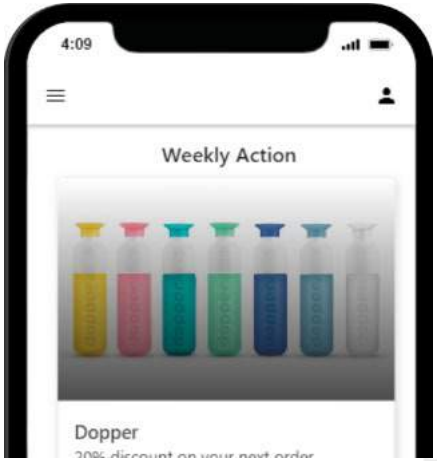
ADITYA MUKARJI, India
Ms. Bharati Chaturvedi, Dr Prabhjot Sodhi, my parents, The Shri Ram School Aravali

TWITTER | INSTA

FACEBOOK 1 | FACEBOOK 2







Let's Get Wasted

THE PROJECT The problem of plastic is everywhere. We are drowning in it. The good news is that 77% of the consumers want to learn how to live more sustainably, but currently there is a gap between aspiration and actual behavior. A lot of us are well-intentioned when it comes to reducing our plastic waste, but the price, availability, and inconvenience of alternative products make it less practical. That's why we have created the WASTED app.

The WASTED app empowers people to kick out plastic from their daily routine and rewards them with discounts on sustainable products. Within the app, users can learn about and select plastic-free actions they would like to start, then repeat the action until it becomes an internalized behavior. Every action is proven by taking a picture and once it becomes a habit, users are rewarded and can shop sustainable products with their earned discount.

By tapping into the current mobile behavior and habit-tracking trend, the Wasted app will appeal to a broader eco-aware audience – giving them a tangible way to reduce plastics.

We're on a mission to make our company irrelevant by eliminating plastic waste. Are you ready to join the fight? Let's get wasted.

ABOUT Wasted started as a not-for-profit neighborhood initiative in Amsterdam Noord, working together with the local government to incentivize citizens to separate their plastic waste. The program rewarded people who recycled their plastic with discounts at local businesses. It worked! and we grew to a community of over 2,000 active participants. But how could we translate that success into something that can scale and have an even bigger impact?

Wasted is now an early-stage impact startup. A top graduate from the Founder's Institute in May 2021. The founding team consists of Elisha and Meredith, both highly ambitious women with expertise in behavioral science, marketing & business development. We also have a team of UX/UI experts, developers, and advisors all voluntarily dedicating their time and energy to our mission.

We are working hard to create the only app that rewards you for reducing plastics. It's a tough journey, but we're up for the challenge because we believe in a future without plastic waste.

Wasted, Netherlands
Meredith Mogensen, Elisha Weeber, Feef Anthony, Katy Barnard, Renee Stollery, Lynne Grey, Nicola Dehmer, Francesca Miazzo, Estelle Roux-Stevens, Michelle Leo, Chris

WEB **INSTA**

FACEBOOK **LINKEDIN**

Eco Design Hub

THE PROJECT Eco Design Hub — it's a practical and educational platform, accumulating designers, artists, ecologists, creative specialists in order to visualize and promote reduce, reuse and recycle principles in Krasnoyarsk and not only. Our main idea is to encourage citizens to follow 3R (7R) and use plastic and solid waste for different creative activities. EDH combines a place in the city, mobile workshops, and public events where residents can bring plastic bags, packages, bottle tops, raw paper, wooden pieces collected by themselves or by a volunteer group, in order to remake it and create something new, useful and stylish.

Also, Eco Design Hub encourages residents to become social entrepreneurs and develop their own ideas in recycling. We work with schools, museums, community centers, and NGOs and developing a partnership with the public, media, and business sectors to promote Recycling in society. Recycle Art Festival was created as a support event for Eco Design Hub in 2016 and grew up into a city-scaled event. We attract local young artists and architects to collaborate with us and encourage them to use recycled materials in their designs.

We love to build a bridge between international artists and makers, local creative specialists, and residents for transmission of knowledge and finding new common recycling and creative solutions!

ABOUT The rise of consumerism over the last decade in Russia and in the world, in general, created an extensive problem of plastic waste in the major Russian cities. All products sold in the supermarket chains are being packed in cheap plastic bags. More than 26 billion plastic bags are handed out every year in shops across Russia, according to Greenpeace. Despite that, environmental protection and recycling are not central topics for most Russian residents. Mostly plastic, glass, paper, even batteries are often thrown out and unsorted solid waste is taken to landfills. In fact, our cities face low levels of community involvement. This situation is actual for our hometown – Krasnoyarsk – located in the Eastern Siberia region and many others.

Our team brings these challenges together and launched Eco Design Hub project for solving the problems in creative and artistic ways on the ground.

Eco Design Hub, Russia
Viacheslav Ivaschenko

WEB

Planet 3R

THE PROJECT Planet 3R converts Textile and Plastic wastes into affordable Eco-friendly products for low and middle-income earners. The fascinating nature of recycled products creates a huge brand appeal which makes people within the target market always want to have more products made from recycled materials. Our method of conversion does not cause any other environmental hazards and the use of local equipment makes our products relatively affordable.

THE PROBLEM AND SOLUTION
Dumping of waste on the roadside and inside drainage channels especially single-use plastics is currently one of the biggest environmental concerns. Our Planet 3R initiative focuses on the empowerment of unemployed youths by training them on effective ways to earn income from recycling plastic and textile waste. We weave Plastic and Textile Wastes Into beautiful bespoke products for the art savvy. We also engage in Grassroots and Creative Awareness programs geared Towards Achieving a Clean Environment.

Our competitive advantages are:
1. Affordability: Our weaving equipment is locally made in Nigeria which makes our products affordable.
2. Access to Raw Materials: We easily source for Disposed plastics, nylons, and textile wastes which are our major inputs in the production.
3. Empowerment Initiative: We empower women and youth in rural communities by training them on sustainable waste collecting and recycling.
4. Recycling Hubs: We have a plan to set up recycling hubs in various locations to achieve higher production efficiency. This will give us an edge in the recycling space in Nigeria and empower more people.

ABOUT In my quest to creating more impact, I realized many people in my community usually dump textile and plastic wastes by the roadside while some even go to the extent of burning them thereby depleting the ozone layer which is hazardous to our health and environment thus prompted me to use my weaving skills to create an innovative solution by starting planet 3R initiative.

At Planet 3R, we do not only make environmental impacts but also create employment opportunities by empowering youths and women. We also plan to improve our economy through locally generated raw materials and export opportunities.

In less than two years of starting Planet 3R, we have made a huge impact by reducing the wastes that end up on the landfill. Our innovation has won many awards for social and environmental impacts. My aspirations are diverse, but my utmost goal is to achieve a world without wastes.

Planet 3R, Nigeria
Adejoke Lasisi, Idowu Azeez, Hamsat Abdurasheed, Seun Oluwajana, Tiwalade Adesuyi

TWITTER **LINKEDIN**

Perpetual Plastic

Turning rubbish into rainbows is an initiative by Liina Llauss, who teamed up with different groups of people to give a new perspective on marine litter. Learn more about the story behind this colorful creative action on page 140.

Scrapp – Recycling Made Simple

THE PROJECT *What is Scrapp?* Scrapp is a profit-for-purpose platform that aims to make recycling simple, fun, and rewarding – for everyone.

How does it work? Simply scan the barcode on any household item and Scrapp will show you which parts are recyclable, or not, according to where you live. We've already integrated the guidance for over 1,000+ local authorities in the UK & Canada, and North East America and have tested the app with over 500 early adopters. Of which, 9 out of 10 said they would carry on using Scrapp to recycle smarter AND recommend it to a friend.

What's in it for consumers? With Scrapp, your planet-positive efforts get rewarded. Because each time you dispose of your waste responsibly, you earn Scrapp points. You can spend these points on your favourite eco-friendly products, or services, via our in-app, sustainable, marketplace. Or you can even donate points to help fund climate-conscious causes. Like our partners Plastic Bank, who are working to eliminate ocean-bound plastic.

What's our mission? We want Scrapp to be the go-to platform for reliable recycling advice. We want to make it easier and more affordable for anyone to buy from brands that positively impact the planet. And we want to use our crowdsourced packaging data to encourage other brands, who could be doing better, to clean up their act.

Our impact? Our current progress has proved that Scrapp could divert 85,000 tons of wrongly placed recyclable waste for an average-sized city (500,000 people) every year. In landfill fees alone, this equates to savings of over $25 million.

Next steps? This September we'll be officially launching Scrapp on iOS & Android alongside an equity crowdfunding campaign. We also have several innovative and interesting projects lined up, including blockchain verified deposits and machine learning product recognition.

ABOUT Back in our University days, we saw the amount of non-recyclable trash inside recycling bins outside our dorms. That week, we brought it up with our sustainability club and began asking questions such as "what was going wrong with the messaging on campus" as well as "how can we inspire our fellow students to do better"? We then spoke to the facilities managers on campus who told us this contaminated recycling problem was costing them tens of thousands of dollars each year in landfill fees. So we decided to fix it.

It's not been plain sailing. But after being invited to National Recycling conferences, being involved in several incubator programs, and by aligning ourselves with industry professionals we've refined our solution over the last couple of years to what it is today.

Scrapp, United States
Dan Marek, Evan Gwynne Davies, Mikey Pasciuto, Thomas Evangelista, John Scarfo

WEB **YOUTUBE**

SOCIAL LINKS

Excerpts from Asia & Pacific portion of database

Ban Baby Ban

David Bergman, United States

WEB 1 **WEB 2**

THE PROJECT "Plastic Bans Worldwide," hosted on my blog "EcoOptimism," is a unique, online, freely available database detailing single-use plastic bans, regulations and fees around the world. As the database has expanded, it has been reorganized for ease of use by continent or region/country/state-province/municipality. It also includes initiatives by businesses. The information can be viewed by clicking tabs for the Americas, Europe, Asia & Pacific, Africa, Middle East, and Businesses. The database is further organized by listing the bans and fees according to type: plastic bags, plastic straws, all single-use plastics, packaging & other, and microbeads.

The database is updated regularly by monitoring a wide variety of blogs and news sources. To maintain integrity, all entries in the database have sources cited and hyperlinked.

In its positive outlook, the database is consistent with the philosophy of the EcoOptimism blog in that it shows possibilities and positive outcomes rather than the gloom and doom found elsewhere in too much of the environmental world. EcoOptimism articles often support information on SUPs and are posted when there are significant additions to the list.

The fact that it has grown to include almost 300 entries, ranging from entire regions (the EU) to small municipalities, from major international companies (for example, Disney) to smaller less-expected operations such as Dubai International Airport and more obvious environmentally minded companies such as Ecover, is indicative of the breadth worldwide movement. It is this burgeoning movement that Plastics Bans Worldwide seeks to promote.

ABOUT I created Plastic Bans Worldwide with the goal of promoting awareness of the nascent global movement to regulate by ban or other restrictions the scourge of single-use plastics. It is an outgrowth of my blog, becoming an integral part of it with frequent posts about new additions to the database, often accompanied by designs that also address the proliferation of SUPs.

The inspiration for the database also comes from my work as an educator, author and designer, all of which have driven my knowledge of not just the problem, but also to the efforts of others and the need to draw attention to those efforts. Inspiration also comes from the eagerness I see in the work of my Parsons School of Design students, who come from all corners of the planet, to address this worldwide problem.

Recycling has been shown to be insufficient as a solution to the problem of SUPs and that, therefore, the problem needs to be dealt with by preventing the proliferation of SUPS at their source. Cutting off demand for them through bans and fees is a far better approach than "after the fact" recycling. Promoting these, along with expanding awareness, is a large part of the purpose of the "Plastic Bans Worldwide" database.

Green City Cork Blocks

THE PROJECT Our Green City block set empowers future green architects by providing young children with an age-appropriate introduction to sustainable concepts and green building. From solar energy to waste management to green roofs to urban farming to public transportation to bike-ability and modern buildings, children have all they need to build their own green city.

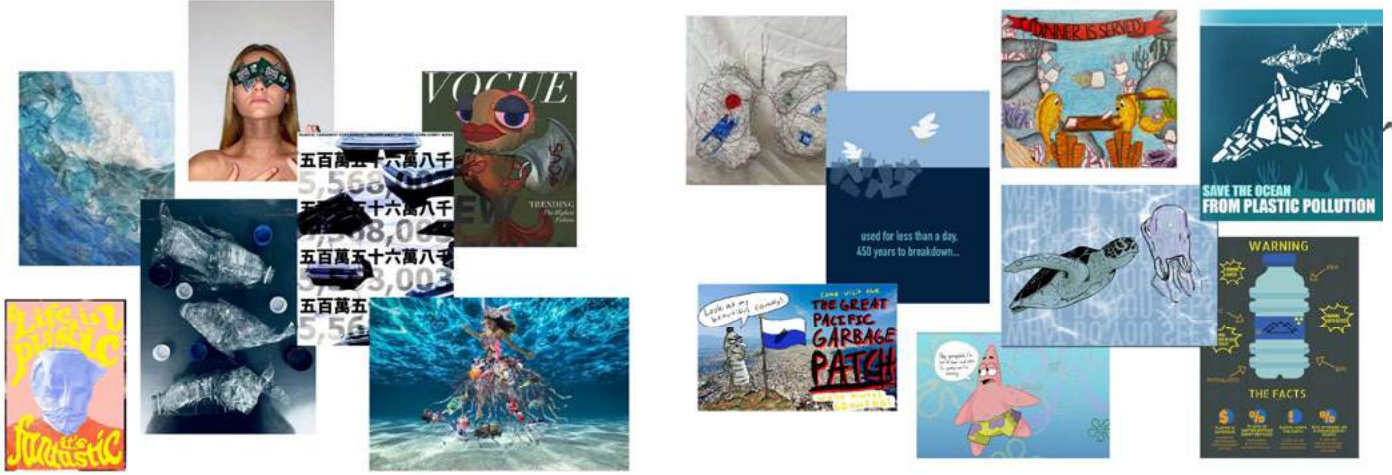
This set includes 13 pieces imprinted on cork with non-toxic, water-based ink.

ABOUT As an early childhood educator who is passionate about sustainability and green design, I wanted to teach young children about sustainable cities in an engaging way. Research has shown that there are many benefits to architecture education during the preschool years. Children at this age are absorbing the world around them and architecture invites them to actively see and wonder about built environments.

I felt that cork building blocks would be the best way to introduce green city features as they promote hands-on learning as well as a connection to nature. The texture of cork allows for children to build diagonally (versus just up and down), supporting deeper spatial awareness. Due to its softness, cork has a calming presence and can be very soothing for children. The green city block set will launch in October 2021.

Monica Teves, United States
Carolina del Zotto, Beth Nock

WEB **INSTA**



Design Students: Sending the Message/ Solving the Problem

THE PROJECT For several semesters now, I have assigned my First Year students at Parsons School of Design a multi-part final project on single-use plastics. Though the course is on sustainable design in general and looks at environmental issues through the lens of systems, SUPs are made a focus of the majority of the semester.

The overall assignment, titled Single-Use Plastics: Awareness, Communication, and Design, is spread over most of the semester and is composed of three parts, reflecting the subtitle. The first and shortest part, Awareness, is simply to monitor and categorize their SUPs over the course of a week. This is followed by Communication: a longer assignment to create a work of art or design that directly or indirectly communicates the issue of SUPs. The students are free to choose the method and media, ranging from billboards and posters to kinetic sculptures. The final and longest part, usually about five weeks in length, is to design a product or system that directly addresses an aspect of SUPs. It may be clothing, products using alternative (and perhaps not even real or available yet) materials, alternative concepts (for example, why do we need plastic beverage containers?), or systems that rethink the way we use and dispose of SUPS.

In that final part, I encourage my students to devise concepts that are not just adapting to the issue of single-use plastics, that is, to not address it as an “after the fact” problem, but to come up with concepts that mitigate the issue by preventing the use or the need for SUPs. Over the course of the semesters, I have been assigning this, I have seen a wide spectrum of thinking and design, much of which is encouraging in the students’ original approaches.

ABOUT This is for a required Parsons School of Design course called Sustainable Systems. All students must take it in their First Year. Instructors can determine their own focus for their sections of the course. In the years prior to creating this assignment, my sections’ focus had been on the climate emergency. While this is, of course, an urgent issue, it often overshadows the also major problem of single-use plastics. The inspiration for choosing this newer focus was not only to make the students, who will go on to majors in fields ranging from product and fashion design to fine arts, aware that there are environmental issues other than climate change but to encourage them to see that there are solutions.
This will be their world and, for better or worse, it will fall to them to find solutions.

The accompanying images are from both Part 2 “Communication” (two collages of several students’ work), and Part 3 “Design” (three representative projects).

David Bergman, United States
The “team members,” of course, are the students studying under my direction.

Goodbye Plastic!

THE PROJECT Our mission is to cut virgin plastic out at its source – demand. The world keeps spinning, gifts are still given, needs have to be met – we want to make sure that this is done in the most plastic-free sustainable way by changing the mode of consumption.

Everything on the platform is ethically minded, naturally made, and sustainably sourced. By definition, all of the products on the platform are plastic-free and we are working on understanding more and more about the best materials to promote as opinions and debates shift.

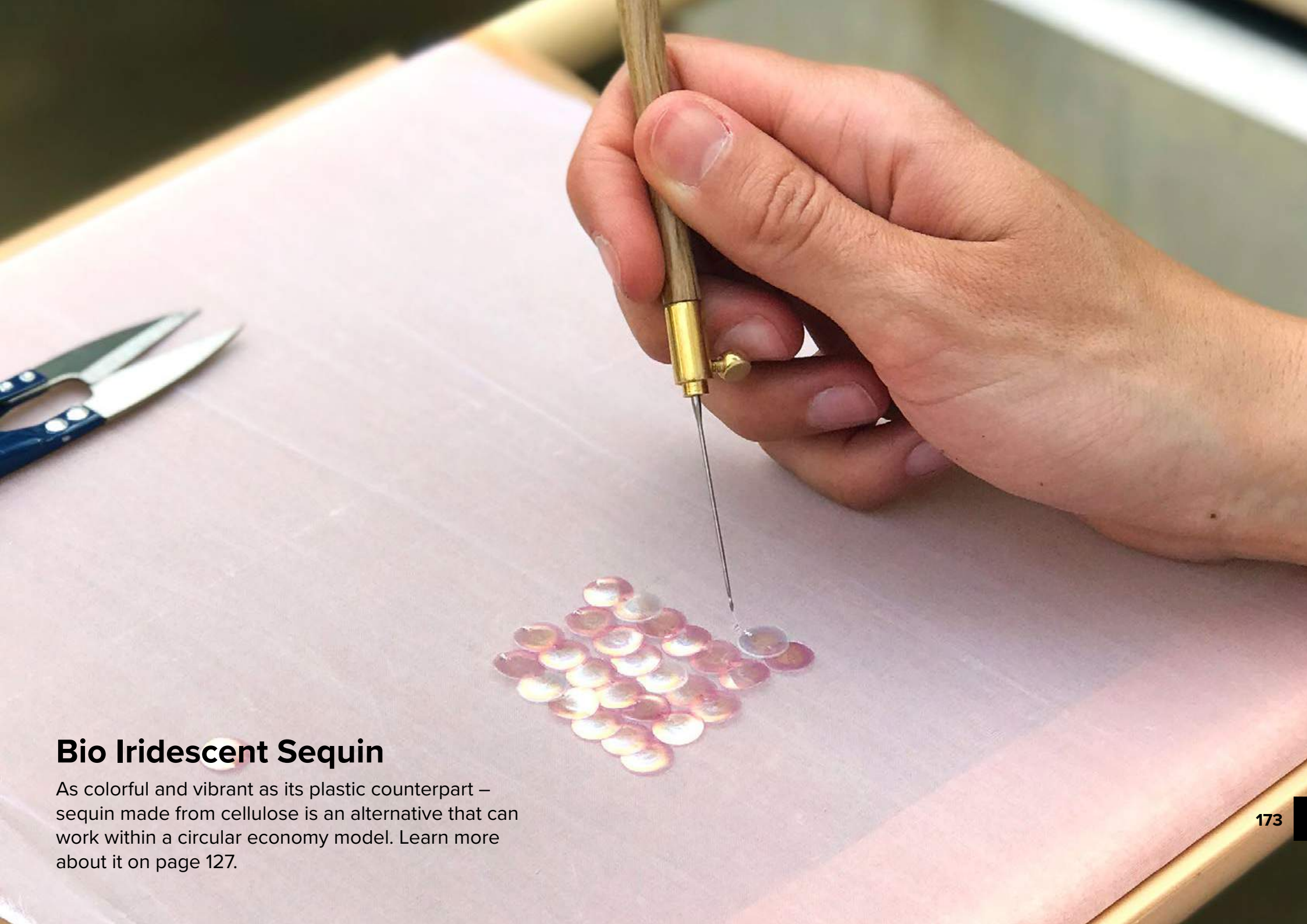
We take a minimalist approach to design and process – making the website sustainable in energy use as well.

ABOUT I came up with the idea at the beginning of lockdown 2020 – I was keen to create and run something I believed in.

Having a background in Events, I saw firsthand the waste and damage of the current modes of production. This is what motivated me into working on sustainability through my experience in Sales and Social Media Marketing.

ecomersh, United Kingdom
Rob Laing, Nathan Carvell

WEB 1 **WEB 2**



Bio Iridescent Sequin

As colorful and vibrant as its plastic counterpart – sequin made from cellulose is an alternative that can work within a circular economy model. Learn more about it on page 127.

Not Longer Life

THE PROJECT It is estimated that in 2020 the plastic production will reach around 500 million tons. Most of them will take approximately 600 years to biodegrade. Far from seeking a real solution to this, the few measures taken to face this problem are rather populist and with the sole purpose of whitewashing instead of tackling the issue. We are not aware of the energy consumption and the environmental impact of using an absurd amount of plastic wrapping actually means. Meanwhile, thousands of products are being marketed, doubling and tripling a synthetic skin. At worst, taking the original place of their natural wrapping skin with a plastic packaging in order to “facilitate” consumption.

The series “Not longer Life” reinterprets and reproduces paintings from classic masters such as Monet or Caravaggio putting them in the current context, as if they were contemporary artists. It aims to lead the still life definition to another level: A zombie life, A wrapped life.

From the supermarket to the photo set. The evolution of food industry characterized by a single-use plastic wrapping.

This series wishes to reflect the direction that the consumer society is heading and the unconscious attitude we are taking towards the natural resources. A pursuit of an utmost and absurd comfort usually misunderstood as progress, welfare or luxury.

ABOUT As a studio specialized in the creation of images, we always want to explore the limits of the tools we are using daily.

This topic, the excesive and absurd use of plastic, interested us very much and wanted to make some more research on it so the perfect excuse for that was to develope a project like this one. One that allowed us to do this research and to keep exploring the 3d modeling tool we are using for our professional works as architectural visualizers.

Quatre Caps, Spain

WEB

Mission Mediterranean

THE PROJECT In 2021 we ran a school competition inviting small groups to design a device that can collect marine debris from the sea. Since coastal communities (Even in the Med) seem massively detached from the sea and our impact we want to scale this project up for the next year: With suitable machinery to upcycle ocean trash into filament and a 3D printer the collected trash can be repurposed in cleanup tools, prototypes for cleanup machines and much more.
The benefit is clear: We reach more people, engage them with cleanups or competitions and they get to go on the water (Aboard our research sailboat) and test the ideas. So really we have 3 benefits in one setup:

- Education/outreach and understanding for the existing plastic issues on/underwater.
- Motivation to come up with possible solutions that are easily replicable.
- Engagement of people with cleanups onshore, equipped with tools made from previously cleaned “trash”.

ABOUT I have been working with Project Manaia in the Mediterranean for several years now, witnessing (and actually counting) the amount of floating trash as well as organizing cleanups on beaches and underwater as well. The sad truth is: Things are getting worse. While the whole world is looking at the 5 gyres, we learn that the whole Mediterranean is already the 6th gyre (Judged from the accumulation of plastics) so in many ways, this is the perfect testing ground for ideas to clean up properly: Whatever ideas work here can be replicated in the rest of the world! And by engaging the younger generation in the idea-finding process we motivate a whole new generation of thinkers to work along with us. The Mediterranean is an amazing but fragile ecosystem and it has been pushed to the edge in every possible way already, so it is time to give something back and try new, creative ways to clean up our “Mare nostrum”.

Project Manaia, Austria
Project Manaia, together with PUSH.
Manuel Marinelli, Pinar Marinelli, Hannah Rasper

WEB **INSTA**

FACEBOOK **YOUTUBE**

Nourishing a Plastic Free Future

THE PROJECT I am a pioneer in a now well-established "zero-waste" sector. The concept of the shops is based primarily around refill and bulk opportunities. This is achieved by providing a welcoming environment where consumers can buy food items, personal care, cleaning, and household items packaging-free, reusing their own containers.

Nourish opened in March 2018 in Topsham, Devon, as one of the very first waves of zero-waste shops that were established in early 2018. In March 2019, Nourish secured private equity which provided the means to open the second store in Exeter, Devon. A third store was opened in Ashburton, Devon in June 2021. I now have 9 part-time employees working alongside me.

I am very aware of the barriers that prevent people from shopping in an environmentally friendly manner. I have worked hard to dispel beliefs that zero-waste shops are expensive, niche, and exclusive.

Profits are not the primary goal for the business and are reinvested to drive the business forwards. The key driver is to enable people to live a less environmentally impactful life through education and providing a means to shop ethically and packaging-free.

ABOUT My husband and I had been living in Kent for 15 years, working hard, playing hard, living a life that didn't leave time for us to consider our actions. I left my job as an Assistant Head in a high school in Kent and enrolled on an MBA, and we moved to Devon 6 months later. We'd become embarrassed about our attitude and our consumption and determined to do something about it. I found it was impossible to live in an area of outstanding natural beauty and not be affected by that and want to live in a way that cherishes rather than destroys the natural environment. Opening Nourish was a huge leap into the unknown for me but has been one of the most rewarding experiences of my life.

I was trying really, really, hard to buy plastic-free locally and getting really frustrated with having to buy staples in plastic from supermarkets, feeling forced into buying packaging because there was no other choice. The shop in Topsham became available at a time when I was working out what I wanted to do after finishing my MBA and, I just thought "Why not just do something about this myself?". I signed the lease, did a ton of research quickly, and the shop was open within six weeks!

It was met with in various ways, enthusiasm from people who were struggling like I was, skepticism from those who thought there was no way people would take their own containers to shops, and curiosity from people who had never come across the concept before. Nourish opened on a shoestring budget and with minimal stock, and as more and more people started shopping there, I was able to invest in expanding to the three shops I now have.

Sarah Martin, United Kingdom
Women owned and Driven: Poppy, Camilla, Natasha, Annabel, Naya, Kathryn, Charlotte, Janet and Liesbeth.
As well as: Stavros Stratas, the zero waste shop owners community, husband Andy

WEB **INSTA**

FACEBOOK

Plastic-free Perth

THE PROJECT We are the only plastic-free shop in Perth, Scotland offering the consumer to shop their daily products plastic packaging free. Everything in our wee shop is locally sourced from small businesses around Scotland with our ethos in mind. We also offer our customers pre-order glass milk bottles where they can swap their empty bottles for a new one encouraging reuse rather than recycle.

Our aim is pretty simple and we want Perth to be plastic-free and we will do our best to educate and influence the community.

ABOUT We struggled a lot with plastics that were unnecessarily forced upon us by the supermarket system. Most of them are not recyclable through our recycling system and ending up in the landfill. We saw a massive gap in Perth and the city was caring out loud for a zero waste plastic-free shop. Both I and my wife took that chance to open Perth's only zero-waste plastic-free shop.

Tyroshan Attidi Panagoda, United Kingdom
Ayesha Attidi Panagoda

INSTA **FACEBOOK**

Studio Birthplace

THE PROJECT We are Studio Birthplace, a creative production studio that dedicates ourselves to tell the pressing stories of our time to create awareness and inspire change.

The short movie Wasteminster is a uniquely original depiction of what would happen if the plastic waste the UK exports each day was instead dumped on Downing Street. Voiced by two of Britain's best impressionists, Jon Culshaw and Matt Forde, the animation is intended to raise a smile at the impressions of Boris Johnson and Michael Gove, and raise awareness of the plastic pollution crisis the UK is creating overseas as well as putting pressure on the government.

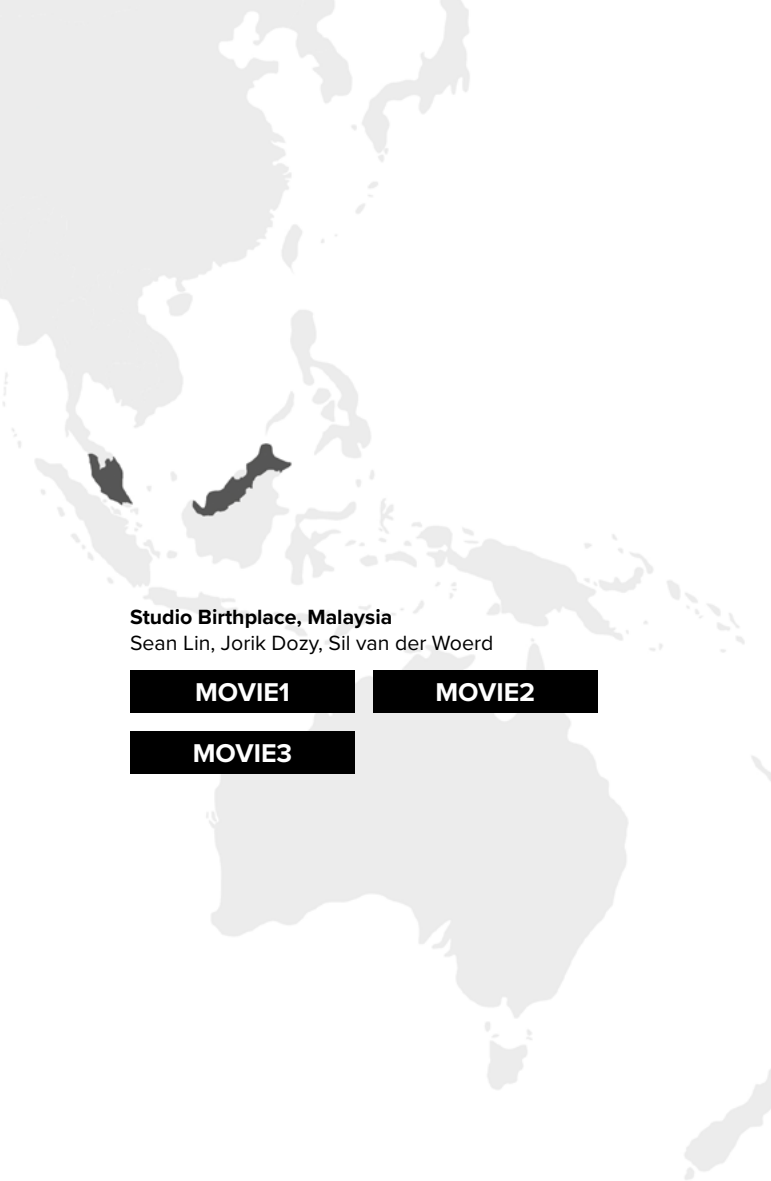
The animated short film Humanity's Impact explores the question: "How many plastic bottles do we produce globally in real time?" and our accompanying Augmented Reality app invites users to interact with the data on a personal level. Set in a 1960s American suburb test site that is populated with plastic test dummies, the film unleashes 20,000 bottles per second that crash onto the unknowing cast of dummies. The bottles burst through the kitchen window, and engulf the family dog. The suburban paradise is quickly flooded, revealing the terrifying scale and rate at which we pollute our planet.

The music video Birthplace for Novo Amor, which tells the symbolic story of a man arriving on a perfect earth, who encounters his nemesis in the form of ocean trash.

ABOUT We believe that comedy can be a powerful tool to help tell some of the saddest stories in our world. Our intention for Wasteminster was not to ridicule politicians, but to place their dummy-personas in a direct conflict with the invisible consequences of their own actions.
The plastic pollution crisis in question is how the UK exports an average of 1.8 million kilograms a day. Investigations have revealed that exported plastic gets dumped and burned in countriesTurkey and Malaysia.

With Humanity's Impact we visualize the incredible data related to humanity's impact on our planet, putting a picture to the numbers. Both the animated series and the accompanying augmented reality app unleash impressive data simulations, visualizing the tremendous scale in which our consumer culture operates.

We filmed Birthplace in Bali, Indonesia where freediving champion Michael Board performed over 250 free dives, while the dive team spent over 35 hours underwater. We also collaborated with a local community in Bali to build a life-size 13 meter prop whale constructed from bamboo and covered with real waste, for which we worked together with a group of school kids who were picking trash in the jungle, in return for books and pencils.



Studio Birthplace, Malaysia
Sean Lin, Jorik Dozy, Sil van der Woerd

MOVIE1 **MOVIE2**

MOVIE3

Close The Loop-of-Life

A team from the Netherlands believes we should even think about being more sustainable in our afterlife. Learn more about this biodegradable coffin and why this brings us "from landfill to forest", on page 27.

Gear Got Soul

THE PROJECT We're a women-led social enterprise working across the globe with a mission to foster inclusive and sustainable development using cultural approaches. We have aligned ourselves with various UNSDG's and work towards the protection of women, children, the environment, fair trade, crafts traditions, disadvantaged people, and sustainable design.

We enable environmental and social impact with every product that we bring to life. By utilizing various waste streams as our raw material, we have successfully diverted quintals of waste material from landfills in North India. All our staff represents communities that have been discriminated against for some reason or the other. We employ from, what in India is termed as Other Backward Class and Economically Disadvantaged Section. Through various partnerships and collaborations, we also empower various self-help groups in India and internationally as well.

ABOUT We started the organization in November 2015 intending to do "something" to tackle the waste problem. We found that everywhere we went, especially the transition areas between the suburbs and the city would be punctuated by urban and industrial waste. Our co-founders came from an architectural and academic background and wanted to address the issue of waste aggressively. The idea for Jaggery Bags was born out of the need to resolve the local waste problem by coming up with creative alternatives that are low-carbon footprint and ethically made.

The founders of Jaggery Bags are Gautam Malik, his wife Bhawna Dandona, and his mother Dr. Usha Malik. The family came back to India from the United States in 2010, after which Gautam worked in an e-commerce company, where he worked as a creative and product head. During this tenure, Gautam came across a study on sustainability. He recognized the huge gap between sustainability and Mid-to-Small Indian makers who are trying to address and fulfill the needs of the global sustainability market. After that, the founders were convinced that it was a time to start a homegrown Indian brand that "repurposes" various waste streams into functional, practical, smart, and indifferent bags for every occasion that customers do not commonly encounter.

Jaggery Bags, India
Dr. Usha Malik, Bhawna Dandona,
Gautam Malik, Shahid Ansari

WEB1 **INSTA**

FACEBOOK

INITIATIVE

Zero Waste Education Station Pop-ups

THE PROJECT Zero Waste Station pop-ups seek to meet zero waste goals set forth by the City of San Francisco by providing Covid-safe guided access to compost and recycling services at events and in underserved areas where people may be experiencing homelessness and/or food insecurity.

The Zero Waste Station pop-ups facilitate engagement with the public at a safe distance while “Zero Waste Specialists” (Race to Zero Waste staff and trained volunteers) direct the placement of items in the appropriate bin as needed and educate participants. Participants interact with four (4) bins: Landfill, Recycle, Compost, and Reuse. Volunteers receive hands-on training with waste characterization, data analysis, community outreach, and public speaking, thereby becoming zero waste ambassadors in their communities. The presence of the Zero Waste Stations in outdoor, publicly accessible spaces allows Race to Zero Waste to promote understanding of waste diversion and engage in community service among diverse groups, including vulnerable populations.

Additionally, We enhance Zero Waste Stations with digital content across Race to Zero Waste’s social media platforms (Facebook, Twitter, LinkedIn, YouTube, Instagram, website and blog) so that community members are able to engage with learning objectives before, during, and after their in-person encounter with a ZW Station pop-up, thereby extending their experience and fostering additional zero waste awareness in attendees’ sphere of social influence.

ABOUT Race to Zero Waste started as a response to the litter that we saw at events like city runs and marathons. We have organized runs with compostable cups and reduced plastics, diverting 90% of event waste from landfills. Since then, we have expanded our range to all different kinds of events like farmers’ markets and beach clean-ups, even donation drives for reuse items that can be given to community partners like Project Homeless Connect. The overall goal is to create a culture of zero waste that is based on a sense of community for all residents and solidarity with those who are going through a time of need. Our current Zero Waste Station pop-ups were developed from a need to pivot from the previous waste collection and characterization methods used at events prior to COVID-19. Race to Zero Waste has navigated the pandemic with dedication and resiliency to continue promoting a zero-waste ethic. The process and method not only dramatically reduces waste stream contamination, but also play an important role in getting park-and beach-goers to take their time to physically sort their own materials. The process also allows the ZW Specialists to interact with participants about sustainable materials management, while having very little contact with the materials themselves. Our future goal is to increase the number of ZW Station pop-ups in underserved areas throughout the City, thus providing needed infrastructure to achieve zero waste goals. We also hope to create a Zero Waste Station Pop-up kit so that others can rent our materials and implement zero waste at their own events!

Race To Zero Waste, United Sates
Hayden Sloan & team,
board members & wonderful volunteers

WEB **INSTA**

FACEBOOK **YOUTUBE**

INITIATIVE

Newport's First Zero Waste/Refill Shop

THE PROJECT Sero Zero Waste encourages the local community to move away from single-use plastic and adopt a circular approach to their consumption habits by offering refillable products in the form of dried whole foods, cleaning refills, and bathroom refills. We encourage people to reuse by offering points for those bringing in their own containers from home.

We work with suppliers on a circular closed-loop system and buy our food products in bulk to reduce the amount of packaging being used. As well as operating as a refill shop we also work with the local community on sustainability initiatives hosting and facilitating workshops such as Repair Cafe's, Clothes Swaps, upcycling workshops, local produce workshops, and litter picks. Our work in both retail and community initiatives provides us with the opportunity to support local businesses and put this at the forefront of our produce and product lines.

We are also heading the Plastic Free Newport campaign as part of Surfers Against Sewage's Plastic Free Communities.

ABOUT Laura Parry and Liz Morgan (the 2 co-founders of Sero ZW) have joined the zero waste movement from two completely different journeys. This has given us the unique opportunity to approach providing zero waste solutions from varying viewpoints.

Laura Parry – Through my role working in marine conservation I learned firsthand how important zero-waste shops are in providing communities with the resources to reduce their dependency on single-use plastic, I wanted my hometown of Newport to benefit from something like this.

Liz Morgan – As someone on my own zero waste journey, I wanted to use my skills in communication both on and offline to help create awareness and share insider knowledge. Running a zero waste shop with absolute transparency and authenticity makes a big difference to how people see zero waste shopping and how achievable and affordable it really can be.

Sero Zero Waste, United Kingdom
Laura Parry, Liz Morgan, Jordan Hunter,
Stefano Carnevale, Elise Lavender, Walter Smith,
Miranda Bishop, Lauren Goodland, Rhiannon Gamble

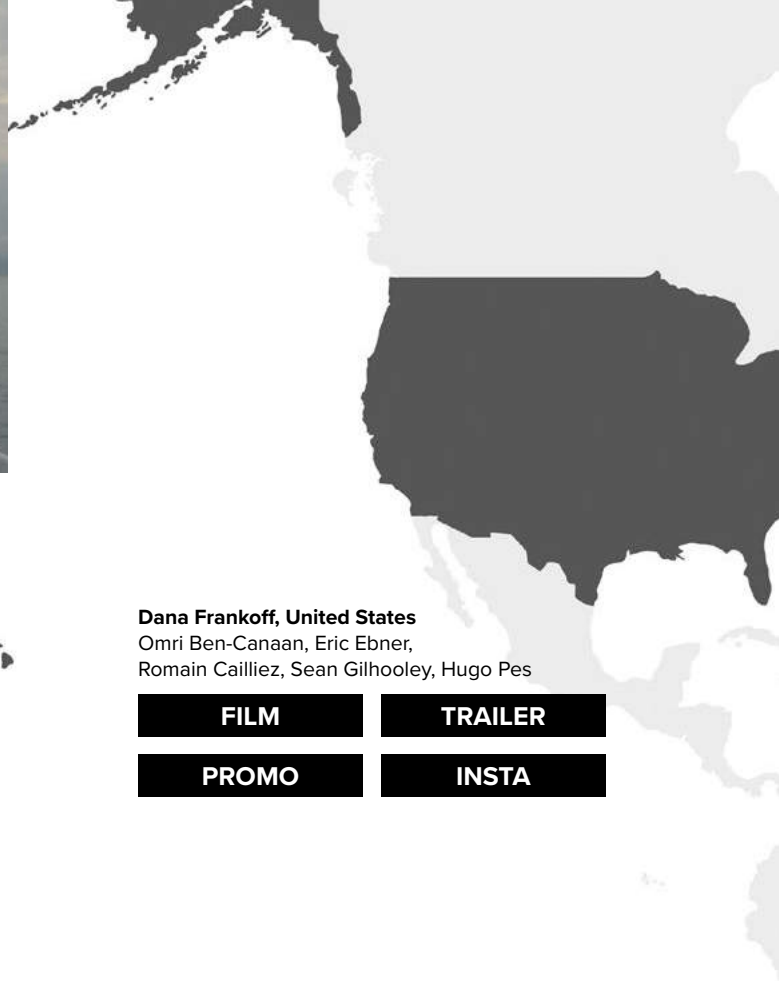
WEB **INSTA**

TWITTER **FACEBOOK**

Voice Above Water

THE PROJECT VOICE ABOVE WATER is the story of a 90-year-old Balinese fisherman who can no longer fish because of the amount of plastic pollution in the ocean, instead he collects trash in hopes of being able to fish again. The story is a glimpse into how one human is using his resources to make a difference and a reminder that if we all play our part we can accomplish something much greater than ourselves.

ABOUT I'd seen how places all over the world were being littered with trash and I wanted to use my years of working in film to do something to help the problem. I am a surfer and lover of the ocean so I started talking with scientists, non-profits and anyone who knew the latest stories happening in the ocean. The company 4 Ocean told me there were fisherman on the coast of Indonesia using their boats and nets to collect trash since they could no longer fish again. I had a vision of a hopeful story of one man in a small boat in the vast sea making a difference.



Dana Frankoff, United States
Omri Ben-Canaan, Eric Ebner,
Romain Cailliez, Sean Gilhooley, Hugo Pes

FILM **TRAILER**

PROMO **INSTA**

A 15 Year Old Who's Ready To Change the World!

THE PROJECT I organized a beach clean to educate people on the huge problem of plastic pollution and how badly it effects the beautiful island that we live on. It was very successful as we collected 100+ cigarette butts, 18 masks, 35 bottle tops and three whole plastic bottles. Many people told me that they are now trying to reduce the amount of plast that they use because of how shocked they were when they saw the state of the coastline we clean up.

ABOUT At the beginning of August this year, the organization I volunteer for hosted an event called Trees and Seas. The aim was to unite ocean and land conservation by doing coastal clean ups and tree planting. I was asked if I wanted to participate and naturally I said yes! I had plan the beach clean as well as organise the promotion of the event.

Ava Bland, Spain

INSTA1 **INSTA2**

WEB

Mycelium Lights

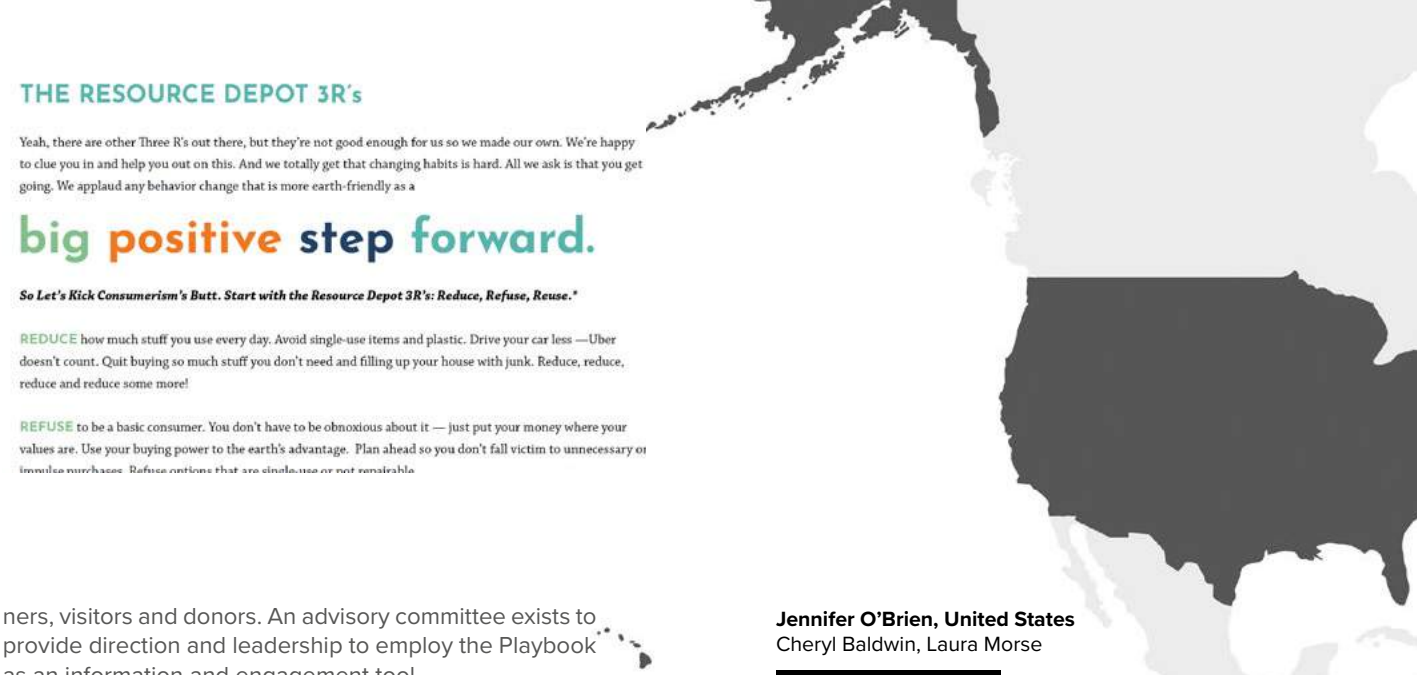
This soft natural light is reflected by mycelium.
What, a fungus? Yes! Learn more about it on page 132.

ENF.

ENF is ENOUGH

THE MANIFESTO PLAYBOOK

Tips, Tools and Tech to Take Your Stand



ENF is ENOUGH

THE PROJECT ENF is ENOUGH The Manifesto Playbook, Tips, Tools and Tech to Take Your Stand is the interactive public education resource for the ENF (enough) environmental campaign. It is a creative, witty and sustainable electronic document for pro-planet indoctrination of children, families and workplaces. This brand-driven and strategically designed propaganda piece represents the spirit and culture of the ENF community campaign and is shared easily across all media platforms.

The Playbook is a key component of the brand and mission promise of Resource Depot in shaping a new mindset for how communities care for the environment and each other. The edgy, fun and inviting tone of the Playbook calls veterans and new recruits to live ENF and soldier-up in Mother Earth's militia. But far from being an exclusive cause, ENF holds a place for everyone, ensuring that small changes in how we buy, consume and live can heal the Earth, ourselves and society.

The Playbook offers ideas from the obvious to the unexpected, with click-in activities, teachable moments and eye-opening experiences awaiting all age groups. Want to live ENF out loud? All the savory slogans and captivating icons are there for the download — make stickers, t-shirts or banners to keep the movement moving. Practical check-lists and easy ideas allow anyone to make progress and contribute to change. The Playbook is distributed by email, social media and newsletter to schools, youth groups, civic organizations, environmental groups, government agencies, business partners, visitors and donors. An advisory committee exists to provide direction and leadership to employ the Playbook as an information and engagement tool.

ABOUT At our 20th anniversary, Resource Depot made a significant shift in our organizational mind-set and sketched out a clear, compelling new message for our mission. Known and loved as a creative reuse and upcycle center for schools and arts programs, the critical state of the environment demanded we question our purpose and evolve in scope, impact and leadership. At risk of losing hard-earned loyalty to popular programs, we got bold, fearless, and wrote our manifesto. Our goal: to build the true believers who will passionately own and champion our work.

Palm Beach County, Florida, is a world-class destination but is a community of extremes — in size, wealth, diversity and disparity. Resource Depot is the growing voice to address our social disparities by promoting human and ecological equity. Introducing sustainable and sharing economy practices while advocating for conscious consumerism is nothing short of revolutionary in South Florida. The ENF campaign asks millions of citizens to REenvision our way of life and our relationship to the environment. In launching this campaign, we assume leadership across the entire Southeastern U.S. as the movement shaking up superficial systems and challenging planet-killing consumerism.

Jennifer O'Brien, United States
Cheryl Baldwin, Laura Morse

WEB

INITIATIVE

Valley of the Flowers Project

THE PROJECT The Valley of the Flowers Project is a small, volunteer-run non-profit with a big goal: to help transform Bozeman, Montana into a sustainable community, and to create a template that can be replicated in any community.

"BYO Bag for Change" and "Boomerang Bags" are two Valley of the Flowers Project programs. The addition of a locally owned large grocery store helped us go from raising $300 per quarter to over $4,000 per quarter in donated reusable bag credits (80,000 fewer bags!). Boomerang Bags, free bags in store lobbies, are a big hit, as are the bags that volunteers sew to sell. These programs provide the opportunity to work together to change the unsustainable single-use bag habit. This educational program that is spreading organically is a positive solution in a state where local bag bans are illegal. A hardware store, and a sporting goods store have recently joined, and a Big Sky and Bozeman store have stopped using plastic bags altogether. "A simple step to sustainability because Montanans care" is the BYO Bag for Change motto, and the program gives folks a concrete way to see how the small action by many of using a reusable bag can make a big difference. The power of many voices will help these programs continue to grow to more stores and communities until all of Montana has kicked its single-use bag habit. The BoZERO Zero Waste Coalition is now the next step, with the goal of helping businesses reduce their waste. Missoula is sharing its Zero By Fifty campaign template, which we will use to give waste audits and certify that Bozeman businesses are working towards zero waste. We CAN be better stewards of our planet!

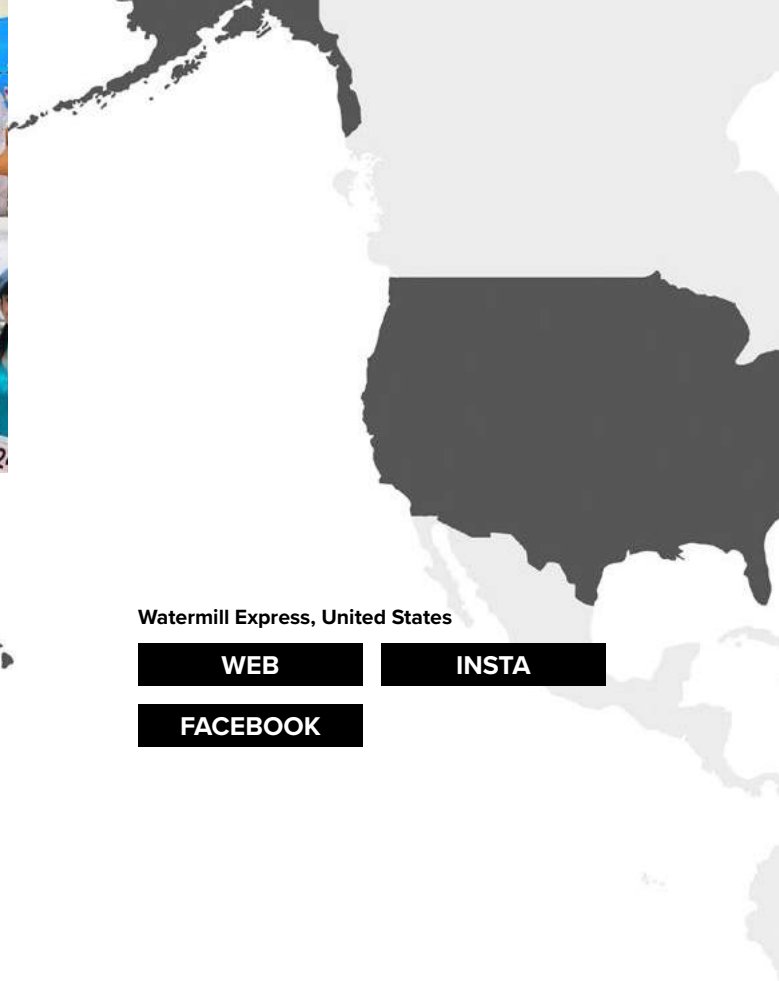
ABOUT My love for the natural world has been a big part of who I am all of my life. When I settled in Montana in 1990 with my young family, I was appalled to learn that this beautiful state has many landfills leaking toxins into our watersheds, and is almost last in the nation in recycling/composting. The plan to take Yellowstone to zero waste by 2020 didn't include the rest of our state.

My Valley of the Flowers Project idea was so big it scared me, but I set to work planting the seeds of some of its programs. My petitions to create a bottle deposit and single-use bag law gathered almost 10,000 signatures. After seeing no action from local officials, I decided to take the signatures to D.C. on my bicycle. After that 2013 ride, I realized the government wasn't the solution. I then built a greenhouse, permacultured my yard, and tried to make my own life more sustainable. I started a non-profit to focus on working directly with businesses to reduce single-use bags. I thought that by this time, this work would be much further along, but I won't quit; too much is at stake. This "grassroots grandma" will continue to work to create a sustainability movement to outpace the growth movement. Grant funds have not come through yet, so it's just me and a few volunteers. The Valley of the Flowers Center, Zero Waste Store, Urban Food Forest, and Tool Library, organic hemp mill for bags, plus Recreation Awards for Volunteer service will manifest in time, and this work will spread like wildflowers.

Wren Kilian, Angela & Margo,
United States

WEB **INSTA**

FACEBOOK



Get A Better Water Habit

THE PROJECT At WaterMill Express we're not about the packaging. In fact, we don't like packaging. Refill your own reusable water bottles to save money and reduce carbon emissions. We've designed the world's most sophisticated water purification kiosk and put it right into your neighborhood. Like your mom always said, it's what's on the inside that counts. Thanks, mom.

Follow our 4R rule:
Reduce the amount of trash you create
Reuse what you have
Refill your own bottles
Refuse single-use bottles

ABOUT In the mid 1980's Lani and Don Dolifka were living near a Superfund site and their drinking water was declared unsafe. They responded along with friends and family, by creating a multi-barrier water purification system that converted existing tap water into drinking water of exceptional purity. They promoted the concept of refilling your own container which helped reduce single-use plastic pollution and save money. Today the company has nearly 1,300 locations and now offers Waterocks Ice at select locations nationwide.

Watermill Express, United States

WEB **INSTA**

FACEBOOK

INITIATIVE

Podcasting for Plastic Reduction in Asia

Sustainable Asia, China
Marcy Trent Long, Bonnie Au, WuYuFei, Chermaine Lee, Stella Chen, Crystal Wu

WEB **INSTA**

FACEBOOK

THE PROJECT We are building a team of environmental journalists here in Asia that have deep knowledge in the areas of plastic reduction, recycling, and upcycling. They are learning about the impacts of plastic on climate change and our oceans. We want to share the stories of what is happening here in Asia so that the west can learn from the environmental damage they cause here, and from the innovative solutions Asians are coming up with to deal with the problem. Our primary media outlet is our podcasts:

1. Sustainable Asia Podcast
2. Plasticity Podcast Series
3. Plastic First Mile Podcast Series
4. Mapping Asia's Plastic Crisis Podcast Series

We have published numerous articles on our medium page, through our partnership with chinadialogue and chinadialogueocean website, SCMP, and the China Environment Forum of the Wilson Center.

Our other podcasts include Sustainable Asia Mandarin, GreenBites, and RTHK Trash Talk.

ABOUT A few years ago, I came across a research report from McKinsey and NGO Ocean Conservancy titled "Stemming the Tide". The report looked at how to stop the eight million tonnes of plastic going into the ocean every year. Living in Hong Kong for 20 years, and loving sailing, open water swimming, scuba diving... I knew firsthand the devastation plastic had wrought on our beautiful beaches and to our marine life here in Asia. Doing more research on the subject, I was surprised that I could find numerous podcasts about sustainable issues from the US and Europe but nothing from Asia. In fact, if there were discussions around the issue of plastic in Asia, it was always a westerner talking about what Asians were thinking.

I wanted to change that, so I founded the nonprofit Sustainable Asia to develop environmental journalism here in Asia with a bent toward podcasting. Our first podcast series is "EIGHT MILLION".

Our goal from the outset – as built more podcast seasons around plastics and other key sustainability topics in Asia – was to tell the stories about plastic pollution from the perspective of Asia, and using Asian experts. We partnered with a small but influential NGO based in China called chinadialogue to help get out the story In 2019, we were nominated Best of Asia podcasts for our work.

What I am most proud of are not the podcast series themselves – their success stands on its own. Instead, we have built a network of freelancers in Hong Kong dedicated to the journalism of reducing plastic, cleaning our oceans, and living in a better world here in Asia. They are also dedicated and learning how to communicate their stories and perspective to the outer world so that the west can finally benefit from the shared knowledge here in Asia.

Conscious Cocktails in Jars

THE PROJECT Coctelería Consciente is the first non-profit sustainable bartending project 100% responsible for its impact. Its main goal is to raise awareness in the cocktail industry about the environment, sustainability, circular economy, healthy habits, wise drinking, and social responsibility through cocktails, spirits and bars.

At the start of the pandemic, we created and developed the first line of bottled cocktails in reusable and recyclable glass jars with options for everyone (non-alcoholic, spirit-free, low-abv, sugar-free, gluten-free, and vegan) in Argentina. We have seen the consumption of alcoholic beverages rise during the past year, so we believe it is important that we offer other options available to take care of our health during the pandemic.

All the materials used in the shipping of the cocktails are made locally in Argentina and are reusable and recyclable, avoiding the generation of unnecessary waste, and the carbon footprint of their production, promotion, and distribution is measured and offset through Fundación Banco de Bosques protecting the Amazon forest. Any proceeds made from the sale of these cocktails will be allocated to the purchase of quality fair-traded organic ingredients to aid those bartenders and other members who have lost their jobs due to the pandemic. Thus, we support local producers as well as providing bartenders with quality food and recipes, so that they not only can go through this difficult time but also acquire a new healthier, and more sustainable lifestyle.

ABOUT This is by far the hardest time this industry has ever experienced, and we still are unaware of the effects it will have in the future and what will the post-pandemic world even look like. This is truly a time to reinvent and challenge ourselves, and for that, we have come up with two initiatives that we have been carrying out for the past months: 1) online seminars and workshops for the hospitality industry and 2) pre-mixed cocktails in jars for people to buy and enjoy at home.

We know this is a stressful and uncertain time for everyone, especially for the members of our industry. That's why we have started to generate more online content, workshops, and masterclasses free of charge for those members of the industry who have lost their jobs in the past months, so as to go through this tough moment together and come out stronger when this is over, with more and better skills and tools for an industry which we think will become more competitive and will offer less job opportunities.

We choose glass jars to show the spirits industry that we can rethink beverages packaging to avoid using single-use materials. The glass jars are made in Argentina potentiating the local economies and it is 100% reusable and recyclable. All the labels and stickers are made 100% of bio-plastic so you can compost them and reutilize the jar at home to save edibles, beverages, or use it as a flower vase, glass o cocktail shaker.

Coctelería Consciente, Argentina
Lucas Groglio, Agustina Borre, Pamela Pesce, Elisa Herrero Mayor, Alejandro Groglio, Fede Cuco

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