Green Games Guide

What's inside

> New in this edition

> Making games better

> Guiding principles

> Overview

GGG best practices

> Wood, paper, and cardstock

> Plastic

> Textiles

> Metals

> Glass

> Box and packaging

> Choosing the right materials

> What's next

> More info

New in this Edition

Welcome to GREEN GAMES GUIDE v 1.1!

It's been more than a year since the first Green Games Guide was released and we thought it was high time for another. In this updated version of the Guide, we've added whole new sections for different kinds of materials, expanded the case study examples, and added new details and adjusted old ones based on new research.

The new sections - on **TEXTILES**, **METALS**, and **GLASS** - expand the content of the Green Games Guide to a much wider range of materials used in games.

The new examples draw from more recent games - including nominees and winners of the new **Sustainable Production Award** selected by the **Green Games Guide board** and given out by **GAMA** each year.

What's next? We're already underway with new projects and initiatives, including a certification scheme for rating the sustainability of an individual game. Hopefully you'll hear more about that in the NEXT version of the Green Games Guide.

In the meantime, enjoy and read on!

Making games better

We are publishers, designers, manufacturers, and players. Card and board games are the center of our professional lives and our personal passion.

We love games. And we want to make them even better. For the whole damn planet.

Let's state the obvious: the climate and environmental crisis is an urgent planetary threat — the greatest challenge in human history. A problem this immense requires all of us, working in every possible sector, to radically change the way we think about our work and daily life. Right now.

From the materials that make up a game to box size and packaging, there are far too many ways that our industry contributes to environmental destruction and wasteful consumerism. The *Green Games Guide* is our attempt to harness the skills, creativity, and passion in the tabletop industry so that we can move from being part of the problem to being part of the solution. It contains concrete actionable steps that all of us can take — manufacturers, publishers, retailers, designers, players, and everyone else in the world of tabletop games.

The suggestions in the *Green Games Guide* are based on science and best current practices in environmentally responsible product design. We also consider how design and production choices might lead to better outcomes for people in the world most affected by climate change. In the pages that follow, you will find practical recommendations for designing, manufacturing, and distributing games more sustainably. You will also find case studies of games that have implemented many of these recommendations.

There is so much more to do. But this is a good place to start. Sustainability begins by understanding the harm we are causing, so we can take action and do better. And that's why we made the *Green Games Guide*. We see it as part of a larger movement in games — a movement that recognizes the severity of the environmental crisis and takes real steps to make the games we all love even better. We'd love to have you on board.

3 Guiding principles

1.Climate positive

Minimize or eliminate carbon emissions.

> Rising greenhouse gasses present an existential planetary threat to nature and humanity.

> Tackling this crisis means radically reducing greenhouse gas emissions from all human activities, and eliminating them completely by 2050 (or ideally, much earlier).

> This guide has science-based recommendations to reduce emissions from the design, manufacturing, and transport of tabletop games.

2.Circular economy

Reduce, reuse and recycle materials to minimize use of natural resources.

> The climate is not the only environmental crisis: a linear economy of waste is driving unprecedented pollution, biodiversity loss, ecological devastation, and loss of habitats.

> Every year, millions of tabletop games use natural resources: freshly cut trees for paper and wood, and fossil fuels for plastic components and packaging — too much of which ends up in landfill within a few years.

> To help end this wasteful cycle, this guide has recommendations to help games reduce the use of natural resources, using the circular economy principles of reducing, reusing, and recycling materials.

> The best thing to do is to reduce the amount of materials used in the first place. The second best thing to do is reuse materials in a meaningful way so that they are given a second life without having to go through a process of recycling, which is energy intensive and typically results in less durable materials.

> Tabletop games are already very reusable. Designers, publishers, retailers

and players can all contribute to the reusability of board games. Community initiatives such as "bring and buy" sales already exist. These are greatly helped by publishers such as Stonemeier Games, who provide free replacement components. This will allow games to have a longer life and reduce the need to buy new copies.

3.Social sustainability

Recognition of workers' rights and local cultures.

> To fully address the planet's challenges requires more than new approaches to materials: environmental sustainability is often tightly linked to social sustainability and climate justice, which considers the people and communities most vulnerable to climate impacts.

> Some of the recommended standards in this document go to great lengths to address issues of workers' rights and respect for local and indigenous cultures. This is particularly true when it comes to the forestry industry behind the paper, cardboard, and wood that make up most of our games, which uses vast amounts of land and reaches local communities worldwide.

> This means you too. We are all part of the social ecosystem of the planet. As players and professionals, there are things we can do to shift the culture of the game industry, raise awareness, and change the way we think about how games are made.

Overview

How we make games more sustainable

A typical game today
  > is produced without sustainability in mind
  > generates large carbon emissions
  > often has components unlikely to be recycled

Step 1: Use less
  > reduce amount of components needed to play
  > reduce materials and waste from production

Step 2: Choose better materials
  > select materials with low carbon footprint
  > use materials likely to be recycled/composted

Step 3: Package mindfully
  > minimize the size of game boxes
  > avoid wasteful packaging materials

Step 4: Use renewables & nature-based removals
  > use renewable energy
  > offset remaining emissions with carbon
    removals like direct air capture

At every step: Change the culture
  > support publishers and manufacturers that
    keep sustainability in mind
  > shift what "good design" really means
  > spread the word about the need for change

Wood, paper, and cardstock

Cards. Tiles. Boards. Rules. Character sheets. Little cardboard tokens. Miniature wooden meeples. **Tabletop games use a heck of a lot of wood, paper, and cardstock.** Not knowing where the pulp in your game comes from means you may be supporting mass deforestation, climate change, illegal logging, worker exploitation, and endangering plant and animal species. The good news is that there are excellent options for sustainably sourcing wood, paper, and cardstock in games.

GGG best practices > wood, paper, & cardstock

Best

100% recycled FSC-certified
(or other verifiable sources)

Climate positive
> no tree cutting required, no environmental degradation
Circular
> made solely from materials that had a previous life, with no tree cutting needed

Almost Best

FSC Mix-certified wood, paper, and cardstock

Climate positive
> these products combine recycled with sustainably-sourced materials
Circular
> use of some recycled content means less trees cut

Better

FSC-certified
new materials

Climate positive
> the gold standard of sustainable forestry certification

PEFC-certified

new materials

Climate positive
> a sustainable forestry certification standard

Good

Recycled wood, paper, and cardstock —
even if they aren't certified

Circular
> use of recycled content means less trees need to be cut

Current

Non-certified wood, paper, and cardstock

Many potential negative effects
including deforestation, ecological degradation, worker exploitation

The fine print

Reduce, reduce, reduce
> Reduce the amount of materials you use in your game components and packaging. For what you do include, today most manufacturers do offer sustainable options, so you need to be sure and ask for them!

Use 100% recycled whenever you can
> Wood, paper, and cardboard made from 100% certified recycled paper is available under the FSC framework. This avoids all the problems of tree cutting, which makes it the GGG **best** practice. At the same time, we recognize that publishing needs often can't use only FSC 100% recycled materials - which is why we also list FSC-mix as a more realistic **almost best** solution.

Certification makes a real difference
> Sustainable forest certifications encourage the protection and restoration of natural forests, prevent deforestation and land degradation, protect native biodiversity, and reduce greenhouse gas emissions. They typically also ensure fair labor practices and respect for indigenous rights. FSC is the most rigorous and robust sustainable forestry certification scheme available globally. PEFC certification is also recommended if FSC certification is not available.

Consider what goes on top
> Often wood-based materials are covered with polymer coatings (such as laminating cards or painting wooden tokens with acrylic). These can essentially add a layer of plastic to paper or cardboard, making the entire game unrecyclable. Instead, select a finish that is compostable, such as a water-based veneer. (Note that these coatings are often added without publisher awareness! Matte boxes are famously coated in plastic to achieve the visual effect, but manufacturers may not feel the need to make publishers aware.)

> Many manufacturers now offer vegetable-based inks for printing cards, paper, boxes, and other pulp materials. These inks are generally much less harmful to the environment, both during the manufacturing process as well as the post-consumer part of a game's life cycle.

What exactly does FSC mean?
> The FSC (Forest Stewardship Council) certification system verifies sustainable sourcing of forest products and ecosystem services at every step of the value chain, from forest to consumer. Every FSC label is backed by a diverse ecosystem of forest managers, businesses, nonprofit organizations, and others committed to upholding a common set of responsible forestry standards that are intended to support:
- zero deforestation
- safeguarding ancient & endangered forests
- fair wage and work environment
- biodiversity preservation
- community rights, including the rights of Indigenous Peoples

What about PEFC?
> PEFC (Program for the Endorsement of Forest Certification) is a global alliance of national forest certification programs. It has a similar focus on reducing deforestation and ensuring biodiversity.

RE-Wood
> A composite material made of wood waste (sawdust) and recycled resin, RE-Wood is a new material with the potential to replace wooden and plastic components that produces far less waste than regular wood.

Steps to take

Manufacturers
> Pay attention to where your materials are sourced.
> Always offer sustainable options to your clients, even if it costs extra.

Publishers
> Work with manufacturers that offer sustainably sourced materials. Always ask for sustainable manufacturing options.
> Strategize how to use more sustainable materials in your products.
> PROTIP: Starting in 2026, The E.U. Deforestation Regulation will require that all producers that sell into the E.U. don't contribute to deforestation, making FCS certification mandatory.

Retailers
> Select games based on whether or not they use sustainable materials. Put pressure on the industry to change.
> Highlight sustainably produced games in stores and websites to increase consumer awareness.

Designers
> Think about sustainability and reducing materials from the very start of your design process. Design games with less.
> Specify sustainable material requirements in your publishing contracts when you can.

Players
> Look for FSC and other certifications on your game boxes.
> Contact publishers and let them know you want them to use sustainable paper and cardstock.

Why this matters

Climate change
> Poorly managed forestry is an important contributor to climate change through deforestation and land degradation.

Ecological effects
> Unsustainable forestry practices can lead to major loss of biodiversity, soil erosion, water pollution, and curtail indigenous rights.

Carbon emissions
> Around 25% of global carbon emissions come from the land sector, and about half of these are related to deforestation and forest degradation.

Criminal logging
> Illegal wood extraction is a primary driver for global deforestation — especially exports to industrialized countries. In Bolivia, Cambodia, Liberia, Papua New Guinea, the Democratic Republic of Congo, and many other countries, illegal logging is estimated to account for 70% to 90% of all wood exports.

Case studies > wood, paper, and cardstock

Canopy
Tim Eisner / Weird City Games, 2022
  > *Canopy* married the game's environmental themes to a real commitment to sustainable design.
  > All paper elements in *Canopy* were certified FSC-mix or better.
  > Rather than plastic shrink wrap, *Canopy* used a small plastic sticker to seal the box, (and a craft paper cover on the deluxe edition). These solutions keep the box materials more sustainable and also keep the game looking sharp on display.
  > For each game sold on Kickstarter, a tree was planted in partnership with the charity Tree Sisters. Marketing around the game emphasizes the importance of sustainability.

Others shifting to certified materials
  > Many publishers are adopting policies of only using FSC or PEFC-certified materials.
  > German-based publishers Kosmos, HABA, and Ravensburger all use exclusively certified materials for their paper and pulp components. In part this shift was spurred by German government regulations.
  > In the US, Clarkson Potter (the game and gift imprint of Penguin/Random House) has voluntarily adopted using only FSC-certified materials in their games.
  > The game publishing giant Admodee aims to have all of their games FSC certified at the start of 2026, in line with coming E.U. regulations.

Plastic

It's time to face up to a hard truth: **we are addicted to plastic.** Among commonly used game materials, plastic by far does the most lasting damage to the planet. Plastics drive fossil fuel exploration and extraction, and produce huge carbon emissions during manufacture. At the end of its lifetime, much of it is burned, sent to landfill or ends up in our oceans. Only a tiny fraction of all plastics are recycled, and your plastic game pieces likely won't be either! But if some of them escape to the environment, they will likely cause harm to nature for hundreds of years, after all of us are long gone. It's time to end our addiction to plastic.

GGG best practices > plastic

Best

Certified plastic that's plant-based AND compostable

Climate positive
> made from plants, not fossil fuels

Circular
> components can be easily composted at the end of their life

Design out all plastic

Climate positive
> avoids drilling fossil fuels in favor of lower-carbon materials

Circular
> avoids using materials that will mostly not be recycled

Better

Recycled plastic instead of new plastic

Climate positive
> reduces the amount of fossil fuel extracted

Not circular
> uses recycled content — BUT like most plastic it is unlikely to be recycled at the end of its life

Current

New plastic component manufacturing

Climate negative
> requires drilling of fossil fuels and produces high carbon emissions

Not circular
> most plastic around the world is not recycled at the end of its life

The fine print

Plastic recycling just doesn't happen

> The vast majority of plastic components will not be recycled, because humans do a terrible job of recycling plastic in just about every country around the world. This comes from a combination of high costs, limited recycling options, and too many different types of plastics. In the US and UK, less than 10% of all plastic is actually recycled — and there is no reason you should expect plastic in your game to fare any better. To make matters worse, when plastic is recycled, it loses much of its flexibility, significantly limiting its post-consumer uses.

Making plastic is deadly, energy intensive, and emits greenhouse gasses

> The seven most commonly used plastics are responsible for approximately 70 million tonnes of CO_2 emissions per year and nearly 3% of total US energy consumption. In the environment, micro-plastic continues to emit greenhouse gasses — one preliminary estimate put a figure of 2,129 metric tons CO_2 from plastic in the world's oceans.

"Biodegradable" is not the same as "compostable"

> Biodegradable materials often require very specific conditions not possible in the average backyard compost pile. Many governments have official standards about what can be considered a compostable material, and it is a more strict standard for how easily material turns into compost. When possible, make use of compostable materials.

Steps to take

Manufacturers

> Offer recycled, certified plant-based, or compostable options.

Publishers

> Work with manufacturers that offer sustainably sourced materials or choose items that don't require custom molds.
> Reduce or remove all plastic parts.

Retailers

> Select games based on whether or not they have a sustainable approach to the use of plastic.

Designers

> Specify sustainable material requirements in your contracts when you can.
> Always be thinking about how to reduce plastic components in your games.

Players

> Look for games that have less plastic components and packaging.
> Demand that publishers and crowdfund creators ditch plastic.

Why this matters

Plastics are a lifeline to the fossil fuel industry

> The great majority of plastics today are made from fossil fuels. Plastic components have huge carbon footprints, and financially support further fossil fuel exploration and extraction. By eliminating plastic, we help put this industry to bed.

Plastic destroys nature

> Made of polymer chains that degrade very slowly, plastic is incredibly durable. Unfortunately, this means plastic that ends up in the natural environment will cause harm for hundreds or even thousands of years. Rather than degrading, plastics in nature simply break down into smaller pieces over time. When these become tiny microplastic particles, they are spread by water and wind over astounding distances. Today, high concentrations of microplastics are found everywhere: remote areas of Antarctica, uninhabited deserts, and the bottom of the ocean. Microplastics are being found in the bodies of a huge range of animal species studied (including in human breast milk!), with still-unknown effects.

The ocean is paying the price

> The water cycle in nature means that a large proportion of all plastic that escapes to nature ends up in the ocean, where it concentrates in larger amounts every year. The growth of pollution in the ocean is so vast that some estimates predict there will be more plastic than fish in the ocean by the year 2050. A huge body of research has shown that plastic is causing untold damage to life in the ocean, with no end in sight as long as our addiction to plastic continues.

Case studies > plastic

Wingspan
Elizabeth Hargrave / Stonemaier Games, 2019

> The original version of *Wingspan* included over 100 individual pieces of plastic in each of its over 1 million copies sold, which attracted criticism from some of the game's nature-loving fans. In August 2022, Stonemaier Games released an ambitious redesign which removed all plastic components.
> The new version of *Wingspan* replaced their signature plastic eggs for wooden ones. All paper and pulp components are FSC-certified. Solutions like these could replace a huge portion of plastic used in board games today.

InFUNity Tiles
Atlas Games, 2024

>InFUNity is a brain-teasing, tile-laying maths game that is proud of its large, colourful plastic tiles. The tiles connect endlessly and encourage replayability, which is always a good sign for sustainability.
>The key innovation, however, is that the tiles are made from 100% recycled plastic the makers collected from within their local region. The plastic is collected locally and then recycled in the Replay Workshop. Funds from the kickstarter went to improving the industrial process and the publishers promised to recycle a further 5,000 lbs of plastic from the Western Lake Superior Region in the USA.
>InFUNity shows that the plastic pollution issue may be tackled creatively by board game makers.

Rebirth
Reiner Knizia / Mighty Boards, 2024

Rebirth is a great example of a game that matches its theme (restoring the land after a series of calamities that left civilization in ruins) and genre (classic tile-laying eurogame) with its production values. One of the ways that it does this is by making its many components from a material created by combining shredded wood waste (around 80%) with recycled binding agents to create something that is close to plastic in terms of detail, but endlessly recyclable. This material can then be injection moulded, allowing more flexibility in terms of shape than wooden pieces while retaining much of the appeal of wooden components since they have more weight than plastic and the scent of chopped/heated wood.

Wissner GmbH, who produce RE-Wood® in Germany, state that their product can be 100% recycled (to make new RE-Wood components), and also note that it is completely biodegradable, a process that would take around 25-80 years, a similar time frame to hardwood. Wood-plastic composites such as RE-Wood, therefore, offer a way in which to make use of the by-product of the wood industry in a way that, managed carefully, might reduce waste from the board game industry.

In short, as Rebirth's cathedrals and castles demonstrate, components produced from this composite material are perfect for the modern eurogame, reflecting and enhancing the genre's familiar aesthetics while advancing the parameters of sustainable games production.

Danger Danger
Ian Clayman / Exploding Kittens, 2024

Danger Danger is a game that mostly contains just cards - already a good move for producing a sustainable title.

However, Exploding Kittens went one step further in reducing unsustainable materials. The game requires a timer, and while many games might have included a sand timer or other plastic element, Danger Danger tried a very different approach.

Relying on the fact that their audience already have smartphones and other ways of keeping time, the game simply asks players to use their own time keeper. And as the cherry on this sustainability sundae, the rules actually explain why they made this decision. From the game rulebook:

> *"WHY ISN'T THERE A TIMER IN THE BOX?"*
> *Chances are good that you already have something that keeps time, and by using what you have, we can reduce the production of unnecessary plastics!*

Textiles

The horror of textile waste is beyond dispute. In the fashion world, for example, 15% of cloth ends up on the cutting room floor. And only 1% of cloth ends up getting recycled. So what does all of this mean for tabletop games? Surely using a small bag for cards or coins isn't going to ruin the planet? All of these small decisions do add up. If we are going to genuinely transform our industry to a more circular economy and have a real impact, we need every component on board. That means cloth and textiles too. And there's a heck of a lot we can do better.

GGG best practices > textiles

Best

Replace textiles with other materials

Climate positive
> paper and cardboard generally produce fewer emissions

Circular
> textiles are among the least recycled game materials

Even Better

100% Recycled textiles

Climate positive
> lower water use and no pesticides means less carbon emissions

Circular
> use recycled content — still unlikely to be recycled at the end of their lives

Better

Hemp and sustainable cotton

Climate positive
> hemp uses less land, water, and resources to grow sustainable cotton

Circular
> hemp products last a long time — but also biodegrade

Current

Conventional Cotton

Climate and circular negative
> excessive water and pesticides drive soil degradation
> recycling extremely unlikely: 1% of cotton is recycled

Polyester & Synthetic Fibers

Destructive to the environment
> synthetic textiles are unrecyclable plastic
> they release microplastics into the ecosystem

The fine print

Recycled cotton works... if you can find it

> With 15% of new textiles left on the cutting room floor, there surely is an opportunity to find a purpose for these materials. Using them in games could help reduce this perverse amount of waste.

> Recycled cotton cloth has a lower carbon footprint than virgin cloth. Virgin cloth production requires raw materials to be grown, harvested, and processed. With recycled cloth, the materials have already been harvested and processed. Choosing recycled cotton also means the textiles will not end up in landfill.

The downsides of recycled cotton

> Arguably, the life cycle of recycled cotton neutralizes any benefits. In the manufacturing process, recycling cotton weakens fibers and therefore the amount of recycled cotton in an item will eventually harm the product's yarn and fabric properties. Many recycled cotton products contain other materials because of the need to blend multiple types of fibers to ensure quality, durability, and strength.

> For these reasons, recycled cotton items are virtually impossible to recycle again so the chances are they will eventually end up in landfill.

> Collecting, processing and shipping recycled cotton products is costly and uses large amounts of energy and fossil fuels.

Try hemp

> In many ways, hemp is an ideal textile choice, especially with a reputable source that prioritizes sustainable practices.

> Hemp is a renewable species that can be grown and harvested in a short period. Hemp fibers are biodegradable, so they decompose naturally without harming the environment. Hemp is naturally strong and durable and ideal for making bags that will be frequently used.

> Hemp uses significantly less water than cotton to grow. Some research suggests it takes 50% less water to produce the same amount of hemp as cotton. Hemp is also naturally resistant to pests and diseases so it can be grown without the use of pesticides, hence reducing its environmental impact. Hemp can be grown on a smaller amount of land than cotton while still producing a similar yield. Finally, hemp has deep roots that aerate the soil and prevent erosion which improves soil health and reduces the need for fertilizers.

> We also love the fact that hemp is one of the best plants at removing harmful toxins from the environment. This process, called 'phytoremediation,' is so good that scientists have successfully improved the soil in Chernobyl using hemp.

What about bamboo?

> Despite some positive qualities, bamboo is ultimately climate negative. In manufacturing bamboo, harsh chemicals are used in processing. It can also be very difficult to recycle bamboo because other textiles are often added to the fabric.

Screw synthetics!

> The idea of a polyester or velvet token bag may seem cozy (and cheap to produce). But these kinds of synthetic textiles are the absolute worst choice you can make.

> Synthetics are basically plastic. They can't ever be recycled, and by producing them you are releasing microplastics into the environment which cause long-term damage to all kinds of living things (some of the grim details are provided in the PLASTIC section above).

> While we're at it, you should avoid wearing synthetic fibers in your clothes too! Be part of the solution, not the problem.

Steps to take

Manufacturers
  > Offer recycled cloth or other eco-friendly fabrics like hemp.
  > If you do use cotton, be sure that environmental and socially sustainable practices are being used by suppliers.

Publishers
  > Work with manufacturers who offer recycled and other sustainable cloth options.

Retailers
  > Select games that are making sustainable choices for their components

Designers
  > If cloth is absolutely necessary in your game, choose recycled cotton or an eco-fabric like hemp.

Players
  > Buy games that use recycled components or eco products.
  > Re-purpose those lovely little cloth bags.

Why this matters

Cotton farming is hard on the planet
  > Cotton requires a lot of water and pesticides during cultivation, and it is this processing of the fiber into fabric that can involve significant energy and chemical inputs. 10,000 liters of water are needed to produce 1 kilogram of cotton. Globally this amounts to 250 billion tons of water using cotton production worldwide.
  > Due to the huge demand for cotton, lobbying from the cotton industry leads to poor irrigation laws that allow cotton corporations to divert huge amounts of water to their production sites and away from other farmers.
  > Cotton production also emits 220 million tons of carbon dioxide annually. Cotton uses 25% of pesticides globally despite only making up 2% of the cultivated land.
  > Runoff with pesticides and synthetic fertilizers pollute waterways and ruin natural ecosystems.

The social responsibility of cotton
  > If you can't avoid cotton, then assess where in the supply chain the cotton is coming from, and that the production follows sustainability standards. Cotton farming using fair practices and supporting local communities can contribute to a more ethical production process.
  > Certification such as the Global Organic Textile Standard (GOTS) or the Organic Content Standard (OCS) will ensure cotton was grown and harvested sustainably without the use of harmful chemicals or genetically modified seeds. It is possible to trace the supply chain of cotton cloth bags to ensure that they come from a sustainable source, in part by fostering direct relationships with suppliers and cotton farmers. Conducting lifecycle analysis of cloth bags can provide detailed information about the impact from inception to disposal and identify areas for improvement.

Case study > textile

Daybreak
Matt Leacock & Matteo Menapace / CMYK

> Daybreak, an award-winning game that simulates the climate crisis, prioritized sustainable materials not only during the production of the game (where there was a clear mandate to reduce plastics through the use FSC-certified paper and wood, and the use of pressed pulp trays) but also, crucially, during the process of the game's design.

> Matt and Matteo's design called for many components: a board, four player boards, many cards and punchboard tokens, as well as a cloth bag that was used for a chit pulling mechanism. About three quarters of the way through the game's design, CMYK commissioned an impact analysis of all these components. It turned out that the cloth bag had the single biggest environmental impact on the game.

> As a result, Matt and Matteo modified the design for the game to use a single, wooden die to replace the chit pull. The resulting design proved to be easier to understand and set up, and (according to the advisors on the project) the die was a better metaphor for the chaotic planetary effects they were modelling. This would have been difficult to accomplish at the very end of the design process: keeping an eye on the environmental impacts of the materials during the design process provided a constraint that helped unlock a better solution.

> Daybreak has received positive attention not only for its gameplay and mission but for its approach to designing sustainably in prestigious media outlets that go far beyond the game industry including the BBC World Service, Bloomberg, Forbes, The Guardian, The New York Times, and Wired.

> Matt Leacock (one of the game's designers) and Alex Hague (CEO and Co-Founder of the game's publisher CMYK) talk in detail about sustainable design at Spiel 2024:

https://www.youtube.com/watch?v=bP-ooQAvwng

Metals

Sparkle and shimmer make all the difference. But the problems with metals are legion. Metals come from the Earth. They're extracted, refined, and produce huge carbon emissions as a rock is transformed into a minifig or tin box. Mining causes deforestation and biodiversity loss. Mines can rarely be reclaimed and many permanently alter the landscape and the surrounding ecology. Not to mention the vast amounts of chemicals used in the refining process that go on to contaminate the soil, water and air. Or the exploitative labor and displaced communities impacted by the mining industry. The one light at the end of the drilling tunnel is that most metals can be recycled forever. Read on.

GGG best practices > metals

Best

100% Recycled metals

Climate positive
> drastically smaller carbon footprint than extracted metals

Circular
> making use of recycled content
> can be infinitely recycled with no loss in quality
> good metal recycling infrastructure exists around the world

Current

Primarily mined metals

Climate negative
> mining uses finite resources and is carbon-intensive

Wastefully linear, marginally circular
> the more games you make, the more mining is needed
> not all metals are widely recycled and some metals are more likely to end up in landfill than being recycled or reused

The fine print

Metal recycling doesn't always happen

> The outlook on metal recycling is mixed. On the plus side, aluminum comes out on top, with a recycled rate of over 75%. The public knows cans can be recycled and many countries have infrastructure and recycling plants to get the job done. This makes aluminum the second most recycled metal only to steel.

> Zinc alloy, often zinc mixed with copper, is commonly used in coins and game pieces. Copper has a higher melting point, so this metal is very hard to recycle.

> Brass, made by blending copper and zinc, has a high commercial recycling rate which is less energy intensive than recycling aluminum and steel. However, a big challenge in recycling post-consumer scrap is collection. Knowing what metal you're looking at can mean the difference between landfill death or a brand-new life.

Recycling operations always generate less carbon than mining

> Recycling aluminum instead of mining it saves a whopping 90% or more energy. So even though aluminum is the most abundant metal on earth, it is still cheaper and also better for the planet to use recycled aluminum products.

Location matters

> Aluminium is the most recycled packaging in Europe. 72.8% of aluminum products, mostly cans, were recycled in 2022. The USA is only at around 40% but Brazil is at 98%. So where you are distributing can make a real difference on choosing metals over cardboard. In an ideal world, we could consider region-specific versions of games depending on what components get recycled where.

Steps to take

Manufacturers

> Choose verified recycled metals, preferably aluminum or brass. Working directly with known suppliers is a good way to ensure the product is recycled content. Suppliers themselves may have systems to prove the origin of their metal.

Publishers

> Consider offering product stewardship schemes for consumers to return their games and have them recycled properly by the company to avoid issues with collection.

Retailers

> Choose games with recycled metal.
> Offer a collection scheme for no longer wanted metal (and other) items.

Designers

> Specify recycled metal in your contract where possible.
> Consider recycled metal instead of plastic.

Players

> Choose games that use cardboard or recycled metal over plastic.
> Recycle and reuse components of games instead of throwing them out: putting a game into landfill should be the last option.

Why this matters

Unearthing the truth about virgin metals

> Metal mining occurs all over the world, and has a range of environmental impacts. The most common and economical methods of mining involve open cut mines, deep excavations that mar the landscape, or removing the tops of mountains. These can take generations to remediate and almost never return to their original state.

> Mining virgin metals can also be a hugely energy intensive process, involve harsh chemical processes or high temperatures, and produces large amounts of waste in the form of 'tailings' that can contain heavy metals and other toxic elements.

> For example — despite being an incredibly commonly used metal, aluminum mining is one of the more energy intensive metals to refine from ores, requiring high temperatures (usually achieved by burning fossil fuels) and with the entire aluminum cycle contributing an estimated 1% of the planet's total GHG emissions in 2007.

> Similarly, mining and refining new nickel — a component in the production of stainless steel — requires around 114 MJ of energy to produce a single kg. That's around the same amount of energy as a Tesla Model 3 uses to drive ~400km. It's not just about GHG emissions, however. If not managed properly, nickel mining can also release sulfur dioxide, contributing to acid rain and particulate matter pollution in areas surrounding refineries.

A heavy load to transport

> A downside of metals is their greater weight vs equivalent plastic or wood elements. The density of many metals is both the source of their durability and an additional burden for transport and logistics emissions. A metal tin or box will typically weigh more than an equivalent paper or cardboard equivalent, potentially adding extra shipping costs, and increasing the amount of fossil fuels used in the transport phase. Some transport methods are highly sensitive to weight (like air freight) making costs prohibitive.

> In general, the heavier a piece of freight, the more the transport method will have to work to move it, increasing the amount of fuel it uses and in the process, the total GHG emissions. Lighter metals like aluminum therefore will often have an advantage over heavier metals like tin and stainless steel.

The social impact of mining

> Mining often occurs on indigenous or first nations lands, with highly variable degrees of responsible land management and benefit sharing. It is often responsible for disturbing places of cultural significance.

> The immense water consumption of mining means that mining operations often compete with water for people and for nature.

The big picture

> The Earth can't keep on giving. We can't keep on taking. The linear model of take, make and waste isn't working. We need to design products that can be kept in the system and not left to lie in landfills. Using already mined metals that can be infinitely recycled is a step towards reducing our extraction and energy use.

Case study > metals

Hanabi
Antoine Bauza / Cocktail Games

   > In 2023, Cocktail Games rereleased Hanabi, replacing the game's classic metal box with a cardboard box made in France. This change in format and the choice of French manufacturing for the box and European manufacturing reduced the use of metals and decreased emissions from shipping.

Mint Tin Games
> Sadly no longer in business, Mint Tin Games published a whole line of games in small mint-sized tins. Remarkable for their small size, these games were highly playable and quite varied. The product footprint was small and the tin packaging was eminently reusable. And reusability is far less damaging to the environment than recycling. We love this creative approach to package design.

What's so special about metal
> While metal can add durability to game materials, we see too many metal components as special add-ons for crowdfunding campaigns. (Like metal coins instead of pulp coin tokens.) Let's not promote the notion that unsustainable materials are more desirable than sustainable ones.

Glass

Those little glass beads and gems in your game are not as transparently clean as they may appear. New glass manufacturing is a juggernaut of carbon emissions. And while some glass does end up being reused, the glass that ends up in landfills will be there for the next million years. We use glass as food containers because as an inert substance, it does not release harmful chemicals. But we're not going to be eating our games anytime soon. Luckily there are good alternatives.

GGG best practices > glass

Best

100% Recycled glass

Climate positive
> significantly less energy use and carbon
emissions than manufacturing new glass

Circular
> making use of recycled content
> glass is recycled in many countries around the
world

Current

Virgin glass — partly or entirely

Climate negative
> requires high energy consumption and produces
emissions

Wastefully linear
> drives major sand extraction from sea and river
ecosystems

The fine print

Use it again and again

> Glass is a relatively sustainable material due to several factors. It can be recycled indefinitely without losing its quality or purity. Recycling varies widely, but for example in OECD countries, about half to two thirds of glass gets recycled.

> While glass production requires significant energy, modern manufacturing techniques have improved energy efficiency, including the integration of recycled glass in the process and requiring lower temperatures than melting virgin glass. This can use up to 40% less energy than manufacturing new glass.

> Glass can be melted repeatedly and is 100% recyclable, and the technology for recycling glass is relatively simple. Making new glass from recycled glass reduces CO_2 emissions and energy use, saving 580kg of carbon dioxide emissions for each ton of glass re-melted.

> One challenge arises in separating the glass from other materials. Although most glass is composed of silica, soda, and lime, the type and quantity of other compounds varies in different types of glass. Thus some glass products can contaminate the recycling stream.

Consider other materials

> There are almost certainly better options for hard materials in your game. For example, consider aluminum: the energy required to recycle an aluminum can is less than the energy required to recycle a glass bottle. Glass is also heavier than aluminum or cardboard and produces more emissions through shipping than lighter hard materials.

Steps to take

Manufacturers

> Make your glass options 100% recycled glass.

Publishers

> Consider alternatives to glass for your hard materials.
> If you must include glass, make it recycled glass.

Retailers

> Consider the weight and impact of products you order.
> Highlight and promote games that make sustainable choices.

Designers

> Design glass out of your games.
> Include a commitment to sustainable materials as part of your publishing agreements.

Players

> Keep the game industry honest by supporting games that make sustainable choices.

Why this matters

Making glass is toxic

 > Globally, glass manufacturing produces at least 86 million tons of carbon dioxide every year. Most of this can be eliminated when glass is recycled and existing technologies could turn glass manufacturing into a mostly carbon-free process. Glass is made by heating limestone, sand, and soda ash to 1,500°C. This heat comes from natural gas, and it accounts for between 75% and 85% of the carbon emissions from glass manufacturing. The remaining emissions are a by-product of the chemical reactions between the raw materials. But some of these materials can be replaced with crushed recycled glass, known as cullet. When cullet is melted, no CO_2 is released. And furnaces don't have to burn so fiercely to melt glass as to melt the raw materials, offering further carbon savings.

Much of glass is never recycled

 > Recycling a glass jar saves enough energy to light a bulb for four hours. And it does happen — to varying degrees depending on the country. 46% of glass is recycled in Australia. 79% of glass is recycled in the EU. But only a third of the 10 million tons of glass used in the US is recycled — the rest goes to landfill. And once it is there, glass takes a million years to break down naturally.

Where it comes from

 > Making glass requires sand harvested from riverbeds and seabeds. This process can seriously disrupt the local ecosystem. It also leaves coastal communities open to flooding and erosion. Worldwide we use 50 billion tons of sand a year for glass production.

Box and packaging

Look at me! I'm a big and shiny box! We all know how much tabletop games inflate the size of boxes in order to grab shelf space and catch a consumer's eye — and how we shrink-wrap them in layers of plastic to make them seem even more pristine. But the hard truth is that the way we design boxes and packaging is doing real damage to the environment. Decisions made about boxes and packaging have repercussions throughout the lives of the games we love, impacting emissions from manufacturing, transport, and what happens at the end of a product's life.

GGG best practices > box and packaging

Best

Compact boxes with no plastic wrap, designed for recyclability

Climate positive
> minimal boxes which tightly fit game components will minimize transport emissions per unit

Circular
> no shrinkwrap means no plastic will end up in nature or landfill. Use paper or cardboard solutions for shipping or wrapping, as these are easily and widely recycled

Good

Reduced box size, plastic wrapping on essentials only

Climate positive
> smaller boxes fit more units onto pallets and containers, reducing carbon emissions per unit

Circular
> limiting shrinkwrap to a bare-minimum reduces materials going to landfill

Current

Box & packaging considered only from a commercial perspective

Climate negative
> oversized boxes add excess volume, making shipping more inefficient and increasing carbon emissions per unit

Not circular
> single-use shrinkwraps around boxes, pieces, cartons, and shipping pallets are virtually never recycled

The fine print

Working better together
> Manufacturers and publishers both bear the responsibility of improving packaging, and it will only happen when they work together. Manufacturers should always offer sustainable options and publishers should strategize about how to best use them.

Reduce box weight
> It's not just about size. Shipping costs (and emissions) are often calculated based on weight, as heavier objects increase cost across the shipping route, from handling to delivery vehicles. Reducing weight reduces cost and allows for more efficient shipping — and reduced emissions — for most transport modes.

All boxes are not created equal
> Different kinds of boxes require different amounts of material. For example, a two-piece box (with a separate bottom and lid) requires more paper pulp than a tuck box (with a folding clasp lid). At the same time, many tuck boxes are not as sturdy as two-piece boxes, which reduces lifespan and can increase waste. Tuck boxes also tend to be virgin pulp, while the centers of 2-piece telescoping boxes are almost always 100% recycled chipboard. Consider all factors when choosing your box.

Surface matters
> Avoid UV coatings on box printing — they make boxes unrecyclable. Similarly, don't use plastic-based polymer lamination — it turns boxes into plastic. Finish your boxes with water-based veneer instead.
> Be especially careful because manufacturers can add plastic-based polymer lamination without notifying publishers, especially with matte finishes.

No more shrink wrap
> Shrink wrapping boxes and internal components is egregiously wasteful and largely unnecessary. Instead, use more durable box wrap or small stickers to seal your boxes. At the same time, not using shrink wrap can sometimes mean more surface and water damage from shipping. (It's a trade-off!) Compostable shrink wrap, although it can yellow with age, may be the best option — it protects the game without producing plastic waste.

Healthy on the inside
> Design the internal components of your boxes so there's less shifting/wiggling of internal components, and ensure case packs are snug on boxes. This means reducing inserts and in-box packaging elements whenever possible. Avoid non-essential or disposable items such as unpunched boards. They increase size and weight, which brings the double-whammy of extra carbon emissions and also extra cost. Eliminate shrink wrap around cards and other components — paper bands do the job just fine as long as the cards are tightly packed. Also, move away from plastic trays, towards materials that are recyclable and compostable, such as cardboard organizers and pulp-based trays.

Streamline manufacturing waste
> Work with manufacturing to remove "hidden" waste that pops up in processes a player might never see. For example, if you are asking a manufacturer to reduce the number of internal plastic bags, make sure they aren't first manufacturing those bags — and then are removing and trashing them before the boxes ship.

Don't forget the pallet
> Everything about individual boxes also applies when packing multiple games for shipping from manufacturing to distribution centers. Avoid and eliminate plastics such as plastic wrapping from pallet packaging — compostable wrapping is a great alternative. Avoid styrofoams and expanded polystyrene fillers for voids and delicate game parts — these materials persist in the environment for decades! Use recyclable or compostable alternatives like air, paper, or cardboard based fillers instead.

Once you've done everything else: standardize your box size
> For manufacturers and publishers, sticking to a standard set of box sizes (rather than inventing a custom box for each game) has multiple benefits. Consistent sizing reduces costs from custom shipping and the custom freight boxes that need to be produced. And it reduces the need to produce and test a new die cut. That said, sometimes boxes vary in size in order to improve shipping or display efficiency. So only standardize your box sizes if it doesn't add additional waste.

Shipping... it's complicated
> Shipping long distances internationally increases a game's environmental footprint. However, local manufacturing and distribution is not always a viable option. If your game is being assembled locally but many components are being air freighted from another continent, you may not be reducing the manufacturing impact. As with many industries, we need to strategize and find better solutions.

Steps to take

Manufacturers
  > Understand how the form factor impacts freight and logistics.
  > Provide options for low emissions transports (e.g., rail and sea, over road and air) and encourage publishers to use them.

Publishers
> Reduce materials in your games that are used for packaging and shipping.
> Standardize box sizes among your products.
  > With shipping experts, find optimally efficient sizes for each transport mode.

Retailers
> Stop requiring large box sizes for optimized aisle placement. Feature smaller games. Bonus: you can put more of them on a shelf!
> Select games based on whether or not they use sustainable packaging. If no one stocked shrink-wrapped games, no one would make them anymore.

Designers
> Specify less wasteful packaging as part of your publisher contract — when you can.
> Work with your publisher to reduce box size and unneeded inserts.

Players
> Shift the culture that sees box size as equal to a game's value or price.
> Tell designers and publishers to create better boxes and packaging.

Why this matters

Box size matters
  > Box size has combinatorial effects - a bigger box reduces the amount of games that will fit in a case, palette, container, or truck. This can significantly bump up the carbon emissions associated with ocean and land shipping for the game. By designing games in a way that is "snug" rather than "loose" you can reduce your game's carbon emissions significantly (in some cases by more than 80%).

Save money too
  > Bigger boxes also make everything more expensive. Smaller, lighter boxes can help reduce shipping costs — for publishers but also for the players who buy games.

Wasteful packaging
  > All of the considerations about materials we mention in other sections of this guide apply to boxes and packaging too. Case in point: plastic wrap around game boxes is *even harder* to recycle than hard plastic. All of that unnecessary material, as well as punch boards and internal packaging, tend to end up in landfills. The more wasteful material that is in a box, the more waste it creates at the end of its life cycle.

Case studies > box and packaging

Kingdomino
Bruno Cathala / Blue Orange Games, 2016

> *Kingdomino* is a great example of efficient and attractive game packaging. The size of the box walks a fine line between fitting inner components without compromising on ease of access and not leaving too much empty space.

> The fact that the domino tiles are pre-punched avoids the issue of transporting extra weight,
and also avoids taking up space that becomes unnecessary once the tiles are removed from the larger sheets on which they are printed.

> At the same time, the box size still presents a substantial art surface for attractive display.

Oink Games
Publisher

> It's clear that the market has conditioned players to think that bigger boxes means a better and more valuable game. But this does not need to be our industry's destiny!

> To take a wonderful counter-example, in many Asian markets, a smaller form factor is seen as an attractive part of a well-designed product. The series of games from *Oink Games* — which come in delightfully tiny boxes — are testament that distinctive quality does not need to be attached to an oversized format.

> When deciding to bring their games from Japan to markets like the US, *Oink Games* resisted pressure to inflate their box to a larger-than-necessary size in order to match supposed consumer expectations. The products still sell very well.

Too Many Bones
**Josh J. Carlson, Adam Carlson /
Chip Theory Games, 2017**

> *Too Many Bones* is an evergreen, best-selling premium game title. In their recent "slimline" release (2021) they made the unusual decision to reduce their box size, thus reducing dead air in the box.

> This decision by a game that is already best-selling is a wonderful example of publishers trying harder to publish sustainably.

> While the box size reduction is fantastic, at the same time *Chip Theory* could still reduce the amount of unnecessary plastic in their games. (It's hard to get everything right!)

Molehill Meadows
Chris Priscott/ Unfringed, 2024

> Molehill Meadows is a simple card-flipping and drawing game that celebrates the natural world. The design is intentionally eco-friendly, from decisions taken to reduce components to the biodegradable cellophane wrap, made using an eco-friendly European factory. This wrap can be placed in food waste recycling bins.

> The challenge with the wrap is communication. The wrap advertises itself as biodegradable, so that players know to dispose of it correctly. However, some players might miss the writing on the packaging, which is unobtrusive so as to not detract from the box art. This could lead to some mistakenly throwing the packaging in the bin destined for landfill. This shows that communication with players is paramount. An alternative would be to replace this cellophane with a paper sticker.

Choosing the right materials

The hard work of making games more sustainable comes down to the details. How are you wrapping and coating components? Can you reduce or eliminate materials? This section compiles a list of tips and best practices you can put to use right now in your current projects. **These may seem like small steps, but every one of them matters.** In games and in life, big victories can emerge from tiny but crucial decisions.

GGG tips for choosing sustainable materials

Ditch plastic
> If there's one villain in this story, it's plastic. Try to eliminate plastic entirely, unless you are willing to invest significant time and effort to guarantee your plastic components are fossil-fuel free and compostable. Perhaps some game components can be common household items rather than including them in the box.

Use wood and paper instead of plastic
> Always choose paper and wood-based alternatives to plastic. Most hard plastic components can be manufactured using wood.

Use recycled pulp when you can
> Switching to recycled material makes a real impact. It's true that some 100% recycled paper products don't have the sharpness of new paper — although for some games they add a distinctive texture. Strategize where you can use recycled materials — in places like box structure, rules, and other elements that don't need extra-crisp art. You can also use FSC Mix paper products, which blend 100% recycled paper with virgin paper from sustainable forestries to achieve greater paper quality.

Doing dice better
> There is a common myth in game manufacturing that balanced dice need to be made out of plastic. They don't! Dice made from wood, recycled plastic, or biodegradable materials are perfectly suitable. Depending on the game, perhaps your dice can be replaced by cards, a random page turn, or something else.

Standees over minis
> Can you replace those figurines with paper pulp elements in stands? Standees allow for more detailed color art at a cheaper price point — and without having to make custom molds. Ideally the standee has a cardstock cross-brace as the base — avoid plastic or acrylic bases so that you're not just swapping one piece of plastic for another.

Cardstock tokens over plastic tokens
> Thick cardstock tokens can give a satisfyingly hefty "hand feel." They also let you apply color artwork to each token.

On wood, use water-based stains instead of acrylic paint
> If you do choose wood, remember to pay attention to the coating. Water-based stains keep the materials compostable.

Use durable box wrap or stickers rather than shrink wrap
> Ditch plastic from the outside of the box as well as from the inside.

Don't add a UV coat
> In recent years, UV coatings have proliferated on a variety of components (cards, box covers, player boards, rulebooks, game boards). But UV coatings make paper products unrecyclable.

Make your inserts out of cardboard or pulp
> Rather than plastic mold inserts or vacuum trays, use cardboard folded trays, cardboard inserts, recessed boards, or pressed or pulped cardboard trays. (Which sometimes can be made out of corn or grass!)

Don't shrink wrap cards
> Use paper bands or wrap on your card decks and other internal components instead of shrink-wrapping them for that trip from the factory to the player. They are often the exact same price! Plus they make card packs easier and more satisfying to open.

Use a card finish with water-based veneer instead of plastic
> This is an older varnish technique which leaves cards still recyclable. Don't use a modern plastic-based polymer lamination to seal cards — it's plastic! This applies to boxes, boards, and other materials too.

Full card sheet usage
> Whenever possible, maximize the use of each card or component sheet. Can you make do with a full sheet of cards rather than adding extra components or different types of materials?

Vegetable-based inks are superior
> Many manufacturers offer vegetable inks as an alternative for printing. They are generally less harmful to the environment.

Paper or wax bags instead of plastic bags for components
> Wax paper is not only more durable than polymer based bags, but they can be recycled or composted, as long as you avoid petroleum-based waxes.

If you must use metal: go recycled aluminum
> Aluminum is the metal most likely to be recycled and to have been recycled. Even though it is a "cheap" material, recycling aluminum uses only 10% of the energy to mine the same amount.

Replace that cloth bag!
> Certified recycled cardboard may

suffice — and would have lower emissions over a lifetime (even over recycled hemp).

Everything in the box should be easily recyclable
> If you do need to include materials that will be immediately thrown out by players (e.g. box and item wrappers), make them out of recyclable materials. Otherwise, you are literally creating pure waste.

Shift expectations of perfect quality
> A good amount of manufacturing waste happens because components are over-engineered for flawless consistency. For example, standards for inking accuracy on dice means too many dice are thrown out and never used. Players won't mind if there are small flaws in game manufacturing — especially if they are told it's for sustainability.

Longer-lasting is better
> Long-lasting materials are ecological because it means that each game can have a longer lifespan. But the great majority of most games will be disposed of at some point, which is why durability is not a replacement for the need to make games out of recyclable and/or compostable materials.

Consider the full life cycle
> Are the materials in your game ultimately landfill bound? Can they be recycled or repurposed? Ed

Consider a recycled aluminum box
> If you need a hard box, aluminum can actually be lighter than a plastic box, so this helps with carbon emissions when transporting. The likelihood of the aluminum box being recycled is higher, as well as consumer repurposing. So there are double the chances of the box not ending up in a landfill.

Why this matters

Paper pulp gets recycled

> Paper and cardstock are some of the most likely materials to be recycled after their lifecycle. In the US, the Environmental Protection Agency estimates that 68% of all paper produced is recycled, and 74% in the EU, according to the European Paper Recycling Council (EPRC). This is because there are well-developed processes for collecting paper and cardboard for recycling, because they are easy and cheap to recycle once collected, and because the market price for paper is typically higher than the cost of recycling it.

Plastic... not so much

> In contrast, the EPA estimates that only 8.7% of plastic is recycled. There are similarly low rates of plastic recycling in just about every country around the world. This is partly because plastics can be hard and expensive to recycle, because the wide variety of plastic types makes collection significantly harder, and because the cost of recycling is often high.

Case studies > choosing materials

Cheapass Games

> We take for granted that every game needs to include every component needed for play. What if it didn't?

> Founded by James Ernest in the 1990s and 2000s *Cheapass Games* produced dozens of titles. Key to the ethos of the company was the acknowledgement that many items in a game box are generic pawns and dice that players already own. *Cheapass Games* were sold in "no-frills" envelopes, with a promise of low-cost components but fun and innovative gameplay.

> The particular lo-fi sensibility of *Cheapass Games* is not for every publisher. But it provides a delightfully inventive alternative to the status quo of wasteful production. Today's thriving culture of print & play games owe so much to the experiments of *Cheapass Games*.

Elevenses the Card Game of Morning Tea
David Harding / Adventureland Games, 2014
Painted by Roses
Ben Goldman / NorthStar Game Studio, 2022

> Crowdfunded games often create mountains of unnecessary swag, in a desperate attempt to supply players with stretch-goal trinkets. But plenty of designers and publishers are bucking that trend.

> *Adventureland Games* and *NorthStar Game Studio* are part of a growing number of crowdfunded games that eliminate stretch goals in a conscious effort to reduce waste.

> As an extra bonus, not having to design, manufacture, and ship all of the extra items saves a lot of money — and means everyone can focus more on making the core game great.

What's next

First: Tell everyone you know about the *Green Games Guide*. Email the guide to your friends and colleagues. Spread the word on social media. The more the merrier.

And — of course! — follow the GGG suggestions and guidelines. If you have gotten this far, you may have noticed that the *Green Games Guide* has a strong emphasis on the material aspects of games. When it comes to changing games, rethinking games as physical objects offers the clearest path forward. We can talk with utter confidence about why plastic shrinkwrap and uncertified wood are bad for the planet.

But if things are really going to change, we have to dig deeper. Because if we are going to overhaul an entire industry, it is going to take more than sourcing new materials. It is going to take a cultural shift too. We need to change the idea that quality equals waste — that a giant box and oodles of unnecessary plastic swag signify a great game. **We need to flip the script on how we define good design.** Good design can mean elegant, minimal, efficient, considerate, appropriate design. Good design should mean design that takes human labor, the environment, and the climate crisis into account.

And there's still more. We need to go even deeper and look critically at the games themselves. To take an obvious example: Why are so many games about power fantasies of domination and colonization? Don't get us wrong — we love the satisfaction of bashing our friends around the game table as much as anyone else. At the same time, we can't help but observe the connection between the way we humans treat our planet and the prevalence of games that indulge uncritically in themes and mechanics of exploitation and conquest. This may seem like a side issue, but it is part of the culture we want to change. Culture (like tabletop games) reflect the times in which they are made, but they also influence and spread ideas and attitudes. What do we want to say with the games we make?

One thing to clarify: **this is not a call for narrowing what games are — this is a demand for *radical expansion*.** For publishers, designers, players, and manufacturers to more fully engage with how the games they make are designed and manufactured, and how they impact the climate, the environment, and the world we inhabit.

These are not easy problems to solve. But if there is one thing that games have taught us, it's that solving tough problems is a worthwhile endeavor. We take on problems — for fun! — every time we play a game. And it's always better when we're not alone — when we gather together, shoulder to shoulder around a game table. We put our full spirit into the problem at hand — to play our hearts out, to challenge each other, and to work through the problem together.

So here we are. Play passes to the left. Looks like it's your turn now.

With love and respect,

The Green Games Guide Board

More info

General Resources
> International Game Developers Association Climate SIG website
> Digital Games After Climate Change (book by Ben Abraham)
> Beyond Recycling (book by Paul Mickelthwaite)
> *Green Transition at Play. State of the Art Report on the Environmental and Social Sustainability of Video and Board Game Industries.* Project STRATEGIES - Sustainable Transition for Europe's Game Industries.

Paper Pulp
> FSC and PEFC Certification info: www.fsc.org / www.pefc.org
> J. Gan, P. O. Cerutti, M. Masiero, D. Pettenella, N. Andrighetto and T. Dawson, 'Quantifying Illegal Logging and Related Timber Trade' in D. Kleinschmit, S. Mansourian, C. Wildburger and A. Purret, 2016, *Illegal Logging and Related Timber Trade – Dimensions, Drivers, Impacts and Responses, A Global Scientific Rapid Response Assessment Report*, International Union of Forest Research Organizations.
> TNR Reporting on illegal logging in Romania.

RE-Wood
> Wissner GmbH, which makes a branded version of this sustainable alternative to regular wood.

Sustainable Forestry
> Is the concept of sustainable forest management still fit for purpose?, Prins, K. Köhl, M., Linser, S, 2023
> Greenwashed Timber. Coniff, R. 2018. For Environment360.

Carbon offsets & carbon removals
> MIT Climate Portal explainer on Carbon Offsets.
> Carbon Brief 'Why CO2 removal is not equal and opposite to reducing emissions'
> Guidance on removals: 'Microsoft carbon dioxide removal procurement cycle'.
> https://www.greenpeace.org.uk/news/the-biggest-problem-with-carbon-offsetting-is-that-it-doesnt-really-work/ Greenpeace Explainer.
> Research Digest on the Failure of Carbon Offsetting. University of Oxford. Link:
> UN Definition of Greenwashing

Plastic

> United Nations Environment Program, <u>Why we need to fix the plastic pollution problem</u>, Feb 25, 2022.
> [Useful explainer from the EEA about what it really means when plastic producers claim their plastic is biodegradable](#).
> World Economic Forum, Ellen MacArthur Foundation and McKinsey & Company, 2016, *The New Plastics Economy: Rethinking the future of plastics*.
> Greenpeace, *Plastic's Circular Claims Fall Flat Again*, 2022.
> D. Posen, P. Jaramillo, A. E. Landis and W. M. Griffin, 2017 '<u>Greenhouse gas mitigation for U.S. plastics production: energy first, feedstocks later</u>', *Environmental Research Letters* 12**,** 034024, DOI: 10.1088/1748-9326/aa60a7
> L. A. Hamilton and S. Feit, 2019, *Plastic & climate: The hidden costs of a plastic planet.* CIEL. CID: 20.500.12592/qctxbd.

Right-sized Packaging

> <u>Useful resource on right-sizing packaging</u>.

Metals

> [Responsible Minerals Initiative (RMI)](#)
> [The London Metal Exchange's Responsible Sourcing initiative](#)
> [Recycled Material Standard Certification](#)
> [SCS Global Services](#) - a globally recognised independent third-party certifier and sustainability expert. [Responsible Source Certification](#) comes from SCS Global Services and confirms use of recycled metals.

Textiles

> [Global Organic Textile Standard (GOTS)](#)
> [Organic Content Standard (OCS)](#)