



CRAFTING A SUSTAINABLE MISSION

ETSY'S INDUSTRIAL ECOLOGY REPORT



We've established a system to measure and reduce our ecological impact, including engaging our marketplace and suppliers and sharing openly with our peers.

EXECUTIVE SUMMARY

Etsy's mission is to reimagine commerce in ways that build a lasting and fulfilling world, which is especially emphasized in our desire in reducing our footprint. This report is aimed to inspire the shoppers of our site to recognize the efforts that Etsy has made in ecological awareness, as well as our sellers, incentivizing them to use sustainable materials in their products.



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TRANSFORMING IMPACT TO OPPORTUNITY

Why we empower the marketplace to do the same

INDUSTRIAL ECOLOGY is the study of industrial systems (materials and energy flows) from the perspective of natural ecosystems. Natural ecosystems have evolved so that any available source of useful material or energy is used by some organism in the system. Animals and plants live on each other and on each other's waste matter. These systems do, of course, leave some waste materials, or fossil fuels would not exist. But on the whole, the system regulates itself and consumes what it produces.

As the green game is played out in corporate boardrooms, the shop floor, in the home, and in the community, it is clear that technology and engineering will continue to play a critical role in reducing many environmental impacts of production and consumption.

Incorporated in consumption are the following points:

- planning of purchases
- the moment of purchase
- use (efficiency of consumption)
- durability
- repairs
- purchase of supplements
- disposal.

We inspire our makers and sellers to use repurposed materials in their goods to promote an awareness of an economical footprint. Seller PaperMelon has 10,000 admirers, specializing in paper jewelry.

Neither technology nor technologinical know-how are in short supply. The primary opportunities come from the continued, sustained application of existing technology to problems.

The primary need is to create the incentives and techniques for companies to use technology and knowledge to improve environmental quality. Human economic activity has been characterized by an open and linear system of materials flows, where materials are taken in, transformed, used, and thrown out.

Tools, clothing, and other products have been forged and fashioned from natural plant, animal, and mineral materials. Worn-out goods and materials left over from the production process have been dumped in backyards and landfills. Even archaeologists find discarded reminders of the past: scrap stone, flints, and potsherds in the rubbish dumps of the Neolithic period. People moved to new habitats when the old locations became unsuitable because of accumulated wastes.

Today, there are more of us and fewer new places to which to move. We face serious pollution in many locations and have

Opportunities come from the continued, sustained application of existing technology to identified problems.

Currently, when products wear out or are replaced by newer models, they are usually thrown away.

poisoned some areas into uninhabitability. As human populations grow, discarding waste material is becoming increasingly problematic. One way for industry to be more self-sufficient and less wasteful is to improve the efficiency of materials use

It seems worthwhile to examine both production processes and product designs to see if the use of materials (and energy) can be improved. Currently, when products wear out or are replaced by newer models, they are usually thrown away. They may be used as landfill or incinerated or they may litter the landscape.

Regulatory pressures and shifting public opinion have spurred the industrial and engineering community to initiate efforts aimed at closing the materials loops more effectively and improving energy-use efficiencies. Automobile manufacturers such as BMW and Volkswagen have designed cars for easy disassembly and recycling. Companies such as Hewlett-Packard, Canon, and Xerox have begun to take back their own used components, such as toner cartridges, and to manufacture new ones using refurbished components and recycled materials from the old ones. These companies are designing new products with reuse, remanufacture, and recycling in mind. The industrial ecology perspective is beginning to influence designers of manufacturing processes.



The elegance of reusable and sustainable materials in our vendors' work creates an opportunity to exhibit sustainability and aesthetics.



DESIGNING THE MATERIALS CYCLE

The makers driving design & and how they're doing it

DESIGNERS OF PRODUCTS are beginning to view their creations as transient embodiments of matter and energy with added value that can be recaptured and recreated within a continuing flow of materials extending beyond the point of sale. Products and the materials they contain are being designed so that they can be reused at the end of their lives. The whole industrial process can be thought of as a closed cycle in which the manufacturer has overall custody for the material used. In this system, the manufacturer must consider the entire material and energy stream, from materials input and

Etsy repurposes packages and products that come in. 67% of our waste has been diverted from landfills. Products such as this repurposed glasses case exhibit design and awareness.

manufacturing through the life of the product and its eventual reuse or disposal. This concept has begun to be embodied in law (as in Germany), making manufacturers responsible for their products through to final disposition.

Automobiles, their components, and other metal products, especially those made of iron and steel, have a long history of being recycled without regulatory prodding. For other metal products



and materials, progress has come later and been much slower. Why is there so much waste, especially of iron, steel, and precious metals, in the metal industry, which has such a long tradition of recycling?

The barriers to industrial recycling of metals can be classified into six interrelated areas: technical hurdles, economic barriers, information barriers, organizational obstacles, regulatory issues, and legal concerns. When recycling is technically feasible, it may be economically unsound. When it is technically and economically satisfactory, a lack of information may block its adoption. Even when the requisite information is at hand, organizational problems can still stymie implementation. Finally, when all else is satisfactory, a recycling scheme can founder on the rocks of regulatory or other legal barriers.

The suitability of a material for an intended reuse is a key technical concern. Metals, metal compounds, and organic materials make up a large fraction of industrial products. The metals are relatively easy to reprocess and reuse.

In many cases, however, organic materials are best thought of as energy stored in chemical bonds rather than as reusable materials. The choice between recycling the material and burning it as fuel or otherwise extracting its chemical energy might be made on the basis of comparative market values.

Waste and product materials sometimes contain unwanted “tramp” elements. These contaminants can ruin the reuse potential of the materials or make handling difficult or dangerous, and purification is often problematic. As products are redesigned for newer



always be possible to “design out” problematic materials. For example, zinc is often used to coat steel to prevent corrosion. It can interfere with the desirable properties of new steel forged from melted recycled scrap steel. Steel mills therefore limit the permissible content of zinc in the scrap they buy or they pay less for scrap with more than a threshold concentration of zinc.

Etsy's headquarters, located in Brooklyn, NY are committed to reducing its footprint. 9% of electricity use across data centers and offices comes from renewable resources.

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The manufacturing process tends to mix materials that are further mixed in the process of waste disposal. In remanufacturing, one generally wants to separate things into their original components and materials. There are costs involved in collecting, sorting, and transporting used-up products, scrap, and waste. Such separation requires information, effort, and energy, which must all be paid for. These costs must be compared with the costs of new materials.

The background of the slide shows a blurred image of a construction or industrial site. In the foreground, there's a large piece of heavy machinery, possibly a bulldozer or excavator, with its arm extended. Behind it, there are several other pieces of equipment and some greenery. The overall color palette is earthy tones like browns, greens, and grays.

10,897kw
per employee

34,137 lbs
diverted
from waste

2.4 tons
of CO₂
per employee



TRANSPARENT WASTE

Staying liable for our community standards

THE REQUISITE INFORMATION about costs is not usually available to everyone in the firm who might be able to use it to good advantage. Standard management and other accounting systems often do not track costs in a way that is useful to designers. Design engineers may not know of the real costs to the company of the materials they choose. Designers generally have no idea what waste problems will be posed by manufacturing with different materials. The internal organization of a firm can be difficult to change.

Changing the whole concept of a product or adding new criteria for environmental compatibility to the design process may not fit the ideas on which the firm operates or its internal incentive system. The business structure may make solution of problems that cross organization lines very difficult. The U.S. regulatory system for industrial wastes has been designed around disposal, and the rules treat recycling and reuse as forms of disposal. The designation of a material as waste, as distinguished from scrap or hazardous material, can be crucial. There are many inconsistencies in the Resource Conservation and Recovery Act.

For example, the waste classification of a solvent-laden rag used to clean machinery depends on how it was used. If the solvent is poured first on the machinery and then wiped with a clean rag, the rag is a hazardous waste. However, if the solvent is poured first on the rag and then the rag is used to wipe the machinery clean, the rag is not considered a hazardous waste. Recycling an industrial waste material is likely to require the recycler to become a legal disposer of that material under the regulations.

Obtaining a permit has significant time, financial, and bureau-

catic costs attached, which are a nontrivial barrier to reuse of industrial waste materials. Under current legal practice, liability considerations for a hazardous material often favor its disposal over its sale or transfer for reuse. Liability is often targeted at the original seller of any material used in a product implicated in a damage suit, even if the material has been reused and remanufactured by several parties en route to that ultimate product. The trail of potential liability can be so long and so unpredictable as to be thoroughly unpalatable. A supplier of a generally harmless, minor component material in a product might be assessed high liability damages because the product caused harm, even if that supplier was not a party to the product design and the material was not at fault. This practice has serious implications for commerce generally, and it appears to explain why firms often choose to dispose of scrap and waste rather than seek users for them.

Some firms have already begun to design their products and processes with a view to closing material loops as much as possible. However, if a product is the embodiment of materials (a plastic water bottle for example), then closing the loop on those value-added materials raises an important question for the firm: Is the product simply the hardware being sold, or is it rather the services that the product can provide?

Etsy endeavors to be as thorough and comprehensive as possible to provide transparency to the methodologies we use to calculate and estimate our environmental footprint.



SUSTAINABLE CRAFTSMANSHIP

Commitment woven into our mission

THERE WAS A TIME when it was common practice to lease rather than sell many products outright. In a lease-based system, the manufacturer controls and therefore is responsible for the end of the product's life and is always prepared to take it back for recycling, reuse, or refurbishment. Designing a product as a temporary provider of a service, to be used later in the creation of another product, is a novel idea in modern manufacturing and raises a new set of issues.

A product is generally sold with the assumption that a consumer or sequence of consumers will use it until it cannot be used anymore. If the manufacturer thinks about taking it back for remanufacturing, the length of time the product spends in the customer's hands becomes an adjustable design variable. The maker may not want the product to wear out by being used for an indefinite time and so might choose to reclaim it at an optimum time for remanufacture. Thus, the notion of "what is a product?" changes. Similarly, its life cycle may also change. The manufacturer may increasingly want to choose materials and designs that take into account the product's eventual "de-manufacture" and reuse.

Industrial ecology views industry's impact on the environment in terms of a comprehensive system that uses and disposes of materials. We can learn to close the materials loop more efficiently by thinking on a larger scale about the flow back into industry that would otherwise be discarded into the environment. There are numerous means of protecting the environment from industrial wastes.

We can, for example, forgo the benefits of a potentially harmful material or we can seek to replace it with a more benign substitute. We can redesign products with the intention of reusing materials and components. It is not yet clear what mix of remedies will most economically minimize the impact of industrial materials on the environment. The various possibilities hold out great promise, but there are complex problems and barriers to be overcome as we develop and implement a new, ecologically sound model for the management of materials in industry.

Designers of products are beginning to view their creations as ... a continuing flow of materials.

With the inspiration of the makersphere and its creative individuals, Etsy believes that, with a little environmental awareness, a fulfilling and lasting commerce sphere is surely attainable.



Our mission is to
imagine commerce in
ways that build a more
fulfilling and lasting
world.



Etsy is a Certified Benefit Corporation.