

Sustainability Analysis of French rabbit Wine

Erica Frye , Nicole Trautsch, Carla Voorhees

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Introduction

In this study, we explored the sustainability of French rabbit wine. French rabbit is produced in the Burgundy region of France by Boisset Family Estates, a winery that is on the leading edge of alternative wine packaging. We chose French rabbit because it invites a discussion of sustainability tradeoffs. We questioned if French rabbit truly can be the sustainable wine Boisset claims since it is shipped across the ocean for distribution. We also wanted to understand the resources consumed in making and recycling Tetra Prisma, concerned it is a "monstrous hybrid" that cannot be effectively recycled despite the claims. Finally, we hoped to determine this: Even if every French rabbit container could not be recycled and went to the landfill, would it still be more sustainable than glass packaging due to the tremendous savings in transportation emissions?



We examined factors that impact sustainability in three key areas — transportation, packaging, and viticulture — using Natural Capitalism to guide our analysis of resource use and to identify and recommend shifts.

Packaging

Our research into Tetra Prisma packaging revealed that Tetra Pak, the company that makes Tetra Prisma, contributes to sustainability in many ways. These include the promotion of regional innovation, responsible sourcing of materials, and creation of new technologies.

Investing in our world

Tetra Pak, part of the Terra Laval Group, creates aseptic packaging for food, dairy, and liquids. They supply a system for processing, packaging and distribution of food through Tetra Pak plants. Tetra Pak has a strong social and ecological responsibility vein that runs throughout their business, from the way they source materials to the creation of more efficient processes in their plants. They have also encouraged their regional divisions to work with the local communities to create solutions that work for them.

A great example of this is the Tetra Pak Brazil division, which has invested heavily in the manufactured capital of recycling technologies for the aseptic cartons, as well as the human capital required to collect those cartons for recycling. As described in the case study "Empowering the 'Bottom of the Pyramid' Via Product Stewardship: Tetra Pak Entrepreneurial Networks in Brazil", Tetra Pak Brazil has led a number of programs in both manufactured and human capital that enrich Brazilians and the local economy. One of these programs involves working closely with governments, local authorities, suppliers, recycling companies and local

entrepreneurs to find low cost recycling solutions for aseptic cartons. Outreach programs that educate the community about solid waste problems and solutions have been supported by Tetra Pak since 1997, and in 2006 these programs were made available via videoconference. Additionally, over 200 local councils were offered expertise in recycling by Tetra Pak representatives. In their effort to support human capital and reach out to the 'Bottom of the Pyramid', Tetra Pak has organized a program for locals to become selective waste collectors, specifically tasked with collecting Tetra Pak for recycling. Local councils have been encouraged to form cooperatives of these collectors, benefiting both the community and the environment.

Tetra Pak Brazil doesn't just stop there. They have been instrumental in developing recycling technologies and downcycling and upcycling options. The company has found ways to make recycling more cost-efficient and attractive by pioneering and promoting new sorting equipment. A new small-scale recycling plant concept that can process 200 kg/h (140 tons/month) has already been exported to South Africa, Costa Rica, Chile and Thailand. Tetra Pak helps the new operators of the plants elaborate on and implement a clear business plan. In addition, Tetra Pak Brazil has led the way in finding uses for the polyethylene / aluminum mixture (Pe/Al) that typically results after recycling Tetra Pak, including roof tiles and pellets that can be used to make "plastic" products.

Billions of cartons

Tetra Pak produces approximately 110 billion aseptic packages per year, each in a six-layer sandwich to repel germs and moisture and to prevent leakage. From the inside out, the Tetra Prisma has: two layers of polyethylene, a layer of aluminum foil, another layer of polyethylene, a layer of paperboard and then finally another layer of polyethylene. Percentage-wise it breaks down into 75% (by weight) virgin, long fiber duplex paper, 20% low-density polyethylene and 5% aluminum. As part of the company mandate, all Tetra Pak must be suitable for recycling. This mandate drives the company to design creatively and invest in recycling technology. One of Tetra Pak's main goals is preserving natural capital. The paper they use comes from responsibly sourced, well- managed forests, as described by the Forest Stewardship Council and the Programme for the Endorsement of Forest Certification. While this is responsible sourcing, production of 110 billion packages per year using virgin fiber still consumes a lot of trees. On the upside, the virgin fibers used in Tetra Pak mean that the packages are more attractive to recyclers, leading to higher recycle rates.

Even with the multi-layered process used to create the cartons, Tetra Pak requires much less energy to create than glass: just 3.56 MM Btu, compared with 8.7 MM Btu. Over a package's lifetime, Tetra Prisma requires just 3.77 MM Btu compared to 10.8 MM Btu for a typical glass wine bottle, per 1,000 liters of delivered wine, as found by a Life Cycle Inventory conducted by Franklin Associates.

Recycling, downcycling and upcycling

Recycling Tetra Pak is fairly easy, provided you have the right equipment. Use of specialized hydropulpers combined with Thermal Plasma Technology means that Tetra Pak containers are fully recyclable.

The recycling process begins with reclamation of the empty aseptic cartons. Unfortunately, there are a limited number of existing programs and the only way to close the cycle on Tetra Pak is to get more municipalities to accept Tetra Pak in their curbside pickup.

Additionally, according to OrganicConsumers.org there is a severe lack of processing plants: "Canadian post-consumer Tetra Pak cartons are shipped to mills offshore, including the far east, or in the U.S. The one processing plant in the U.K. shut down last fall, meaning that country's aseptic containers had to be shipped to Scandinavia." All those extra transportation costs certainly add up.

Once the cartons are collected, they enter the first step of the recycling process, which involves a hydropulper that has been adapted to handle the Pe/Al mix that remains once the paper pulp has been separated out. The paper is then downcycled into tissues and other household papers. The recycler can then choose between two options: He can either extrude the Pe/Al mix into pellets that can be made into roof tiles or "plastic" materials, or he can continue the process of Thermal Plasma Technology that will break down the mix into pure aluminum and paraffin wax. In the first case, technically, the aluminum is a contaminant in the "plastic" products, but it has no effect on the final quality so it can remain. In the second case, the aluminum can be upcycled into new aluminum foil for the packages, and the paraffin wax sold to the chemical industry to be used as wax emulsion for paper. The resulting materials are so pure that the aluminum can be sold back to the company that makes the foil, Alcoa, at 95% of the price listed on the London Metals Exchange, \$2780 per ton in May 2006. The wax can be sold for \$620 per ton.

Thermal Plasma Technology, created with the help of Tetra Pak Brazil, is highly efficient and results in 90% of energy yield usually being achieved. If you were to try to use natural gas instead of plasma to separate the Pe/Al mix, the result would be only 25-30% efficient, the aluminum would be contaminated, and the plastic would burn.

Additionally, Tetra Pak is cheaper to recycle than glass bottles. The per-ton costs are higher, but there are many more aseptic packages in each ton than glass bottles, reducing the price per carton significantly. The per ton difference is 25,000 cartons vs 1,666 glass bottles, translating to a per pack cost of 0.03 cents for the carton and 0.1 cents for the bottle. (Tetra Pak, 2006)

Unfortunately, just because Tetra Pak can be recycled doesn't mean it will be. Even with the new technology and markets developed by the company, only 20% of the more than 110 billion Tetra Pak manufactured every year are actually recycled and 20% of Americans have curbside Tetra Pak recycling options. While a low number, it is comparable to glass packaging — despite more widespread curbside collection, only 28% of glass bottles are recycled in the United States. Although there is hope: In the UK the availability of Tetra Pak recycling went from 4% to 85% in one year, and more facilities are being added around the world. Curbside acceptance has increased enough that Tetra Pak has just been granted the right to put a recycle symbol on its packages.