

Gucci's Sustainable Production System: A Benchmark for the Luxury Fashion Industry

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Abstract:

The luxury fashion industry faces increasing pressure to balance environmental responsibility with commercial value, as consumers and stakeholders demand greater transparency, ethical sourcing, and sustainable practices. Gucci, as a leading luxury brand under the Kering Group, has emerged as a benchmark for sustainable transformation in the sector. This paper provides a comprehensive analysis of Gucci's sustainable production system, focusing on its upstream raw material sourcing, midstream production and manufacturing, and downstream inventory and logistics management. Through the implementation of the "Gucci Equilibrium" strategy, the brand has established a full-link sustainable system that integrates innovative materials, vertical supply chain integration, digital management tools, and circular economy initiatives.

The study highlights Gucci's efforts to ensure compliance with international standards such as CITES and LWG, the adoption of plant-based and recycled materials, and the use of digital tools like the Environmental Profit & Loss (EP&L) platform to monitor and disclose environmental impacts. Furthermore, Gucci's agile production planning, ethical manufacturing standards, and circular initiatives such as "Gucci Up" and "Gucci Vault" are examined as key drivers of both environmental and commercial performance. Despite significant progress, challenges remain, including supply chain transparency, ethical risks in rare leather sourcing, and the sustainability paradox of outlet-specific production. The paper concludes with recommendations for further enhancing transparency, expanding circular services, and strengthening third-party audits. Gucci's practices offer valuable insights and a replicable model for the broader luxury industry, demonstrating that sustainable development and business value can coexist through full-link integration, technological empowerment, and circular innovation.

1 Introduction

The luxury fashion industry has long been associated with exclusivity, craftsmanship, and high-value products. However, in recent years, the sector has faced mounting scrutiny over its environmental and social impacts, particularly regarding resource-intensive production, animal welfare, and waste generation (McKinsey & Company, 2022). As global awareness of sustainability grows, luxury brands are compelled to rethink their business models to align with the principles of environmental stewardship and ethical responsibility, without compromising on quality or brand value (Sanz-Lopez et al., 2024).

Gucci, a flagship brand of the Kering Group, has positioned itself at the forefront of this transformation. Through its “Gucci Equilibrium” strategy, the company has sought to integrate sustainability into every aspect of its value chain, from raw material procurement to end-of-life product management. This paper aims to provide a holistic analysis of Gucci’s sustainable production system, examining the mechanisms, achievements, and ongoing challenges across the upstream, midstream, and downstream segments of its supply chain.

2 Upstream: Raw Materials Sourcing & Sustainability

2.1. The Importance of Sustainable Sourcing in Luxury

For luxury brands, the quality and provenance of raw materials are foundational to brand reputation and product excellence. However, the sourcing of high-end materials such as rare leathers and exotic skins presents significant sustainability and ethical challenges. Issues such as overexploitation of species, environmental degradation, and animal welfare concerns have prompted both regulatory and consumer scrutiny.

2.2. Gucci’s Approach to Raw Material Compliance and Transparency

Gucci has responded to these challenges by implementing a rigorous sourcing framework that prioritizes transparency, compliance, and environmental responsibility. The brand collaborates with the International Trade Center (ITC) to manage the trade of Nile crocodiles, ensuring adherence to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Since 2018, Gucci has also joined the Fur Free Alliance, committing to the elimination of animal fur from its collections — a move that aligns with shifting consumer values and industry trends.

All leather suppliers must obtain certification from the Leather Working Group (LWG), which assesses environmental performance in areas such as water and energy use, chemical management, and waste. For rare and exotic leathers, suppliers are required to hold both CITES and LWG certifications, with additional standards for suppliers in regions

such as South Africa. This dual-certification approach aims to ensure both legal compliance and best-in-class environmental practices.

Despite these efforts, the complexity of global supply chains means that risks remain. In 2024, a Thai farm supplying rare leathers to luxury brands, including Gucci, was implicated in animal welfare violations (PETA Asia, n.d.). While Gucci has not publicly responded to the lawsuit, the incident underscores the need for continuous improvement in supply chain oversight and third-party verification.

2.3. Material Innovation and Waste Reduction

Recognizing the environmental impact of traditional leather production — particularly its high water and chemical use — Gucci has invested in material innovation and recycling. In 2021, the brand launched Demetra, an animal-free fabric composed of plant-based and recycled materials. Demetra has been recognized by organizations such as PETA for its environmental benefits and represents a significant step towards reducing reliance on animal-derived materials (WWD, 2021, June 17).

Gucci's "Scrap-less" initiative further addresses waste by optimizing leather cutting processes prior to tanning, thereby minimizing offcuts and resource use. As of the latest data, 13 tanneries participate in the program, collectively reducing 253 tons of leather waste, saving 9.5 million liters of water, and preventing 1,085 tons of CO₂ emissions (Gucci, n.d.). These achievements are publicly disclosed, enhancing transparency and stakeholder trust.

2.4. Circularity and Supplier Relationships

Gucci's commitment to circularity is embodied in the "Gucci Up" program, which repurposes leather and fabric offcuts into new products, such as the "Off The Grid" collection made with ECONYL® regenerated nylon. Unusable waste is donated to non-profit organizations for secondary use, further extending the lifecycle of materials.

The brand also maintains long-term partnerships with top-tier suppliers, some spanning multiple generations. To manage costs and ensure supply stability, Gucci employs multi-year contracts, advance investments, and bulk procurement strategies. Initiatives such as "green loans" from Intesa Sanpaolo Group support suppliers in adopting sustainable practices, while quality control is maintained through partnerships with certified tanneries like Conceria Stefanie.

2.5. Summary of Upstream Sustainability

Gucci's upstream strategy is characterized by authoritative certification, material innovation, recycling, and stable supplier relationships. While challenges such as supply chain transparency and rare leather oversight persist, the brand has established a robust foundation for sustainable sourcing.

3 Midstream: Production & Manufacturing

3.1 The “Made in Italy” Hybrid Production Model

Gucci's production system is anchored in the heritage of “Made in Italy,” with 95% of manufacturing partners located domestically (Gucci, 2024). The brand employs a hybrid model that combines in-house facilities, such as the Gucci Art Lab, with a network of trusted external suppliers. The Art Lab specializes in prototype development, sample production, and the creation of high-value leather goods and footwear, emphasizing technological innovation and sustainable material research.

External suppliers, many of whom are specialized artisans, provide expertise in component production and proprietary techniques. These long-standing relationships enable Gucci to maintain high standards of quality and craftsmanship while benefiting from the flexibility and specialization of the Italian manufacturing ecosystem.

3.2. Vertical Integration and Supply Chain Control

To enhance supply chain control, Gucci and Kering have pursued vertical integration through strategic acquisitions. In 2023, Gucci's logistics division acquired the Colonna Group, a leading leather manufacturer, while Kering owns tanneries such as Caravel and France Croco (Gucci, 2024). This integration allows Gucci to secure access to high-quality and rare materials, streamline production cycles, and safeguard proprietary technologies.

Vertical integration also supports the shift towards greater in-house production, particularly in the leather goods category. By internalizing key processes, Gucci can improve profit margins, reduce lead times, and respond more effectively to market demands.

3.3. Sustainable and Ethical Manufacturing

Gucci's commitment to sustainability extends to its manufacturing practices, which are guided by three core principles: environmental management, social responsibility, and circular economy.

- **Environmental Management:**

Gucci utilizes the Digital Environmental Profit & Loss (EP&L) tool to measure and disclose the environmental footprint of its entire supply chain. The brand adheres to the Manufacturing Restricted Substances List (MRSL) and Zero Discharge of Hazardous Chemicals (ZDHC) standards to minimize chemical pollution.

- **Social Responsibility and Ethics:**

All suppliers are required to comply with Gucci's code of conduct and sustainability principles, which cover labor rights, workplace safety, and environmental protection. Compliance is monitored through SA8000 certification and regular social audits, with a commitment to ensuring living wages through collective bargaining agreements.

- **Circular Economy Initiatives:**

The Circular Hub, developed in partnership with Kering, promotes material recycling, waste reduction, and the adoption of circular economy practices across the Italian supply chain. This initiative supports the industry's transition towards a more sustainable and resource-efficient model.

3.4. Agile Production Planning and Market Responsiveness

To navigate the fast-paced fashion market, Gucci has implemented an agile production planning system that integrates series preparation, order management, and production scheduling. The brand employs a "push-pull" hybrid model: classic products are produced in advance ("push"), while trend-driven items are made to order ("pull"). This approach minimizes inventory backlogs and enables rapid response to shifting consumer preferences.

By leveraging digital tools and real-time data, Gucci aims to shorten production cycles from weeks to days, enhancing both speed and flexibility (McKinsey & Company, 2022). This agility is critical for maintaining competitiveness in the luxury sector, where timely delivery and exclusivity are paramount.

3.5. Summary of Midstream Sustainability

Gucci's midstream strategy combines the strengths of Italian craftsmanship, vertical integration, ethical manufacturing, and agile planning. These elements collectively support the brand's commitment to high-quality, sustainable production.

4 Downstream: Inventory & Logistics

4.1. Inventory Management and Digital Integration

In the downstream segment, effective inventory management is essential for reducing waste, optimizing logistics, and enhancing customer experience. Gucci has developed a centralized Order Management System (OMS) that synchronizes inventory data across all sales channels in real time. This system enables intelligent order allocation, directing shipments from the nearest store or warehouse to minimize transportation distances.

According to industry analysis (e.g., McKinsey), such digital integration can reduce logistics-related emissions by 10–15% and improve inventory turnover rates, delivering both environmental and commercial benefits.

4.2. Logistics Efficiency and Security

As a luxury brand, Gucci prioritizes secure and reliable delivery. Measures include tamper-proof packaging, GPS tracking, and the consolidation of shipments to reduce environmental impact. Air freight is reserved for urgent product launches, while sustainable fuels and electric vehicles are being piloted to further decrease emissions in line with Kering's 2030 climate goals.

4.3. Managing Discounts and Off-Season Products

The management of discount and off-season products presents a unique challenge for luxury brands. Gucci utilizes controlled outlet stores and online discount partners, sometimes producing items specifically for these channels. While this strategy protects brand value, it raises concerns about overproduction and sustainability.

To address these issues, Gucci is expanding its circular initiatives, including partnerships for resale and refurbishment. Programs such as "Gucci Vault" and collaborations with platforms like The RealReal extend product lifecycles and reduce waste, aligning with circular economy principles.

4.4. Summary of Downstream Sustainability

Gucci's downstream strategy emphasizes inventory transparency, logistics optimization, and the integration of circular initiatives. However, challenges remain, particularly regarding the environmental impact of outlet-specific production and reliance on air transport.

5 Conclusion and Recommendations

5.1 Key Achievements

Gucci's sustainable production system exemplifies the potential for luxury brands to reconcile environmental responsibility with commercial success. Key achievements include:

- **Upstream:** Rigorous sourcing standards, material innovation (e.g., Demetra), and waste reduction through programs like "Scrap-less" and "Gucci Up."
- **Midstream:** Preservation of "Made in Italy" heritage, vertical integration for supply chain control, ethical manufacturing, and agile production planning.
- **Downstream:** Real-time inventory management, logistics optimization, and the expansion of circular economy initiatives.

These practices have resulted in measurable environmental benefits, such as significant reductions in leather waste, water use, and logistics emissions, as well as improved inventory turnover and supply chain transparency.

5.2 Ongoing Challenges

Despite substantial progress, several challenges persist:

- **Supply Chain Transparency:**
Incidents such as the 2024 Thai farm lawsuit highlight gaps in oversight, particularly for rare leather suppliers.
- **Data Disclosure:**
Energy consumption and environmental data for some OEM partners remain incomplete.
- **Outlet Production:**

The production of outlet-specific goods raises the risk of overproduction and undermines sustainability goals.

5.3 Recommendations

To further strengthen its sustainable production system, Gucci should consider the following actions:

1. Enhance Transparency:

Expand the disclosure of environmental impacts associated with outlet products and all supply chain partners, including OEMs.

2. Expand Circular Services:

Increase the coverage of repair, refurbishment, certified second-hand, and rental services through platforms like “Gucci Up” and “Gucci Vault.”

3. Strengthen Third-Party Audits:

Implement more frequent and unannounced audits of rare leather suppliers to mitigate ethical risks and ensure compliance with animal welfare standards.

4. Reduce Overproduction:

Shift away from producing outlet-specific goods towards demand-driven production and circular business models.

5.4 Industry Implications

Gucci’s experience offers valuable lessons for the broader luxury industry. Vertical integration can enhance supply chain control and material security; digital technologies are critical for improving efficiency and transparency; and circular design and recycling can deliver both environmental and commercial value. By adopting a holistic, full-link approach, luxury brands can achieve the “symbiosis of sustainable development and business value.”

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