



## ALBANIAN GARMENT AND LEATHER FOOTWEAR INDUSTRY; CHALLENGES FOR SUSTAINABILITY AND GREEN DEVELOPMENT

Professional paper  
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**ABSTRACT:** Albanian Garment and Leather Footwear Industry, remain one of the most advanced among the other Balkan regions regarding operational environment, due this to the implementation of digital reforms from the government. Although this is an advantage, many companies are facing challenges due to external and internal factors. This is due to many factors such as the COVID–19 pandemic, internalization, technology innovation, decrease of primary resources, customer demand customized at the lowest price, etc. Albania cannot be called a free labor force, on the other hand, the devaluation of the euro, technological transformations, and the implementation of EU legislation to protect primary resources, by leading them through sustainability and green production. This sector nowadays needs to change the concept of production by investing in advanced technology, if they want to survive in the local and EU market.

**Keywords:** Garment and leather footwear, green development, sustainability, advanced technology.

## ALBANSKA INDUSTRIJA ODEĆE I KOŽNE OBUĆE; IZAZOVI ZA ODRŽIVOST I ZELENI RAZVOJ

**APSTRAKT:** Albanska industrija konfekcije i kožne obuće ostaje jedna od najnaprednijih regiona na Balkanu u pogledu operativnog okruženja, zahvaljujući implementaciji digitalnih reformi od strane vlade. Iako je ovo prednost, mnoge kompanije se suočavaju sa izazovima zbog spoljašnjih i unutrašnjih faktora. To je zbog mnogih faktora kao što su pandemija COVID-19, internalizacija, tehnološke inovacije, smanjenje primarnih resursa, potražnja kupaca prilagođena po najnižoj ceni, itd. Albanija se ne može nazvati slobodnom radnom snagom, s druge strane, devalvacija evra, tehnološke transformacije i implementaciju zakonodavstva EU za zaštitu primarnih resursa, vodeći ih kroz održivost i



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zelenu proizvodnju. Ovaj sektor danas treba da promeni koncept proizvodnje ulaganjem u naprednu tehnologiju, ako želi da opstane na lokalnom i tržištu EU.

**Ključne reči:** *Konfekcija i kožna obuća, zeleni razvoj, održivost, napredna tehnologija.*

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## 1. INTRODUCTION

Albania's Garment and leather footwear industry has a significant potential. This sector created around 30,000 employment opportunities in the clothing industry and 40,000 in the leather footwear industry. It encompasses 802 small and medium-sized enterprises (SMEs) operating in the country. About 95% of companies are oriented towards CM and CMT production, with customers ordering from EU countries. About 5% of companies operate with their brands for the local and foreign markets [2].

In 2022, this industry accounted for approximately 38% of the country's total exports [1]. Despite efforts by Garment and leather footwear companies in Albania over the past two decades, to invest in updated technology, the existing technology and human resource investments still do not meet the need for high competitiveness in European and global markets [2].

Although Garment and Leather Footwear companies operating in this sector have made efforts to invest in updated technology, the current technology in use and human resource investments still need to meet the requirements for high competitiveness in European and global markets [2].

Achieving sustainability in this sector requires the adoption and investment in new technologies and considerable efforts to integrate existing policies, laws, and stakeholders' diverse interests into a unified framework.

## 2. SECTOR ANALYZE EXPORTS AND IMPORTS OF GARMENT AND LEATHER FOOTWEAR

Albania's garment and leather footwear industry has encountered difficulties and challenges since 2020 [2].

The challenges faced by the garment and leather footwear industry in Albania include:

- Competition and globalization.
- Technological upgrades.
- Human resources.
- Supply chain disruptions.
- Sustainability and ethics.
- Market trends.
- Regulations and compliance.

These challenges have negatively impacted the industry, leading them to the closure of 100 companies and an increase in unemployment [2].

This sector in 2023 had a Total annual turnover (garment and footwear) of 1000 million Euro and 41% export contribution of all industries, according to Instat [1].



During the month of December 2023, this industry had a negative impact on the annual decrease in exports with a value of - 4.1 percentage points and -1.0 points percentage for imports [Instant]; this is related to some of the factors mentioned above [1].

This negative impact was caused by many internal and external factors, one of which was the euro devaluation, product diversification, lack of client orders, and EU regulation for Green products.

In 2023, exports decreased by 7%, and imports decreased by 8% compared to 2022 [2].

**Table 1:** Exports/Imports of Textile and Leather; Footwear Foreign trade according to the products, 2019-2023/ million ALL

Exports / Imports of textile and Leather Footwear (Mill AL)					
Textile and footwear; Foreign trade according to the products, 2019-2023/ million ALL	2019	2020	2021	2022	2023
<b>Exports of textile and leather</b>					
Textile & textile materials	61,235,760,695	56,679,554,613	61,292,341,209	69781820112	70,127,952,775
Leather footwear	56,965,779,270	45,664,926,626	51,162,755,258	65440203344	56,179,808,567
Exports of textile and leather footwear (Mill AL)	118,201,539,965	102,344,481,239	112,455,096,467	135,222,023,456	126,307,761,342
<b>Imports of textile and leather</b>					
Textile & textile materials	71,073,141,113	63,272,740,756	76,217,550,198	84,614,515,730	79,879,959,872
Leather footwear	16,129,723,827	12,184,034,004	14,613,078,109	17,173,683,613	14,310,607,785
Imports of textile and leather footwear (Mill AL)	87,202,864,940	75,456,774,760	90,830,628,307	101,788,199,343	94,190,567,657

Overall, the Albanian garment and leather footwear industry faces challenges that necessitate the adoption of advanced technology and sustainable practices based on EU regulation for Green Products, to ensure its survival and competitiveness in both local and EU markets.

### 3. DENIM FACTORY: AN ECO-FRIENDLY AND SUSTAINABLE ENTERPRISE - CASE STUDY

The origin of jeans dates back to the 16<sup>th</sup> century. Denim is a valuable and comfortable material for clothing that has gained popularity for many decades, and still does.

Jeans, a global staple in the fashion industry, are among the most sold and used garments worldwide. However, the chemical colors and laundry processes used in their production have a significant negative impact on the environment.

In the denim washing industry, significant advancements are being made to reduce environmental impact. Innovative approaches such as laser technologies, ozone-washing methods, water-free technology, and sustainable dyeing techniques are transforming traditional practices. Some Albanian denim companies, such as Krienko Jeans Blue Sky and Denim Factory Group, have adopted eco-friendly practices and transparent supply chains, contributing to a cleaner future.

**Denim Factory Group** produces for Italian and EU suppliers. With an experience of over 20 years, the company has been cooperating and still cooperates with important clients such as SCOUT, PINKO, TRUSSARDI, JAQUMUS, JECKERSON, RELISH, GAS, DIXIE, ROY ROGERS, DIESEL.

The production lines produce approximately 2500/3000 pieces per day.

The Laundry / Denim Dyeing in Denim Factory Group is extensive and is divided respectively into: Laundry Department, Dyeing Department, Jeans Collection and Dyeing Sample Department, Laser Department

The company fulfills different requests by using new technologies and the latest machines for printing, laser, and embroidery.

### 3.1. Dyeing process

In the dyeing laboratory for white textiles, the process begins with a thorough examination of the sample sheet. This involves assessing the color, conducting tests such as colorfastness and dye penetration, and sending the sample to the customer for approval.

Based on the comments that are brought to the company, they proceed further with the production with the color that the customer has approved

Before sending samples to the customer, two or three tests are done to achieve the color requested by the customer; the coloring powder is weighed based on the weight of the sample, and the weight of the colorant is calculated. More than three color mixtures can be made to achieve a single color, then the mass of powder prepared with hot water is mixed and the solution is put in the washing machine, for the dyeing process.





**Figure 1:** Laboratory of dyeing equipments

The Laundry Department has a production capacity of about 4,000 items per day. The use of ozone-flow technology, which significantly reduces water waste, is another investment of the company. The company produces certified eco-sustainable products for environmental protection.

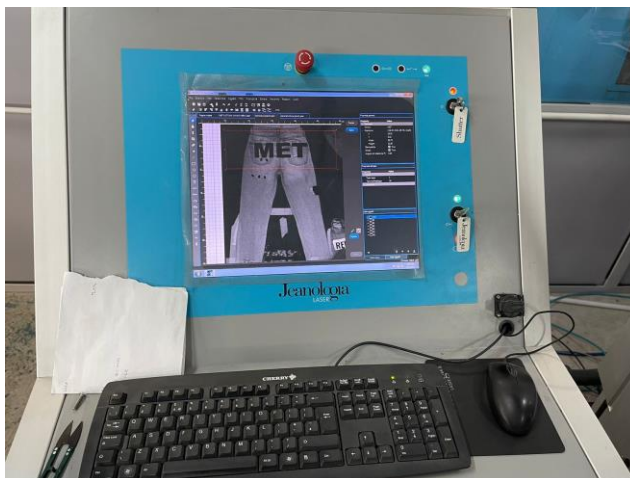
The company produces certified eco-sustainable products for environmental protection. In collaboration with many clients, they are developing projects with eco-sustainable products, creating certified washes and fabrics, which are enjoying tremendous success in sales.



**Figure 2:** Laundry Machines

### 3.1.2 Jeanologia laser technology

The company have invest in Jeanologia laser equipment. It works as a thermal source, eliminates the indigo dye of denim fabric by sublimation through heat.



**Figure 3:** Jeanologia Laser Machine

By using this laser, the company gives the fabric a faded or patterned look based on the client's orders.



**Figure 3 a:** Faded Denim product designed in Jeanologia Laser

Depending on the client's request, the company also uses the laser for logo brand design as it is shown in the figure 4.

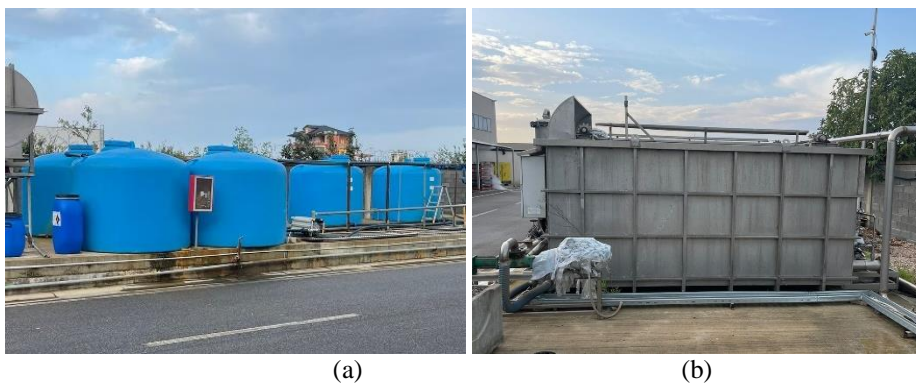


**Figure 4:** Logo Denim product designed in Jeanologia Laser

This innovative method not only minimizes water usage, replace chemical hazard, reduces time and costs, protect environment based on EU legislation, but also plays a crucial role in protecting workers from harmful processes. That means that the company will have high-quality production and productivity improvement.

### 3.2. Minimizing water consumption

The company have invest in technology and equipments to minimize water consumption by filtering and reusing water.



**Figure 5:** Water reservoirs (a); Water filtration (b)



Figure 5 (c): Water Draining from the laundry

#### 4. CONCLUSION

Innovations for Sustainability (Water-Free Lasers) in Denim Group Factory have a positive impact on environmental protection and in minimization of low primary resources (water, energy, chemical reduction of carbon footprint).

This laser offer several benefits in denim washing, making them an eco-friendly and efficient choice:

- **Conservation of Water:** As the name suggests, water-free lasers eliminate the need for excessive water during the fading process. Traditional wet processes consume large amounts of water, contributing to environmental strain.
- **Precision and Customization:** Water-free lasers offer a level of precision and customization that is unmatched in the denim industry. They allow for the precise fading and distressing of denim, enabling designers to create intricate patterns, whickering, and worn effects with unparalleled accuracy. This level of customization enhances the uniqueness of each pair of jeans, appealing to consumers who value quality and individuality.
- **Reduced Chemical Usage:** Unlike chemical-based techniques, water-free lasers don't require bleaching agents or dyes. This significant reduction in chemical usage not only minimizes chemical pollution but also ensures a safer working environment for workers, providing reassurance about the safety of the process.
- **Energy Efficiency:** Water-free laser machines are designed to consume less energy than traditional washing methods. This high level of efficiency not only contributes to a greener production process but also instills optimism about its Sustainability.



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- **Speed and Productivity:** Lasers work swiftly, reducing production time. Faster processing means quicker turnaround for denim manufacturers.
- **Worker protection.**

The company has also invested in equipment for water filtration and its discharge, as well as in energy with solar panels and LED lights.

## REFERENCES

- [1] Albanian Institute of Statistics, Import Export of the textile and leather footwear, (2019-2023).
- [2] Leti A., Spahija, S., Shehi E. (2024). Albanian Garment and Footwear Leather Industry Shifting to Own Brand Production, *Journal of Integrated Engineering & Applied Sciences*, 2(1), 58-68.
- [3] Dakuri Arjun, J. Hiranmayee & M. N. Farheen (2013). Technology of industrial denim washing, *International Journal of Industrial Engineering & Technology (IJJET)*, 3(4), 25-34.
- [4] Naimul Hasan. (July 2022). Recent Development in Washing techniques for denim Jeans, pp. 22-27.
- [5] Nafis Hossain, Kaikobad, Mehnaz Jebin, Fajun Farin, Md. Mahbubur Rahman1, Mazharul Helal, Md Mutasim Uddin (2023). Denim Wash Using Natural Reagents: A Focus towards Sustainability & Environment Friendly 2023, *5th IEEE International Conference on Sustainable Technologies for Industry 5.0 (STI)*.
- [6] Kan, C. W. (2015). *Washing techniques for denim jeans*. In Denim, (pp. 313-356), Woodhead Publishing.
- [7] Khalil, E. (2015). Sustainable and ecological finishing technology for denim jeans. *AASCIT Communication*, 2(5), 159-163.