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Energy Conservation through Sustainability: A Study on Indian Textile Companies Utilizing Recycled Cotton

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ABSTRACT : This study explores the role of Indian textile companies in advancing sustainability by incorporating recycled cotton into their production processes. This research aims at top 3 textiles companies of Indian that have adopted innovative practices to reduce energy consumption and mitigate environmental impact. By adopting sustainable practices, these organizations have significantly lowered their dependency on virgin cotton, thereby reducing water usage, pesticide application, and associated carbon emissions. The study highlights the dual benefits of energy conservation and environmental preservation achieved through such practices, emphasizing how the adoption of sustainable practices is reshaping the Indian textile industry. These initiatives have dual benefits for the companies who adopted sustainable practices as it ont only with India's sustainability goals but also position these companies as leaders in responsible manufacturing on the global stage. This paper relies on extensive secondary research through various resources of books, peer reviewed journals, website articles, news clippings and company websites.

I. INTRODUCTION

The textile industry contributes up to 10% of global carbon emissions and consumes vast amounts of energy and resources. Processes like fiber production, dyeing, and finishing are particularly energy-intensive, highlighting the need for sustainable alternatives. By integrating energy-efficient technologies and recycled materials like cotton, the industry can significantly reduce its environmental impact while meeting growing demands for eco-friendly products. Recycled cotton has shown potential to lower energy use and greenhouse gas emissions, offering a pathway to sustainability. This study explores the role of such practices in reducing the sector's environmental footprint, emphasizing the need for innovation and wider adoption of sustainable measures【5】【6】. 3 leading companies based Indian with around 500 cr revenue generating companies are using such practices and contributing to upscale the energy conservation through sustainability.

II. OBJECTIVE

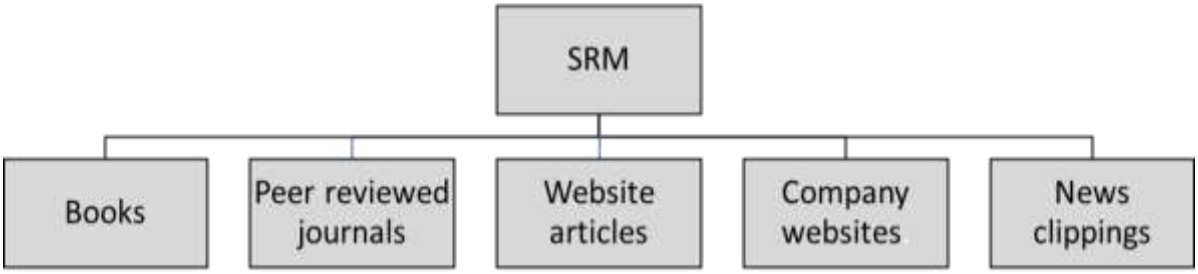
To analyze the role of Indian textile companies in promoting energy conservation through adoption of innovative methods, examining the impact on sustainability, reduction in resource consumption, and environmental benefits.The study aims to highlight specific practices, technologies, and outcomes achieved by leading firms such as Arvind Limited, Welspun India, and Trident Group, providing insights into how these efforts contribute to a more eco-friendly and energy-efficient textile industry.

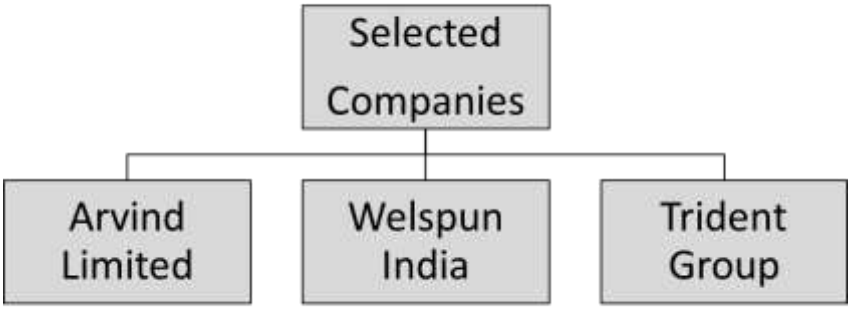
III. REVIEW OF LITERATURE

Statistics collected from brands like **Arvind Limited**, **Welspun India**, **Trident Group**, these companies have proven data of how drastically it can bring a change.

Environmental Impact and Water Savings: "Recycling one ton of cotton saves approximately 765,000 liters of water, a critical factor in India, where textile production is responsible for 79 billion cubic meters of water consumption annually. Companies like Welspun India are leading by adopting circular production practices, integrating recycled cotton to address water scarcity and energy concerns in the sector."【6】【7】

Research Methodology : Conduct research and read existing literature on the subject. Analyze and interpret statistical information.





For this research paper the selective sampling technique was chosen to select 3 textile companies based on the following criteria

1. Companies whose core domain is textiles
2. Companies having around 500 cr turnover

IV. RESULTS AND DISCUSSION

Here are key details on energy conservation through the use of recycled cotton by Indian textile companies such as Arvind Limited, Welspun India, and Trident Group:

1. Arvind Limited

- Arvind has reduced its total direct and indirect emissions by approximately 15% over the past five years.
- The company uses advanced technologies like foam dyeing, which saves up to 90% water compared to conventional dyeing methods.
- Arvind collaborates with Cleantech Solar for a 16.2 MW rooftop solar installation, reducing its carbon footprint by 50,000 tons annually through solar and biomass initiatives【1】【2】.

2. Welspun India

- Welspun India is a significant adopter of renewable energy and sustainable practices.
- As of 2022, 22% of their energy consumption came from renewable sources. This effort aligns with their broader sustainability goals【3】.

3. Trident Group

- **Renewable Energy Usage**: Trident aims to source 50% of its energy from renewables by 2025. Currently, 42% of its energy comes from biomass, complemented by 41 MWp of solar power, showcasing its proactive approach to reducing dependency on conventional energy sources 【8】

- **Water Recycling**: The company practices zero liquid discharge, recovering approximately 1.9 billion liters of water annually. This conservation aligns with sustainable manufacturing goals, particularly in processes involving recycled cotton 【2】

These companies illustrate how embracing recycled cotton and renewable energy can simultaneously reduce environmental harm and enhance sustainability credentials.

Limitations

1. **Data Availability**: Reliable, updated data on energy usage and savings from recycled cotton practices is limited. Many companies do not disclose detailed sustainability metrics, which can restrict comprehensive analysis.
2. Geographically limitation

V. CONCLUSION

The findings underline the importance of adopting recycled materials for energy efficiency and a reduced ecological footprint in the textile sector.

Future of Recycled Cotton in Energy Conservation : Recycled cotton has the potential to reshape the Indian textile industry by reducing environmental impact, conserving resources, and aligning with global sustainability trends. Advancements in recycling technology and growing consumer demand for eco-friendly products will drive its adoption further.

Steps to Promote It:

1. **Government policies and incentives:** Provide subsidies and enforce sustainability regulations.
2. **Technology upgradation and investment:** Enhance recycling processes for better scalability and efficiency.
3. **Consumer Awareness**: Educate about the benefits of recycled cotton and promote transparent labeling.
4. **Industry Collaboration**: Foster partnerships to standardize practices and innovate together.
5. **Global Outreach**: Align with international standards to boost exports and competitiveness.

These actions can ensure a sustainable, energy-efficient future for textiles. Arvind Limited, for example, has pioneered sustainable fabric production, saving substantial energy through circular manufacturing. Similarly, Welspun India integrates recycled fibers to promote eco-friendly textile solutions while meeting global standards.The adoption of advanced manufacturing systems and green technologies, like Eco-Twist for sustainable textiles, highlights trident groups commitment to energy conservation and efficiency.

REFERENCE

1. https://www.denimsandjeans.com/environment/arvind-sustainability-report/49497
2. https://www.indiantextilemagazine.in/arvind-and-purfi-global-partner-to-reduce-the-amount-of-textile-waste-going-in-to-landfills/
3. https://textilefocus.com/arvind-limited-and-purfi-global-partner-to-combat-massive-textile-waste-problem-in-a-giant-leap-in-textile-circularity/
4. https://www.fibre2fashion.com/industry-article/9777/textile-recycling-techniques-and-challenges
5. https://climategrandchallenges.mit.edu/wp-content/uploads/2022/04/CGC_factsheet-Emissions-reduction-through-innovation-in-the-textile-industry.pdf?ref=ambrook
6. https://www.azom.com/article.aspx?ArticleID=23620
7. https://www.ifc.org/content/dam/ifc/doc/2023/strengthening-sustainability-in-the-textile-industry-ifc-2023.pdf
8. https://indiantextilejournal.com/trident-groups-chairman-emeritus-rajinder-gupta-receives-s-vastra-ratna-award/