



Global Compact Network Pakistan

NET ZERO RESEARCH CHALLENGE 2023

Case Studies on four leading business enterprises from Pakistan to inspire Net Zero Transition

ARTISTIC MILLINERS





Project Brief

July 2023 was the hottest month in recorded modern history! As noted by the Secretary General of the United Nations, climate change has attained crisis proportions as a global existential threat. UN member states that had, in 2015 Paris Agreement, committed to combat global warming by reducing the planet's temperature to 1.5 degrees Celsius, the Net Zero target for 2050, must ensure achieving this commitment! Globally, 2050 is the target year by which we should extract the same amount of Greenhouse Gases (GHG) as we emit in our processes, thus neutralizing their impact to zero. Pakistan is the eighth most vulnerable country to Climate Change. The floods of 2022 are taken as the first indicators of this climate catastrophe.

The Global Compact Network Pakistan has been instrumental in supporting the private sector as a whole, and its members in particular, to incorporate sustainability in their strategic visions. As we move forward in this decade of action (2020 - 2030), awareness among stakeholders has forced business organizations to revamp their operations and create transition plans to reduce their carbon footprint. If, by 2025, businesses do not align their strategies with sustainability practices they will become irrelevant because climate change is now an existential crisis.

In Pakistan, business organizations have not been able to make commitments to the Net Zero target year despite having sustainability-focused policies in place. Only 26 business organizations have committed under the Net Zero Pakistan initiative by the Pakistan Environmental Trust. Of these, 25 organizations are from the Textile and Apparel sector. This is mainly due to the prerequisites of carbon footprints in their supply chains set by the textile and apparel products buyers in Europe and North America. Given the urgency of the situation, the agenda for a global requirement to lower the carbon footprint is pushed forward, and similar actions will be expected by stakeholders in almost every business sector. In its mandate to advocate for Climate Action, GCNP initiated the Net Zero Research Challenge 2023 as an academia-business research project to develop Case Studies on companies in Pakistan on their Net Zero Journey. The core objective of this project was to develop four Case Studies to be used as learning tools in universities for business students to understand the global transition. These case studies are also intended to, be used as guidelines for SMEs to develop their sustainability policies. GCNP partnered with four prominent large-scale organizations; Artistic Milliners (Private) Limited, Roshan Packages Limited, Pak Arab Refinery Limited, and AGI Denim (Private) Limited.

One main objective of the project was to promote experiential learning. This was achieved by engaging Research Teams from Institute of Business Administration (IBA) or NED University. Each corporate partner was deputed a Research Team to conduct in-depth desk reviews, and field visits, and to engage with the leadership to not only incorporate the initiatives already taken by these companies but also to construct a strategic roadmap for companies as a proposal for 2030 and beyond. The Research Teams, led by a faculty member, built their research on how regional business entities have adopted sustainable practices, particularly how operational transitions have helped organizations to reduce their carbon footprint either directly from their operations (Scope 1), or indirectly (Scope 2). The priority area was to structure solutions that could bring optimum efficiency regarding carbon emissions. Furthermore, integrating through the value chain and tracking carbon emissions (Scope 3) was considered and incorporated as a significant policy-backed action for companies.

The Net Zero Research Challenge was launched on 09 June 2023 with a Briefing Session for Corporate and Academic partners. In two months, Research Teams under the guidance of a Project Consultant were able to draft Case Studies on their respective companies. The Case Studies highlight key initiatives taken by companies regarding Sustainable Development Goals, Sustainability, and Carbon Emission projects, particularly the proposed roadmap to achieve Net Zero by 2050. In this Publication, four Case Studies will contextualize important solutions for reducing carbon emissions starting from the plantation of trees and mangroves, awareness raising of stakeholders, transport and operational efficiency, to carbon capture and storage. It also emphasized how interventions and collective reforms can create a substantial difference and contribute to setting up Carbon Credit and Carbon offsetting projects in Pakistan. The Concluding Event was held in Karachi on 17 August 2023 at Movenpick Hotel in which all four Research Teams presented their respective Case Studies.

Khalid Junejo
Executive Director

**GLOBAL COMPACT NETWORK PAKISTAN'S
ENLIGHTENED CORPORATE PARTNERS:**



Artistic Milliners (AM) is a multinational vertical denim manufacturing company with the mission to sustain its reputation as one of the top manufacturers in the world by striving for excellence in each function of the business with a strong focus on sustainability, innovation, and women empowerment. Founded on the core values of authenticity, inclusivity, force for good, and planet positive, and with over 10,000 employees, the company owns approximately 17 facilities situated in the Korangi and Landhi areas of Karachi. The company has an annual production capacity of 88 million pounds of yarn, 108 million meters of fabric, and 30 million garments. Artistic Milliners offers a wide range of products, catering to men, women, juniors, kids, and toddlers, in all sizes. Artistic Milliners practices sustainability as a priority. The organization's focus on sustainable practices is evident as they actively prioritize and invest in these initiatives.

SDG No	Sustainable Development Goals	Initiatives
01	No Poverty	Enabling females in underprivileged communities with skillsets to earn.
02	Zero Hunger	Milliner Organic Initiative Food Security Support for Farmers & Communities
03	Good Health & Well Being	Better Work & Little Milliners Day Care Initiatives
04	Quality Education	Set up several schools in Sindh to provide education in underdeveloped regions.
05	Gender Equality	Women's Empowerment with Technology Gender-Based Violence Programs
06	Clean Water & Sanitation	Water Recycling & Efficient Water Management Processes
07	Affordable & Clean Energy	Notable Investments in Wind Farms, Solar Energy, and smart Farm Technologies
08	Decent Work and Economic Growth	Ensuring the Health, Safety, and Wellbeing of employees through year-round training and engagement programs.
09	Industry, Innovation & Infrastructure	Sustainable & Innovative SCM Practices
10	Reduced Inequalities	Fair Trade Certified Factories Disbursing in Premiums for 5,000 Workers.
11	Sustainable Cities and Communities	Collaboration with organizations to sensitize communities on pollution, energy consumption, and climate change.
12	Responsible Consumption & Production	Zero wastage policy with every production waste going into recycling processes.
13	Climate Action	Adoption of Crop2X & Related Sustainable Farming Practices
14	Life Below Water	Recycled water consumption with no water wastage getting dumped.
15	Life on Land	Tree Planting Initiatives & Sustainable Agricultural Practices
16	Peace, Justice & Strong Institutions	Encourages serenity, justice, and accountability at all levels of the institution.
17	Partnership for Goals	Collaborative Approach Through Partnerships & Community Development Efforts

Artistic Milliner’s Sustainable Drive

Artistic Milliners commenced impact-driven initiatives in line with its Sustainability profile and to achieve Net Zero before the target year of 2050. The company has been focused on projects with integrated layers of objectivity. Since 2016, several projects have been started with a driving vision to operate a value chain that has minimal impact on the environment. The Sustainability projects and decarbonization initiative have not only reduced carbon footprint but have guided a new longer vision for renewable energy.

Water Initiatives	Agricultural Initiatives
<ul style="list-style-type: none"> • Water Recycling: The company recycles 85% of water in major mills and laundries. • Sustainable Facility: The AM-4 apparel park, a USGBC LEED Platinum level facility in Karachi, utilizes advanced MBR (membrane bioreactor) water recycling technology. It has a daily water recycling capacity of 1.5 million gallons. • Sustainable Washes: Aqua-less Technology Clear fade and clear vintage both are certified by the ZDHC (Zero Discharge of Hazardous Chemicals) program and significantly reduce water usage compared to conventional methods. Both wash technologies together use 75% less water compared to conventional methods, using just 12.5 liters of water per jean as opposed to the standard 52 liters. 	<ul style="list-style-type: none"> • Milliner Cotton Initiative: Artistic is producing sustainable cotton in Pakistan. It is verified by Control Union Pakistan. It is in Rahim Yar Khan covering an area of 12,000 acres with 500 farmers working in it. It produces 4800 MT of cotton per year. The cotton is live and traceable. • Smart Farming with Crop2x: The company has installed soil sensors in MCI (Milliner Cotton Initiative) and MO (Milliner Organic) farms. It resulted in crop yields increasing by 25% and farmers realized a cost savings of 34% from the reduction in pesticide use and a cost savings of 53% from the reduction in fertilizer use. Crop2x’s irrigation application also saw a water reduction of 40%.
Renewable Energy Initiatives	<ul style="list-style-type: none"> • Distribution and Cultivation to Increase Sustainability: The company distributed 9,500 seed bags among the 1,600 farmers associated with Milliner Organic in Kohlu, in March 2022 and again in 2023. In August 2022, they provided 20 tons of bio-fertilizer to the MO farmers. They planted 14,925 trees in Rahim Yar Khan to date with the help of MCI farmers and WWF-Pakistan to help improve biodiversity and the environment. • Tech training: Field staff encourage farmers to install and log into their traceability application so that all the shipments to the ginning factories would include this data allowing for the traceability of cotton. Farmers using these apps are resulting in
<ul style="list-style-type: none"> • Wind Farm: Commissioned a flagship 50MW wind farm in the Ghara-Keti Bandar Wind Corridor. Installed wind farm in Jhimpir with 100 advanced wind turbines generating 100MW. • Hydropower Projects: (Artistic I and Artistic II) - Investing in 62.606MW and 57.4MW hydropower projects in Khyber Pakhtunkhwa, Pakistan, to generate clean energy from rivers. • Solar Projects: Commissioned 151 MW solar projects on the roof of factories 	
Women Empowerment Initiatives	

<ul style="list-style-type: none"> • BSR HER Essentials Program: Artistic has partnered with a Bestseller company to launch an educational and health-focused business. This program is helping by training women through digital tools and technologies. • Gender-Based Violence Program: Gender-based violence occurs when an individual is treated differently because of their gender. It causes gender inequality, abuse of power, and other harmful norms. This mainly affects working women. Artistic is committed to continuously promoting gender equality and the protection of women and girls from any sort of GBV. • Little Milliners Daycare: They have partnered with IFC (International Finance Corporation) to launch a childcare program. So that more workers can join in without worrying about their young kids. It also portrays family-friendly policies. Little Milliner's daycare center is a free-of-cost daycare for lower-wage working women. 	<p>more smooth, accurate, and easily accountable outcomes.</p>
	<p>Non-Hazardous Chemical & Dyeing Agents</p>
	<ul style="list-style-type: none"> • AM has made efforts to eliminate harmful chemicals and dyeing agents wherever possible with ZDHC/Green Screen-certified bleach alternatives, reusable eco-stones, eco enzyme, and eco bleach • AM has installed state-of-the-art eco-friendly machines such as lasers, e-flow (ozone), and foam dyeing

Road Map to Sustainability

Artistic Milliners has ambitiously set **2040** as the year to achieve net zero emissions. To achieve the 30-year target of net zero emissions, the Company has designed the road map to sustainability:

Future Targets			
2025	2030	2040	2050
<ol style="list-style-type: none"> 1) 100% level 3 conformance of ZDHC Chemicals 2) Recycled Polyester and sustainable cotton 3) Pilot runs of regenerative agriculture 4) Expanding renewable energy portfolio 5) Achieving a 70% ratio of women employees 6) Artistic (Hydro Power project of 62.6 MW) 	<ol style="list-style-type: none"> 1) 100% renewable Energy 90% use of recycling water 2) Extending organic farming to 4,000 farmers and reducing chemical usage by up to 6,000 KG 3) 5% ability diverse employees 	<ol style="list-style-type: none"> 1) Carbon Capturing & Utilization 2) Net Zero Emission program completion 	<ol style="list-style-type: none"> 1) Artistic (Hydro power project of 57.4MW)

The company needs to build on its current invested projects. Targets locked by the Company are backed by systematic planning. Similar to Artistic Milliner's sustainability-focused initiative for SDGs for 2030, the strategic vision enables a similar impact-driven approach.

Future Plans	
<ul style="list-style-type: none"> Achieving 2025 preferred material goals for cotton and recycled polyester through Higg FEM and FLSM self-assessment programs Circular Park, a fiber recovery facility, aims to close the loop in operations by centralizing textile waste streams and post-consumer waste. Powered by clean energy, it can recover up to 6 million kilograms of recycled fiber annually Milliner Cotton Initiative (project underway) consists of 15,000 acres, 1,000 farmers, 900 cotton-pickers, up to 50,000 MCI bales/season, 2 Ginning Mills, and a Capacity of 9-10 million meters of fabric 	<ul style="list-style-type: none"> A pilot run of regenerative agriculture in Rahim Yar Khan, Pakistan, is being launched for the 2023-2024 season in collaboration with Regen Agri and Control Union Pakistan. Additionally, a program called Sisterhood of Sustainable Farming is being developed to empower female farmers Enhance MCI product sustainability through data gathering and a Life Cycle Assessment (LCA) in collaboration with Peterson Investment of \$370 million in two runs of river hydropower projects which will contribute a combined 521 GWh per year

Road to 2030 and beyond

In creating a roadmap for Artistic Milliners' 2040 target to achieve Net Zero. Strategies must be aligned with three strategic target goals:

Short Term Strategies

Incorporating Sustainability KPIs: In addition to the initiatives taken to promote sustainability culture, the Company can also move ahead by incorporating sustainability KPIs in employee's annual objectives. Sustainability is the responsibility of the whole organization. For this, all departments and employees must work to achieve sustainability goals. KPIs must be SMART so that employees make efforts to achieve those. It would rapidly increase the interest of employees in sustainability and eventually would impact the sustainability culture.

Sustainable Packaging: Along with organic cotton and non-hazardous chemicals procurement, Artistic Milliners can take steps to implement sustainable packaging because the packaging has a significant share in textiles. In sustainable packaging, major strategies are reduction in plastic either by replacing it with other sustainable materials or by decreasing its use, and reduction in paper either by replacing it with other sustainable material or buying paper (Cartons and other cards) from FSC (Forest Stewardship Council) certified suppliers.

Sustainable Logistics: To minimize the impact on the environment, organizations are taking steps to optimize their logistics practices. Along with the movement of goods, transportation used for the mobility of employees is also of great concern. Artistic Milliners can aim for sustainable transportation models and strategies for both material and employees.

Sustainable Dyeing and Washing: Textile dyeing and washing accounts for around 3% of global CO2 emissions (Quantis Report 2019) and over 20% of global water pollution (World Bank report). AM has worked significantly in this domain as discussed in the sustainable drive section. To further work in this area, Artistic Milliners can opt for advanced technologies i.e.; Endeavour by Alchemie Technology Ltd, and IMOOGO Dye-Max

Endeavour by Alchemie Technology has developed a dyeing process for textiles called Endeavour which is a waterless smart dyeing process. The process is not completely waterless, but it reduces wastewater by 95% and offers significant savings in energy, materials, and labor costs. Whereas, IMOOGO Dye-Max Spray dyeing line is a flexible system designed to be implemented in just about any process where the precise and repeatable application of low-viscosity dye is required. The Dye-Max is ideal to integrate into a center line or in most continuous dyeing lines. Below are the key features of Dye-Max.



Mid Term Strategies

Garment to Garment Recycling: Artistic Milliners has taken several steps in this domain with a major step named "Cradle to Cradle Initiatives". Further, the company can also view the state-of-the-art technology of the H&M foundation named "Loop". Loop is the world's 1st in-store system that disassembles and assembles old clothes into new ones. From unwanted garments, a new knitted garment is made. The system uses no water and no chemicals, thus having a significantly lower environmental impact. Loop is an advanced system that can be easily built into one container with noise-proof operations.

Logistics Process Automation: According to the study by McKinsey, "Rapid decarbonization of the sector will require industry leaders to rethink long-term infrastructure investments, embracing both technology and sustainability." Keeping this research in view, and considering the importance of logistics in sustainability, Artistic Milliners can work on the implementation of WMS, which would optimize the warehousing and logistics operations. Optimization of warehousing and logistics operations would eventually impact the carbon emission number.

Long Term Strategies

Carbon Capturing and Utilization: Carbon capture and storage (CCS) is a three-step process, involving: capturing the carbon dioxide produced by power generation or industrial activity; transporting it; and then storing it deep underground. Instead of storing carbon in the last stage of the process, some organizations are using that reclaimed carbon again in their process, this technique is called carbon utilization and storage (CCUS). Dyecoo's practice of using reclaimed Carbon dioxide to run the dyeing process can be analyzed by AM.

Dyecoo's CO₂ Dyeing: DyeCoo uses patented and industrial-proven technology based on CO₂, instead of water. The technology uses reclaimed CO₂ as the dyeing medium in a closed-loop process. When pressurized, CO₂ becomes supercritical (SC-CO₂). In this state CO₂ has a very high solvent power, allowing the dye to dissolve easily. Thanks to the high permeability, the dyes are transported easily and deeply into fibers, creating vibrant colors. Key features of Dyecoo's CO₂ dyeing are Zero waste water, availability on an industrial scale, Energy efficiency, Lower process costs, Vibrant Colors, and geographical freedoms.

Artistic Milliners has emerged as one of the few organizations that have invested significantly to integrate their value chain to mitigate the carbon footprint. The 2040 target is a testimony of commitment, action, and responsibility from an enterprise that is considered to be a homegrown success story for Pakistan.



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GLOBAL COMPACT NETWORK PAKISTAN'S ENLIGHTENED ACADEMIC PARTNERS:



The NED University of Engineering & Technology, was established in March 1977 under an act of the Provincial Assembly of Sindh after upgrading of the former NED Government Engineering College, which was set up in 1921. The NED University is thus one of the oldest institutions in Pakistan for teaching and producing Engineering graduates. Our mission is to make students acquire education and research excellence in engineering and allied disciplines to produce leadership and enabling application of knowledge and skills for the benefit of the society with integrity and wisdom.

The department of Economics and Management Sciences is a part of faculty of Architecture & Management Sciences. The degree programs are designed to develop logical reasoning and analytical skills among students through the provision of advanced knowledge in the field of Economics and Management Sciences. The department aims to establish the thinking ability of the students in such a way that they can carry out innovative research in the field of Economics, along with to prepare the students to meet the market challenges in public and private sector.

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The era of global warming has ended; the era of **global boiling** has arrived.”

António Guterres
Secretary-General of the United Nations

