

# **Proceeding Report**



## **Pathways to Energy Transition and Decarbonization Studies Launch: Solar Mapping of the Textile Sector, Solarization Trends in the Leather Industry, and Solarization Trends from the Perspective of Solar Companies**

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**Prepared by: Abdul Haseeb Tariq**

**Alternate Development Services,  
Islamabad**



**Pathways to Energy Transition and Decarbonization**  
**(Key Reports:**  
**Solar Mapping of the Textile Sector,**  
**Solarization Trends in the Leather Industry, and**  
**Solarization Trends from the Perspective of Solar Companies)**

### **Introduction of ADS**

Alternate Development Services (ADS), based in Islamabad, is a research, policy, and capacity-building organization dedicated to advancing climate action, environmental sustainability, renewable energy transition, and inclusive development. ADS brings a strong track record of supporting industries and corporate entities in adopting climate-resilient and low-carbon practices through evidence-based research, strategic consultations, and policy advocacy.

Through its flagship initiative, the “Alternate and Renewable Energy Campaign (AREC),” ADS has actively engaged sectors such as textiles, leather, and sports export-oriented industries. The organization works closely with corporate stakeholders to facilitate low-emission transitions that are in line with Pakistan’s national climate goals and international environmental commitments.

ADS conducted three research studies to understand how Pakistan’s industrial sector can transition toward cleaner and more reliable energy. Across the three reports, ADS examined solar adoption from multiple angles, including the perspective of industrial consumers, solar companies, and sector-specific energy needs, to create a clear picture of both the opportunities and the barriers within the current system. By engaging directly with industries, conducting field survey-based assessments, and consulting stakeholders, ADS generated evidence-based insights that connect ground realities with national energy and climate priorities.

Through this work, ADS documented how different sectors are approaching solar adoption, what challenges they face, and what support mechanisms could accelerate the shift toward renewable energy. The reports collectively highlight issues such as energy transition, decarbonization, policy uncertainty, financing gaps, operational hurdles, and the need for stronger coordination between industry and academia. At the same time, the growing interest of industries in clean energy solutions and the willingness of solar companies to expand their services if the enabling environment improves. Overall, the three reports serve as a comprehensive resource for policymakers, private-sector actors, and partners. ADS studies not only identify the pathways for scaling solar energy in key industrial clusters but also outline practical recommendations for improving regulatory processes, strengthening market confidence, and promoting more sustainable, low-carbon industrial growth in Pakistan.

### **Objectives of the reports launch and consultation event**

1. The main purpose was to engage the participants (stakeholders, students, researchers) about the critical issues of energy demand and carbon emissions within the textile industry to enhance their understanding of the sector’s energy demand, emissions, environmental impact and the importance of energy landscape and adopting renewable energy sources under CTBCM regime.

2. This event aimed to examine the textile and leather sector's energy landscape and solarization trends, and the infrastructure challenges that contribute to emission, environmental and climate impacts.
3. Present findings from the reports that highlight effective strategies for renewable solar energy adoption and carbon reduction, demonstrating the potential for clean energy and green products sustainable development.

### **Significance of the reports launch and consultation event**

The launch of the sectoral reports for textiles and leather industries, and solarization trends holds significant importance as these studies provide a ground-based understanding of Pakistan's industrial energy landscape and decarbonization pathways. The reports analyze the following key aspects:

- **Energy Mix:** A detailed assessment of how industries rely on primary and secondary energy sources, including grid electricity, captive power plant generation, and emerging renewable solar options to understand patterns of consumption and associated challenges.
- **Emission Profiles:** Identification of GHG emissions from the textile and leather sectors, along with insights from solarization trends. These profiles highlight industrial dependence on fossil fuels, energy-intensive processes, and resulting environmental pressures.
- **Renewable Energy Potential:** Exploration of opportunities for adopting cleaner energy sources such as solar PV, and biomass, including findings from solarization surveys, GIS-mapped PV potential in textile clusters, and renewable integration prospects in the leather sector.
- **Policy Alignment:** Evaluation of how industrial energy transition opportunities align with Pakistan's evolving policy framework, particularly under the CTBCM regime, net-metering reforms, carbon market requirements, and compliance needs under mechanisms like CBAM.

### **Venue and Date**

The event took place from 2:30 PM to 8:00 PM, Faisalabad.

### **Participants**

The reports launch and consultation event was attended by over 30 participants, including professors from academia, partner organizations, industrialists, students, and media, as guests.

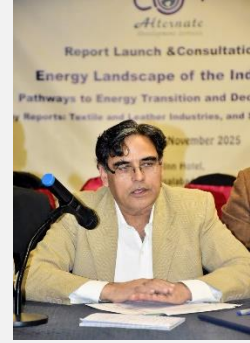
### **Proceedings**

The consultation began with the recitation of verses from the Holy Quran.

### **Amjad Nazeer**

Mr. Amjad Nazeer, CEO of ADS, started with an introduction and basic background session by elaborating on the objectives and significance of the report's launch and consultation event. He presented an insightful analysis of Pakistan's energy sector, starting from the industrial revolution, an increase in energy demand with the passage of time, while addressing challenges such as outdated infrastructure and a reliance heavily on fossil fuels. After that, he underscores the transformative potential of renewable energy sources like solar, given that Pakistan receives high penetration of solar radiation daily.

Mr. Nazeer emphasized the importance of a coordinated approach among the government, the private sector, and stakeholders to foster renewable energy adoption for economic growth, environmental protection, and reducing annual fuel imports. Turning to the textile industry, which contributes nearly 8% of the country's GHG emissions due to its heavy dependence on fossil fuels, Mr. Amjad Nazeer emphasized the pivotal role of energy transition in the industrial sector, particularly in tackling climate change and enhancing economic resilience. He highlighted that with targeted investments in renewables like solar under the Competitive Trading Bilateral Contracts Market (CTBCM) regime. Moreover, he demonstrated that Carbon Border Adjustment Mechanism (CBAM) conditionalities aligning with renewable solar energy become crucial for retaining market access. He described that by reducing emissions and operational costs, Pakistan's textile industry could strengthen its global competitiveness and position itself as an environmentally responsible sector, potentially reducing carbon emissions and increasing exports by aiming for clean energy adoption and green products for industrial development.



In closing his remarks, Mr. Amjad Nazeer also highlighted the broader context of global climate and economic injustice, emphasizing that countries like Pakistan, despite contributing minimally to global emissions, bear a disproportionate share of the climate impacts, energy insecurity, and economic pressures from international compliance mechanisms. He stressed that while the Global North historically benefited from industrialization powered by fossil fuels, developing economies now face stringent sustainability requirements, such as CBAM, without receiving adequate technological or financial support. Mr. Nazeer said that this imbalance places additional strain on Pakistan's industries, which must modernize rapidly to remain competitive in global markets. He reaffirmed that equitable climate cooperation, increased access to green finance, and fair international policies are essential for enabling countries like Pakistan to transition responsibly toward clean energy while safeguarding jobs, exports, and long-term economic stability.

### **Dr. Syed Ali Abbas Kazmi**

Dr. Syed Ali Abbas Kazmi presented a scoping study of off-grid solar PV and captive power systems across Pakistan's textile sector under the emerging Competitive Trading and Bilateral Contracts Market (CTBCM) regime; the goal was a techno-economic and environmental feasibility analysis that is useful for industrial sectors. He framed the work as a practical analysis rather than academic theory, stressing the need for MRV-ready analysis. Dr. Kazmi described the textile sector's strategic significance as the backbone of Pakistan's economy, roughly 8.5% of GDP, about 60% of export earnings, and nearly 30% of industrial employment, and yet it was highly energy-intensive because continuous spinning, weaving, dyeing, and finishing required steady, high-quality power. He underlined the stakes, competitiveness, and jobs that depended on solving the energy problem. Dr. Kazmi emphasized problem statement, the textile mills faced unreliable grid supply with frequent outages and voltage swings that caused production losses with losses of ~US\$70 million/day during the 2023 grid failure, high industrial tariffs reached ~PKR 50–60/kWh compared with historical benchmarks near PKR 26/kWh, and network inefficiencies (17–18% T&D losses) inflated costs and captive thermal plants operated at poor efficiency (30 to 40%) and were now uneconomical given fuel price volatility and gas shortages.



He presented the response pathways, like the industry's immediate response had been to shift toward solar PV rooftop and ground-mount and to adopt hybrid configurations (solar + captive/grid) to restore daytime resilience and reduce fuel dependence. He demonstrated with an example, high capacity in MW installations such as the 7.2 MW plant at Kohinoor Mills. Solarization lowered operating costs and Scope-2 emissions, aligned with Pakistan's targeted goals, and strengthened export competitiveness.

When introducing market context and CTBCM, Dr. Kazmi explained that historically, net-metering had been the dominant behind-the-meter mechanism since 2015, but by mid-2025, the market had ~5.3 GW across ~42,000 installs and a buyback of roughly PKR 27/kWh; policy proposals aimed to cut buyback to ~PKR 10–11/kWh. Gross-metering (feed-in) provided predictability for large generators but reduced onsite bill offsets and outage resilience. Under current dual-rate realities, mills often paid ~PKR 30/kWh while receiving ~PKR 12–15/kWh for exports, which disincentivized industrial-scale deployment. CTBCM (competitive trading/bilateral PPAs + wheeling) could enable direct procurement, virtual aggregation, and terms that aligned daytime solar value with industrial demand, but it had to be implemented carefully. Additionally, on risks and enablers, Dr. Kazmi argued for pragmatic, sequenced reforms rather than abrupt rule changes and warned that privatization/market reform under CTBCM brought risks like opaque Use-of-System Charges (UoS), legacy PPA constraints, DISCO resistance, and grid hosting limits. The enablers included time-phased wheeling, one-window onboarding, standard PPA and MRV templates, pilots (VPPs), fast rollout of time-resolved metering, feeder upgrades, and simplified interconnection SLAs, plus concessional green finance and first-mover guarantees. If implemented right, daytime costs fell and verifiable emissions reductions flowed to exporters.

Dr. Kazmi and his team mapped current energy practices and installed PV across textile clusters (sampled Faisalabad & Multan), assessed rooftop and ground-mount potential with GIS and field surveys, developed techno-economic scenarios (off-grid, self-consumption, CTBCM bilateral), and computed LCOE, NPV, IRR, and payback. He said our team performed sensitivity to wheeling, trading rates, grid losses, and CBAM (EU Carbon Border Adjustment Mechanism) implications, and our team produced actionable, stakeholder-specific policy and finance roadmaps designed to mobilize bankable solar projects. He framed the study practical technical analysis of GIS-validated, dispatch-aware, and MRV-ready. Additionally, on stakeholders Dr. Kazmi listed who had to act, like prosumers (textile mills) anchored demand and invested; distributed generators

and EPCs built and operated; ISMO and power traders enabled trading and risk pooling; regulators (NEPRA, Power Division) set wheeling and market rules; DISCOs/DSOs managed network access and metering; NTDC ensured transmission reliability; industry associations and environmental agencies supported MRV/CBAM compliance. Cross-agency coordination and industry-regulator forums were required to iteratively design workable rules.

In methodology Dr. Kazmi outlined the approach for field mapping and asset inventory (surveys of textile mills and captive plants), GIS solar mapping using Sentinel-2 imagery and rooftop cadasters, dispatch-aware techno-economic modelling in HOMER for scenarios S1 and S2, sensitivity analysis on wheeling/trading and CBAM, growth and grid impact projections for high solar injection cases (75–87%), and finally conversion of findings into policy, finance and implementation roadmaps with standard PPA templates for pilots.

Transitioning to policy recommendations, Dr. Kazmi advised reinforcing strategic transmission nodes for ~800 MW pockets, running net-metering and CTBCM in parallel with a clear roadmap, lowering CTBCM entry to 500 kW, and providing a one-window onboarding with standardized PPA/wheeling templates. Time-phased, differentiated wheeling schedules (intra-cluster discounts + ToU tiers), a first-mover guarantee fund, preferred access for projects offering grid services, and channeling CBAM/carbon revenues into a green market stabilization fund were core measures. Fast-track metering/interconnection for textile clusters required DISCOs to publish charge schedules/SLAs and provided concessional loans and tax breaks for solar + storage.

Dr. Kazmi presented the solarization on rooftop/ground PV plus storage and efficiency, directly cut outages and scope-2 emissions, and improved competitiveness. But profitability bottlenecks had to be fixed: fast interconnection, time-resolved metering, concessional finance, and standardized PPAs for SMEs. Adopt a dual-track policy, scale large centralized renewables (S1) for the lowest system LCOE while protecting distributed projects (S2) using intra-cluster WR caps (~PKR 12–15/kWh) and MRV standards.

### **Muhamad Usman bin Ahmad**

Mr. Muhammad Usman bin Ahmad, Research Associate at USPCASE, presented results with targeted 80 textile mills (sample: 50 in Faisalabad and 32 in Multan) for mapping and analysis. From the sample, 62.8% of mills relied primarily on captive thermal generation (gas/coal/oil/biomass), which underscored the urgent need for cleaner alternatives. At the same time, roughly one in three mills had already adopted some level of solar, and grid-tied configurations were growing as reliability improved. He opened the results by highlighting the dominance of captive thermal.



Muhammad Usman presented the capacity breakdown in concrete numbers, in Faisalabad (50 mills with ~1,043 MW total CPP capacity) gas-only CPPs accounted for about 273.8 MW (~26.25%), mixed renewables (solar/wind only) about 65.3 MW (~6.26%), hybrid gas + solar about 286.2 MW (~27.43%), and hybrid gas/solar/grid about 417.92 MW (~40.06%). Overall, nearly 67% of capacity was in hybrid configurations, which showed adoption of mixed systems, but primary energy still leaned heavily on thermal sources. Additionally, he described GIS validation and

examples. Muhammad Usman said our team performed GIS solar mapping for 15 Faisalabad and 5 Multan mills using high-resolution Sentinel-2 imagery, rooftop clusters, and mill boundary parcels. Irradiance was modelled in ArcGIS Pro Solar Analyst; shaded areas  $>30\%$  were excluded, and required  $\geq 15^\circ$  for a usable rooftop area. Our team digitized actual PV footprints for validation; examples shown included Sapphire Textile, Interloop (Faisalabad), Mehmood Textile (Multan), and Reliance Weaving (Multan), producing geo-referenced PV layers and per-site area/orientation metadata. Furthermore, on aggregate installed capacity, his results noted: Across mapped sites, our team identified  $\sim 145$  MW in Faisalabad and  $\sim 92$  MW in Multan of installed or identified PV potential in the sample; over 60% of those installations were hybrid or tri-hybrid systems (tri-hybrid roughly 20%).

Next, he laid out tradeoffs, scale vs. payback, when presenting the techno-economic scenarios. Muhammad Usman explained S1 and S2: “Scenario S1 was centralized and high-renewable ( $\approx 87\%$  solar), targeting  $\sim 3,733$ – $3,750$  MW, with high CAPEX ( $\sim$ US\$2.43 billion) but lowest system LCOE and highest aggregate NPV because scale and storage enabled arbitrage and peak capture. Scenario S2 was distributed and lower-renewable ( $\approx 75\%$  solar), targeting  $\sim 2,175$  MW with lower CAPEX ( $\sim$ US\$1.43 billion), giving faster paybacks and higher project IRRs for individual installations but greater sensitivity to wheeling and lower system-level NPV. Moreover, Muhammad Usman presented TEA outputs while calculating LCOE, IRR/ROI, payback, and NPV for multiple cases and reported sensitivity to wheeling rate (WR) and trading rate (TR). With a fixed TR of PKR 24/kWh, S2 was highly sensitive to WR. Once WR exceeded  $\sim$ PKR 15/kWh, S2’s LCOE climbed sharply, IRR collapsed, and paybacks lengthened, effectively killing most mid/small distributed projects. S1 was more resilient to WR increases because scale, storage, and reinforcements allowed arbitrage; higher TR benefited S1 disproportionately because of peak capture. Practically, this meant keeping intra-cluster wheeling low ( $\leq$  PKR 12–15/kWh) to preserve distributed deployment; use trading rate settings to steer investments toward centralized scale when that was the policy objective. The slides showed scenarios where higher TR (PKR 20→30) favored S1 + storage while high WR harmed S2.

Mr. Usman modeled current net-metering and buyback realities. Net-metering had grown ( $\sim 5.3$  GW by mid-2025), but proposed buyback cuts (from  $\sim$ PKR 27/kWh toward PKR 10–11/kWh) threatened existing economics. Mills often faced effective dual rates (pay  $\sim$ PKR 30/kWh, receive  $\sim$ PKR 12–15/kWh), plus non-network charges (debt  $\sim$ PKR 3.23, cross-subsidy  $\sim$ PKR 3.47) and WRs of PKR 12+ that reduced viability. He demonstrated how policy settings passed through to project economics. He quantified environmental and CBAM impacts: his team modelled emissions and the relevance of the EU’s CBAM: textiles were likely to be included by 2027, and Pakistan’s textile exports were highly exposed (slides cited textiles  $\sim 28\%$  of EU trade exposure). Shifting daytime loads to solar plus hybrid backup materially reduced Scope-2 emissions and mitigated CBAM risk. Across the scaled scenarios, our team modeled an emissions avoidance of roughly 1.6–1.76 billion kg CO<sub>2</sub>/year, a substantial carbon value, and found that incorporating carbon accounting improved NPV and IRR, especially for the centralized option, where absolute gains were largest.

Mr. Usman presented post-CBAM TEA, where LCOE, IRR, NPV, and payback were recalculated, including carbon costs/credits. CBAM and carbon finance materially boosted NPV/IRR in many cases. Our team also modeled WR and TR impacts after CBAM incorporation and still found the same structural sensitivity: high WR remained fatal to distributed projects; favorable TR and carbon revenue supported centralized builds. He demonstrated the robustness of results under carbon pricing. After that, he framed recommendations tightly to the numeric results, with key barriers illuminated by the data being opaque UoSC, legacy PPAs, DISCO resistance to wheeling/trading, weak MRV systems for carbon accounting, SME finance gaps, and administrative burdens around licensing and interconnection. From the modelling and mapping, it recommended a dual-track approach: accelerate large centralized builds to capture system-level LCOE benefits while protecting distributed projects with targeted support (intra-cluster WR  $\leq$  PKR 12–15/kWh), standardize PPA and MRV templates, fast-track metering and interconnection for clusters, and create first-mover guarantees and concessional finance.

Finally, Muhammad Usman emphasized the mapping and TEA outputs and ended the results section with concrete outcomes and practical takeaways: our team mapped 80 mills and identified ~145 MW (Faisalabad) + ~92 MW (Multan) in the sample, modelled S1 (3,750 MW; ~87% renewables) and S2 (2,175 MW; ~75% renewables), and found the core trade-off: S1 yielded lowest system LCOE and highest aggregate NPV while S2 yielded faster paybacks and higher project IRR. Tariff sensitivity thresholds mattered: WR above ~PKR 15/kWh effectively collapsed S2; TR increases favored S1. The policy takeaway was a dual-track rollout, predictable wheeling rules, MRV readiness, and targeted supports to avoid stranded or inequitable investments.

### **Dr. Ch. Arslan**

Dr. Arslan stated that the industry is far ahead of academia. While academia still focuses on theory, industry has advanced with modern technologies, automation, and global sustainable practices to meet the national and international standards for exports. He emphasized that industries are continuously upgrading themselves to meet international standards and stringent to export requirements. In contrast, academic institutions are progressing slowly and are still not aligned with the demands of today's fast-evolving industrial energy, emission, and environmental landscape. Furthermore, Dr. Arslan further highlighted that this gap is becoming a major challenge. University graduates entering the job market often lack the practical skills and hands-on exposure that industries urgently need. Dr. Arslan stressed that unless academia accelerates its pace, updates its curricula, and strengthens collaboration with industry, the disconnect will continue to grow. He urged both sides to work closely together to bridge this gap and ensure that future professionals are prepared for real-world industrial demands. He was also grateful for such events/sessions that create opportunities for industry-academia interaction.



### **Abdul Haseeb Tariq**

Mr. Abdul Haseeb Tariq, Green and Clean Energy Officer at ADS, presented the study on “Solarization Trends in Industry”. He began by providing a background of Pakistan’s power system, where he described that the national installed capacity was 46,605 MW, consisting of 55.7% thermal, 24.4% hydro, 11.9% renewables, and 7.77% nuclear. He explained that Pakistan’s industrial sector consumed about 37.5% of the national energy annually, making it the second-largest energy-consuming sector. He further stated that the industry relied heavily on the grid, fossil fuels, and biomass, and therefore contributed significantly to national emissions over 18% of Pakistan’s GHG emissions.



Mr. Tariq presented environmental stress indicators, noting that industries withdrew 3–4% of the nation’s freshwater, and industrial processes accounted for around 16% of national emissions (12% energy + 4% process emissions). He highlighted that only 1% of industrial/municipal wastewater was treated, while 99% entered rivers and the sea untreated. He reported that challenges such as energy waste, surplus generation, interrupted supply, and high line losses continued to affect industrial performance. Additionally, he then continued the background by explaining that industry contributed around 20.8% of Pakistan’s GDP and employed about 25.5% of the national labor force. He reported that the sector grew 1.21% in FY 2023–24 but rebounded to 4.77% growth in FY 2024–25. The study, he noted, emphasized solarization trends, energy-transition potential, and carbon-reduction impacts from solar integration.

Mr. Tariq presented ADS’s research findings, explaining that 140 in-person industrial surveys were conducted to assess electricity demand, usage patterns, energy-intensive processes, and opportunities for decarbonization. He stated that the ADS team collected the data through face-to-face interviews with industries across various regions. He stressed the current energy demand in industries, showing how rising demand directly linked with increased unit consumption. Moving through the results, he presented and explained several figures about installed solar capacities across residential, commercial, industrial, and agricultural sectors, along with total solar capacity installed to date. He discussed the preferred types like P-Type and N-Type of solar panels used in Pakistan, technical considerations motivating industrialists to adopt large-scale solar systems, strategies solar companies used to attract industrial clients, industrial processes where solar energy remained less effective, after-sales services and maintenance packages offered to industrial customers, key policy and regulatory challenges faced by industries in adopting solar, methods for ensuring compliance with government regulations and incentives, and in the last he emphasized emerging technologies and trends shaping the future of industrial solarization. Furthermore, throughout the presentation, the main theme Mr. Tariq emphasized and clarified the results findings about the importance of solar adoption for reducing emissions, improving clean energy within industrial sectors, and targeting Pakistan’s goals of clean-energy transition.

## Amjad Mehdi

Mr. Amjad Mehdi presented a study titled “Energy Landscape and Emission Analysis of Pakistan’s Leather Industry”. He explained that the study was conducted by ADS and was aimed at understanding energy consumption, emission patterns, and renewable integration potential in Pakistan’s leather sector. Mr. Mehdi highlighted that Pakistan’s leather industry ranked among the top three manufacturing and export sectors, contributing 4–5% to the national GDP and employing around one million workers. He noted that Pakistan had 700–800 operational tanneries, according to PTA estimates, and in FY 2022–23 the industry generated USD 1.13 billion in exports, of which over 95% were destined for international markets. He stressed that leather remained one of Pakistan’s leading export contributors after textiles, providing nearly 5% of export earnings annually. At the same time, the sector was energy-intensive, depended heavily on fossil fuels, and faced rising production costs along with increasing sustainability pressures.



Mr. Mehdi explained that the study aimed to analyze the energy landscape, emissions profile, and renewable energy potential of Pakistan’s leather industry. He outlined the objectives: characterize energy demand and emission patterns, quantify potential reductions through renewable energy, identify barriers, policy, financial, and technical, and assess compliance with sustainability standards. He presented that the study focused on major leather clusters in Karachi (Korangi), Lahore, Sialkot, and Kasur, covering both SMEs and large tanneries. The thematic scope included energy use, renewable energy integration, GHG emissions, and environmental compliance. Mr. Amjad Mehdi presented the mixed-methods approach used for the study. The research team conducted surveys, structured interviews, and secondary data reviews. Survey work was completed across Lahore, Kasur, and Karachi. Conducted 40 surveys were conducted from tanneries and big allied units. He explained that the team collected quantitative data on fuels, electricity usage, and emissions, alongside qualitative insights on practices, challenges, and perceptions. Furthermore, he emphasized several key difficulties in data collection: firstly, many tanneries were reluctant to share energy data due to confidentiality, secondly, lack of formal metering made gathering accurate information difficult, especially among smaller units, and thirdly, seasonal variations in production complicated representativeness.

Mr. Mehdi stressed, highlighted structural weaknesses in energy monitoring across the sector. He presented that the industry was dominated by SMEs, which accounted for nearly 80% of production and employment. He presented the distribution of companies by production type: Finished Leather – 87.5%, Raw Hides Processing – 50%, Leather Goods (bags, shoes, gloves, jackets, etc.) – 45%, and Semi-finished Leather – 37.5% Further, he explained that the product variety highlighted sectoral complexity and the diversity of processes, energy needs, and emission sources. He also presented the slide showing total leather production in square feet, reflecting the scale of output across surveyed units.

Mr. Amjad Mehdi described the leather sector as highly energy-intensive, with consumption ranging from 0.97–1.87 MJ per 100 ft<sup>2</sup> of finished leather. He explained that tanneries used a diverse energy mix: diesel, gas, electricity, and in some cases, coal and wood for boilers.

Additionally, he highlighted that 95% of tanneries experienced regular power outages, 85% relied on diesel generators as backup, raising production costs. Solar PV adoption was growing but uneven, with 200 kW being the most common system size; 69% of surveyed units planned to install solar within the next 6–12 months. Moreover, he explained that solar adoption in the leather sector was rising due to high energy costs. However, he emphasized several barriers: High Initial Cost – 89%, Space Constraints – 75%, High Maintenance Cost – 61%, Lack of Technical Support – 43%. Finally, he highlighted that LWG certification was the leading international compliance standard, with 41% of tanneries certified, driven by export markets. He stressed that despite high awareness, compliance gaps persisted, especially among smaller units. Mr. Amjad Mehdi stated that transitioning the leather industry toward cleaner energy must be a national priority. He emphasized that even small interventions could deliver major emission and cost reductions. Renewable energy integration, he stressed, would enhance competitiveness, regulatory compliance, and environmental performance. He concluded that the policy and government departments' management must work together to achieve a sustainable leather sector.

### **Voices from Industrial Sustainability Officers**

The first one highlighted that the leather sector is under immense pressure due to rising sustainability expectations and regulatory demands. He emphasized that in Sialkot, there have long been calls from locals for shifting industrial units outside the city due to congestion and environmental concerns. However, he noted that many industry representatives feel that energy transition cannot simply be *imposed* on them. According to him, “everyone will do what they want based on their own priorities,” reflecting the resistance and autonomy often seen within traditional manufacturing clusters.

Another one stressed that for the industry, the customer is the ultimate authority, more influential than even the government. He explained that companies move quickly when international buyers demand compliance or cleaner production, whereas voluntary changes are rarely adopted. He suggested that if buyers directly required solarization as part of procurement conditions, industries would adopt it without hesitation. He reiterated that “customer pressure drives transformation,” and therefore international clients must be engaged as key actors in pushing for renewable energy.

The next one explained that the industry is highly practical and business-oriented, and will only pursue initiatives, whether related to emissions reduction or renewable adoption, when they align with operational and financial realities. His colleague added that *solarization alone is not enough* for genuine decarbonization. He argued that industries must also consider shifting from coal to biomass and other cleaner fuels, but acknowledged that cost savings remain the primary concern, often outweighing environmental motivations. He pointed out that emissions from textile manufacturing are relatively lower compared to sectors like transportation, where emissions are substantially higher. Citing FESCO, he mentioned that the energy sector contributes around 20% of emissions, much of it driven by coal-based power plants.

Further next one said that Faisalabad is the hub of Pakistan’s textile industry, operating within a “third-world business culture,” where sustainability teams frequently propose improvements that get rejected. Now, however, environmental questions are rising from international markets, pushing industries to reconsider. He emphasized that for most firms, Return on Investment (ROI)

is the sole deciding factor, and industries primarily focus on business continuity and profit margins rather than voluntary sustainability actions.

From academia, **Dr. Shahood uz Zaman** (Assistant Professor, NTU) said that ADS conducted an insightful seminar titled Energy Landscape of the Industries. It featured productive and well-informed discussions on the transition to green energy in both the textile and leather sectors. The session played an important role in raising awareness about industrial decarbonization, particularly in the context of the upcoming energy transition under the CTBCM regime, 2025 and onward. He added that such initiatives are essential for guiding industries toward sustainability and equipping them with knowledge about emerging policies and technologies. ADS's valuable effort in promoting clean energy adoption within key industrial sectors.



Representing academia, **Mr. Sana Ullah** (UAF – Agriculture Department) addressed misconceptions around climate change. He stated that it is a *myth* to believe that rooftop solar panels are causing global warming, urging participants to consider the broader environmental drivers such as deforestation, fossil fuel consumption, industrial emissions, and land degradation. He highlighted the need for scientifically grounded discussions instead of narratives that misguide the public or discourage clean-energy adoption.



**Ms. Sanai Muhammad** (CEO, CAEA) offered a geopolitical perspective, explaining that the global energy transition is deeply influenced by the divide between the Global North and the Global South. She noted that while the Global North pushes for rapid decarbonization, developing economies often struggle with limited finance, technological gaps, and competing developmental priorities. She argued that any sustainable transition in Pakistan must recognize these structural disparities and ensure equitable access to technology, finance, and capacity-building.



### **Concluding remarks**

Mr. Amjad Nazeer delivered the concluding remarks. He summarized the key insights presented throughout the event and emphasized the critical importance of transitioning Pakistan's industrial sectors, particularly textile, leather, and solarization, for cleaner, more resilient, and cost-effective energy systems for green products. He highlighted, our studies revealed high dependence on fossil fuels, substantial emission footprints, and major compliance gaps, while also demonstrating strong potential for renewable solar energy adoption. Mr. Nazeer stressed that overcoming policy, financial, and technological barriers through coordinated action across government, academia, and industry contributes to accelerating industrial decarbonization for Pakistan's future.

## Media Coverage

### The News

#### Industrial sector urged to embrace renewable energy to remain globally competitive

**By our correspondent** FAISALABAD: Climate and energy experts have warned that Pakistan's industrial sector must rapidly shift toward renewable energy and low-carbon production to stay competitive in global markets increasingly driven by climate regulations. The warning came during the launch of three research studies on industrial decarbonisation, emphasising solar adoption, emissions reduction, and long-term energy planning.

Hosted by Alternate Development Services (ADS), the event brought together academics, industry representatives, civil society members, and policymakers to explore the future of energy use in the textile and leather sectors, two major contributors to national exports and emissions. ADS Chief Executive Amjad Nazeer described this as "a decisive moment" for industries, noting that countries acting early on carbon reduction would gain economic advantage, while those delaying risk exclusion from international value chains. Key studies presented included an analysis of off-grid solar feasibility for textiles, solar adoption across industrial clusters, and leather industry energy efficiency and emissions hotspots. Experts stressed that global buyers increasingly demand sustainability compliance, making renewable energy adoption a business imperative, not just an environmental choice.

**WORKSHOP ON TRADITIONAL AND ISLAMIC BANKING:** A workshop on comparative perspectives of traditional and Islamic banking was organized by the Centre of Islamic Finance, Institute of Business Management Sciences (IBMS), University of Agriculture Faisalabad (UAF), Vice Chancellor Prof Dr Zulfikar Ali during his visit to Jaranwala. The initiative, "Grow More Wheat Campaign 2025," promotes modern, climate-smart wheat production practices and guides farmers on innovative technologies to improve yields.

Dean Faculty of Agriculture Dr Ghulam Murtaza highlighted the role of improved seed varieties and precision farming tools in enhancing production and minimising risks. Dr Muhammad Naveed emphasised proper land fertility and timely irrigation, while Director Agriculture Extension Faisalabad Khalid Mahmood noted that direct scientist-farmer interaction encourages adoption of new technologies.

### Business Recorder

**FAISALABAD:** The climate and energy experts have warned that the country's industrial sector must be rapidly transit toward renewable energy and low-carbon production to remain competitive in global markets, which is increasingly shaped by climate regulations.

This call was made at the launch of three research studies on industrial de-carbonization, collectively urging policymakers and businesses to prioritise solar adoption, emissions reduction, and long-term energy planning.

The event, hosted by Alternate Development Services (ADS) at a local hotel, brought together academics, industry representatives, civil society members, and policymakers to examine the future of energy use in Pakistan's textile and leather sectors, two major contributors to national exports and emissions.

Opening the session, ADS Chief Executive Amjad Nazeer said Pakistan's industries were entering "a decisive moment" where energy choices would determine export prospects and survival in international value chains. He noted that new global carbon thresholds, shifting buyer expectations, and supply chain compliance standards were already reshaping industrial production. "Countries that act early will secure economic advantage. Those that delay will face exclusion," he cautioned.

### DAWN

#### Experts warn industries of shifting global markets

By Our Correspondent | 2025-11-15

**TOBA TEK SINGH:** Experts have warned that the country's industrial sector must rapidly transition toward renewable energy and low-carbon production to remain competitive in global markets increasingly shape climate regulations.

This was said during an event hosted by the Alternate Development Services (ADS) in Faisalabad on Friday.

The event brought together academics, industry representatives, civil society members, and policymakers to examine the future of energy use in Pakistan's textile and leather sectors, two major contributors to national exports and emissions. On the occasion, three research studies on industrial decarbonisation, collectively urged policymakers and businesses to prioritise solar adoption, emissions reduction, and long-term energy planning.

ADS CEO Amjad Nazir said Pakistan's industries were entering "a decisive moment" where energy choices would determine export prospects and survival in international value chains.

He noted that new global carbon thresholds, shifting buyer expectations, and supply chain compliance standards were already reshaping industrial production. "Countries that act early will secure economic

### Climate Call

#### Industries Urged to Accelerate Clean Energy Shift Amid Rising Global Climate Pressures

By Naheen Ahmad • November 14, 2025



**FAISALABAD:** The climate and energy experts have warned that the country's industrial sector must rapidly transition toward renewable energy and low-carbon production to remain competitive in global markets increasingly shaped by climate regulations. This call was made at the report launch titled "Energy Landscape of the Industries: Pathways to Energy Transition and Decarbonization" (featuring key reports on the textile and leather industries, and solarization trends). Research studies on industrial decarbonization, collectively urging policymakers and businesses to prioritise solar adoption, emissions reduction, and long-term energy planning.

The event, hosted by Alternate Development Services (ADS) at a local hotel, brought together academics, industry representatives, civil society members, and policymakers to examine the future of energy use in Pakistan's textile and leather sectors, two major contributors to national exports and emissions. Opening the session, ADS Chief Executive Amjad Nazeer said Pakistan's industries were entering "a decisive moment" where energy choices would determine export prospects and survival in international value chains. He noted that new global carbon thresholds, shifting buyer expectations, and supply chain compliance standards were already reshaping industrial production. "Countries that act early will secure economic advantage. Those that delay will face exclusion," he cautioned.

The first study, presented by Dr Syed Ali Abbas Kazmi, Head of Department USPCASE NUST and Muhammad Usman bin Ahmed, Research Scholar of NUST, examined the techno-economic feasibility of off-grid solar systems for the textile sector. Their findings highlighted significant cost savings and substantial carbon reduction potential under the Competitive Trading Bilateral Contract Market (CTBCM) regime, which is expected to redefine Pakistan's power market in the coming years. A second study, shared by Abdul Haseeb Tariq, Green and Clean Energy Officer of ADS, documented solar uptake across industrial clusters. While solarisation is

### Links

1. <https://www.brecorder.com/news/40392542>
2. [https://epaper.dawn.com/DetailImage.php?StoryImage=15\\_11\\_2025\\_178\\_004?utm\\_source=whatsapp](https://epaper.dawn.com/DetailImage.php?StoryImage=15_11_2025_178_004?utm_source=whatsapp)

3. <https://climatecall.pk/industries-urged-to-accelerate-clean-energy-shift-amid-rising-global-climate-pressures/>
4. <https://www.peakpoint.pk/en/2025/11/14/accelerating-industrial-decarbonization-pakistan/>
5. <https://islamabadmail.com/industrial-decarbonization-pakistan-industry/>
6. <https://urdu.islamabadmail.com/industrial-sector-energy-transition/>
7. <https://climatecall.pk/industries-urged-to-accelerate-clean-energy-shift-amid-rising-global-climate-pressures/>
8. <https://chenabplus.com/to-increase-exports-by-reducing-carbon-emissions-by-shifting-industries-to-solar-energy/>
9. <https://minutemirror.com.pk/experts-warn-pakistans-industry-decarbonise-or-be-left-behind-462072/>
10. <https://www.facebook.com/share/v/14TJaPU6ZJ3/>
11. <https://www.facebook.com/share/v/19v5uyQ7pj/>
12. <https://www.facebook.com/share/v/17jvHvAjuv/>
13. <https://www.facebook.com/share/v/1CpBBKNZAk/>
14. <https://www.facebook.com/share/v/1FKykLZfCg/>
15. <https://www.linkedin.com/feed/update/urn:li:activity:7396492666563264512/>

## Annex I







## Agenda

November 13, 2025 (Thursday)		
Time	Agenda Point	Resource Person
02:30 PM – 02:50 PM	Attendance of the Participants	ADS team
02:50 PM – 03:00 PM	Recitation of Holy Quran	Volunteer/Recording
03:00 PM – 03:30 PM	Welcome Note Context building on renewable energy transition and decarbonization in textile and leather industries, and solar trends in industrial sector of Pakistan	Amjad Nazeer, CEO-ADS
03:30 PM – 03:50 PM	Significance of the industrial decarbonization in wake of international growing demand of clean products	Dr. Ch. Arslan, UAF
03:50 PM – 04:40 PM	Scoping study of off-grid Solar PV and captive power systems in Pakistan's textile sector under CTBCM regime: Techno-economic and environmental feasibility analysis	Dr. Syed Ali Abbas Kazmi (HoD), Associate Professor, NUST (USPCASE), Islamabad. Mr. Muhamad Usman bin Ahmed, Research Associate, NUST (USPCASE), Islamabad.
04:40 PM – 05:00 PM	Dialogue/Q&A	All Participants
05:00 PM – 05:20 PM	Energy landscape and emission analysis of Pakistan's leather industry	Mr. Amjad Mehdi, Advocacy Lead at ADS, Islamabad.
05:20 PM – 05:40 PM	Solarization Trends in Industry	Mr. Abdul Haseeb Tariq, Clean and Green Energy Officer at ADS, Islamabad.
05:40 PM – 06:10 PM	Panel Discussion  Clean energy transition and the way forward	<b>Moderator:</b> Amjad Nazeer, ADS  <b>Panelists:</b> Prof. Dr. M. Sana Ullah, UAF Dr. Shahood, NTU M. Soban, Liberman International Faizan Latif, Nizam Group Imran Shahzad, Maheen Textile Usman-E-Ghani, Gohar Textile M. Ashraf Rauf, Gohar Textile Dr. Syed Ali Abbas Kazmi, USPCAS-E, NUST Dr. Mustafa Anwar, USPCAS-E, NUST
06:10 PM – 06:30 PM	Interactive Session/Q&A	All Participants
06:30 PM – 06:50 PM	Vote of thanks and conclusion	Amjad Nazeer ADS
06:50 PM – 07:00 PM	Certificate Distribution Ceremony	
07:00 PM – 08:00 PM	Dinner	
End of the Event		