

IMPACT SHEET • SWITCH-ASIA PROJECT
SUSTAINABLE CARPET AND PASHMINA

Introducing sustainability to the carpet and pashmina manufacturing industries in Nepal



Thanks to the project, 35 dyeing and washing enterprises from the carpet sector as well as 25 enterprises from the pashmina manufacturing sector have adopted cleaner production practices



The Challenge

Carpet and pashmina production are Nepal's second and third largest source of export earnings, and the largest source of industrial employment providing 200 000 jobs. These industries, however, are constrained by out-dated production methods that are inefficient and highly polluting, leading to reduced competitiveness and adverse environmental impacts. The fragmented networks of small and medium enterprises (SMEs) rely on inefficient and environmentally damaging production practices which have limited the ability of both industries to respond to increased regional competition for export markets, or respond to demand from some western markets for environmentally friendly products.

Objective

The project aimed to increase resource efficiency, profitability and sustainable growth in Nepal by mobilising the private sector and relevant public-sector authorities to reduce both fuel and water use and water pollution in the Nepalese carpet and pashmina manufacturing industries. The project promoted sustainable production and SME profitability in two of Nepal's highest earning yet most polluting industries. Specific objectives included:

- raising awareness and knowledge in the carpet and pashmina manufacturing industries on cleaner production techniques, and improving financial literacy and providing access to financing for SMEs;
- strengthening existing actors, such as the carpet and pashmina industry associations and service providers, so that they can provide resources and expertise on cleaner production techniques;
- collaboration and developing synergy with the Ministry of Industry and relevant line ministries and private-sector umbrella organisations creating an enabling environment to facilitate the switch to cleaner and more efficient production through policy advocacy.

TARGET GROUPS

- 25 pashmina, 18 wool dyeing and 17 carpet washing SMEs that are members of the Pashmina and Carpet Association
- 2353 workers
- Residents of the Kathmandu valley
- The Nepali Government

Activities / Strategy



Facilitating Wide Adoption of Cleaner Production (CP) Practices

Dyeing and washing account for the bulk of pollution and waste in carpet and pashmina production. The project established standardised CP practices for each sub-sector and offered technical support to SMEs in their implementation. These practices included, for example improved methods for dosing chemicals, good housekeeping and material handling practices, the insulation of stoves, the introduction of waste recycling equipment and the reuse of water softeners. The potential of solar water heaters as supplemental energy supply was tested and results were disseminated to promote usage among SMEs.



Standardising CP Practices and Creating Reward Mechanism to Early Adopters

The project supported the adoption of voluntary CP practices for carpet and pashmina producers, which have been incorporated in the new National Sustainable Production Policy, developed under the leadership of the Ministry of Industry with the technical assistance and support of the project. The use of standardised CP practices is the first step for future internationally-recognisable certification, which can stimulate the demand for eco-friendly carpet and pashminas from environmentally conscious consumers.



Closing the Credit Gap

The project worked and partnered with a commercial bank and SMEs to develop appropriate financial products facilitating the establishment of CP options in processes and technologies by reducing transaction and operating costs. One such, Swacha Paryawaran Karja, has also been designed for enterprises from other sectors willing to switch to CP, such as agribusiness, forestry and fast-moving consumer goods.



Strengthening Government Capacity and Commitment to Cleaner Production

The project collaborated with the government to take a more active role in promoting CP practices, organising fifteen formal policy working group meetings over two years, in which key ministry officials were engaged in project activities, improving their knowledge and awareness of cleaner production. Policy recommendations and the draft of the National Sustainable Production Policy, completed during the project's implementation, has been translated into Nepali for further consultation and shared with multiple stakeholders from the private sector, NGOs and different government line agencies. The project also established links to international knowledge hubs, for example Chinese Cleaner Production Centres and the SWITCH-Asia Network Facility, in order to share and access lessons related to successful policy instruments in the Asian region.

Scaling-up Strategy



Replicating and Promoting Cleaner Production Practices

Improving the capacity of the industry stakeholders was a crucial component for extending the impact of the action beyond its scope and duration. The project ensured that existing networks and organisations were well positioned to support and promote the adoption of cleaner production practices in the carpet and pashmina manufacturing industries. Capacity has been built among business intermediaries, such as the project's implementing partner, SEED Nepal, and other non-profit industry associations, such as Nepal Pashmina Industry Association and Central Carpet Industry Association enabling them to pass on their knowledge to SMEs. These industry associations were equipped with guidelines and training manuals to allow extension and replication across the carpet and pashmina manufacturing industries.



Promoting Policy Instruments and Enhancing the Policy Environment

Nepalese ministries have tremendous potential to support the adoption of CP practices in the pashmina manufacturing and carpet industries and beyond. Applying both incentives and regulation and improved effective and informed government oversight can drastically increase the uptake of cleaner production and environmentally friendly practices. Existing examples such as the Chyangra Trade-mark or the 'pollution control certificate', show how Nepal's government is capable of supporting industry-wide adoption of high product quality and ethical production standards. The project standardised a set of cleaner production practices and options for the pashmina production industry, such as good housekeeping practices and occupational health and safety measures with the objective of strengthening environmental standards and improving safety.



When buyers from European countries recently visited my industry, they were impressed with the improvement in the sectors such as good housekeeping practices and occupational health and safety measures supported by the EU-funded SWITCH-Asia project. The training provided helped me to save resources like energy, chemicals and dyes.

*Mr. Ganesh Shrestha,
Proprietor,
Ashirbad Pashmina Industry*



Results



Increased Cleaner Production Practices

By the end of the project, 33 SMEs from both the wool dyeing and the carpet washing sector had adopted CP practices, such as the recycling of process waste and the reuse of process water. SMEs reported investments in technological modifications, such as the replacement of outdated generators and improvement in operational practices such as more accurate chemical dosing. 11 SMEs in the carpet and pashmina production sectors reported major investments in costly CP options, such as technological modifications, insulation of stoves, introduction of waste recycling equipment and reuse of softener. The adoption of CP practices resulted in higher efficiency in water and fuel consumption, reduced air and water pollution, lower production costs, and reduced pressure on water resources in the Kathmandu valley.



Investments in Sustainable Practices

By the end of the project, 28 participating pashmina manufacturing, carpet washing and wool dyeing SMEs had made investments in CP practices, e.g. in replacing machinery for better energy efficiency, better insulation of boilers and steam pipelines, solar panels, etc. Overall, investment in CP options totalled NPR 10 389 900 (EUR 85 870).



Reduced Water Pollution

The project reduced water pollution caused by the Kathmandu dyeing and washing industries, primarily located in peri-urban agricultural and residential areas.



This project has raised the international competitiveness of the carpet and pashmina manufacturing sectors through the implementation of a cleaner production approach. The project identified preventive and innovative eco-friendly and sustainable solutions and processes which were then implemented in the SMEs. It was shown that there exists further need to build the awareness of SME stakeholders about the need for resource efficiency and cleaner production practices beyond the carpet and pashmina manufacturing industries.



Mr. Surendra Chaudhary,
Project Manager,
Mercy Corps – Nepal



The discharge of large amounts of untreated wastewater into groundwater and waterways, polluting local water resources and degrading soil quality, have also been reduced. Discharging wastewater through a filtration and treatment process into the municipal sewage system rather than onto agricultural lands, allows it to remain productive for the cultivation of high value cash crops, such as seasonal vegetables for additional income, benefitting local communities.



Improved Resource Efficiency and Healthier Production









By introducing CP practices to the SMEs, the project achieved a 23.25% reduction in energy consumption of 4283 GCal (4 977 798 kWh) compared to the beginning of the intervention. Total CO₂ emissions in both sectors were reduced by 192 081 tonnes (25.68%), total chemical oxygen demand (COD) was reduced by 192 081 kg (25.68%), chemicals by 118 690 kg (28.82%) and water consumption by roughly three million litres (36.23%). The SMEs improved skills to measure their resource consumption, e.g. through better dosing of chemicals. More exact dosing of and azo free chemicals combined with better material handling has led to reduced indoor air pollution. Also, implementation of safety practices, such as covering motor belts and insulating dyeing pots, has resulted in a reduction of short and long-term safety risks.



Awareness of Workers of Occupational Health and Safety (OHS) and Women's Empowerment

2355 workers (1353 male and 1002 female from the wool dyeing, carpet washing and pashmina manufacturing sectors), have been made aware of OHS, cleaner production practices, reduction of waste, and resource optimisation through awareness-raising campaigns and workshops held at their factories. The project brought visibility to women's contributions in the carpet and pashmina manufacturing industries including them as CP team members, and supported their skill development in the cleaner production field through their participation in pre- and post-assessment training, CP awareness workshops and financial management training.

Impact in Numbers

<p>Economic Impact</p> 	<ul style="list-style-type: none"> • 53 SMEs confirmed a 2-5 % decrease in their cost of production after implementation of CP measures. • 41 SMEs confirmed average production cost savings of 5%. • Since project implementation, the majority of the waste fibre from carpet and pashmina production is being re-used and sold as material in low cost mattress production. • Practices like loosening the bundle hank to ease the process of dyeing lead to time and material savings. 		<p>copies in national diplomatic missions, embassies and international fairs, e.g. the 2016 International Carpet Fair in China and Germany.</p> <ul style="list-style-type: none"> • 71 in-factory CP awareness raising workshops were completed and 2353 workers made aware of CP options.
<p>Environmental Impact</p> 	<ul style="list-style-type: none"> • Reduction of process waste through recycling: <ul style="list-style-type: none"> • reuse of fibre waste; • recycling of waste water in treatment plants; • implementing the sediment process before discharging wastewater. • Types of SCP measures implemented to reduce damage to the environment: <ul style="list-style-type: none"> • use of solar water heaters as a renewable energy source; • use of a dust filtration system in the smoke stack; • use of mild chemicals and detergents and a reduction in the use of toxic chemicals; • use of digital weighing balances to improve measurement accuracy in chemical dosing; • reuse of water in carpet washing – last wash being used as first wash for the next batch; • use of efficient prefabricated dyeing pots. • Reduction in water usage Before: 775 920 m³; After: 494 778 m³ Reduction of: 281 142 m³ (36.2%) • Reduction in use of toxins and harmful substances (chemical) Before: 411 850 kg; After: 293 660 kg Reduction of: 118 690 kg (28.7%) • Reduction in energy usage Before: 21 409 295.6 kWh; After: 16 431 497.8 kWh Reduction of: 4 977 797.7 kWh (23.3%) • Chemical oxygen demand - Waste water discharge Before: 747 193 kg; After: 555 832 kg Reduction of: 192 081 kg (25.6%) • Reduction in tonnes - CO₂ Before: 13 075 MT; After: 9841 MT Reduction of: 3234 MT (24.7%) 	<p>Green Finance</p> 	<ul style="list-style-type: none"> • After involvement with the project, multiple SMEs acquired lending from banks for machinery and equipment in order to establish CP options. • The project linked 65 SMEs with banks, raising SMEs' awareness of banking terms and conditions, compliance and standards. • A clean eco-friendly financing product has been designed by the project in cooperation with a bank, called 'Swachh Paryawaran Karja', to reduce transaction and operating costs for both the bank and SMEs.
<p>Social Impacts</p> 	<ul style="list-style-type: none"> • Thanks to the introduction of OHS measures, a reduction of work related accidents by 2% was observed. • The project improved working conditions and ensured the adoption of health and safety measures, for example the use of personal protective equipment like masks and earplugs. • Improved waste discharge systems at the SME level benefits the local communities through less degradation of farm soil. 	<p>Target Group Engagement</p> 	<ul style="list-style-type: none"> • The project reached 60 participating pashmina production, carpet washing and wool dyeing SMEs. • 2353 workers were involved during the project. • The project completed 16 training workshops in the three sectors: <ul style="list-style-type: none"> • pre-assessment training sessions in wool dyeing; • pre-assessment training sessions for the carpet washing and pashmina production industries; • cleaner production (CP) assessment training in the carpet washing, pashmina production and wool dyeing industries; • training on Excel-based Database Management Systems for all three sectors; • financial management training. • In-factory CP awareness raising workshops with 71 SMEs • One exposure-learning visit to the China National Cleaner Production Centre (NCPC, China) • 2791 individuals (1734 males and 1057 females) from beneficiary SMEs, CCIA, NPPIA (Nepal Pashmina Industries Association) and project staff benefited from training sessions and workshops. • Awareness-raising activities on waste management issues and the optimised use of resources were provided by the project.
<p>Climate Benefits</p> 	<ul style="list-style-type: none"> • After the project intervention, there was increased use of solar water heaters for washing and dyeing and use of solar panels. • The project encouraged the replacement of out-dated generators with more energy efficient models and the replacement of light bulbs with LED lights. • Similarly, it encouraged the insulation of boilers and steam pipelines to reduce heat loss. • The project facilitated increased use of efficient voltage controllers to minimise energy fluctuations. • The project endorsed the practice of switching off lights to save energy usage, redesigning rooms and working spaces to allow sunlight in obviating the need for electrical lights during the daytime. • An article on the CP process and potential benefits was published in CCIA (Central Carpet Industries Association) in 2016 with distribution of over 1400 	<p>Women's Empowerment</p> 	<ul style="list-style-type: none"> • 1057 female workers were trained during CP awareness raising workshops, financial management training sessions, and CP assessment training. • The project ensured that female workers' earnings start equally with male workers' earnings with standard minimum wage and can increase to up to NPR 25 000 (EUR 204)/ per month depending on their skills and overtime. All female and male members are allowed to have a one-hour break and lunch allowance or to have their lunch in the factory.
		<p>Policy Development</p> 	<ul style="list-style-type: none"> • The project conducted 15 official policy working group meetings and published a comprehensive situational study and analysis on the existing policy environment for the industrial sector in Nepal. • The project submitted: <ul style="list-style-type: none"> • a policy paper with nine specific objectives on how to integrate cleaner production into the carpet and pashmina production sectors; • policy recommendations and a draft of 'Sustainable Industrial Production' policy. • The project enabled the formation of a policy working group with representation from seven line ministries including two private sector umbrella organisations under the chair of the Ministry of Industry.



Legend

- Eligible countries for the SWITCH-Asia Programme
- Non-eligible Asian countries for the SWITCH-Asia Programme

Project implementation area

- City
- Region
- Country

The boundaries shown on this map do not imply on the part of the European Union any judgment on the legal status of any territory or the endorsement or acceptance of such boundaries.

OBJECTIVES

The project helped Nepalese SMEs in the carpet and pashmina manufacturing industries to increase their resource efficiency and profitability. The implementation of cleaner production measures in wool dyeing, carpet washing and pashmina production helped to reduce process waste and water and energy use in two of Nepal's highest earning yet most polluting industries.

DURATION



PROJECT TOTAL BUDGET

EUR 1 058 939 (EU contribution: 90%)

PROJECT CONTACT

Mr. Surendra Chaudhary / Ms. Katie Hau
Sanepa, 44700
Nepal

Tel.: +977-1-5012571 Ext: 120

Email: chadda812@gmail.com / khau@uk.mercycorps.org

PARTNER



Mercy Corps – Nepal (MC Nepal)



Society for Environment and Economic Development – Nepal (SEED Nepal)