

IMPACT SHEET • SWITCH-ASIA PROJECT  
**CITY-WIDE PARTNERSHIP FOR SUSTAINABLE WATER USE  
AND WATER STEWARDSHIP IN SMES IN LAHORE, PAKISTAN**

# **Adopting better water management practice towards a more sustainable growth path in Pakistan**



**The project reached 400 SMEs, with 35 SMEs improving  
water efficiency and reducing effluent pollution by 15%,  
and reducing CO<sub>2</sub> emissions by 11 000 tonnes annually**



## The Challenge

Pakistan is a water-stressed country and unsustainable water use, and poor water management and governance practice cause increasing water scarcity. In Lahore, where the project focused, extensive unsustainable groundwater withdrawal for domestic and industrial use, coupled with low recharge rates, has already caused groundwater levels to drop significantly. In 1960, the water table in Lahore sat 5 metres below the surface, currently the water table is over 40 metres deep. Total water availability at the basin level is further reduced by pollution, commonly from untreated industrial effluent. Water scarcity also has serious implications for the sustainability of SMEs and the industrial sector as a whole, for both direct operations and supply chains.

## Objective

The objective of the *Water Stewardship Pakistan (WSP)* project was that by 2025 water efficient production and consumption would predominate as best practice in Pakistan's major industrial cities, contributing to improved environmental sustainability and poverty reduction within the context of sustainable development.

The specific project objectives were:

- to promote Better Water Management Practices (BWMPs) among 300 processing and manufacturing SMEs in the target area;
- to increase water management capacity of 75 SMEs with high water usage;
- to establish BWMP implementation in 25 SMEs;
- to establish a multi-stakeholder water partnership on a city-wide level.



### TARGET GROUPS

- 400 cross-sectoral SMEs
- Small and Medium Enterprise Development Authority (SMEDA)
- 6 Chambers of Commerce
- 3 Industrial Associations
- 5 National and Provincial Government Departments
- 6 Municipal Governments

## Activities / Strategy



### Conducting Gap Analysis and Implementing BWMPs

The project conducted water and environment audits on 35 SMEs, exceeding the target of 25 SMEs. Based on the results, the project drafted a BWMPs action plan for each of the SMEs and provided on-the-job training on BWMPs for their technical and management professionals. This was followed by post-audits to evaluate the scale of implementation of BWMP action plans and the development of a business case.



### Building the Capacity of SMEs

Based on the business case, 87 SMEs (more than the target of 75 SMEs) were targeted to build their capacity on improving their water efficiency through training on i.) Water Management, ii.) Energy Conservation, and iii.) Pollution Reduction. To create awareness of BWMPs, 300 SMEs were targeted through 'business case' presentations. Supporting materials (training manuals and brochures) were distributed among key stakeholders through training workshops, awareness seminars, exposure visits and stakeholder meetings. Eight seminars were organised in different cities (Lahore, Faisalabad, Sialkot and Karachi) with the support from local Chambers of Commerce. The Pakistan Readymade Garment Manufacturing Exporters Association (PRGMEA) in Lahore office was involved in organising the sessions.



### Creating Awareness of 'Alliance for Water Stewardship' (AWS) Standards

The AWS Standard was designed to be an international standard defining a set of water stewardship principles, criteria, and indicators for how water should be managed at sites and watershed levels to be environmentally, socially, and economically beneficial. WWF-Pakistan introduced AWS Standards disseminating them through awareness seminars in Sialkot and Faisalabad. The project provided Nestlé-Pakistan with a three-day training session to build a network of accredited service providers for AWS Standard implementation. Technical services were provided to Nestlé for implementing AWS Standard in its Sheikhpura and Islamabad plants and to help its staff become accredited to the standard.



*Wastewater from textile industry*



## Scaling-up Strategy



### Conducting Water Footprint Study in Punjab and Situation Analysis of Water Resources in Lahore

The 'Water Footprint Study of Key Industrial Sectors of Punjab' assessed the extent of dependency of key industrial sectors (such as cotton textile, leather tanning, sugar processing and paper manufacture), not only in terms of direct water use, but also the quantity of water used in supply chains that SMEs depend on. Water Footprint accounts for the water consumed in factory operations plus the indirect water footprint associated with consumption of water in the production of raw materials. Acknowledged by the Water Footprint Network, the study clearly demonstrated the scale of virtual water dependence of the Punjab, elaborating the risks and how they can be addressed at the business level. The Situation Study collated key information on the water resources of Lahore, describing the physical water and institutional water management situation and risks, providing a robust evidence base to support the identification and implementation of water stewardship activities.



### Engaging with Policymakers

The project engaged with national and provincial policymakers to show the potential of BWMPs in improving water management in Pakistan, specifically by engaging SMEs. On-site visits were arranged to the SMEs implementing BWMPs. The project was present at various forums attended by policymakers, including the National School of Public Policy, highlighting existing water issues and potential mitigation strategies.



### Development of a Strong Business Case

The completion of audits and post-audit activities, followed by validation audits, led to the development of a 'customised' business case, which presents the economic and environmental benefits of BWMPs for each of the selected 35 SMEs. The business case outlines the potential of economic savings of individual BWMP at the enterprise level as well as the sum of all BWMPs at the industrial level. The suggested BWMPs fall under three categories, i.e. water management, energy conservation, and reduction of chemicals used.



### City-level Water Stewardship Partnership

The project facilitated the establishment of a multi-stakeholder city-wide partnership for sustainable water management in Lahore. The partnership brought together a network of public, private and civil society actors committed to mitigate shared water risks, which continues beyond the project.



### Policy Shift toward Water Sustainability

The project supported a shift in policy making towards sustainability and enabled the model to be replicated in other cities in Pakistan. As a result of the liaison with the Environmental Protection Department (EPD), guidelines were developed for the industrial sector to improve their water efficiency and reduce the use of chemicals. Business cases and information packages were circulated among provincial and national level policymakers to assist in developing evidence-based policies.



### Indus Basin Water Stewardship Strategy

The project stimulated the drafting of a Water Stewardship Strategy of the Indus Basin to improve overall basin-level water governance, which was presented at the Annual Water Stewardship Moot in South Africa in November 2015.



### Creating a Wider Awareness

Two documentaries were developed to disseminate project findings and achievements, a five-minute overview and a twenty-minute film focusing on operational aspects of BWMPs, success stories and statements from target SMEs and stakeholders, screened for SMEs, multinational corporations, financial institutions and government departments.



*Paper mill wastewater discharge*

## Results



### Reduced Water Use and Pollution

The project instigated an annual capital investment of PKR 119.90 million (EUR 1.03 million) for the implementation of BWMPs resulting in annual economic savings of PKR 177.80 million (EUR 1.52 million) due to water and energy savings and chemical use reduction. The total annual water conservation in the target SMEs amounted to 4.46 million m<sup>3</sup> accompanied by pollution reduction in the range of 10–30% and recovery of 1 829 tonnes of chemicals from waste streams. Furthermore, the total annual reduction in the energy consumption was 58 296 megawatt per hour (MWh), estimated to reduce 11 000 tonnes of CO<sub>2</sub> annually.



### Established Multi-stakeholder City-wide Partnership

A voluntary initiative, the city-wide partnership aims to promote constructive open dialogue on the priority water risks and to mobilise resources, fostering new partnerships for improved water governance, adopting locally-driven solutions and making measurable improvements in the overall water management of the city. The partnership includes at least one organisation from all sectors: government, corporate, academia and civil society, with around 15 members, and helps to build liaison among different sectors incorporating a holistic perspective on mitigation strategies against the identified water challenges.



### Convinced Businesses to Implement BWMPs

The project developed a strong business case based on BWMP implementation at the industrial level to convince companies to become engaged at the city level to address water challenges. The project also focused on building a 'city-level business case' to reinforce the significance of sustainable water resource management to secure the economic activity of the city. The baseline study of Lahore showed that the estimated total water use of industrial sector is 335 million m<sup>3</sup>/year. If 10% of the water use is reduced, there is a potential for businesses as a whole to save 33.5 million m<sup>3</sup>/year of water.



### Signed MoU with the Government for Better Water Management

The project helped EPD to develop guidelines for the industrial sector to improve their water efficiency and reduce the use of chemicals. In addition, many other governmental and private organisations have extended their support for the city-level water stewardship through their commitment to the city-wide partnership. As the project leader, WWF-Pakistan has signed memorandum of understanding (MoU) with the Punjab Irrigation Department for better water management at city and farm levels.



*Water is a cross-cutting issue which covers all the domains of the triple bottom line, which is social-political, environmental, and economic. Especially for South and East Asia, it is the backbone of the economy regarding agriculture, industry and ecosystems. Relating to its governance, water is everybody's business regardless of the sector one works in. Only an 'across the board' approach can help alleviate the issue. Water is more of a management issue, rather than that of hydrology, infrastructure or technology alone.*



Mr. Ali Hasnain Sayed,  
Project Manager,  
WWF-Pakistan



### Won the Energy Globe Award

WWF-Pakistan was awarded the 2015 National Energy Globe Award for this SWITCH-Asia *Water Stewardship* project. The award is endorsed by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) in cooperation with the United Nations Environment Programme (UNEP). In 2015 the environmental prize received over 1 500 project submissions from 177 countries; this project was recognised as the best in Pakistan.



### Ensured Water Project Sustainability beyond the Project

In collaboration with International Labour Organisation (ILO), WWF-Pakistan planned to launch the 'International Labour and Environmental Standards Application in Pakistan's SMEs' funded by the European Union, furthering the water stewardship activities. The programme aimed to promote enforcement, implementation and compliance with the International Labour and Environmental Standards by public and private sector institutions and organisations in Pakistan. WWF-Pakistan also planned to collaborate with GIZ to increase the textile sector's awareness on water efficiency. Due to its major supply chain in Pakistan, Levi's, the clothing company, has expressed interest in joining the city-wide partnership of Lahore.

# Impact in Numbers

## Economic Impact



- An annual saving of PKR 177.80 million (EUR 1.52 million) achieved against capital investment of PKR 119.90 million (EUR 1.03 million), after BWMP implementation in 35 SMEs.
- Development of a business case which is being used to encourage SMEs on a wider scale to adopt BWMPs.

## Environmental Impact



- The 35 pilot SMEs achieved total annual water conservation of 4.46 million m<sup>3</sup>, pollution reduction in the range of 10–30%, recovery of 1 829 tonnes of chemicals from waste streams, and reduction in water consumption led to reduced chemical consumption in industrial processes.
- BWMPs promoted technological changes:
  - use of reverse osmosis (RO) and softener for water treatment;
  - use of level switches in water storage tanks;
  - reuse of cooling water (in mills bearings, turbines bearings, etc.);
  - use of efficient motors;
  - reuse the vessels' cooling and hydraulic testing water (100–400 m<sup>3</sup>/day).

## Social Impacts



- Improved the water quality of rivers due to reduced wastewater discharge and recovery of chemicals from waste streams.

## Climate Benefits



- The total annual reduction in the energy consumption was 58 296 MWh, estimated to reduce 11 000 tonnes of CO<sub>2</sub> annually.
- Some of interventions proposed and implemented: use of efficient motors; improving power factor; heat recovery from hot wastewater streams; and reclaiming and use of all steam and vapour condensate generated in process house.

## Target Group Engagement



- Engaged with over 400 SMEs through audits, technical training, capacity building, awareness sessions, and exposure visits to model industries: 35 SMEs for on-ground implementation of BWMPs; 87 SMEs for capacity building on BWMPs; 300 SMEs for awareness raising.
- Multiple stakeholders were involved:
  - 400 SMEs (sectors: textile processing, sugar, paper & pulp and leather tanneries); Punjab Small Industries Cooperation (PSIC);
  - 4 Chambers of Commerce in Lahore, Faisalabad, Sialkot and Karachi,
  - 3 industrial associations (All Pakistan Textile Processing Mills Association, All Pakistan Textile Mills Association, Pakistan Tanners Association);

## Policy Development



- 5 national and provincial government departments (such as Environmental Protection Department, Water and Sanitation Authority, Irrigation and Land Reclamation Department, Pakistan Council on Water Resource Management);
- 6 educational/research institutions (Forman Christian College, Lahore University of Management Sciences, Government College University Lahore; University of Engineering and Technology; International Water Management Institute, Pakistan Council of Research in Water Resources);
- 3 multinational corporations operating in Pakistan (Nestlé, Coca Cola, Levi's).

- Establishment of a multi-stakeholder city-wide partnership on sustainable management of water resources in Lahore.
- The project contributed to various policy platforms including National School of Public Policy and Pakistan Urban Forum. An exposure visit was organised to Dada Enterprises (Pvt) Limited to demonstrate to policymakers and water managers the benefits of BWMPs and to build support for replicating the project in other cities. Dada Enterprises was one of the 35 pilot SMEs.
- Put forward policy recommendations such the inclusion of industrial representatives in policymaking processes to ensure incorporation of practical aspects; and development of SME guidelines for water efficiency improvement.
- The project supported the Environmental Protection Department in developing guidelines for the industrial sector to improve their water efficiency and reduce the use of chemicals.
- A MoU signed for better water management at city and farm levels.
- At the national level, the project was made known to the Director General Environment from Ministry of Climate Change and Deputy Secretary Industries.

## Europe-Asia Cooperation



- Joint publications issued, involving experts from Pakistan and UK on the Water Footprint Study of Key Industrial Sectors of Punjab. WWF-UK was involved in the development of a report, namely 'City-level business case for collective action on water stewardship,' which was reviewed by the Water Footprint Network. The study shows that the blue water footprint (BWF) of a textile processing unit is approximately 26 m<sup>3</sup> / tonne of fabric processed. The BWF of paper industry is 11 m<sup>3</sup> / tonne and of sugar industry 4.7 m<sup>3</sup> / tonne, while of the leather industry lies in the range of 1–25 m<sup>3</sup> / tonne.



#### 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 objective of the *Water Stewardship Pakistan (WSP)* project was that by 2025 water efficient production and consumption would predominate as best practice in Pakistan's major industrial cities, contributing to improved environmental sustainability and poverty reduction within the context of sustainable development.

## DURATION



## PROJECT TOTAL BUDGET

EUR 815 688  
(EU contribution: 80%)

## PROJECT CONTACT



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Cleaner Production Institute

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