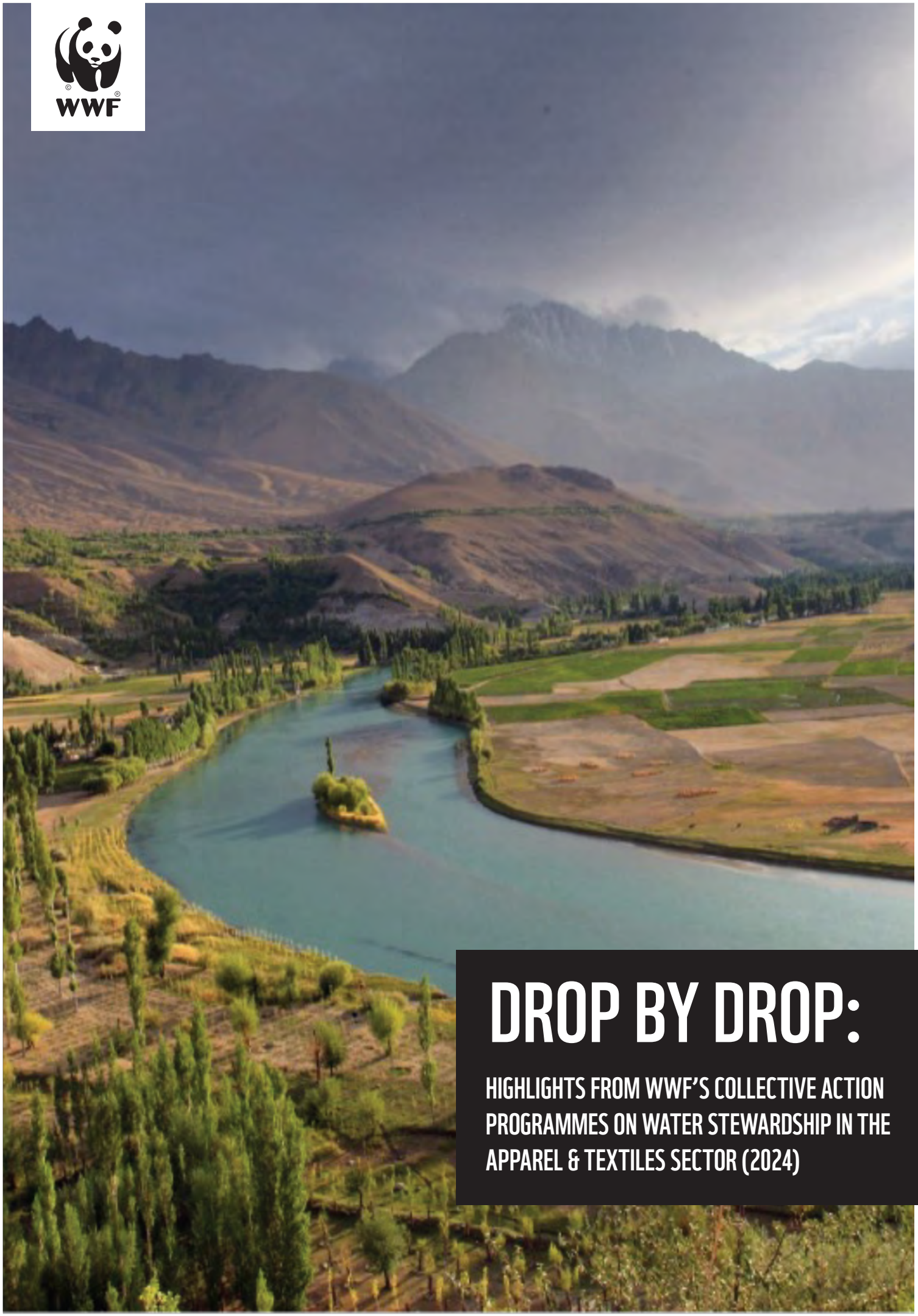


DROP BY DROP:

HIGHLIGHTS FROM WWF'S COLLECTIVE ACTION PROGRAMMES ON WATER STEWARDSHIP IN THE APPAREL & TEXTILES SECTOR (2024)

CONTENTS

INTRODUCTION

WWF piloted its first Collective Action project on Water Stewardship in Taihu Basin, China back in 2011, and since then has established elaborate Collective Action initiatives in ecologically diverse river basins such as Buyuk Menderes (Turkiye), Noyyal-Bhavani (India), Indus (Pakistan) and Mekong Delta (Vietnam) with the overarching goal to reduce the impacts of the textile sector on these river basins, ensure healthy river flows, and restore freshwater habitats and biodiversity.

Our on-ground teams are working closely with corporate partners, local and national government offices, financial institutions as well as civil society organizations to drive action at the basin level and explore opportunities to sustainably manage freshwater resources, which would benefit all - businesses, people and nature.

This report gives an overview of the activities of WWF's Collective Action Programmes in the year 2024. Furthermore, the report includes snippets of key achievements from past years to give readers an understanding of how our programs have evolved through the years. Our hope is that this report will help establish a better understanding of how WWF's Collective Action programs are making an impact in the river basins where we are operating.

2024 turned out to be the hottest year on record. Not only that, it also became the first year with an average temperature more than 1.5 C above the preindustrial levels (since 1850)[1] , which resulted in higher land and sea surface temperatures and increased ocean heat. These climatic changes have disrupted the Earth's water cycle, causing violent floods in some parts of the world and severe droughts in others.

We also witnessed a series of devastating floods and droughts in different parts of the world. In June 2024, for example, southern Brazil faced extensive damage due to powerful and extended flooding. In October, the Valencia region in Spain received a year's worth of rain in a span of few hours, leading to extreme flooding and widespread destruction which claimed lives of over 200 people. In South Asia, monsoon season caused intense flooding in countries like Bangladesh, Nepal, India and Pakistan. The challenges caused by political unrest and protests to the textile sector in Bangladesh were further compounded by the monsoon flooding, causing a 50%[2] decline in garment production, as factories struggled to meet purchase order deadlines due to disruption in cotton supplies.

On the other hand, drought plagued other parts of the world such as Panama Canal and Amazon river basin. One of the most tragic biodiversity loss incidents in the past year was the death of over 150 pink river dolphins in Lake Tefe, Brazil which baffled conservationists and scientists globally. Moreover, droughts in southern Africa severely affected crop production with the implication of exposing over 30 million people to food shortages. These scenarios demonstrate how water risks are materializing into reality and causing disruptions to supply chains and businesses.

In addition to depleting water levels, deteriorating water quality and water-related disasters, the loss of freshwater biodiversity and disturbance of freshwater ecosystems are major threats to the health of freshwater bodies (and the services they provide). According to WWF's Living Planet Report published in 2024, the freshwater biodiversity declined by a whopping 85% between 1970 and 2020.

There is an urgent need to invest in protecting and restoring and sustainably managing rivers, lakes and wetlands to reverse nature loss, adapt to climate change and drive sustainable development. We also need to accelerate collective action to build more resilient river basins which, in turn, will lead to resilient societies and economies. This report showcases some of the work WWF and partners are doing to drive collective action and deliver change. The year 2024 has showed us a glimpse of what the future would look like if we don't make better, more sustainable choices.

Water Stewardship
Collective Action Programs

COLLECTIVE ACTION WATER STEWARDSHIP PROGRAMMES' HIGHLIGHTS OF THE YEAR 2024

BUYUK MENDERES BASIN, TURKIYE

IMPORTANCE OF THE BUYUK MENDERES BASIN

Located in the South-Western part of Turkiye, the Buyuk Menderes basin offers myriad economic and ecological services to people and nature. The basin not only supports the country's second-largest cotton producing region (in the province of Aydin) but is also the source of over 60 per cent of Turkiye's home textile exports (from the province of Denizli). In addition, the basin is a biodiversity hotspot with 10 legally protected areas and 3 internationally important wetlands.

BASIN PROJECT OVERVIEW

WWF-Turkiye is implementing Water Stewardship in the textile sector and in cotton production in the Buyuk Menderes basin to ensure a sustainable water management structure, with a multi-disciplinary, multi-stakeholder, inclusive, and integrated approach. The program has 3 overarching objectives:

1. Green transformation of the textile sector through the implementation of a Cleaner Production Program;

2. Promotion of modern irrigation and regenerative agriculture in cotton production to ensure resilient and sustainable production; and

3. Restoration of ecosystem services in the target Key Biodiversity Areas (KBAs) for the benefit of nature and people.

COUNTRY RISK PROFILE BASED ON WWF'S WATER RISK FILTER:

Indicator	Risk Scale
Drought Risk[3]	2.87
Flood Risk[4]	2.17
Water Quality[5]	3.4
Flagship Species	European eel: endangered species

Figure 1. Map of Buyuk Menderes Basin

2024 ACTIVITIES

OBJECTIVE 1

WWF-Turkiye and the Chamber of Industry collaborated to secure financial and technical support for textile facilities to position Denizli as a model for green transformation of Turkiye's textile sector.

Engagement with Finance Institutions for Private Sector Financing:

WWF-Turkiye engaged finance institutions and local banks to explore opportunities for creating private sector financing mechanisms for cleaner production in the textile industry. WWF-Turkiye and a local bank are working on developing a blended finance model that integrates public grant support to lower barriers to investment.

Engagement with the Ministry of Trade for Policy Development:

Since lack of incentives has been identified as one of the key barriers for cleaner production investments in Denizli, WWF-Turkiye is working with the Ministry of Trade to explore mechanisms to acknowledge and offer leverage to companies that are implementing cleaner production practices. The Ministry of Trade and WWF-Turkiye mutually agreed to organize a series of roundtables in 2025 to bring together stakeholders to strengthen existing programs, develop new initiatives that support the green transformation of the industry, and address barriers.

OBJECTIVE 2

Feasibility Analysis of Regenerative Cotton Production:

WWF-Turkiye conducted a cost-benefit analysis of regenerative cotton pilot projects to demonstrate the economic benefits and viability of these practices. The analysis will provide insights and scientific input for the development of financial support programs.

The feasibility study focused on regenerative agriculture practices implemented in two pilot fields, measuring 5.5 hectares and 2.4 hectares, during the 2020–2021 and 2021–2022 cotton production seasons.

The cost-benefit analysis evaluated data on associated income and costs. The income from regenerative cotton production includes revenue from seed cotton sales during the production season, a 20 per cent premium price, and incentives provided by the Ministry of Agriculture for fuel, fertilizer, and seed cotton on a per-hectare basis. On the cost side, regenerative cotton production expenses encompass water consumption, sowing, fuel, fertilization, and labour for irrigation and hoeing. Additional costs include chemical plant protection, defoliants (a chemical that removes leaves from trees and plants), harvesting, and cover crop seeds, and other factors such as certification, and the depreciation of machinery and equipment over time.

The results showed that regenerative cotton farming

BUYUK MENDERES BASIN, TURKIYE

becomes profitable as yield losses are gradually recovered over five years. With varying levels of government support, the payback period ranged from two to three years, with net accumulated cash reaching $448,000 to $530,000 by year ten.

Strengthen the knowledge and skills of farmers and agricultural stakeholders

2.1 Regenerative Cotton Scorecard

WWF-Turkiye developed the final draft of the Regenerative Cotton Scorecard in both Turkish and English. The scorecard is designed as a tool to support farmers and agricultural engineers in developing step-by-step action plans for implementing, monitoring, and evaluating regenerative practices at the farm level. Its primary goal is to bridge the gap between theory and practice in regenerative agriculture, providing guidance for different levels of ecological enhancement based on the outcomes and practices outlined in Table 1 below.

The Regenerative Cotton Scorecard is designed for diverse stakeholders, primarily benefiting farmers and agricultural engineers by helping them assess ecological practices, identify areas for improvement, and plan their transition to regenerative agriculture. It also serves the textile supply chain, including brands, enabling them to evaluate sustainability initiatives, understand investment needs, and communicate outcome-based ecological improvements. Public authorities and cooperatives gain insights into the adoption and impact of regenerative practices, while cooperatives can use the scorecard to support collective decision-making. Additionally, academics can integrate the scorecard into educational materials, and consumers can use it to discern genuinely regenerative practices.

2.2 Guidelines and Training Videos: Better Soil and Water Management in Cotton Production

WWF-Turkiye launched the English-subtitled training video series on its YouTube channel. These videos have been shared through Textile Exchange reaching more than 600 people. Links: Water and Soil Management in Cotton Production Guidelines and Farmer's Toolbox; Training Videos - Water and Soil Management in Cotton Production (Playlist).

Table 1. Regenerative Cotton Scorecard Outcomes And Practices

Outcome	Practice
Soil Health	Cover Crop Tillage Soil Cover Year-Round Living Roots Crop Rotation Animal Integration & Grazing Management
Water Management	Reducing the Amount of Irrigation Water Needed Irrigation Water Management
Climate Change Mitigation	Reducing Field Traffic Carbon Emissions Carbon Sequestration
Biodiversity Elements	Diversity of Non-Crop Species and Habitats Soil Biodiversity
Input Management	Plant Nutrients Management Pesticide Management Weed Management Biological Inoculation Applications

KEY ACHIEVEMENTS

WWF-Turkiye's major water stewardship achievements and outcomes in 2024:

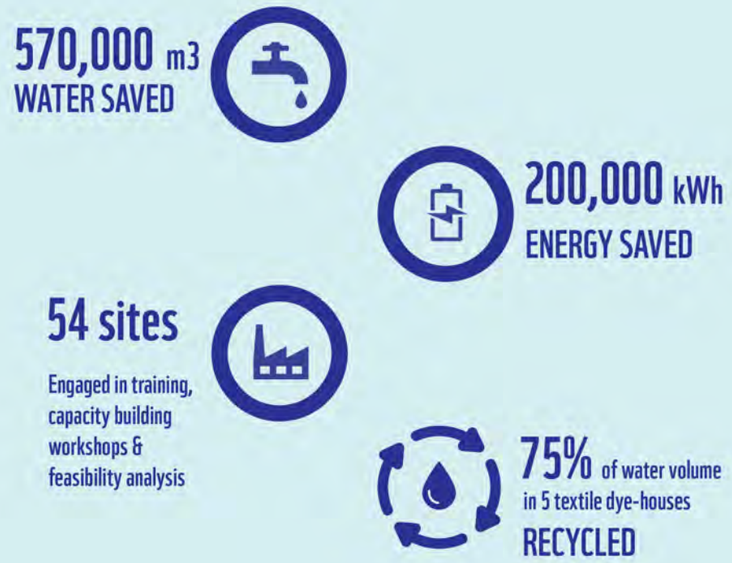
1. The fourth season of regenerative agriculture pilot across 17.9 hectares of Better Cotton farms has been completed, with comprehensive data collection for monitoring and evaluation (M&E). On a 15.5-hectare farm, investment in modern irrigation led to a 60% reduction in water use, saving approximately 58,000 m^3 of water annually.

2. WWF-Turkiye conducted a cost-benefit analysis of regenerative cotton pilot projects on 7.9 hectares, showing that regenerative cotton farming becomes profitable as yield losses are gradually recovered over five years. With varying levels of government support, the payback period ranged from two to three years, with net cash ranging from US$448,000 to $530,000 by year ten. These results will be shared with the Ministry of Industry in 2025 to inform potential government-backed financial support for regenerative farming.

3. WWF-Turkiye finalized the Regenerative Cotton Scorecard, a tool to guide farmers and agricultural engineers in developing step-by-step action plans for implementing, monitoring, and evaluating regenerative practices. The Scorecard, along with guidelines, will be publicly available in English in 2025.

4. WWF-Turkiye facilitated the launch of a technical working group by the Aydın Governate to restore habitats and migration routes of the European eel in Bafa Lake and the Buyuk Menderes Delta. The group, consisting of 45 stakeholders from public authorities, NGOs, academia, fisheries cooperatives, and municipalities, identified key challenges and developed an action plan with 14 activities across three objectives: restoring habitats, enhancing the eel population, and fostering local stewardship for habitat restoration.

BUYUK MENDERES BASIN PROGRAM - CUMULATIVE IMPACTS



INDUS RIVER BASIN, PAKISTAN

IMPORTANCE OF THE INDUS RIVER BASIN

In Pakistan, the Indus River Basin contributes 219 billion m3 to the average annual renewable water resources of the country, supporting industrial and agricultural production as well as many of the country's major cities. The basin contributes 95.8 per cent of average annual renewable water resources of the country. It is home to 225 wetlands of national significance, including 19 Ramsar sites, which support 18 threatened mammal species (including Punjab Urial and Indus River Dolphin), 20 threatened bird species and two endemic amphibian species. Moreover, 187 freshwater fish species, and 788 marine and estuarine fish species are also found in these wetlands. The health of these wetlands is directly or indirectly contingent on the quality and quantity of surface and groundwater fed by the Indus River.

BASIN PROJECT OVERVIEW

One of the biggest stakeholders in the Indus River Basin is the textile industry, which is supported by locally grown and imported cotton. Pakistan is the 5th largest cotton producing country in the world, and cotton has the highest blue water footprint amongst Pakistan's major crops.[6] Textile and leather sectors contribute 8.5 per cent[7] and 5.6 per cent[8] to the country's Gross Domestic Product (GDP) respectively. WWF-Pakistan is implementing an eight-year project entitled 'International Labour and Environmental Standards Application in Pakistan's SMEs (ILES)' in collaboration with ILO, funded by the European Union (EU). The project targets improvement in environmental governance and compliance in the leather and textile sectors for leveraging economic benefits of the EU's Generalized Scheme of Preferences (GSP+).

COUNTRY RISK PROFILE BASED ON WWF'S WATER RISK FILTER:

Indicator	Risk Scale
Drought Risk	3.33
Flood Risk	2.92
Water Quality	2.92
Flagship Species	Indus Dolphin: endangered species

Figure 2. Map of Indus River Basin

2024 ACTIVITIES

Stakeholder Sessions, Workshop and Dissemination Sessions:

Many stakeholder sessions were organized to engage and exchange information with federal and public sector organizations. Several other workshops, dissemination sessions and seminars were held to enhance the visibility of the project's success stories, by showcasing the adoption of sustainable practices by the private sector. The stakeholders gave positive feedback on the projects' results. These activities included:

- A dialogue on strengthening national environmental compliance through cross-learning and structure development for countrywide effective coordination with active participation from Environmental Protection Agencies (EPAs), the Ministry of Climate Change (MoCC), the National Compliance Center (NCC), and Ministry of Commerce (MoC).

- A stakeholder workshop to address water challenges in the province of Khyber Pakhtunkhwa (KPK) was led by EPA-KPK's Director General, and engaged 24 stakeholders in identifying water challenges, conducting SWOT analyses of the identified challenges, and devising an action plan.

- Two training and capacity development sessions for representatives of Sindh and Balochistan EPAs and the Ministry of Commerce to improve compliance with international environmental standards, Multi-environmental Agreements (MEAs), and Sustainable Development Goals (SDGs). 27 participants were trained.

- Two workshops on "Structuring Green Financing Instruments for Textile & Leather Sector" in Islamabad and Karachi, in collaboration with the National Institute of Banking and Finance (NIBAF), were aimed at building the capacity of financial institutions to develop green investment products. The sessions covered concepts of green financing, regulatory frameworks, risk management, and practical implementation. The workshops trained 37 representatives from 18 financial institutions and, as a result of the training, many banks are planning to launch specific green financing instruments for SMEs.

- A panel discussion on "Harnessing Islamic Finance: Unlocking New Avenues for Climate Action" in collaboration with NIBAF examined the potential of Islamic finance as a sustainable solution, emphasizing its ethical principles and alignment with the Sustainable Development Goals (SDGs). The event was attended by 42 participants.

Workshops and Dissemination Sessions:

- In June, delegations from Pakistan's textile sector participated in a visit to Viet Nam, focusing on sustainability and circular economy practices, which included engagements with key stakeholders, such as STAMEQ, Hanoi Industrial Textile Garment University, and QUATEST, to explore cleaner production policies, sustainability integration in education, and textile testing.

INDUS RIVER BASIN, PAKISTAN

• In August, delegations from Pakistan's textile sector participated in a visit to Germany, which highlighted best practices in sustainable materials, recycling, and circular design through roundtables, discussions, and field trips, fostering knowledge exchange and collaboration. The visit emphasized actionable strategies for sustainable transitions in Pakistan's textile industry.

• Through specific training activities, the Project supported the certification of 114 participants on various standards including ISO 14001:2015, ZDHC CMS TIG and WASH.

• A series of sessions on REACH (EU Regulation for Registration, Evaluation, Authorization, and Restriction of Chemicals) in Lahore, Faisalabad, Sialkot and Karachi trained 94 participants.

• Throughout the year, enterprises were supported in various areas, including Science Based Targets (SBTis), sustainability reporting on ESG and GRI, sustainable management of their Effluent Treatment Plants (ETPs), and assessment of their water recycling plants.

• Through ILES project's supported training sessions on Smart Environmental Management Practices (SEMPs), SMEs now have an increased capacity to implement environmental management. A session to promote SEMPs practices in the textile and apparel sector was organized in collaboration with PRGMEA and facilitated the exchange of best practices in resource efficiency, energy conservation, and waste reduction while fostering networking and collaboration for compliance with international sustainability standards. 37 stakeholders benefited from the session.

• Two sessions on the AWS Impact Accelerator in Lahore and Faisalabad addressed unique water challenges in the participating sites by evaluating water availability, quality, and usage patterns. The sessions focused on developing site-specific strategies and action plans for implementing the AWS Standard, tailored to local contexts and constraints.

• The Project supported training on "Community Wash Promotion and Train the Trainer Essentials".

Tool Development:

WWF-Pakistan developed various tools to support transition in the textile sector:

• In collaboration with Sindh Environmental Protection Agency (SEPA), an online Self-Monitoring and Reporting Tool (SMART) was developed to enable facilities to submit compliance reports under Sindh Environmental Quality Standards. WWF-Pakistan also committed to assisting other EPAs in developing an online portal following the successful pilot with Sindh EPA, and for building capacity of Balochistan EPA staff.

• A Learning Management System (LMS) was developed to provide a course on Sustainable Manufacturing and Environmental Practices (SMEPs) for the textile and leather industries. The course offers interactive, self-paced modules on sustainability, compliance, and resource efficiency. This initiative aims to build industry capacity and promote sustainable practices in Pakistan's SMEs.

• In order to promote digital data reporting and transparency, a data reporting portal was developed in collaboration with Pakistan Ready-made Garments Manufacturers Association (PRGMEA), which will help enterprises report their best practices online.

Studies and Other Activities:

• A study on environmental analysis and remediation of air, water and solid waste management of Hub, a city in Baluchistan was conducted. It involved detailed assessments of air and water quality to identify pollution sources, analyzed surface and groundwater resources, and quantified solid waste generation.

• A study for Gadoon Amazai Industrial Estate, Khyber Pakhtunkhwa assessed solid waste types, quantities, and wastewater discharge to propose a comprehensive waste management system and recommended a Combined Effluent Treatment Plant (CETP) for effective wastewater treatment.

• The project supported the technical upgrading of the Institute of Knitwear Technology, established by the Pakistan Hosiery Manufacturers Association (PHMA) in Lahore through the purchase of quality control equipment.

• The project engaged a consultant to develop an Environmental Management Plan (EMP) for decontaminating existing tannery sites in Sialkot. The initiative included conducting a physical survey to assess the current state of tannery clusters, collecting and chemically testing soil and groundwater samples from 10 sites, and formulating a cluster-specific EMP to address soil pollution during the tannery relocation process.

KEY ACHIEVEMENTS

WWF-Pakistan's major water stewardship achievements and outcomes in 2024:

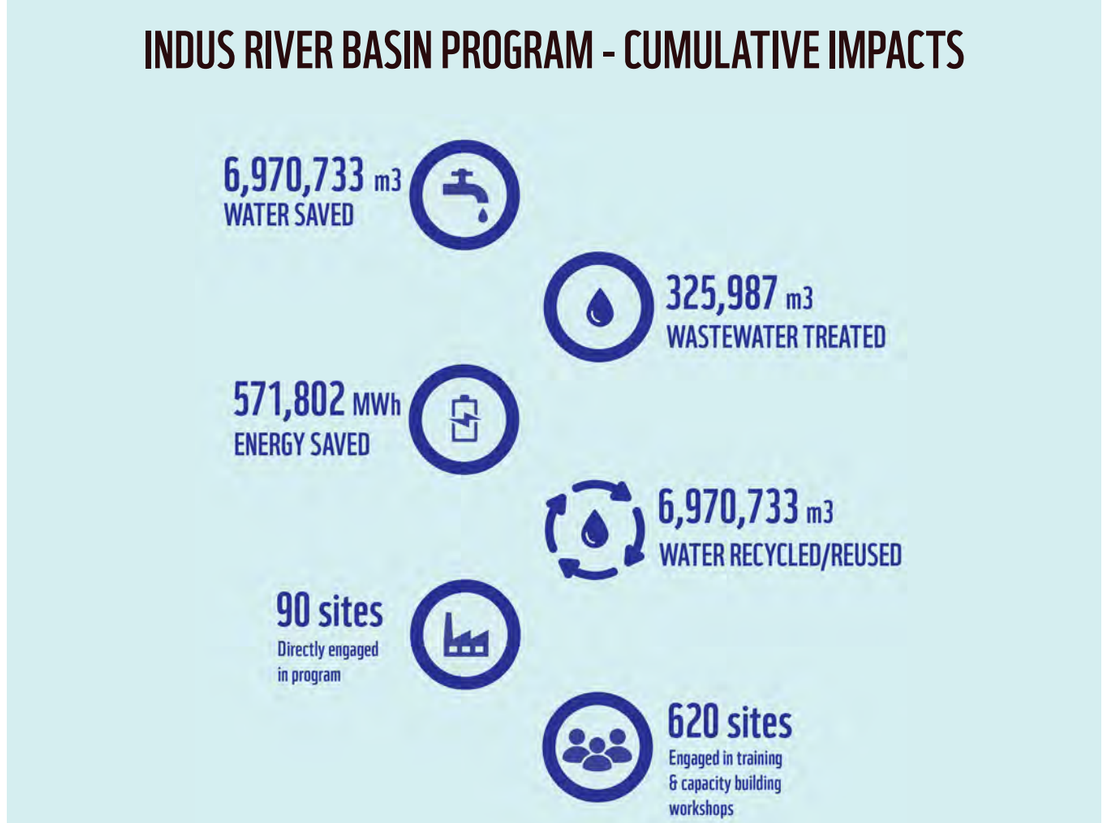
1. An online portal, Self-Monitoring and Reporting Tool (SMART) was developed to enable facilities to conveniently submit compliance reports under Sindh Environmental Quality Standards.

2. Two workshops were organized on "Structuring Green Financing Instruments for Textile & Leather Sector" in collaboration with the National Institute of Banking and Finance (NIBAF), which trained 37 representatives from 18 financial institutions. The training has encouraged many local banks to launch specific green financing instruments for SMEs.

3. A data reporting portal was developed in collaboration with Pakistan Ready-made Garments Manufacturers Association (PRGMEA), which will help enterprises report their best practices online.

4. The Project supported the certification of 114 participants on various standards including ISO 14001:2015, ZDHC CMS TIG and WASH.

Additional Achievements: 15 SMEs implemented AWS • 1033 rainwater harvesting systems were installed • 77 Ablution water reuse systems constructed • 112 recharge wells sites installed to replenish groundwater aquifers • 24 floating treatment wetlands installed



MEKONG RIVER DELTA, VIET NAM

IMPORTANCE OF THE MEKONG RIVER DELTA

The Mekong Delta, with an area of 40,000 km2 in Viet Nam, is one of the most vibrant and fertile deltas of the world. Large parts of the delta are used for rice cultivation, aquaculture, orchards and vegetable crops, contributing more than 50% of national rice output and 70% of aquaculture exports. Viet Nam is also a top destination for investors in the Mekong region, with funds fueling the development of global supply chains and industrial growth. The textiles and electronics sectors, in particular, have witnessed a rapid expansion in recent years. However, the Delta is facing growing risks. Sinking and shrinking, it is increasingly vulnerable to the worsening impacts of climate change as well as salinization. It also faces increasing pollution.

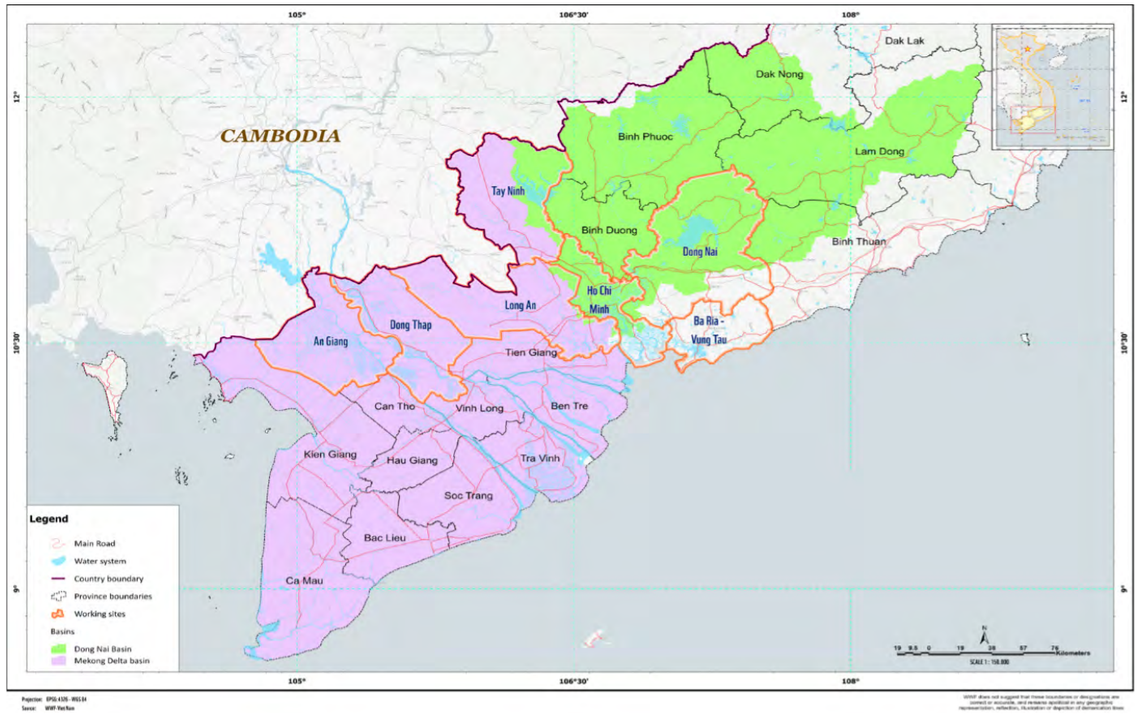
BASIN PROJECT OVERVIEW

WWF-Vietnam's Water Stewardship's program aims to 'support the regional development objective of creating an economically prosperous, socially equitable and environmentally sound Greater Mekong region, and work towards the vision of maintaining and improving river basin health'. To achieve this, the program supports textile SMEs in Viet Nam through water and energy assessments, improved access to technical and financial tools on cleaner production, and by mobilizing collective action in the textile sector.

COUNTRY RISK PROFILE BASED ON WWF'S WATER RISK FILTER:

Indicator	Risk Scale
Drought Risk	2.87
Flood Risk	3.23
Water Quality	2.58

Figure 3. Map of Mekong River Delta



2024 ACTIVITIES

Phase II of Water Stewardship Program

In 2024, WWF-Vietnam's Water Stewardship Program secure support to transition to Phase II, which aims to will extend water stewardship efforts to new sectors, such as aquaculture and beverages, and scale the impacts to the conservation of the basin.

To achieve this ambitious goal, the program budgeted US$2 million for the 4-year time span. Similar to Phase 1, the Swiss Development Agency (SDC) continues to be the major donor of the program. WWF-Vietnam collaborated with WWF-Myanmar and WWF-Cambodia to develop grant proceedings for Phase II of the Water Stewardship Program for SMEs in the Greater Mekong region. For match-funding, WWF-Vietnam was able to secure support from the private sector and WWF-Korea pitched also pitched in, while WWF-Vietnam also secured the approval for match-funding support from a corporate foundation for the conservation project in Tram Chim, a protected wetland in the Mekong Delta. Now the budget for WWF-Vietnam's Water Stewardship Program is secured, with US$1 million from SDC and more than US$600,000 jointly from 4 other donors.

The second significant step was to initiate the long approval process with the Government via the Ministry of National Resources and Environment (MONRE). The process began with stakeholder mapping to identify the relevant department of MONRE where the program could be housed as well as other technical departments that could participate as collaborative partners during program implementation. The Institute of Strategy, Policy on Natural Resources and Environment (ISPONRE) was identified as the most suitable agency to oversee the project. After six months, the official program document has been reviewed by all eight departments inside MONRE as well as by 6 Ministries and local government n the seven provinces selected as sites for pilot projects. The process is now approaching the last step of Ministerial review and approval.

Collective Action:

The project harnessed collective action with the development organization GIZ, and fashion brands to accelerate water stewardship actions and environmental performance amongst the textile manufacturers. Collective action promoted by the project consisted of capacity building activities, collective commitment for sustainability, and new funding for the water stewardship program. Specifically, a HIGG climate action training was co-organized by GIZ and WWF, attracting 14 partnered brands and more than 570 textile factories. The project has actively worked with three brands on supplier enrollment for water stewardship transformation support. Meanwhile, eight leading textile mills have been nominated by these brands and will benefit from technical support from WWF. WWF-Vietnam is also pursuing collective action with

MEKONG RIVER DELTA, VIET NAM

private partners like Coca-Cola and Heineken for a shared learning journey on water footprint and basin water risks, concept development on water replenishment and watershed health, and wastewater reuse at the industrial park level. Even though it will take a considerable time to transform these concepts into concrete plans, there is a strong hope that collective action and empowering the private sector to take the driving seat will accelerate efforts to deliver nature-positive impacts.

Emerging Focal Areas

WWF-Vietnam will focus on Water Circulation at the Industrial Park (IP) level with the potential to scale. Wastewater from the centralized wastewater unit of the IP can be used as process water for construction materials or further treated to be reused for wider purposes.

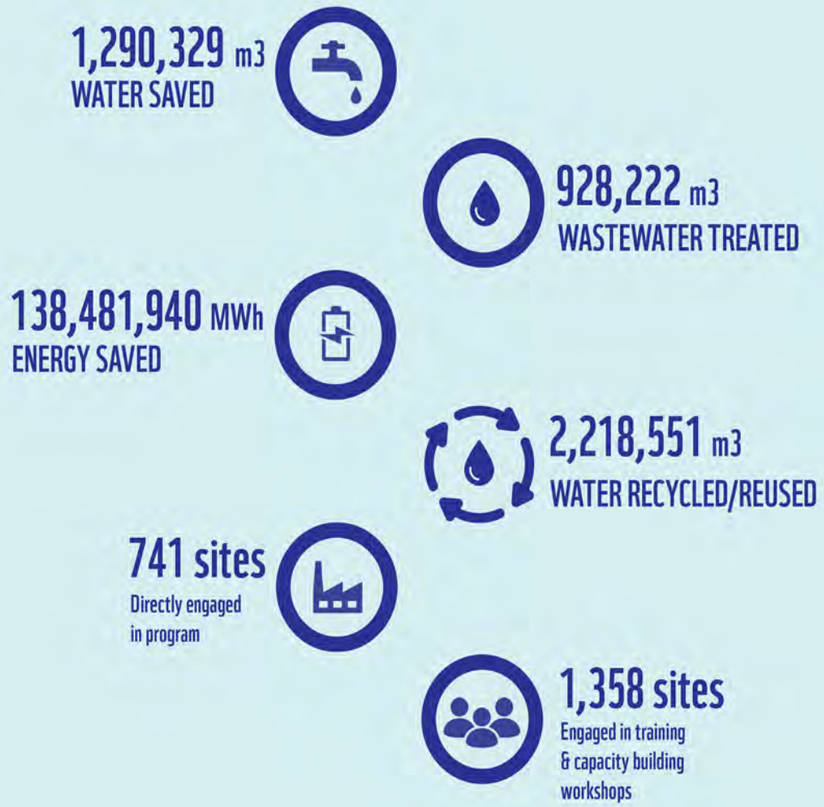
The other emerging area of focus is Nature-based solutions as a strategic intervention to conserve water resources and to secure sustainable economic benefits.

KEY ACHIEVEMENTS

WWF-Viet Nam's major water stewardship achievements and outcomes in 2024:

1. Secured US$1.6 million funds for Phase II of the Water Stewardship Program.
2. Pushed halfway through the Government approval process for the 4-year Water Stewardship Program
3. Promoted collective action in the region by providing a co-training platform with GIZ, engaging textile suppliers with fashion brands, and co-creating a watershed health concept with beverage companies.
4. Completed one more bankable project on wastewater recycling in a Denim Fabric facility. The feasibility study demonstrated high financial benefits with payback period of 11 months due to low upfront investment (CAPEX) on the ion exchange filtration to upgrade the current wastewater recycling facility.

MEKONG RIVER DELTA PROGRAM - CUMULATIVE IMPACTS



NOYYAL & BHAVANI BASINS, INDIA

IMPORTANCE OF THE NOYYAL and BHAVANI RIVER BASINS

Noyyal and Bhavani are 2 sub-basins of the Cauvery River, which are critical for the water security of the region. The rivers have their origin in the mountains of Western Ghats, which is one of the world's greatest biodiversity hotspots. In addition to harboring unique wildlife upstream, the rivers also enable much of the agricultural and industrial economy downstream. These basins generate about 16 per cent of the GDP of Tamil Nadu state and more than 50 per cent of its hydropower as well as housing textile clusters (Coimbatore, Tiruppur & Erode) responsible for 90 per cent of cotton knitwear exports from India. There are about 800 garment factories, 500 dyeing units and more than 3,000 finishing units, which employ about 600,000 people and contribute to exports worth US$ 3 billion. The city of Tiruppur is famously known as the "Knitwear Capital of India". The Noyyal River, which flows through the heart of the city, has been instrumental in shaping Tiruppur's rise as a textile hub. However, rapid industrialization and urbanization have led to severe environmental challenges, particularly polluting of the Noyyal River due to untreated or partially treated sewage and effluent discharge. Given the intertwined economic and environmental significance of the city and the river, the adoption of sustainable practices has become essential to ensure a harmonious balance between industrial progress and ecological preservation.

BASIN PROJECT OVERVIEW

WWF-India's Noyyal-Bhavani program aims to ensure that freshwater is available for people and nature by improving the quality of surface water and groundwater in the Noyyal-Bhavani Region. Specifically, the program's objectives include:

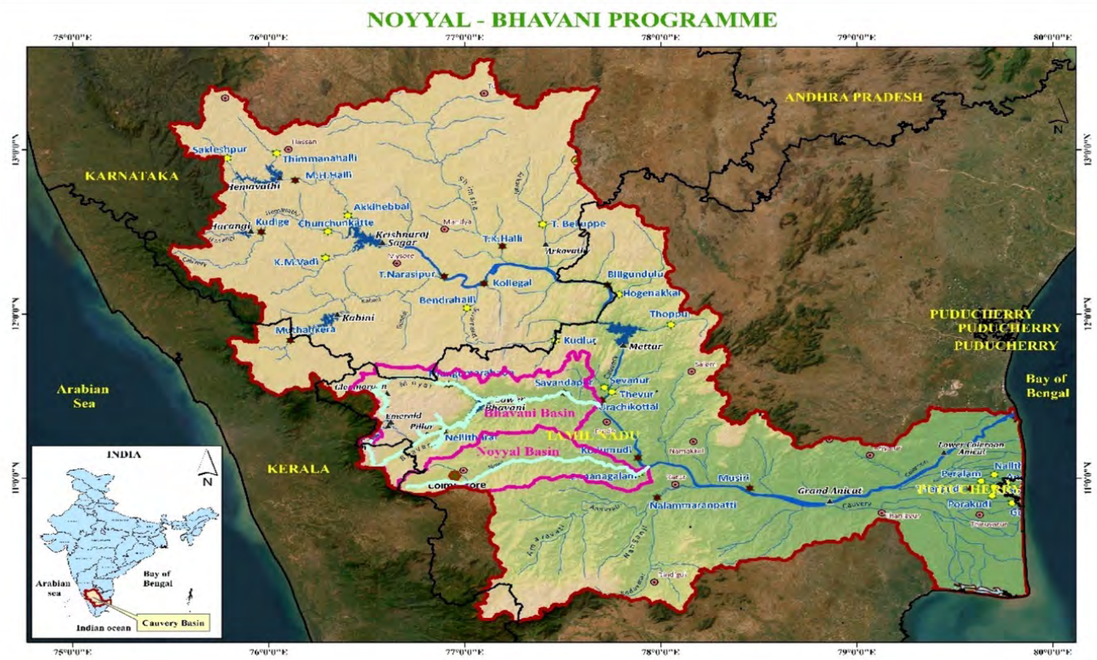
- establishing interactions and trade-offs between users and sectors in representative zones of the Bhavani and Noyyal river basins;
- demonstrating models in key sites to strengthen positive interactions leading to healthy river ecosystems and water security; and
- influencing sectoral, local, regional and national policies that deliver on a shared vision and outcomes for sustainable river basin management.

WWF-India is implementing a landscape-based approach to achieve these objectives and is working in different parts of the two basins. The components of the program include groundwater improvement in Tiruppur City, wetland conservation and restoration, invasive species management, industrial engagement on cleaner production, environmental flow assessments and farmer engagement.

COUNTRY RISK PROFILE BASED ON WWF'S WATER RISK FILTER:

Indicator	Risk Scale
Drought Risk	3.29
Flood Risk	2.98
Water Quality	3.48
Flagship Species	Orange-finned Mahseer – Critically Endangered

Figure 4. Map of Noyyal and Bhavani Basins



2024 ACTIVITIES

Clean tech and Better Water Management Practices:

In response to the pollution challenges posed by industrial establishments in Tiruppur, WWF-India has initiated clean technology engagements within the city's textile cluster. These efforts focus on key areas such as energy management, water and wastewater management, material and chemical management, and health and safety across the textile value chain. By September, WWF-India had completed 30 assessments, identifying 276 opportunities with the potential of saving 2,415,100 kWh of electricity, 128,780 KL of water, and 4,114 tonnes of fuel annually.

Agricultural best management practices demonstrated in the Mandarai Pallam catchment to improve groundwater level:

In the Mandarai Pallam area, there are Elephant Protection Trenches (EPT) that occasionally affect the flow of streams during the monsoon season. To address this, a GPS survey was conducted along the EPT until the watershed boundary to identify the trench's slope and facilitate the proper drainage of water into the stream. The site-specific design suggestions for the water diversion structures were devised by the expert team to ensure that water diversion structures do not compromise the EPT.

In addition to that, Ground Water Recharge (GWR) structures to recharge groundwater around defunct borewells in fields have also been implemented and the groundwater is being periodically monitored to check the efficacy of GWR structures.

Environmental-flows framework for Moyar River Basin:

The E-flows framework for the Moyar River basin located in the Noyyal-Bhavani river basins landscape, which was developed in 2023 to secure minimum river flows to support biodiversity, was presented at a meeting with the Forest Department and relevant stakeholders to share its key findings and advocate for its approval. Additionally, three rain gauges were installed in the Moyar River Zone to better understand weather patterns for efficient water resource management.

Wetland Restoration:

WWF-India is working on the conservation of 4 wetlands in the region – Sulur Lake, Anthiyur Lake, Marlimund Lake and Koolipalayam. Wetland Health Assessments for each lake were based on pre-monsoon fish health assessments to identify and record key fish species followed by water quality assessments, including vertical profiling, macro-phytic and macro-zoobenthic studies. These assessments facilitated the development of Wetland Health Cards and action plans for wetland conservation

- *Sulur Lake*

In Sulur Lake, a Dragonfly Survey was conducted through citizen groups, which resulted in identification of 14 species.

NOYYAL & BHAVANI BASINS, INDIA

Dragonflies are also a bio-indicator for water health since their survival is dependent upon the availability of clean water. High levels of pollution can destroy their eggs and suffocate their nymphs.

A Bar Screen Chamber, which blocks solid waste and invasive plants entering Sulur wetland from the Noyyal River, was installed at the inlet canal of the wetland to improve its water quality. In addition, Floating Fountains were installed at the Sulur Lake to improve the water quality and enhance aquatic life in the wetland.

• *Nanjarayan Bird Sanctuary, Koolipalayam*
WWF-India has been tasked by the government to develop an Integrated Management Plan (IMP) and Framework Management Plan (FMP) for the Nanjarayan Bird Sanctuary in Koolipalayam. As part of this process, a Wetland Health Card for Koolipalayam was developed.

• *Anthiyur*
The first Stakeholder Engagement Program with farmers involved more than 30 farmers, who pledged their support for the conservation initiatives and joined as Wetland Mitras (Friends of Wetlands).

• *Marlimund Lake*
WWF-India, in collaboration with the Forest Departmentand the Toda tribal community, is actively working on therestoration of the shola grasslands in the Upper Bhavani region. Recognizing the critical need to revive native grassland ecosystems, WWF-India focused on the restoration of indigenous shola species. In a significant gesture of support, the Toda community provided one acre of land specifically for the establishment of a grassland nursery. With this partnership, WWF-India successfully set up the nursery, planting over 40 native shola species. The nursery now serves as a crucial resource for restoring degraded grassland patches. A major milestone is planned for July 2025, when these carefully nurtured native species will be transplanted into a designated pilot restoration site, marking an important step toward the large-scale revival of the unique shola-grassland landscape.

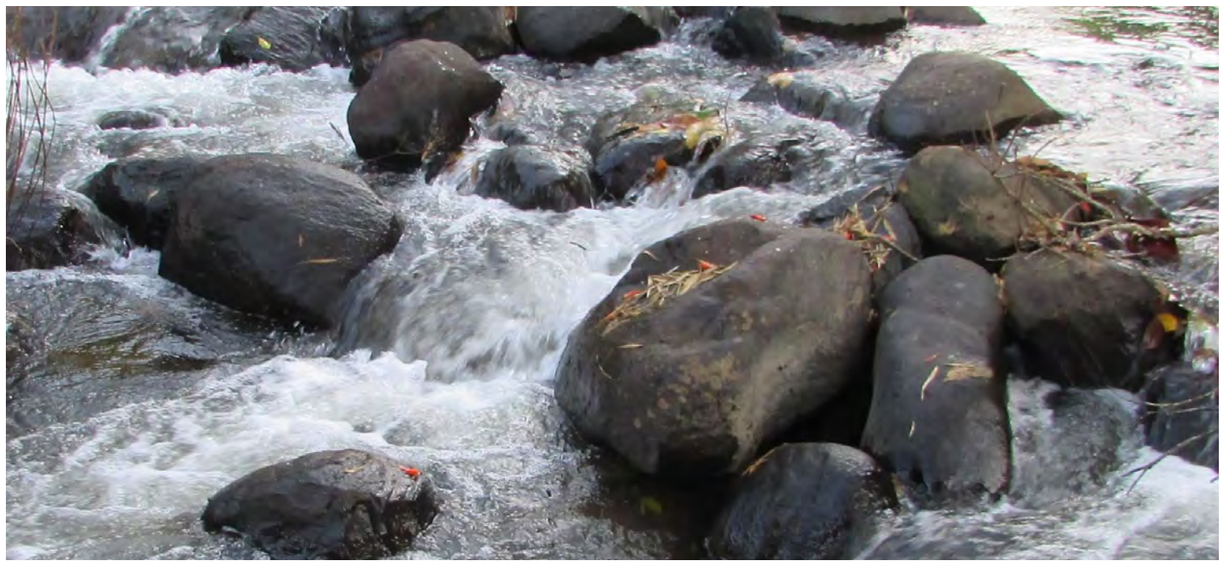
Addressing Pollution hotspots in Tiruppur city:

Rainwater Harvesting (RWH) and Recharge Structures were implemented at seven locations in the pilot phase in the city of Tiruppur. These structures will help recharge borewells to improve groundwater levels through collection of surface runoff during rains.

Strengthening Advocacy through Citizen Groups:

River Health Assessments (RHA) at different locations in the Bhavani River were conducted with citizen groups in association with Rotary International.

A Water School Program has been implemented in 15 schools engaging fifty teachers and 1,351 students. The students established kitchen gardens. In addition, Water School activity materials like Water Wheel, Eco pyramid, and Snakes and Ladders were distributed to all 15 schools. The program was then scaled to nine more schools engaging approximately 2000 students and 100 teachers in conservation activities.

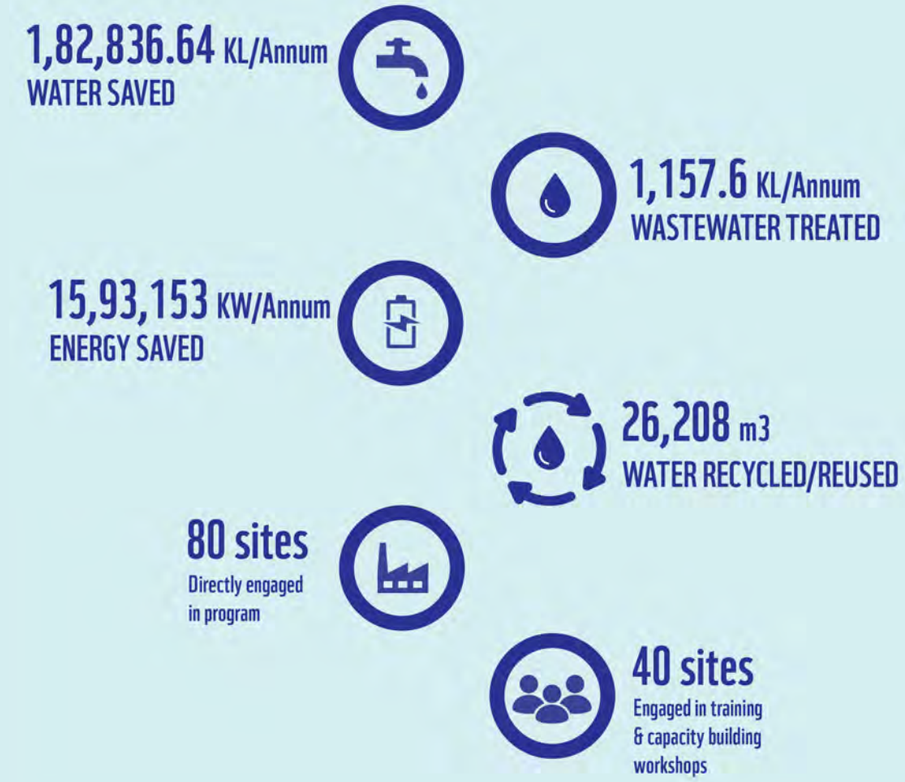


KEY ACHIEVEMENTS

WWF-India's major water stewardship achievements and outcomes in 2024:

1. WWF-India completed 30 assessments, identifying 276 opportunities with the potential of saving 2,415,100 kWh of electricity, 128,780 KL of water, and 4,114 tonnes of fuel annually.
2. Water Health Assessments of key wetlands were conducted followed by the development of Wetland Health Cards and action plans for wetland conservation.
3. Installation of seven Rainwater Harvesting (RWH) and Recharge Structures to improve groundwater levels in the city of Tiruppur.
4. Three rain gauges were installed in the Moyar River Zone to analyse rainfall variation for efficient water resource management
5. A Water School Program was implemented in 29 schools engaging over 2000 students and 100 teachers.

NOYYAL & BHAVANI BASINS PROGRAM - CUMULATIVE IMPACTS



TAIHU RIVER BASIN, CHINA

IMPORTANCE OF TAIHU RIVER BASIN

The Taihu River Basin holds immense ecological and economic significance. Ecologically, it serves as a vital source of water for people and nature, supporting a rich array of aquatic life and providing essential ecosystem services. Economically, the region is a hub of industrial activity and agricultural production, contributing significantly to the national economy. The Taihu River Basin is a part of Yangtze River Delta in eastern China, and is one of China's most economically developed areas. In line with 2024 policies, efforts are being intensified to balance ecological preservation with economic development, ensuring sustainable utilization of resources while fostering green growth in the Taihu Basin. This includes promoting eco-friendly practices, enhancing environmental governance, and fostering innovation in sustainable technologies to safeguard the region's ecological integrity and economic prosperity.

COUNTRY RISK PROFILE BASED ON WWF'S WATER RISK FILTER:

Indicator	Risk Scale
Drought Risk	2.35
Flood Risk	2.32
Water Quality	2.82

Figure 5. Map of Taihu River Basin

BASIN PROJECT OVERVIEW

To promote the sustainable transformation of the middle and lower reaches of the Yangtze River region, WWF-China supported the "Design Innovation, New Quality Future" forum organized by WWF, China National Textile and Apparel Council (CNTAC), and Donghua University at the Shanghai World Design Cities Conference (WDCC), which stimulates new productive forces in fashion through design innovation. Together with its strategic partner, One Planet Foundation, WWF-China is engaged in two key wetland projects in Taicang:; Jincang Lake Provincial Wetland Park Restoration – Focused on water replenishment; and, Local government-supported '72 Villages' Riverbank Wetland – Primarily aimed at promoting sustainable tourism.

WWF-China aims to realize the value of ecological products by creating a unique "Wetland+ Taicang Action" online platform. This platform promotes high-quality development of regional cultural tourism. Another collaborative action "Protecting the Rivers and Seas" was launched in 72 Ideal Villages of Liuhe, Taicang. The slogan "Protecting the Rivers and Seas" reflects Taicang's strategic location within the Taihu basin and at the Yangtze River estuary.

To assist enterprises in their ecological and green transformation, WWF-China has initiated the "Earth Enterprise Partnership Program", piloting green transformations in enterprises, supporting their ESG (Environmental, Social, and Governance) improvements, and promoting water transformation in their supply chains to enhance their performance in water resource utilization and reduction of water pollution. In this context, the governance of the Taihu Basin has entered a new chapter. Multi-stakeholder cooperation has become the key to driving the governance process, combined with the Taihu Governance 2.0 model – a new governance approach driven by technology, emphasizing data sharing, intelligent monitoring, and public participation. The ecological protection and economic development of the Taihu Basin are gradually achieving harmonious coexistence through this model.

TAIHU RIVER BASIN, CHINA

2024 ACTIVITIES

• In December 2023, WWF-China hosted the 9th Taihu Forum, with nearly 200 participants in-person and almost 200,000 viewers online. The Taihu Forum took place in Nanxun, Huzhou, and consisted of four sessions. The sessions explored themes of “Collaborative High-Quality Conversion of Ecological Advantages in the Yangtze River Delta Region” and “Innovation-Driven Collaborative Sustainable Development of World-Class Lake Areas” from three different perspectives – “Innovation Empowerment - Building a Collaborative Ecosystem from Rural Revitalization to Sustainable Destinations,” “Fashion Empowerment - Revitalizing World Heritage Agriculture and Sustainable Fashion,” and “Industrial Empowerment - Sustainable Water Management for Enterprises and Watershed Collaboration Based on Science-Based Targets.”

• WWF-China jointly organized the “Design Innovation, New Quality Future” forum with the China National Textile and Apparel Council (CNTAC) and Donghua University, along with the 2024 Green Challenge Sustainable Fashion Awards. This event aimed to promote the integration of circular and sustainable materials, new technologies, and innovative processes with the fashion industry.

• From 2023 to 2024, two training sessions were organized on wetland management capacity building, which trained a total of 292 protected area managers, university staff, and professionals from specialized institutions.

• From 2023 to 2024, two training sessions were organized on wetland management capacity building, which trained a total of 292 protected area managers, university staff, and professionals from specialized institutions.

• Building on the Industrial Park Guidance v1.0 published in 2019, WWF-China released the Industrial Park Guidance v2.0 in 2024, which represents an improvement in four key areas: refining guiding principles, introducing the Water Stewardship Index (WSI) with empirical evidence, updating critical water management actions to align with green policies, and designing comprehensive worksheets for sustainable water management at both enterprise and park levels. It emphasized shared infrastructure and water-energy integration, and quantifies water-saving and carbon-reduction potential based on extensive research

KEY ACHIEVEMENTS

WWF-China’s major water stewardship achievements and outcomes in 2024:

1. Two training sessions organized on wetland management capacity building, which trained a total of 292 protected area managers, university staff, and professionals from specialized institutions.

2. Industrial Park Guidance v2.0 was published.

3. WWF-China jointly organized the “Design Innovation, New Quality Future” forum with the China National Textile and Apparel Council (CNTAC) and Donghua University, along with the 2024 Green Challenge Sustainable Fashion Awards.

TAIHU RIVER BASIN PROGRAM - CUMULATIVE IMPACTS

111 sites
Directly engaged in program

5 sites
Engaged in training & capacity building workshops

EXTRACTS FROM PAST ANNUAL HIGHLIGHTS: 2021 - 2023

2021

Türkiye

• The Cotton Water Stewardship Committee, which was established by facilitation of WWF-Türkiye in 2019, designed a modern irrigation pilot in 95 ha of cotton farms of 17 farmers in 2020 and submitted the project to the Ministry of Agriculture for financial support. The Ministry does not have a grant support scheme for collective implementation of modern irrigation by multi-farmers; therefore the Committee developed a policy file that brings legislation recommendations to enhance modern irrigation implementation in cotton production in Buyuk Menderes basin and in Türkiye.

2022

Türkiye

• In 2022, in the Buyuk Menderes Delta, which is a national park and a wetland of international importance, an illegal attempt to dry out the wetland by digging a channel took place. WWF-Turkiye's social media campaign and official letters to authorities resulted in the decision of regional authorities to take action to restore the wetland. WWF-Turkiye is in dialogue with the regional authorities to follow up and support the restoration.

Viet Nam

• WWF-Viet Nam's project also aims to improve safe water access to the local community to enhance awareness of the local community affected by water pollution due to textile production in the region. The project offered subsidy on the installation of water filters to 35 households using contaminated well water and established two monitoring groups to equip the village households with the capacity to monitor around twelve water quality parameters before drinking and cooking.

• WWF-Viet Nam's efforts motivated a financial leasing joint-venture company to issue a green credit line for the textile sector offering concessional interest rates without the need of any collateral assets and the loan threshold at 100% value of the purchased equipment.

Pakistan

• The project supported the development of the Cleaner Production policy for the province of Sindh. The government of Sindh, including the Minister of Environment and Director General Sindh Environmental Protection Agency (SEPA), were engaged in consultative sessions on draft of policy and recommendations.

• The Green Tannery guidelines developed under the project were endorsed by the Sialkot Tannery Zone (STZ) which is implementing the guidelines while developing the new tannery zone. Two factories have already started implementing the guidelines in their premises.

China

• WWF-China, in collaboration with CNTAC, developed the Factory Assessment Improvement System's (FAIS) tool's Water Efficiecy module. The water efficiency evaluation indicator system of FAIS covers key water sub-industries such as chemical fiber manufacturing, wool textile, hemp textile, silk, printing & dyeing. The qualitative indicators include 6 primary indicators and 34 secondary indicators, including basic requirements, water efficiency management system, pollution control and reduction, and sewage recycling, water-saving technology application, standard participation and award, and management system implementation; 40 enterprises completed the self-assessment of water efficiency module.

• Six enterprises completed the data input test for the Water Efficiency module of the FAIS tool. The assessments showed that the tool can meet requirements of industrial water efficiency or water-saving evaluation.

India

• WWF-India, along with the Corporation Commissioner, the Mayor of Tirupur Corporation, and 27 local organizations, jointly launched an initiative for developing an 'Integrated Groundwater development Plan' for Tiruppur Municipal Corporation. The initiative will focus on identifying key pollution hotspots, groundwater levels and water quality. The data will help develop a sustainable water use and management plan.

• Due to WWF-India's advocacy efforts, the Koolipalayam Lake was announced as a 17th Bird sanctuary of the state by Tamil Nadu Government.

2023

India

• WWF led efforts, in collaboration with the Forest Department, to remove the invasive species, Lantana camara, in Marlimund and to replace them with native species. WWF is working with forest dependent tribal communities, textile industries, forest department, state and district governments and local government to innovate and convert lantana biomass into fuel briquettes at an entrepreneurial scale.

• WWF-India worked closely with the local Forest Department to assess the Environmental Flows requirements for Moyar and Sigurhalla Rivers in the Bhavani River basin. These rivers face hydropower and water diversion infrastructure. WWF-India developed the E-Flows recommendations for these rivers in collaboration with the local Forest Department, electricity utilities and concerned District Administration and will advocate towards the implementation of the recommended E-Flows regime.

Türkiye

• WWF-Turkiye Initiated the European eel conservation campaign to mobilize stakeholders to take action and enhance water quantity and quality in Bafa Lake and Buyuk Menderes Delta

• As part of WWF-Turkiye's regional collaboration with the Chamber of Industry and the Development Agency in the textile sector, the 'Denizli's Future is in Cleaner Production' project, initiated by the Chamber in 2022, successfully completed. The project aimed to conduct a feasibility analysis on resource efficiency at 40 textile companies, revealing that a €8.6 million investment across these companies has the potential for annual savings of €8.2 million. This project represents Turkiye's first comprehensive study on resource efficiency in the industrial sector. Since the inception of the regional partnership for textile cleaner production in 2018, the Development Agency's financial support for cleaner production has reached 10 million TL (€1 million 400).

Viet Nam

• 7 bankable projects on water efficiency and wastewater recycling were completed, with techno-financial feasibility study presented to 05 textile factories. So far, 04 projects have been implemented, of which 03 were on water efficiency and 01 was on wastewater recycling.

• 2 new dedicated green credit line for the textile sector were issued by a financial leasing company in June 2022 and the 2nd large commercial bank in September 2023. The two credit lines offers concessional interest rate and low requirement on collateral assets on the condition that investments bring about environmental benefits;

• WASH for local community: In early 2023, the project subsidized for the installation of water filters for the 35 households with the most contaminated well water. The project then scaled the clean water access to two communities: Duc Hoa Ha and My Hanh Bac of Duc Hoa district, Long An province. In November 2023, the project shared the water access subsidy plan with communal authorities. The long-term plan was to collaborate with the utility company to extend the water pipeline to one village.

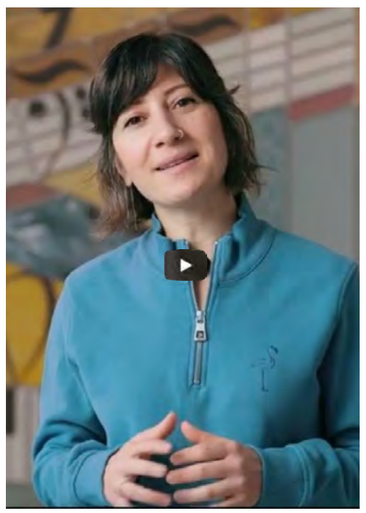
• 20 targeted textile SMEs took actions to reduce water and energy consumption as well as wastewater pollution from 10% to 50%. The total saving amount of water was more than 2 million cubic meter per year. Total annual energy saving was 133 million megajoule. 738 textile SMEs reached to raise water risk awareness and more than 150 textile SMEs increased technical knowledge of water-energy effective solutions;

2024 COMMUNICATIONS

[WWF-Pakistan: Documentary - Journey toward Sustainability in Pakistan's Leather and Textile Sectors]

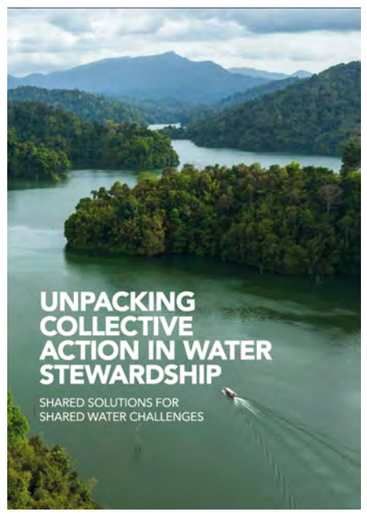
[WWF-Pakistan: Documentary - The Thirsty Industry - A Journey Towards Sustainability]

[WWF-Pakistan: Impact Sheet]



[WWF-Turkiye: Water and Soil Management in Cotton Production - Training Video]

[Ensemble: Mobilizing the Apparel and Textile Sector Towards Sustainability and Collective Action]



[Unpacking Collective Action in Water Stewardship: Shared Solutions for Shared Water Challenges]

ENDNOTES

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SPECIAL THANKS TO OUR CORPORATE PARTNERS:

Gina Tricot, IKEA, J. Crew and Madewell, John Lewis Partnership, PVH Corp., Tommy Hilfiger, Tommy Cares Foundation, Ralph Lauren, VF Foundation

ADDITIONAL THANKS TO:

The European Union, The Swiss Agency for Development and Corporation, WWF-Japan and WWF-Korea for their support to basin programs.

PUBLISHER:
WWF International
May 2025

PHOTOS:

WWF-Pakistan (p. 1); WWF-India (p. 2-3); WWF-India (p. 5); Turgut Tarhan, Büyük Menderes Delta / Aydın (p. 8); WWF-Pakistan (p. 12); WWF-Viet Nam / Cham Team (p. 16); WWF-Viet Nam / Cham Team (p. 18); WWF-India (p. 20); WWF-India (p. 22); WWF-China (p. 24); Charlotta Järnmark / WWF-Sweden (p. 26); hying51 (p. 27); WWF-Viet Nam (p. 29); Turgut Tarhan, Büyük Menderes Delta / Aydın (p. 31); WWF-Pakistan (p. 31), WWF-India (p. 32); WWF-Pacific / Tom Vierus (p. 33); WWF-Pakistan (p. 34).

REPORT DESIGN:

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WWF – WORLD WIDE FUND FOR NATURE – ONE OF THE WORLD'S LARGEST CONSERVATION ORGANISATIONS

World Wide Fund for Nature (WWF) is one of the world's largest and most experienced independent conservation organizations, with over 5 million supporters and a global network active in more than 100 countries.

WWF's mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature, by conserving the world's biological diversity, ensuring that the use of renewable natural resources is sustainable, and promoting the reduction of pollution and wasteful consumption.

As a part of its efforts to achieve this mission, WWF has partnered with many fashion companies (e.g., H&M Group, PVH Corp and Tommy Hilfiger, Levi Strauss & Co, Gap Inc., and others) and peer organisations on an approach called 'Water Stewardship'.

Adopting Water Stewardship requires not only impact reduction activities with manufacturers and materials (i.e., water management), but also asks companies to address shared water challenges and governance in basins through collective action with other businesses, governments, NGOs and communities. These key water users work together to create shared solutions to shared water risks, with a focus on collective solutions to underlying problems and with the goal to ultimately strengthen water governance in partnership with policymakers.

You can find out more about WWF's work on water stewardship here. You can find out more about WWF's on-ground work with the apparel and textiles industry here.

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Please cite this report as:

WWF. (2025). Drop by Drop: highlights from WWF's collective action programmes on water stewardship in the apparel & textiles sector. WWF International.