Impact Brief

Pakistan

UNICEF and the Punjab Saaf Pani (Clean Water) Authority installed a 120,000-litre tank and a 48-kilowatt solar-powered water system in Punjab Province. This specific system remained resilient through the 2024 floods and continues to provide safe water for 45,000 people across nine communities. ©UNICEF Pakistan/White Rice Communication

Making health, education and water systems more resilient to protect children in Pakistan

Children in Pakistan face intensified drought, extreme heat and flooding. Through risk-informed solar and nature-based solutions, UNICEF and government partners are ensuring essential services protect children from climate shocks, reaching more than 5.4 million people.

BACKGROUND

Melting glaciers and unpredictable rainfall threaten the Indus River Basin, increasing the likelihood of catastrophic floods.[1] For instance, in 2022, children in Pakistan were disproportionately affected by widespread flooding that impacted 33 million people, half of whom were children under age 18.[2] The flooding led to 5.4 million people losing access to safe water.[3] Pakistan has also experienced extreme heatwaves, with temperatures regularly exceeding 48°C (118.4°F), and prolonged droughts across multiple regions over the past decade.[4]

Solar solutions that improve energy access for water, health and education services can reduce climate impacts on children. For example, expanding sustainable energy in Pakistan's health facilities could prevent more than 175,000 deaths by 2030 and add US$296 million to the economy by 2044.[5]

UNICEF'S APPROACH

UNICEF is partnering with the government and civil society to expand solar energy across Pakistan, advancing national climate goals to climate-proof healthcare facilities by 2035 and deliver safe drinking water in all climate-vulnerable districts by 2030.[6]

Since 2022, UNICEF and its partners have installed 2,517 solar solutions to improve health, education and water services, and 38 nature-based solutions to improve water and sanitation services. Children, families, students and healthcare patients now have more reliable access to safe water, strengthened healthcare services and safer school environments. Government officials serving these communities also gained greater knowledge and skills to make child-critical services climate-resilient.

Dates: 2022-2025

Funding Partners: The European Union; the Governments of the Republic of Ireland, Japan, the Republic of Korea, the Kingdom of the Netherlands, the Kingdom of Norway, Sweden, the United Kingdom, the United States and the United Arab Emirates; Education Cannot Wait; Gavi, the Vaccine Alliance; King Salman Humanitarian Aid and Relief Centre; and UNICEF core resources.

Funding Invested: US$6.5 million

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STRENGTHENING CLIMATE RESILIENCE FOR CHILDREN

MAKING HEALTHCARE AND EDUCATION FACILITIES RESILIENT: Since 2022, UNICEF and the government have installed 784 solar photovoltaic (PV) systems[7] in small & large healthcare facilities and warehouses. An uninterrupted energy supply benefits children and women by powering safe vaccine storage, life-saving equipment, and 24/7 access to maternity wards. For example, UNICEF and partners solarized three district hospitals, with an installed capacity of nearly one megawatt of reliable electricity to power oxygen supply and essential maternal and child health services.

To mitigate the effects of more frequent and extreme heat, UNICEF provided solar-powered fans and lights to 1,093 schools to improve ventilation, cooling and lighting, enabling students to continue learning during heatwaves.

STRENGTHENING HEALTH SYSTEMS: UNICEF is working with the Ministry of National Health Services, Regulations and Coordination (MoNHRC) to strengthen national monitoring systems. UNICEF supported the MoNHRC to embed climate-sensitive indicators into its national data systems. UNICEF also trained community health workers and MoNHRC managers to reduce climate-related risks to the continuity of health services.

DELIVERING FLOOD- AND DROUGHT-RESILIENT SAFE DRINKING WATER: From 2022–2025, UNICEF and its partners provided solar-powered safe drinking water services to over 420 communities, 120 schools and 100 health facilities. Reliable access to safe water prevents waterborne diseases by removing the primary pathways through which pathogens spread. One example is Hayatabad's Burns & Plastic Surgery Centre, where UNICEF installed a 35-kilowatt solar system that provides an uninterrupted water supply, enabling infection prevention and control and improving healthcare quality.

INSTALLING NATURE-BASED SOLUTIONS: UNICEF complemented these solar investments with nature-based solutions (NbS) that protect children's health and local ecosystems. This includes, in 2024-2025, UNICEF supporting government partners in installing 16 floating wetlands and 22 groundwater recharge ponds, and training more than 3,000 adolescent girls, who are now community champions, to further raise awareness of how NbS mitigate climate shocks. Floating wetlands use native aquatic plants to naturally filter water, reducing water contamination and methane emissions. Large groundwater recharge ponds capture rainwater runoff, reducing flood risk and recharging underground aquifers in drought-prone areas.

OUTCOMES & IMPACT

More than **5.4 million people** are directly benefiting from **2,517 solar PV and 38 NbS solutions**

3.5 million healthcare patients are directly served by 784 solarized health facilities, including 790,000 girls and 850,000 boys. The facilities reach a catchment population of 38 million people (2022-25)

~150,000 students in 1,093 schools benefit from climate-resilient learning environments with solar-powered lighting and fans (2024-25)

12,000 community health workers and **270 MoNHRC managers** are trained in reducing climate risk (2024-25)

1.7 million people gained access to solar-powered drinking water systems across 420 communities, 120 schools and 100 health facilities. This includes 799,000 children, including nearly 386,000 girls and more than 413,000 boys (2022-25)

58,000 people benefit from 16 floating wetlands and 22 groundwater recharge ponds (2024-25)

3,150 adolescent girls in 10 villages trained as nature-based solution and climate change champions (2024-25)

2 MW of installed capacity for 784 healthcare facilities (2022-25)

Nature-based solutions are cost-effective, can be locally owned and maintained, and make safe water more accessible and reliable – reducing health risks for children, particularly from waterborne diseases, such as cholera, diarrhea and dysentery.

LOOKING AHEAD

In 2026-28, UNICEF will further solarize climate-resilient health, education and water services and expand nature-based solutions in over 800 sites, including with support from Gavi the Vaccine Alliance, the Global Partnership for Education and the Adaptation Fund. UNICEF will continue to work closely with the government and seek additional partners to develop innovative climate finance programmes that expand climate- and environmentally resilient solutions in communities, schools and health facilities.

1 *World Resources Institute, 2023, How Pakistan floods impact risks for global conflict.*
2 *UNICEF, 2022, Devastating floods in Pakistan.*
3 *Journal of Water and Climate Change, 2024, Impact of climate change on water scarcity in Pakistan.*
4 *UNICEF, 2022, The coldest year of the rest of their lives.*
5 *UNICEF, 2024, Improving energy resilience in Pakistan can avert 175,000 child and adult deaths.*
6 *Government of Pakistan, 2025, Pakistan's Third NDC.*
7 *Photovoltaic (PV) systems are technologies that convert sunlight directly into electricity using solar cells.*
8 *UNICEF, 2024, Transforming healthcare in remote areas.*