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All over the world, UNICEF works in the sector of water, sanitation and hygiene (WASH). This contributes to the realization of children's rights to survival and development through support to national programmes that increase equitable and sustainable access to, and use of, safe water and basic sanitation services, and promote better hygiene practices. In particular, UNICEF strives to halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation, in line with Millennium Development Goal 7. UNICEF also works to ensure that all schools have adequate child-friendly water and sanitation facilities, and hygiene education programmes.

In the State of Palestine, where access to clean, drinking water remains a challenge, UNICEF works to supply water to the most vulnerable communities and schools, along with increasing access to improved sanitation facilities. As a result of the lack of access to water, **many Palestinian families have to purchase water from private vendors at a high cost** - often more than five times the tariff of water through public supply - and without quality control. These **costs are too high for poor and vulnerable families, who have to compromise on the minimum quantity of water they use** and prioritise household spending.

95% of Gaza aquifer's water polluted

Even though household connectivity to water network is high in the West Bank (more than 90%), **the supply is intermittent with water only available from a few hours a day to once in months, and up to 40% of the water is lost in the system**. As a result, many families use underground and roof top tanks to store water and are in need of improved safe water handling practices.

The groundwater is the main source of water. The quality of water resources in the West Bank is considered good, **but 90 to 95 per cent of Gaza's sole water source, the coastal aquifer, is unfit for human consumption** due to sewage, agricultural infiltration and salt-water intrusion from the sea. The water is contaminated mainly with **high levels of chloride and nitrates**, in some areas as high as six times the World Health Organization (WHO) limit. There is a need to stop over-abstraction of



Seven-year-old Ahmad holds a bottle he has just filled with free, clean drinking water at a desalination unit built by UNICEF with funds from the Government of Japan in Nuseirat Refugee Camp, in the middle area of Gaza. UNICEF/EI Baba

groundwater and use **sea water as an alternate source of water** for domestic and drinking purposes in Gaza.

Inequitable access to water

Access to water remains inequitable in the West Bank, where poor rainfall also leads to water scarcity. **About one million West Bank Palestinians consume 60 litres of water per capita per day or less**, significantly below the WHO recommendation of 100. More than 100,000 people are not connected to a water network. Unconnected communities suffer from acute water shortages, especially during the summer- they have access to as little as 20 litres per capita per day, one fifth of WHO's recommendations. **The impact on Bedouin and herder communities is especially severe**, given their dependence on farming and herding as a source of livelihood.

In Area C, which covers more than 60 per cent of the West Bank and is under Israeli security and administrative control, Palestinian communities face tremendous difficulties when trying to obtain permits to install, upgrade or protect their water sources. **Springs, wells and cisterns are often subject to demolition**, sometimes forcing families to leave their land.



Access to water remains of particular concern in Area C of the West Bank. In Refaea, near Yatta, 40-year-old Um Fahed goes more than 20 times a day to a cave to fetch water from the spring, as the community is not connected to the water network. UNICEF/Daki



Children enjoy the water from the water network thanks to support from the Government of Japan in Rujib
UNICEF/Daki

Little over one third of West Bank Palestinians are connected to a sewage network. The sewage networks are considered old and poorly maintained, especially in the West Bank. Connectivity is higher in Gaza, with over two-third connectivity, but communities without connection use cesspits and septic tanks. This leads to overflow and creation of **open air sewage lagoons**, often in the midst of densely populated neighborhoods, where people are too poor to afford emptying tanks on time. They pose a threat to children - over the 2011-2012 winter season, three children drowned in sewage pools in Gaza¹. Leakage from the networks and seepage from the cesspits are contaminating the surrounding areas and groundwater.

Up to 90 million litres of raw or partially treated sewage is released daily into the Mediterranean sea due to Gaza's inadequate wastewater collection and treatment infrastructure. The Israeli **closure of Gaza severely curtails access to fuel needed to operate the WASH infrastructure**, and to spare parts needed to maintain the systems.

Many schools lack appropriate sanitation facilities - almost a third of public schools do not meet the recommendations of the Ministry of Education and Higher Education on the number of toilets for boys, girls and children with disabilities. Students have knowledge of good hygiene behaviors but need to improve practices.

Establishing Water Information Systems

As part of its support to national programmes that increase equitable and sustainable access to safe water and basic sanitation services, **UNICEF has upgraded database systems at Gaza's Coastal Municipalities Water Utilities (CMWU) and at the Palestinian Water Authority (PWA)**, and helped establish a National Water Information System at PWA while contributing to water quality surveillance with support from the **European Commission Humanitarian Aid and Civil Protection (ECHO)**.

HELPING RURAL COMMUNITIES ACCESS WATER

To help bridge inequalities, UNICEF supported CMWU to improve wastewater network in vulnerable areas of Rafah, Gaza, to provide adequate sanitation to nearly 2,500 people. This also helped minimize groundwater pollution and sewage flooding in the area. **In poor areas of the West Bank, UNICEF has rehabilitated and/or extended water networks** to increase families' access to water, helping decrease dependency to private vendors. So far these interventions have benefited 300 families in Ad-Dhahiriya (Hebron) and 22,000 people - half of them children, including the students of seven schools - in the northern West Bank villages of Rujieb (Nablus) and Burquin (Jenin).

The village of Rujieb, home to 7,500 people, is perched on a hill. Lack of water pressure made it difficult for water to reach every single house, especially those located on higher ground. The latter used to receive water only once a week, while houses located downhill would receive water twice a week. The lack of water pressure was further compounded by the lack of material to carry water up to the houses. **"Half of the water destined to our village was lost before it even reached us because of old water networks**, worn-out water pumps and limited capacity of storage," explains Owni Dweikat, Head of the Village Council. Rujieb municipality used to receive water every other day, for two hours only. "Because it takes more than two hours to fill the municipal reservoir with water, and more than two hours to distribute it to some houses, we could not provide all the families with water," Dweikat says, adding that families whose houses were located high on the hill received the least water. "We would sometimes go without water from the tap for as long as two weeks", recalls Rashad Halabi, a 13-year-old boy.

UNICEF, with funding from the **Government and People of Japan**, renovated the old water network, installed new water booster pumps and built a 500 cubic metre municipal reservoir, all of which now enable the provision of water to every house in the village. "From now on, families in the village will all be provided with a sufficient amount of water for drinking, personal hygiene and domestic use," says Bilas Dongol, Head of the WASH programme at UNICEF. **"Most households will be able access water, no matter how high up the hill they live."** The project has resulted in a 16 per cent increase of access to water and in major savings for vulnerable families, who no longer have to purchase water at high prices, and can now trust its quality.

¹ See UNICEF News Update, Sept. 2012: 'Protecting children from the danger of sewage pools in Gaza: a C4D campaign'

HELPING STUDENTS ACCESS WATER AND SANITATION, AND IMPROVE HYGIENE PRACTICES AT SCHOOL

WASH in schools is a first step towards ensuring a healthy physical learning environment, particularly for girls. In the State of Palestine, UNICEF targets schools located in the most vulnerable communities. In 2011-2012, **WASH facilities were built or rehabilitated in 107 schools to provide adequate toilets for boys, girls and children with disabilities.** Hand-washing facilities and drinking water fountains were installed in 118 schools, benefiting more than 80,000 students. In order to **improve good hygiene practices,** UNICEF supported hygiene promotion activities such as trainings for health workers and distribution of hygiene kits, and supported celebrations for Global Handwashing Day.

One of the schools which benefited from **brand new sanitation facilities** is al-Ram basic school for girls, located in the poor neighborhood of al-Ram, near Qalandia checkpoint. "The old toilets were so dark and shabby that I tried to avoid going there all day long because it looked unhealthy," says nine-year-old Hend Hashem. "We had been waiting for nine long years to get proper facilities, so this UNICEF project is like a blessing," said Zainab al-Azza, the school principal. "Now that the students can see what a proper sanitation facility looks like, it's easier to teach them about good hygiene practices in their daily lives."

Located close to East Jerusalem but reached only through dirt roads, the Arab-al-Jahaleen school in Abu Dis enrolls Bedouin children living in the bottom of a valley surrounded by Israeli settlements and littered with rubbish. Located in Area C, the school is threatened with demolition. Due to the extreme vulnerability of its students, the school's mobile latrines were recently rehabilitated by UNICEF with support from the **Australian Government.** "Having a clean and healthy place where we can wash makes a



Up: a student uses WASH facilities built by UNICEF at Al Ram basic school for girls thanks to Australia's support.

Right: rehabilitated mobile latrines at the Arab al-Jahaleen school. UNICEF/Daki



big difference," says 13-year-old Sulaiman. "The old ones were so run down that it was stressful to go there," recalls his friend Osama.

In 2011-2012, UNICEF also supported **water tankering to 151 schools in Gaza** for five months, benefiting 70,000 students, and to **25 schools in the West Bank,** benefiting over 10,000 students. The first Knowledge, Attitudes and Practices (**KAP study on WASH in School**) was completed and hygiene and safe practices promoted among school children and their families. UNICEF also developed a hygiene manual and monitored hygiene awareness in 68 schools, benefiting 27,000 students.

In 2013-2014, UNICEF plans to build or rehabilitate WASH facilities in another 60 schools in West Bank and 80 schools in Gaza, and to tanker water in 70 schools in the West Bank and 160 schools in Gaza. A hygiene manual for teachers in grades 1-4 students is also being developed..



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UNICEF also **trucks water to families living in unconnected, marginalized communities.** The quality of the water is controlled and the prices are regulated, sparing poor families the costly option of buying from private vendors at a high price and without any guarantee that the water they buy is safe. In the West Bank community of Yatta, 29-year-old Jalileh Amar can be seen filling her home tank with water from a truck supported by UNICEF with funding from the **Central Emergency Response Fund (CERF).** This will allow her children to access clean, safe drinking water at home.

STORING AND TRUCKING CLEAN, DRINKING WATER

Many Palestinian communities who have only intermittent access to water supply, or no access at all, need to be able to **properly and safely store water at home** until the next replenishment. Because many poor families cannot afford proper storage facilities, UNICEF is stepping in. **More than 6,000 vulnerable people living in Gaza's Access Restricted Area (A.R.A) were given water storage roof tanks at home,** with a focus on female-headed households, thanks to funding from the **Government of Japan.** This area of land on the Gaza side of the 1948 Green Line has been gradually and unilaterally expanded by the Government of Israel. Gazans are now either totally or partially prohibited to enter the area 1000-1500

the Green Line, and access to water remains extremely difficult. Next year, UNICEF will start working on grey water re-use - water from bathrooms and kitchen - in the A.R.A..

(Photo: UNICEF/Daki)

Desalination plants help respond to Gaza's water crisis

The water situation in Gaza is particularly acute, with **90-95 per cent of the territory's sole aquifer contaminated** by sewage, chemicals and seawater. With no streams or rivers to speak of, Gaza has historically relied almost exclusively on its coastal aquifer. This saline pollution is made worse by untreated sewage, with 90,000 cubic meters of raw and partially treated sewage allowed to flow into the shallow sea waters each day from Gaza. The United Nations warned that due to over abstraction of ground water, the aquifer might be unusable by 2016, with the damage potentially irreversible by 2020². More than four out of five Gazans buy their drinking water from unregulated, private vendors, a heavy burden on already impoverished families. "Some families are paying as much as a third of their household income on water," says June Kunugi, UNICEF Special Representative.

Neighbourhood desalination plants and their public taps providing free, clean water seem a lifesaver for the poorest of Gaza's 1.7 million residents. Gaza already hosts 18 small plants, most of them supplied by UNICEF. With support from the **Government and people of Japan, UNICEF has, so far, installed three brackish water³ desalination units with the capacity to treat 50 m³/hour, and 10 units with the capacity to treat 50 m³/day, providing safe drinking water to 95,000 people in Gaza.** With support from the **European Union**, UNICEF is now installing a sea water desalination plant to treat 6,000 m³ per day, which will benefit 75,000 people. **"The desalination units were installed where there is maximum water pollution,"** says Bilas Dongol, Head of the UNICEF WASH programme. "It's a perfect solution for Gaza, provided there is enough electricity and fuel available to power the plants."

Every other day, Ramadan, a resident of Nuseirat refugee camp, used to carry empty bottles and jerry cans across the tiny alleyways of the camp, until he reached the nearest private water vendor. Since he could only carry so many bottles, the father of five would bring along four of his young children to carry more bottles home. He would spend the equivalent of ten dollars a month on buying water, a large sum for cash-strapped families in the coastal enclave.

"The water that comes through the tap is saline and undrinkable," says Ramadan, whose family only uses it for washing and bathing. "It is not fair," he adds. "I am unemployed, and I need to save as much as I can in order to survive and put food on the table



Up and Right: With support from the Government of Japan, UNICEF built a desalination unit supplying clean, drinking water to 15,000 people in Gaza's Nuseirat Refugee Camp.

UNICEF/EIBaba



for my children. I could only afford the strict minimum amount of water, not even knowing what my children were really drinking." An estimated four-fifths of water sold by private vendors is polluted.

The situation has improved dramatically since **UNICEF installed a brackish water desalination plant that serves 15,000 refugees** living in the camp with clean drinking water. Funded by the **Government of Japan**, this desalination plant produces 50 cubic meters of drinking water per hour from the polluted water coming from a brackish water well.

"Residents receive access to drinking water once per week, which allows them to fill up their storage tanks at home with water that lasts until the next refill," says Sabri Al-Faleet, from Al-Nuseirat municipality.

Ahmad Essawi, Ramdan's seven year old son, is happy to be spared the tedious task of carrying heavy water bottles every other day. "It was a long walk with my sisters in the cold winter and the summer heat," he says. "Now we can all focus on our studies or play with our friends."

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² See "Gaza in 2020: a liveable place?"

<http://reliefweb.int/sites/reliefweb.int/files/resources/104094048-Gaza-in-2020-A-liveable-place.pdf>

³ Brackish water is water that has more salinity than fresh water, but not as much as seawater. It may result from mixing of seawater with fresh water.