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THE NEW WORLD PROJECT IN ACTION

10 CASE STUDIES AND THEIR CONTRIBUTIONS TO THE SUSTAINABLE DEVELOPMENT GOALS

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INTRODUCTION

The UNDP–Coca-Cola partnership **"New World: Inclusive Sustainable Human Development Initiatives"** Project (NWP) was established to address five of the 10 priority areas identified in a global 2013 UN My World Survey as critical for sustainable human development, namely: good education; better job opportunities; access to clean water and sanitation; protecting rivers, forests and oceans; and equality between men and women. Two main intervention areas were selected to aid progress towards these goals:

1. Increasing access to safe drinking water and sanitation services and improving water-resources management through inclusive and practical community-based approaches; and

2. Empowering women and youth through improved education and job creation for more resilient communities.

The NWP has developed an inclusive partnership mechanism with The Coca-Cola Foundation to encourage the participation of civil-society organizations (NGOs, CSOs) in supporting innovative, inclusive and sustainable solutions in 19 countries across several regions, including Europe and Central Asia, South Asia, and the Middle East and Africa.

This summary report examines 10 case studies from different regions of the world to see how NWP-funded initiatives can contribute to the Sustainable Development Goals (SDGs) related to water, gender and livelihoods and how the results affect the lives of people at the local level. The 10 projects were selected to be representative of the regional and thematic coverage of the NWP and to ensure the capturing of the innovation and learning potential of the projects and the potential to inform future programming, taking into account sufficient data availability.

Even with relatively small grant amounts (usually between US $75,000 and US $100,000 per project) with limited duration of one year to 18 months, the vast majority of the projects have achieved important results in line with many SDGs. In the areas of water-resources management (WRM) and water, sanitation and hygiene (WSH), the projects detailed in the case studies contributed to:

- *Improved water supply (Tajikistan, Kyrgyzstan);*

- *Efficient use of water resources via wastewater/greywater treatment and reuse (Gaza Strip, Pakistan), drip irrigation (Lebanon, Kazakhstan) and less-water-intensive agriculture (Egypt);*

- *Demonstrating approaches to watershed management (Belarus, Russia) and building resilience to climate change and land degradation (Kazakhstan); and*

- *Improved knowledge and skills related to resilient methods of resource use.*

The types of projects included here show how priorities are shifting from the provision of water-supply infrastructure to (a) reuse of treated wastewater/greywater, which protects the environment while saving valuable water resources; (b) building resilience to climate change; and (c) watershed management.

At a more distant impact level, the projects contributed to improved livelihoods (in some cases demonstrating a link to poverty reduction and health) and lessened the burdens that are borne predominantly by women when water supply and sanitation are inadequate.

In the area of women's empowerment, the projects contributed to women gaining valuable skills, which boosted their self-confidence and in some cases translated into additional business opportunities and increased incomes. Though the latter outcome is often at a small level for the time being, it is starting to change the role of participating women in their families, households and communities, with their time being more valued and them being perceived as potential income-earners and in some cases employers.

The most successful projects were embedded in or linked to larger projects that allowed them to transcend the challenges posed by the limited duration and maximum grant size of the NWP. Based on these case studies, both programmatic and indicator-related recommendations can be made that can be used by Coca-Cola, UNDP's Istanbul Regional Hub and Country Offices in the region, and implementing agencies, as well as by national governments.

Programmatic recommendations: Water and Sanitation

- Connection rates are high in Europe and Central Asia overall, but residents of some remote regions (e.g. in Tajikistan and Kyrgyzstan) still use unsafe water sources. While public water taps constitute improvement, their impact on health is not large. Output-based aid schemes could be promoted to facilitate in-house connection subsidies and UNDP could guide local governments in sharing best practices and facilitating implementation.

- Wastewater production is rising and the financial, environmental and social costs are projected to increase dramatically unless wastewater management receives urgent attention from multisectoral, ecosystem-based approaches. Financing should also take account of the fact that there are important livelihood opportunities in improving wastewater-treatment processes, whilst the private sector can play an important role in operational efficiency.

- Given the increasing water stress in the region, there is a need to break the link between economic development and resource use ("decoupling"). Maximizing water efficiency in the entire water supply and disposal chain, including before water enters the cities, and reducing production of wastewater should be primary goals throughout the entire management scheme.

- Innovative irrigation and agricultural methods that use less water, ideally with examples which also combine wastewater treatment and reuse, should be promoted.

- With the impact of climate change manifesting in intensified trends in desertification and land degradation, and water resources diminishing, it is important to promote innovative approaches that link sustainable use of water resources to counter the negative effects of climate change.

- Many countries of the Europe and Central Asia region are in the process of improving their legislation to align with the Water Framework Directive (WFD) and initiatives aimed at promoting corporate water stewardships could be complementary to these reforms.

Programmatic recommendations: Empowering women and youth

- Since focusing solely on training or transfer of resources can at best achieve only limited impact on the gender-equality agenda in the SDGs, future projects should tackle a broader set of core issues and challenges, providing multicomponent support while acting on structural causes and drivers rather than symptoms.
- Projects that focus on women should ensure that beneficiaries receive both technical and business skills, and a better understanding of the idea of working in cooperatives (if applicable). They should also take into account the women's family and/or social circumstances.

Indicator-related recommendations:

- Selecting indicators should start with adequately designed results frameworks that capture the most important developmental results as well as allow for linking to the SDGs.
- There should be key indicators for each typology/theme that are used by each project so their results can be aggregated more beneficially.
- Adequate monitoring and evaluation (M&E) plans with adequate baselines must be developed in advance, ensuring that the relevant information is captured using tools and methodologies suitable for the objective of making linkages to the SDGs. The methodologies and tools could include household surveys, focus-group discussions and interviews but should also strive to employ innovative approaches such as crowdsourcing and intelligent infrastructure.

Case Study 1:

Ensuring safe water supply in three villages of Tajikistan

THE PROBLEM

Forty percent of the population of Muminabad, a district in southern Tajikistan, lack direct access to safe drinking water. Remote and mountainous parts of the district rely on small springs and rainwater that are insufficient and/or seasonally unavailable, leaving residents to resort to mudflow water, water from ditches, and transporting water on donkeys from neighbouring villages. When there is a basic water system in place, what it supplies is of low quality, sourced from runoff from higher-elevation villages or filtered drain-off of melting snow or rains reaching the village via open drainage canals.

A pre-project survey of three villages in Muminabad revealed residents' concerns about the contamination of open water sources with pollution from dumped municipal and animal waste. Boiling of water was practiced by 30 percent of the residents of Childuhtaron village (where there was a basic water system in place), 25 percent of the residents of Pahmdara village and 10 percent of the residents of Navobod village. Some residents also used cheesecloth to filter their water. The survey also revealed that Navobod had very little water for irrigation.

"Water was in such short supply that there there was not even enough to allow my children to wash their hands properly."

—village resident in Muminabad

THE PROJECT

The project for the three villages consisted of improvements to infrastructure, institutions and community awareness. Two gravity-filled reservoirs for water storage and disinfection, with a capacity sufficient to allow for future population growth, were constructed, along with a secure sanitary zone and a water-recycling system allowing collected runoff water from Childuhtaron village to serve Navobod village for secondary use after undergoing biological filtration.

Water user associations (WUAs) were meanwhile set up in all three villages. The WUAs then jointly established a formally registered water users cooperative (WUC) with representatives of all three villages, including 11 women, on its 33-member board. Board members were trained in the operation and maintenance (O&M) of the water-supply systems, including arranging water-quality tests in cooperation with local authorities, for which the WUC is responsible.

Brochures were also produced and distributed about the role of the WUC and methods of preventing waterborne/water-transmitted diseases, and 24 members of village councils (mahalla) were trained in the prevention of such diseases.

Keys to success:

- The fees paid by residents to cover the O&M costs of the consumed water, approved at the general meeting of WUAs as an average tariff of 1 somoni per month (around US $0.13), are an important element in ensuring the sustainability of project results.
- The training of the WUC members, the genuine demand for safe drinking water, and the commitment of the village councils to support the system's maintenance were also crucial.

Recommendations:

- The level of interest in in-house connections should be considered at the project design stage, as temporary public water points may be more appropriate if interest levels are high.
- Better questionnaires for the pre-and post- project household surveys would have allowed the project's impact to be captured more rigorously.
- Results should be shared with the Government of Tajikistan and more widely for potential follow-up, e.g. subsidy support for in-house water connections and safe sanitation.

MAIN RESULTS

- The project ensured **equal access to safely managed water** in all three villages, supplying a WHO-recommended minimum amount of water that complies with chemical and biological standards and meets taste, odour and colour tests. *Strong contribution: SDG 6, Target 6.1*

- The project was **completed in partnership with local stakeholders**, with village councils approving construction plans and facilitating the getting of permits and conducting of water-quality tests, and the O&M of the completed water-supply system was transferred to the WUAs. *Contribution: SDG 17, Target 17.17*

- The **capacity of community members was increased** to manage, maintain and operate the water-supply system in cooperation with local authorities. *Contribution: SDG 6, Target 6.b*

- Ninety percent of the population said in a post-project household survey that their **knowledge of water pollution and waterborne diseases has improved.** *Likely contribution: SDG 3, Target 3.3*

- **Fuel spent transporting or boiling water has likely reduced**, with the greatest impact felt by the poorest. *Potential contribution: SDG 1, Target 1.2*

- **More water for irrigation has been made available annually** in the village of Navobod, increasing farmers' harvests and positively affecting their livelihoods. *Contribution: SDG 2, Target 2.3*

- **Time spent by women fetching and treating water has reduced significantly,** to 30 minutes or less every two days. *Strong contribution: SDG 5, Target 5.3*

Case Study 2:

Improving access to drinking water, hygiene and sanitation practices in rural Kyrgyzstan

THE PROBLEM

As cases of water-borne diseases increased in the village of Karamyk, Kyrgyzstan, residents became increasingly concerned about the quality of the drinking water they were drawing from a nearby irrigation canal.

The lack of sustainable access to safely managed drinking water meant many residents were spending hours boiling water and transporting it using donkeys, even making treacherous journeys to fetch water during the region's harsh winters. Without drinking water at school, students could not participate in sports, and the local hospital did not always have clean water for its showers and wash basins.

In addition, residents of the 2,800-population village lacked necessary knowledge about good hygiene, especially handwashing with soap.

"Every spring and summer, patients, especially children, would be coming to us with gastrointestinal infections. Since the water pipe was installed, we have not had a single case of such infections."

—healthcare worker at the obstetric clinic in Karamyk village

THE PROJECT

The project included both making infrastructure improvements and working with school health committees (SHCs) to raise awareness about good hygiene among parents and youth. A 6,253-metre pipeline was built to bring water from a natural spring to Karamyk, via four public water taps and 17 in public buildings.

At the same time, community-run parental resource centres (PRCs) and school parliaments (SPs) were set up and their members trained on good sanitation and hygiene practices. Good hygiene at the household and school level was also promoted through public events, contests and leaflets and posters.

The project also supported the establishment of a Rural Department of Potable Water Supply responsible for operations and management and built the capacity of its members, who include representatives of the local women's council, SHC, school and medical centre, through trainings and study tours to municipalities that had successfully implemented improved water systems.

Keys to success:

- Local government and villagers contributed to construction of the water-supply system, demonstrating strong local ownership, genuine interest in the upkeep of the system and hence a strong factor for the likelihood of the sustainability of the project.
- Government authorities' partnership with the Mountain Societies Development Support Programme (MSDSP) demonstrated their commitment to maintaining the drinking-water infrastructure after its construction is completed.
- Having the SHC and the PRC linked to the local school also supports the sustainability prospects of the project.

Recommendations:

- More precise survey questionnaires would better assess the level of awareness about good hygiene, which did not show improvement despite the extensive educational campaigns.
- Better sanitation facilities are necessary in order to make serious improvements to hygiene practices; the majority of village homes have simple (often, unimproved) plot latrines outside.
- Additional data is required to determine the project's contribution to more regular school attendance.
- More uniformity in compliance related to paying the monthly water fee of 10 KGS (US $0.15) would reduce uncertainty in the sustainability prospects of the water supply system.
- Connection subsidies should be promoted to facilitate in-house water connections; however, as interest in these is high in Karamyk, the construction of temporary water points may have been preferable to public water taps that will become obsolete.

MAIN RESULTS

- **Access to and use of safely managed drinking-water supply was increased**, with water points located within 200 metres of the vast majority (88 percent) of Karamyk residents, and 93 percent of villagers assessing the drinking-water quality as excellent (compared to a baseline survey when 94 percent rated it as bad). *Strong contribution: SDG 6, Target 6.1*

- **The local community and municipality was closely involved in each stage of the project**, contributing both finances and compensated labour to the construction of the new water system. The project also led to the elimination of water conflicts with the neighbouring upstream villages. *Contribution: SDG 17, Target 17.17; SDG 6, Target 6.b*

- A post-project chemical analysis of the water at source showed that it is **safe to drink**, and both households and hospital staff reported **fewer health problems**, including cases of acute diarrhoea, in the community. *Likely contribution: SDG 3, Target 3.9*

- **Women and children no longer have to undertake risky and lengthy trips to fetch water.** *Contribution: SDG 5, Target 5.3*

- Residents no long have to spend time and money to boil water, and farmers now have more time to attend to their fields, creating a **likely positive impact on livelihoods in the village.** *Potential contribution: SDG 1, Target 1.2*

Case Study 3:

Household greywater treatment in restricted and border areas of the State of Palestine

THE PROBLEM

Only 15 percent of the 40,000 inhabitants of Bani Suhaila, in the Gaza Strip, have access to adequate sanitation, depending mainly on cesspits or septic tanks for wastewater disposal, as well as collection and disposal of greywater. Many residents were, however, unable to distinguish between greywater and blackwater, and lacked knowledge of ways to use treated greywater for irrigation.

Using cesspits is expensive and they are often in poor condition, leading to disposals in the streets and infiltration that contaminates groundwater and creates adverse environmental, health and social consequences, in particular enhancing the spread of insects and mosquitoes that can carry viruses. Greywater accounts for about 55 percent of domestic daily consumption in Bani Suhaila, and residents use untreated greywater to irrigate their trees, adding to the pollution burden. Using untreated greywater also puts farmers at risk of low productivity and losses from their crop- and fruit-bearing trees such as lemon, guava, olive and palm, hindering socioeconomic development.

Greywater reuse projects implemented by the Palestinian Hydrology Group (PHG) throughout the West Bank and Gaza Strip have consistently demonstrated that it is possible to reclaim and reuse around 60 percent of treated greywater used for irrigation, or 150,000 litres per household per year.

THE PROJECT

The project installed 80 household greywater treatment units (GWTUs) in areas suffering from a lack of adequate sanitation. Using treated greywater for small-scale irrigation can reduce the pressure on sewage-treatment systems and aquifers, leading to reduced environmental pollution, improved groundwater quality and quantity, improved public health and increased agricultural productivity.

Workshops were also organized and brochures distributed on how to operate and maintain the greywater collection and treatment systems, and how to use treated greywater in irrigation. As greywater contains basic elements of soil fertility and plant growth, its use can also contribute to a reduction in the intensive use of chemical fertilizers.

Monitoring of the effluent quality was carried out after the initial implementation of the project, which demonstrated that the contaminant loads had been reduced to suitable levels for use in agriculture.

"Since installing the greywater treatment unit, we are saving US $21 a month on expenses for irrigation water and fertilizers. My family of seven is not rich, and now I can use this money on food, drinking water and clothes."

—resident of Bani Suhaila

Keys to success:

- Members of the local community demonstrated genuine interest in finding solutions to wastewater/greywater treatment and were actively involved during the project execution, contributing US $25 to US $30 per household to the system either in cash and/or in kind (including with labour).
- Local municipalities and the CMWU staff and volunteers were also on board with the project.
- The project benefitted from knowledge of previous GWTUs that had been locally designed, extensively tested and found to be effective in other parts of the Gaza Strip.

Recommendations:

- Due to frequent power outages in the project area, and in the Gaza Strip in general, it is advisable to have systems in place that will allow water pumps to run on solar energy.
- It is also advisable to design various versions of the water-treatment units to suit the needs of households of different sizes.
- Household surveys carried out before and after the project with a control group would result in more rigorous results about the impact of the project on health and livelihoods.

MAIN RESULTS

- In the Bani Suhaila area, 135 households (1,350 people) now **dispose of greywater in a safe way and reuse the treated greywater**, which is of a quality suitable for irrigation of olive, citrus and almond trees, as well as fodder. *Contribution: SDG 6, Target 6.3*

- The reuse of treated greywater helped to **reduce the volume of groundwater used for irrigation** by up to 80 percent, with an estimated savings of 100 m3 of groundwater per agricultural property per year. *Contribution: SDG 6, Target 6.4*

- Households **improved their knowledge related to the operation of the greywater treatment systems as well as to good hygiene** practices. *Contribution: SDG 13, Target 13.3*

- The amount of **time women spend on household chores related to the lack of adequate sanitation**, including cleaning up blockages in pipes and basins in kitchens, was reduced, as was their use of detergents, according to anecdotal evidence. *Contribution: SDG 5, Target 5.3*

- The introduction of greywater recycling resulted in **positive environmental impacts**, including an end to wastewater overflowing in the streets and greywater leaking into groundwater. *Contribution: SDG 6, Target 6.6*

- Residents reported **reductions of up to 80 percent in the use of groundwater and fertilizers**, resulting in monthly cost savings, as well as reduced costs associated with the emptying of cesspits, and increased productivity of crops. *Contribution: SDG 2, Target 2.3*

- The poorest households in Bani Suhaila **improved their ability to make ends meet.** *Contribution: SDG 1, Target 1.2*

- Partnerships were forged between the PHG, which initiated this project after several outreach campaigns in the communities, the Bani Suhaila municipality and the Coastal Municipal Water Utility (CMWU). *Contribution: SDG 17, Target 17.17; SDG 17, Target 17.7*

Case Study 4:

Installation of seven solar-powered compact sewage water-treatment systems in peri-urban/rural areas around Lahore, Pakistan

THE PROBLEM

In Pakistan, about Ninety percent of available water resources are used for irrigation. Because of the shortage of surface water supply, groundwater and untreated urban wastewater are used for irrigation without monitoring of the water quality or the type of crops they are used on.

Untreated industrial wastewater containing various types of hazardous chemicals and toxic metals is also discharged in rivers, leading to mixing of carcinogenic and harmful ingredients in the food chain, as well as contaminating groundwater (used for drinking purposes) and riverbeds.

These problems are particularly acute in Lahore, the capital of Punjab province, with a 3.36 million peri-urban population affected by these negative health and environmental impacts.

"The soil texture has been improving gradually, crop production has increased and spending on fertilizers has been reduced by around 60 percent."

—a farmer in one of the villages around Lahore

THE PROJECT

Seven solar-powered compact sewage water-treatment systems developed by the Society for Empowerment and Environmental Protection (SEEP) were installed in selected peri-urban/rural areas of Lahore. Sanitation Committees were formed in all seven villages that signed agreements with landowners to allocate plots free of charge for the treatment units. The treatment systems, developed based on a unique combination of anaerobic and aerobic treatment technologies, are cost-effective, requiring low levels of civil work and maintenance and operating on off-grid renewable energy. By making treated wastewater available for irrigation, the project aimed to help reduce water deficits while allowing fruits, vegetables and other crops to be cultivated safely.

Brochures about the project and user manuals on the operation and maintenance (O&M) of the sewage-treatment units were also published and distributed in order to empower and enable the communities to take responsibility for the O&M through the formation and training of the local Sanitation Committees.

An additional intervention, carried out with funding from SEEP and not from NWP, connected a 455-litre drinking water tank in Chandrai village with a polypropylene random copolymer (PPRC) water header that contains four taps for the provision of safe drinking water. The same ozone gas generated by the sewage treatment system is used for drinking-water sterilization.

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INSTALLATION OF SOLAR POWERED COMPACT SEWAGE WATER TREATMENT SYSTEM IN KARBATH (HAWALIYAN) TO SOLVE WATER & SANITATION PROBLEMS
In the context of a United Nations Development Programme, New World: Inclusive Sustainable Human Development Initiatives.
Funded by:
UNDP
Implemented by:
Society for Empowerment and Environmental Protection (SEEP)

Keys to success:

- The low cost for O&M compared to conventional systems, the genuine interest of the communities, and the readiness of SEEP to monitor and assist in the event of technical issues give this project strong potential for sustainable operation.
- The donation of land plots by the residents for the sewage-treatment systems free of charge, in-kind contributions of labour from the community, and collaborative agreements reached with communities regarding the O&M of the sewage-treatment systems were all crucial.
- The locally designed sewage-treatment systems are innovative and cost-effective, a product of the local engineering talent addressing one of the pressing needs of the community.

Recommendations:

- Future projects would be advised to plan construction of the ozone gas generation system for drinking-water sterilization together with the water points.
- A plan should have been put in place to collect modest financial contributions from the community in order to build a fund for battery replacement and other maintenance needs.
- Expanding the project to faecal sludge management is recommended as a next step.
- Data on the quantity of pollutants removed during wastewater treatment would enable the calculation of the monetized environmental benefits of such projects.

MAIN RESULTS

- Each of the seven installed systems is **treating around 31,300 litres of sewage a day** (approximately 30 percent of wastewater generated), benefiting 7,400 people in 1,050 households. *Contribution: SDG 6, Target 6.3*

- The sewage treatment systems are **providing more than 220,000 litres daily (18 million litres annually) of better-quality irrigation water** to use on more than nine hectares of land, saving an equivalent amount of freshwater. *Contribution: SDG 6, Target 6.4*

- Fourteen operators (two nominated by each Sanitation Committee) were **trained to operate and maintain the sewage-treatment systems** and local residents were educated about their benefits. *Contribution: SDG 13, Target 13.3*

- Women are represented on Sanitation Committees and were **active in mobilizing community residents** to promote the project. They say they are saving time formerly spent dealing with wastewater and polluted yards in their neighbourhoods. *Contribution: SDG 5, Target 5.3*

- **Good partnerships were developed between stakeholders**, including local governments, government institutions, NGOs and community residents. *Contribution: SDG 17, Target 17.7*

- **Pollution from wastewater has been reduced** in the target area, contributing to the reduction of the pollution from the leakage of wastewater to groundwater. *Contribution: SDG 6, Target 6.6*

- Farmers have observed **higher yields of crops and vegetables**, and reported that they spend less on groundwater for irrigation and fertilizers. Increased confidence about the safe use of treated sewage has also led more residents, especially women, to start growing vegetables in their backyards, contributing to food security. *Contribution: SDG 2, Target 2.3*

Case Study 5:

Water-wise village in Lebanon

THE PROBLEM

Although Lebanon is known as a water-rich country, many villages in the country suffer from water shortages due to unsustainable water-management practices, including the irrigation of agricultural fields with the wasteful "flooding" method.

In the village of Menjez, in the Akkar region near the border with Syria, water shortages had led many farmers to abandon their land plots, previously used to grow olives, almonds, grapes, carob trees, fruit trees and seasonal vegetables, as well as to host beehives.

One of the most deprived regions in the country, Akkar has one of the highest poverty rates in Lebanon; at least half of the farmers of Menjez could be assessed as poor.

"The farmers keep telling me that the new irrigation system is like heaven for them, since they just need to turn on the tap and then can go and tend to their other business."

—mayor of Menjez

THE PROJECT

A drip irrigation system was installed on six hectares in Menjez, comprising two pumps, two 2,000-litre-capacity pressure tanks, several electrical tablets and filters. The pumps and the valves are manually operated by the farmers in collaboration with the municipality, with the aim of improving the farmers' access to irrigation water by eliminating leakages and therefore the viability of the agricultural activity. The drip irrigation system covers around 2,000 trees for 40 farmers.

A rainwater harvesting system was installed close to the school garden in Menjez in order to provide the retained water for irrigation purposes. The system has a holding capacity of 2,000 litres. In order to conserve drinking water, faucet aerators were installed in all 350 houses in the village (four per house), 30 in the school, four at the municipality, four at one of the village agricultural cooperatives, and four at the local Civil Defence Centre.

An awareness-raising campaign was also carried out with students at the village school, their teachers, school board members, municipality board members, local households, and farmers/members of the village's agricultural cooperatives. The presentations aimed to raise general environmental awareness in the community with a special focus on water, its importance and ways to save it. Farmers also received special training that introduced the drip irrigation system and its benefits, and taught them how to install and maintain such systems.

6
CLEAN WATER
AND SANITATION

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Keys to success:

- The formal agreement signed between Fair Trade Lebanon, the Municipality of Menjez and the two agricultural cooperatives of Menjez, committing to develop fair-trade products and contribute to the village's socioeconomic development, provides solid grounds for the sustainability of the project results.
- Effective leadership from Menjez's mayor allowed the village to set an example for others.
- Financial support from the municipality was instrumental in expanding the area covered by the drip irrigation system.
- A Water Committee to be formed by local farmers will collect money to manage and maintain the system in conjunction with the annual allocations provided by the municipality. The annual fees will be only a fraction of the costs that the farmers had to incur to manage their previous, inefficient irrigation systems.

Recommendations:

- UNDP should facilitate more sharing of experiences among local municipalities so that other villages that would like to replicate the project in Menjez can more fully benefit from its success.

MAIN RESULTS

- **Significant reductions were achieved in water used both for irrigation and drinking purposes**, while the availability of safe drinking water was increased indirectly by reducing the amount drawn for irrigation from local springs. *Contribution: SDG 6, Target 6.4*

- Community members were made **more familiar with sustainable water conservation practices**, while farmers improved their knowledge of operating drip-irrigation systems. *Contribution: SDG 13, Target 13.3*

- Menjez's newly formed municipality has committed to supporting improvements in water and irrigation infrastructure. It helped farmers operate the new water supply system, extended the drip irrigation system by 40,000 m2 and has pledged to co-fund part of the expenses connected to the system's future operation. *Contribution: SDG 6, Target 6.b; SDG 17, Target 17.17*

- The size of irrigated land in the village has doubled, while **higher-value crops are being planted** (e.g. avocado and apricots) and farmers have been able to expand the cultivation of organic products, boosting local incomes. Farmers also have to devote less time to irrigation, leaving them free to engage in other productive activities. *Contribution: SDG 2, Target 2.3*

- Farmers say the system has helped them not only to make ends meet but also **be able to spend more on their children's education, healthcare** and home renovations. *Likely contribution: SDG 1, Target 1.2*

- The use of aerators has decreased water wastage and increased the actual availability of water for cooking, drinking and household chores, **making women's housework less burdensome.** *Contribution: SDG 5, Target 5.4*

Case Study 6:

Upscaling organic agriculture activities through improved access to water supply in Zimbabwe

THE PROBLEM

Without enough reliable water and sanitation facilities, farmers in the Makoni district of north-eastern Zimbabwe struggled to increase their yields enough to earn a decent living. In 2011, the community-based organisation Makoni Organic Farmers Association (MOFA) received a grant from the Global Environment Facility (GEF) Small Grants Programme (SGP), implemented by UNDP, that was used to scale up activities and establish six new demonstration plots of organic gardens that focused on conserving biodiversity and eliminating persistent organic pollutants (POPs).

The group also received additional training on organic farming techniques, a step that helped MOFA to receive organic certification in 2012. But the implementation of the GEF SGP project also highlighted on-going challenges for the farmers: The bucket systems they used for irrigation were labour-intensive and limited the area under production, while the lack of toilet facilities at their organic gardens posed a challenge to maintaining their organic certifications.

"We would never have thought that people in this rural part of the country would one day be able to use solar-powered pumps to get clean water from boreholes, instead of having to drink water from unprotected wells."

—farmer and member of the Makoni Organic Farmers Association

THE PROJECT

The project aimed to upscale organic agriculture activities in Makoni by increasing organic production; increasing access to sustainable, safely managed water supply for drinking and agricultural purposes; increasing access to gender-sensitive improved sanitation facilities; and providing water and sanitation training.

All six community gardens in Makoni were extended and fenced and liquid-manure tanks were constructed to serve them. One borehole was also drilled for each garden and equipped with solar pumps and taps to increase irrigation capacity. An additional tap was installed outside each garden to provide public access to safe drinking water.

Six male/female-separated pit latrines were also constructed in the organic gardens, and trainings were led for different groups on W&S, the negative health and environmental impact of POPs, and the marketing of crops. A Marketing Committee was established to seek markets and promote the growing of crops which may have a higher market value.

Keys to success:

- The local community was equipped with the necessary knowledge and capacity to run the organic farms on a sustainable basis.
- The sustainability potential was also enhanced through community involvement and participation in all project activities with co-financing in cash and in-kind (labour) contributions, as well as the strong partnerships built.
- The borehole maintenance expenses are covered by the MOFA members through monthly contributions to the gardens' revolving funds.
- The project is expandable and replicable, with Makoni already upscaling other enterprises such as indigenous organic poultry and mushroom production, aquaculture and apiculture, and other villages already mobilizing farmers to start organic farming if they receive financial support.

Recommendations:

- Ways to maintain good hygiene in the male-female separated toilets and address risks of vandalism should be implemented, perhaps by building separate toilets for passers-by.
- More data should have been collected on amount of water harvested and then used by each garden to better measure project results.
- A more aggressive marketing strategy, and better transport to markets, are required to secure reliable, readily available markets that have real value for organic products.
- The reasons for the insufficient water at the Tashinga West borehole (where digging ponds are being used temporarily to make up for the shortage) should be thoroughly investigated.

MAIN RESULTS

- Passers-by and nearby households have **increased sources of safe water** due to the taps installed outside the gardens. *Contribution: SDG 6, Target 6.1*

- Farmers demonstrated **improved knowledge and application of organic farming,** including making composts and using organic production in their household gardens as well. *Contribution: SDG 13, Target 13.3*

- The 24,000 litres of water per day made available for irrigation allowed for year-round production; **increased soil productivity, garden sizes, and incomes** for farmers; and the establishment of effective manuring systems. Farmers also learned to shift to crops that perform better in their gardens' soil types. *Contribution: SDG 2, Target 2.4; SDG 2, Target 2.3*

- The number of people getting involved in community gardening has increased and farmers report that they can **better afford basic household needs,** including educational expenses for their children, better access to healthcare and sufficient food, as a result of their enhanced production for household consumption and for sale. *Contribution: SDG 1, Target 1.2*

- Due to the prioritization of gender mainstreaming in all project activities, **62 percent of direct beneficiaries were women.** Many say they now have their own money, contrary to common local practice of men controlling the household finances. *Contribution: SDG 5, Target 5.a*

- Organic farming practices have **likely increased the return of carbon to the soil**, raising productivity and boosting the mitigation potential of agriculture against climate change. *Likely contribution: SDG 15, Target 15.3*

- **Strong partnerships were forged between various stakeholders**, with community ownership at all stages of project implementation. *Contribution: SDG 6, Target 6.b; SDG 17, Target 17.17*

Case Study 7:

Demonstration of best practices in sustainable water resources management in forest sector in the aral zone of Kazakhstan

THE PROBLEM

Declining water levels in the Aral Sea have resulted in its rapid shrinking, with some forecasts pointing to the disappearance of the inland sea entirely by 2020.

The sand and drifts covering dried area of the sea contain high levels of salt, including toxic components of pesticides and fertilizers. Precipitation and air humidity have been reduced and winters have become colder and summers hotter in coastal areas.

Around 70 percent of irrigated lands in the Aral zone have seen decreasing yields ranging from 20 to 42 percent in different regions (and approaching 75 percent in the coastal areas). The air and soil pollution have led to worsening quality of freshwater from both open and underground sources.

The impact of this major environmental disaster, including its detrimental effect on local livelihoods, has led to depopulation of the communities in the Aral zone of Kazakhstan.

"We have now sufficient irrigation water to revitalize our farm to its full capacity."

—farmer in Aralsk region

THE PROJECT

The project aimed to improve the living conditions of local residents by increasing opportunities for income-generating activities while contributing to environmental conservation and restoration. Water-saving technologies, including drip irrigation but also mulching and cropping, were introduced to the forest nursery of Aralsk State Institute of Forestry and Conservation of Wildlife (ASIFCW), which traditionally lost much of the water taken from the Syrdarya River through the Basykara canal due to inefficient irrigation methods.

Black saxaul trees, marsh elder and Lombardy poplar were planted, and an off-grid electricity system installed, complete with reservoirs, pumps, a solar-wind power station, a wind-turbine generator and eight solar panels. This off-grid renewable-energy system provides electricity to the nursery, as well as the administrative building of the Forestry Agency. In addition, 8 kilometres of the Basykara (Sholakaryk) canal were rehabilitated and water filters installed to provide clean water for cattle breeding as well as irrigation.

A second component of the project carried out awareness-raising activities among local communities in Aralsk district on innovative best practices and technologies related to water-saving, and training workshops for local rural youth on efficient use of water resources and reforestation in the Aral zone.

Keys to success:

- Simultaneous implementation of the project activities with a full-scale UNDP/GEF project on conservation of desert ecosystems helped ensure a solid and relevant design and open up opportunities for co-funding.
- The installation of locally produced wind turbines and long-term allocation of resources for their maintenance ensure they will be able to operate long into the future.
- The coordinated targeting of youth also supports the project's sustainability prospects.

Recommendations:

- The local communities need to develop adaptive measures to climate change.
- A long-term framework should be established for afforestation of the dried bed of the Aral Sea, including the planting of a green belt to protect from dust storms and moving sands.
- Results should be shared widely to facilitate the prospects of follow up and scaling up.

MAIN RESULTS

- Local communities in a dry and hot climate have an **increased irrigation water supply and continuous access to open water sources** due to the rehabilitation of the Basykara (Sholakaryk) canal, which has directly benefitted and estimated 1,400 local residents. The **use of irrigation water per hectare has also been reduced** by 55 percent. *Contribution: SDG 6, Target 6.4*

- The installation of a wind-solar plant at the targeted forest nursery has **provided permanent electricity and increased energy efficiency** while reducing annual greenhouse gas (GHG) emissions. *Contribution: SDG 9, Target 9.4; SDG 7, Target 7.3*

- Staff at forest plantations **improved professional qualifications** through a series of workshops and on-the-job training, while local farmers, schoolchildren and other local residents **gained better awareness about water-conservation technologies.** *Contribution: SDG 13, Target 13.3*

- **Partnerships were forged** with the Forestry Agency, local schools and the central district government of the Aral region, with the central government of Kyzylorda also playing a strong coordinating role. *Contribution: SDG 6, Target 6.b; SDG 17, Target 17.17*

- The planting of saxaul shrubs and seedlings **contributed to building a sustainable framework to promote afforestation** on the dried Aral Sea bed and mitigate processes of desertification in the region. *Contribution: SDG 13, Target 13.2; SDG 15, Target 15.3; SDG 6, Target 6.6*

- Green zones created to protect villages from moving sands contributed to **improved disaster risk reduction** in 24 communities in the Aral Sea region. *Contribution: SDG 13, Target 13.1*

- Increased areas under irrigation, better conditions for livestock breeding and the creation of additional job opportunities **prompted the return of some former residents** and helped households make ends meet. *Contribution: SDG 1, Target 1.2; SDG 2, Target 2.3*

- Afforestation of the dried bed of the Aral Sea and planting of green belts around the settlements and recreation zones in Aralsk district are expected to have **positive impact on the health of local communities.** *Likely contribution: SDG 3, Target 3.9*

- Women farmers and forestry staff gained new and valuable knowledge related to climate-resilient and efficient irrigation and agriculture, thus **contributing to their economic empowerment.** *Contribution: SDG 4, Target 4.5*

Case Study 8:

Sustainable agriculture promotion through the recycling of crop residues in Egypt

THE PROBLEM

The river Nile is the backbone of Egypt's industrial and agricultural sector and is the primary source of the country's drinking water. But rising demand in the countries of the Nile Basin, pollution and environmental degradation are decreasing water availability, creating a growing problem of water scarcity in Egypt.

Inefficient and unsustainable practices in agriculture, including seasonal rotting and burning of crop residues, are meanwhile leading to desertification and health hazards. These trends are expected to deteriorate further with climate change, adding to the struggles of rural residents like those in the Qena region, where more than half of the population lives below the poverty line.

Farming communities in the area have been hit recently by rationing of irrigation water and a 30 to 45 percent increase in the prices of chemical fertilisers.

"My husband is disabled and I am the only breadwinner in our family. The money I earn here is very important for us."

—woman working at Sharqi Samhoud Community Development Association

THE PROJECT

The project aimed to address the linked issues of water shortage, land degradation, health hazards and unsustainable agricultural practices by introducing a sustainable agricultural method of recycling crop residues to produce composts. The use of composts was expected to decrease irrigation need, improve soil quality, stop the hazardous burning and rotting of crop residues and provide additional source of jobs, income and skills to the local community. The project was funded as a pilot through the NWP first generation and scaled up in the second generation ending in 2017.

Both rounds of the project involved training of farmers and agriculture extension staff in crop-residue recycling and compost production and use; providing recycling equipment, namely: a chopper for dry materials, a chopper for green materials, a trailer, a tractor and a steering system for crop-residue recycling and compost production. With the scaled-up project it is expected that:

(a) the value chain for recycling of agricultural residues will be completed and upgraded in the pilot community (in particular with marketing of compost and non-traditional feed);
(b) the local partner, the Sharqi Samhoud Community Development Association (CDA), will have sufficient capacity to sustain and promote the agricultural recycling method in Upper Egypt; and
(c) the crop-residue recycling model will be scaled up.

Keys to success:

- Being embedded in the larger Egypt Network for Integrated Development (ENID), a joint initiative of UNDP and the Ministry of International Cooperation, increased the reach of this project.
- Ensuring a net profit from the compost production in the recycling process contributes to the sustainability of the project.

Recommendations:

- With demand increasing, the CDA might need to favour recycling the residues at its premises, as this seems to be more cost-effective.
- Demonstrating robust evidence of the project benefits and disseminating the results is necessary to get funding for the further expansion and replication requested by many local farmers.
- Exploring ways to link with ENID's on-going work in promotion of handicrafts and cottage industries to provide more opportunities for women by using banana fibres extracted from the residues would promote integrated rural development with direct women's empowerment.
- When scaled-up, the project should be integrated with promotion of drip irrigation as well as wastewater treatment and reuse.

MAIN RESULTS

- As of the time of writing, 460 tons of crop residues had been recycled, creating enough compost to fertilize around 28.6 hectares, leading to an estimated **savings in water utilisation for irrigation** of about 110,200 m3. *Contribution: SDG 6, Target 6.4; SDG, Target 6.6*

- Farmers and extension workers **improved their knowledge of recycling crop residue to make compost** and are applying that knowledge either on their own land plots or in conjunction with the CDA. The practice of burning crop residues has also been reduced among the trained farmers. *Contribution: SDG 13, Target 13.3; SDG 17, Target 17.7*

- Women trained by the project in the compost-sifting and packing operation who are now working part-time at the CDA are **earning more than the minimum wage and say they feel more self-confident** after acquiring their new skills. *Contribution: SDG 4, Target 4.5*

- Participating farmers reported savings on the cost of fertilisers as well as an boost in yields, leading to **small increases in net profits. New work opportunities were also created for women** at the CDA. *Contribution: SDG 1, Target 1.2; SDG 2, Target 2.4; SDG 2, Target 2.3*

- Decreased burning of agricultural waste **contributed to a reduction in emissions** of carbon monoxide, particulate matter and polycyclic aromatic hydrocarbons, while increasing healthy microbial activities in the soil. *Contribution: SDG 12, Target 12.5; SDG 15, Target 15.3; SDS 2030 for Egypt*

- Decreased burning of agricultural waste is also likely to contribution to a reduction in allergies and lung diseases in the local community, while utilising banana residues to make composts has been shown to lead to a reduction in the concentration of heavy metals. *Potential contribution: SDG 3, Target 3.9*

- **Partnerships were forged and strengthened** between local communities, universities, community-based organizations, and local and central government. *Contribution: SDG 17, Target 17.17*

- The training programme for the recycling of agricultural residues is **being replicated nationwide.** *Contribution: SDG 13, Target 13.2*

Case Study 9:

Empowering women through life-skills education and strengthening of peer-support groups for resilient communities in South Africa

THE PROBLEM

South Africa has one of the world's highest levels of inequality, with women more likely to be impoverished than men. Though small businesses are seen as a crucial engine of growth, their failure rate is high, and women and youth face particular hurdles due to lack of collateral.

The government has a number of policies and programmes in place that aim at helping micro and small enterprises, in particular those owned by women, with most support structured to be accessed through cooperatives.

A study undertaken by the Department of Trade and Industry, however, showed that the survival rate of cooperatives was a mere 12 percent, highlighting the fact that they are not always being established on a genuine basis (but rather, for the purpose of accessing government grants), a problem worsened by untargeted, uncoordinated support and poor mentorship.

"I can still remember how I was counting every Rand before; now I have been able to pay for my child to study abroad."

—member of a catering peer support group

THE PROJECT

Since 2013, UNWOMEN has been implementing the Empowerment of Women Entrepreneurs Project (EWEP) with funding from The Coca-Cola Company and with the help of the NGO "Hand in Hand" South Africa. The project seeks to build the capacity of micro-entrepreneurs in townships, urban and peri-urban areas to run and grow their businesses through providing basic business-skills training. EWEP also assists them in forming peer support groups (PSGs), in which women voluntarily come together to achieve collective economic goals through collective decision-making by consensus of all.

The NWP, implemented by UNWOMEN in partnership with "Hand in Hand", aimed to strengthen PSGs (including those formed under the EWEP), positioning them for growth and access to support so that they can serve as a more sustainable model for the formation and development of cooperatives.

After carrying out a needs assessments of the groups, 29 PSGs received modular trainings on business management and life skills; post-training follow-up support with capacity-building and mentorship; support in networking and building linkages with other services; training of trainers; and support in designing action plans that reflect each group's needs and dynamics.

SOUTHERN AFRICA
Leadership Skills for Self Help
Group Management
Coca-Cola

Keys to success:

- The project started from participatory mapping of PSGs' needs against services or products that could enhance groups' businesses as well as linking groups with other service providers.
- The synergy between the longer-term EWEP and the NWP, both funded by Coca-Cola, strengthened the sustainability potential of the initiative by giving it space and time to continue engagement beyond the duration of the NWP-funded project.
- Multifaceted support was an essential component in the project's success and also created an appetite for a future joint programme with the Government of South Africa.

Recommendations:

- Coordination between various levels and units of the government could be enhanced, coupled with a thorough review of the policies aimed at supporting the cooperatives.
- Continued coaching and networking support is needed to help the PSGs make their next big steps.
- The strengthening of synergies among UN agencies would be fruitful, as would including a policy-advisory component in the relevant UN projects.
- A longer-duration project with a component on training in technical skills would improve the capabilities of the PSG members.
- Consolidation and scaling up of the results of the project is desirable to sustain the gains and reach out to additional communities.

MAIN RESULTS

- Participating women **gained valuable skills in group visioning, teamwork and sharing of responsibilities, marketing and business planning.** As a result, many became more proactive about looking for new business opportunities rather than waiting for financial sponsorship. The new skills also enabled some groups to secure larger contracts and increase sales, productivity and market reach. *Contribution: SDG 4, Target 4.4; SDG 4, Target 4.5; SDG 5, Target 5.a*

- Individual interviews with participating women revealed that most of them were poor and that **the project had contributed to improving their livelihoods** when the PSGs matured into cooperatives and sought contracts outside the very limited state orders. In some cases, the project clearly contributed to helping the women out of poverty. *Likely contribution: SDG 1, Target 1.2; SDG 10, Target 10.1*

- Women from the successful cooperatives reported that they are perceived by society as having **gained leadership and employment potential**, and some have already been appointed to positions of more responsibility. *Contribution: SDG 5, Target 5.5*

- Though several women said their work at the cooperatives left them with less time for household chores, they also reported that their household members are more appreciative of the tasks they perform at home and more willing to help. *Contribution: SDG 5, Target 5.4*

- While a planned formal partnership with the national government is still a work in progress, **strong ties were forged with local governments, NGOs and private businesses** that provided support in different ways for the project. *Contribution: SDG 17, Target 17.17*

Case Study 10:

Queen bee project in Turkey

THE PROBLEM

On-going internal migration from rural areas to cities in Eastern Turkey, coupled with cultural traditions, has generally had a negative impact on family structures and women in particular. The options for young girls are often restricted, resulting in little schooling, early marriage, and high fertility: the average family in the region has nine people, usually supported by just one breadwinner. Women from the migrant households living in the Süphan district of Van province face acute problems with poverty, lack of Turkish language skills, low literacy, restrictions on social life and dependency on their parents and husbands.

Beekeeping, which does not require significant financial investment or land ownership, is the main source of income for more than 40,000 families in the region. But productivity is hampered due to a lack of queen bees, which need to be replaced every two years, as well as a lack of knowledge.

"Our roles at home are changing as we earn money.... If there is money at work, my family does not interfere in my life..."

—female participant in the beekeeping project

THE PROJECT

The NWP project sought to build on previous work in the region by the Hisar Anadolu Support Association (Hisar Anadolu Destek Derneği, or HADD), which has been organising programmes for women and girls related to literacy, crafts and computing, as well as an earlier project in apiculture that gave 20 girls beekeeping courses and three starter hives each.

Through training and transfer of individual assets, the NWP project sought to increase the number of girls involved in beekeeping and teach them how to rear queen bees for their own use via training sessions in modern apiary techniques in partnership with Düzce University. It also set up the TUSBAL Cooperative, with the trained young women as founding members and managers, responsible for day-to-day operations, honeycomb transportations, protection of the honeycombs and upkeep of the laboratory, queen bees and other output production.

A laboratory and production units were set up and a bee pasture planted that includes honey plants' sprouts (thyme, lavender, mint, phacelia) and an assortment of fruit trees. In addition to honey, small amounts of bee wax and Propolis are also being harvested.

Keys to success:

- HADD's previous work in the region helped earned the trust of the local community.
- Earlier HADD-run trainings related to health literacy and computing provided a basis for the NWP-funded trainings.
- Bringing opportunities close to the women's homes allowed them to get permission to go work.
- The trainings arranged were of good quality and resulted in women getting official certificates, establishing a cooperative and securing beehives.

Recommendations:

- Participants need to receive further training that imparts better knowledge about cooperative management, product development, business planning and marketing and sales, as well as group visioning, teamwork and sharing of responsibilities.
- A stronger sense of ownership of the business and being part of decision-making would have helped managed the women's expectations about sales and earnings.
- An extension and diversification of the product range and perhaps the opening of a sales point could improve the cooperative's financial sustainability, and consequentially, the financial standing of the participating women.
- Pursuing organic certification and higher-value products requires a longer timeframe than originally allowed. The project would thus benefit from being linked with a larger initiative on private-sector development in Turkey to overcome the challenges related to the NWP's short duration/limited funding format.

MAIN RESULTS

- Women and girls **gained valuable knowledge and skills** in beekeeping and honey production. Participants said the training boosted their self-confidence and independence. *Contribution: SDG 4, Target 4.3; SDG 4, Target 4.4; SDG 4, Target 4.5*

- While the project idea was heavily based on making the women asset owners, the majority of those interviewed perceived the hives as belonging to the cooperative. The sense of ownership is thus not very strong, nor is the understanding of the basics of cooperative management. *Weak contribution: SDG 5, Target 5.a*

- In its first year, **the project produced close to 2,500 kg of honey that was bottled, labelled and made ready for sale** after passing quality tests. In addition, 200 queen bees were produced and hive productivity has increased slightly amidst harsh winter conditions. Participants, however, reported disappointment with the small amount of money they received for their efforts and said it hurt their efforts to convince their families to allow them to keep working.

- The project was instrumental in the establishment of the institutional framework – the cooperative – which helped to **build group cohesion** among the members. The project also **created conditions for socialisation, countering isolation.**

- The young women involved in the cooperative **contributed their earnings to their households**, which are quite poor, but the amounts were not nearly enough to help them meet basic needs.

- Participants said they initially saw **some improvement in terms of being more valued in their households**, but this was reversed due to the perceived insufficiency of their earnings.

- **Limited partnerships were built with local authorities**, which provided space for the project and supported TUSBAL in exhibiting the products. *Weak contribution: SDG 17, Target 17.17*

New World

This publication highlights the achievements of New World, a four year partnership programme between the United Nations Development Programme (UNDP) and Coca-Cola that improved water supply and sanitation, promoted responsible water resource management, and empowered women and young people through more than 40 projects supporting communities in 19 countries around the world.

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