

**The Economic, Social, and Environmental
Impacts of the Social Protection Projects
(SPECRP)**

The Public Works Project (PWP) is implementing the Strengthening Social Protection in Yemen and COVID-19 Response (ESPECRP) project, in partnership with the United Nations Development Programme (UNDP) with funding from the World Bank. The project aims at improving food security levels, providing temporary employment, and facilitating access to basic and economic services.

As a strategy pursued by PWP, the application of the principle of transparency aims at ensuring the sustainability of implemented subprojects and whether they meet the needs of the communities. An environmental, social, and economic impact assessment was carried out for the interventions that were completed during a period ranging from 3-6 months to measure whether they have had any impact in improving the living conditions of vulnerable communities and the level of food security and whether they addressed the negative impacts of climate change.

The evaluation targeted 37 subprojects as a sample from across the Yemeni governorates. They varied between large, medium, and small projects in three sectors covered by PWP, namely rural and urban road paving projects, mechanized water projects, rainwater harvesting reservoirs, agricultural land protection subprojects, and irrigation channels.

Feedback from direct and indirect beneficiaries was collected, including from community committees and workers in those subprojects. We will start with a brief presentation of the most important results in the three sectors targeted by the evaluation. Later, a more detailed explanation will be provided for each sector individually.

I. Key findings from the impact assessment of agricultural land protection projects and irrigation canals are as follows:

- Results showed that natural resources were fully utilized in the implementation of projects to protect agricultural lands and irrigation canals. 99% of implemented projects had a positive impact on the environment- i.e. did not cause any damage

to neighboring lands. No harmful waste was generated that would harm the surroundings.

- Further, 95% of implemented projects left a positive impact on social relations in the local communities, strengthened cooperation and cohesion between people, strengthened community participation, reduced the number of disputes, and 57% of these projects contributed to creating new skills for workers.
- The impact assessment showed that more than 90% of implemented agricultural projects contributed to improving economic and living conditions for families in flood-susceptible areas compared to the situation before implementation of the projects. They also increased the area of cultivable land and increased the productivity of various crops.
- Implemented agricultural projects also contributed to improving the nutritional levels of the beneficiary households, who used products grown on their agricultural lands, and some produced more than they needed to sell in the market.
- The projects contributed to improving the income of beneficiary households by more than 85%, reducing daily expenses, and contributing to the improvement of educational outcomes for children, especially for girls.
- The assessment confirmed that the implemented agricultural land protection projects contributed significantly to reducing and mitigating soil erosion of cultivable land, which has been caused by climate change and households were able to secure access to food even in the rainy season.
- More than 80% of community members said they were satisfied with the
- implemented projects and confirmed that they have met their needs.

II: Rural and Urban Road Paving Projects Sector:

- Natural resources were used in the implementation of road projects. 95% of these projects contributed to the positive impact of the projects on the environment in terms of not causing any damage to neighboring lands. The project did not produce any harmful waste in the surrounding area.
- Implemented projects contributed positively to strengthening social relations in local communities, enhancing cooperation and cohesion between people,

community participation, and reducing the incidence of disputes. 75% of these projects contributed to producing trained labor.

- More than 60% of the implemented rural road paving projects contributed to reducing the cost of transporting basic goods and commodities. They also facilitated the transport of agricultural products from the region to the nearby market, where the average cost of transporting foodstuffs before the project's intervention was upward of YER 7738. After the implementation of the intervention, the cost was reduced to an average of YER 3425. The project also saved the community time and effort when transporting food and other materials by as much as 93.7%. It also reduced the average purchase price of each unit of water to YER 5200.
- The implemented road paving projects also contributed to a reduction in the cost of transporting water. After the implementation of road projects, the average purchase price per unit of water (100 liters) went down to YER 5600.
- In addition, 80% of these projects contributed to improving the health situation in the community. After the implementation of the projects, they facilitated ease of movement and allowed patients to be transported through paved roads, cutting the average time to reach the nearest health unit from 60 minutes to 24 minutes.
- Furthermore, the road paving projects also contributed to improving households' income by more than 70%, reduced daily expenses, and contributed to increased enrollment of boys and girls in schools. They also reduced rates of dropout of male and female students from schools by 36.7%. In addition to that, the projects helped reduce the illiteracy rate among women by saving the time and effort it took to fetch water to their homes. Based on community members' feedback, people saved around 30% of their time.
- More than 90% of different communities were engaged with each other, promoting inclusiveness and a sense of ownership, while strengthening links between the project and the community.
- More than 90% of the beneficiary community members reported that they were satisfied with the implemented road paving projects and confirmed that they met their needs.

III: Rainwater harvesting reservoirs and mechanized water projects sector

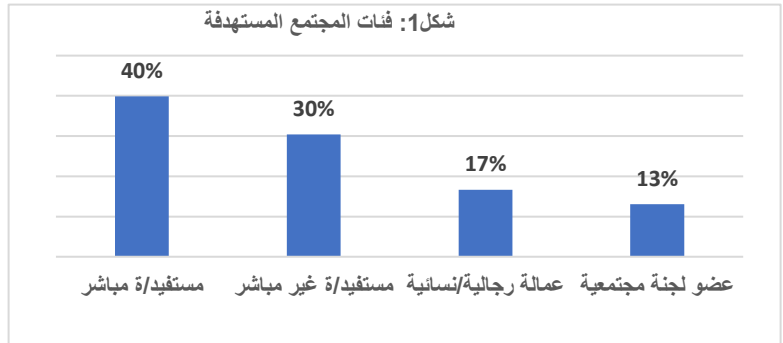
- Natural resources were used in the implementation of projects.
- 98% of the implemented projects are environmentally friendly. They have no impact on the waterways or branches or pooling water for irrigation of other farms. No damage was caused to neighboring lands. These reservoirs were not built on pasture grounds and no trees were uprooted. Furthermore, implemented projects didn't cause any landslides or rockslides, and the surrounding area wasn't affected by harmful waste.
- As for social relations, implemented projects have had a positive impact, in terms of enhancing cooperation, interdependence between people, and enhancing community participation.
- Implemented water projects have contributed to meeting the water needs of 85% of the beneficiaries, improving the health of women and children, and reducing the spread of diseases caused by water shortages. These projects also contributed to the improvement of the community life of the beneficiaries and contributed to the creation of employment opportunities and the training of workers. Thus, helping in the improvement of living conditions and enhancing social sustainability.
- Furthermore, water projects have contributed to a 77% reduction in the households' daily expenses for water and food. Rates of girls' enrollment in schools have increased after the completion of the intervention. This was the result of building water access points closer to their homes, which saved time and effort giving them more free time that made it possible to enroll in schools.
- The implemented water projects have improved the quality of water suitable for domestic use by 92%. Due to increased health awareness, the households' dietary patterns have also changed. Clean water also reduced the incidence of diseases by 89%, especially among women and children.
- Water projects have contributed to ensuring constant water supply to households even during the rainy and flood season. They also mitigated the impacts of extreme weather conditions, helping members of the community to cope better.

Sectoral Impact Assessment: The Steps (agriculture, paving roads, water)

1- Agricultural projects (protection of land and irrigation canals)

20 projects were selected in 13 governorates. The total target sample in this assessment was (276) samples, which included target governorates and represented various segments of society (direct beneficiary of the

implemented subproject, indirect / beneficiary, employment, and community committee member), as shown in Figure (1). 94% of these groups reside in the same areas, 4% are IDPs, and the rest are returnees. From the perspective of the target group, these subprojects benefitted an average of 1386 beneficiaries, 1100 being females. Some of these targeted subprojects include the construction of surface walls to protect agricultural land, the construction and rehabilitating of protection walls for irrigation canals and farmlands and for reducing irrigation water losses, bumpers and gabion walls, and surface barriers for the protection of farmlands. They varied between 70% for medium-sized subprojects, 22% for large subprojects, and 6.9% for small subprojects. All types of intervention in these subprojects were either construction or repair works.



Natural Resources and Pollution Reduction:

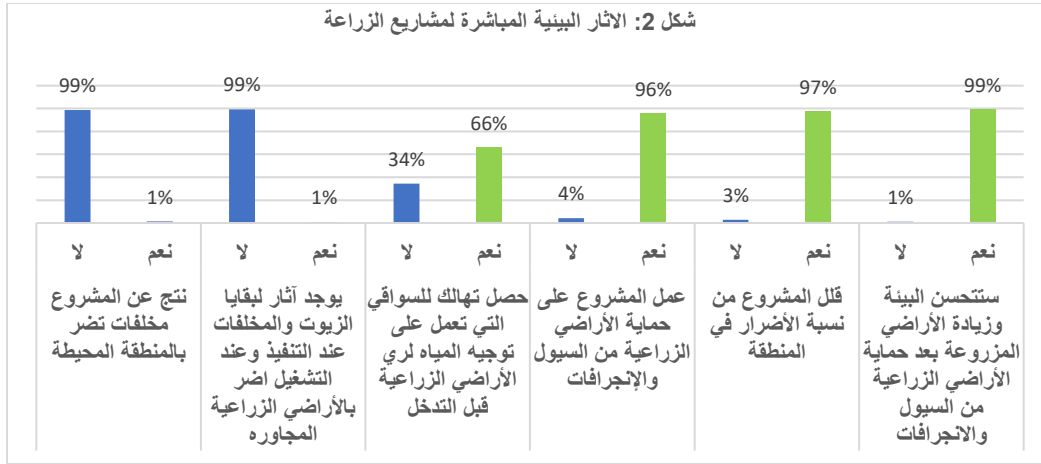
The target group stated in this assessment mentioned that natural resources in the region were used in the construction of the project. By using local natural resources, the community benefits are greater, including environmental sustainability through the effective use of natural resources, reduction of pressure on the surrounding ecosystems, and economic benefits through a reduction of resource consumption, achieving financial sustainability of the project in the long run, by providing local job opportunities or improving environmental conditions. Thus, improving the quality of life in the area surrounding the subproject. Stones, sand, aggregate, and manpower were used, in addition to the use of other tools, such as drilling tools and graders. This confirms that these resources were effective

and efficient to achieve maximum benefits. Resources were used sustainably reducing the least amount possible amount to reduce manmade negative environmental impacts on the environment. In addition, pollution was curbed, resource depletion and exploitation were limited and were rather used in a manner that maintained the balance of the ecosystems, preserved the biodiversity, reduced resource consumption, and achieved financial sustainability for the subproject for the long term.

Direct Environmental Impacts of Agriculture Subprojects

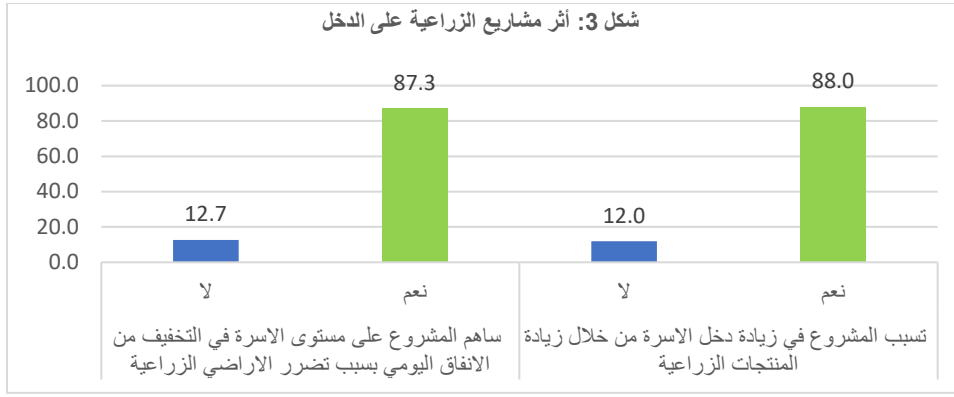
Beneficiaries of agricultural subprojects confirmed that measures were taken to reduce the impacts of floods and reduce potential environmental damage. 76.8% of community members reported that implemented subprojects covered the area with flood buffers thereby reducing environmental damage. Implemented agricultural subprojects did not cause any damage to adjacent lands, which confirms contractors' commitment to the use of environmentally friendly building practices. The implemented subprojects did not cause any landslides or collapses of soil or rocks, indicating that the design and implementation of the subprojects were carried out in a manner that achieves environmental stability.

Results also showed that 66% of community members reported that water canals used to direct water to irrigate agricultural land had been degraded before the implementation of the subprojects and the interventions. This indicates a need to pay attention to the maintenance of agricultural improvements to maintain the sustainability of agricultural systems. 96% of community members stated that agricultural subprojects implemented protected agricultural land from floods and drifts stopped damage to the area and increased cultivated land. This confirms that the implementation of agricultural subprojects was carried out correctly and sustainably. This strengthened the community's confidence that the interventions would provide a favorable and encouraging environment for agriculture and would protect the land from degradation, increase agricultural production, and expand cultivated areas.



Impact of Agricultural Subprojects on Improving Income

87% of the target community members indicated that agricultural subprojects contributed to cutting down their household's daily expenses thereby increasing family income. This is indicative that the agriculture subprojects implemented contributed to improved agricultural production, producing more crops and agricultural products. Therefore, households have become more self-sufficient and are meeting a large part of their nutritional needs from their production. The increased household income, because of the increased agricultural production, suggests that agricultural subprojects implemented have contributed to increased productivity of the land, and thus increased household incomes. Households were now earning more money from sales of agricultural products. In turn, this contributes to the strengthening of the local economy and the improvement of the financial situation of households. It indicates that additional job opportunities have been created resulting in increasing disposable income.



Impact of Agricultural Subprojects on the Community

As for the impact of agricultural and land protection subprojects on the community and cohesion, 93% of community members explained that these subprojects engaged different communities who worked together. This confirmed that these subprojects contributed to enhancing cooperation and interaction between different segments of the community, strengthening cohesion, and building positive relationships between members of different communities. 83% said they noticed positive changes in the community after the completion of subprojects, including increased environmental and agricultural awareness, improved quality of life, more employment and income opportunities, and enhanced trust and cooperation among members of the community.

Community members attribute the positive changes in the community to the implemented agricultural subprojects. They say that those were the main drivers for these positive changes. 85% of members of the target community confirmed that these agricultural interventions helped different groups in the community to integrate better, now that they have a shared goal and purpose and to maintain and sustain the subproject. They have gained more understanding and become more proactive after working on the subproject. Agricultural subprojects are their utmost priority, and this has made everyone rally around the subprojects and become more cooperative to make them successful, maintain them, and allow everyone a job opportunity to improve their economic situation.

In general, members of the community feel that agricultural subprojects have had a positive impact on the community. The rehabilitated community assets have

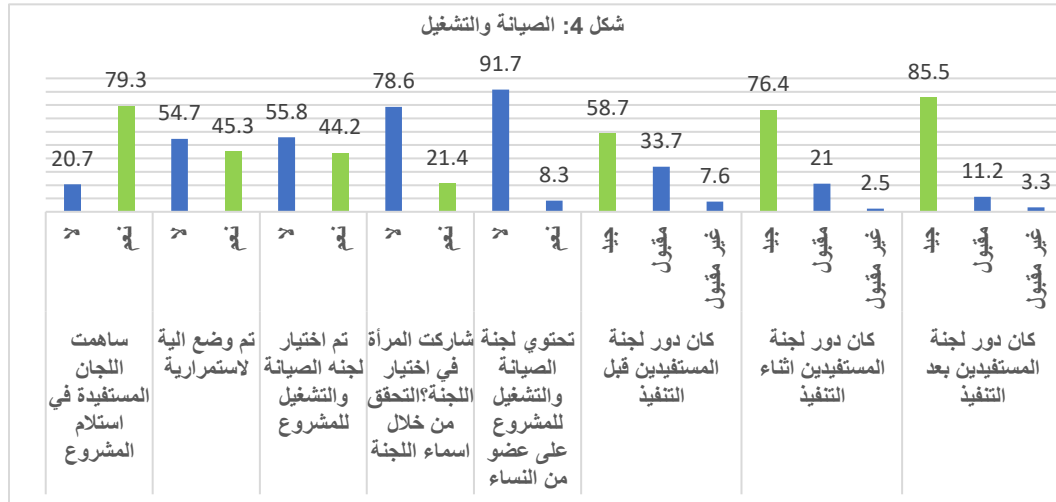
also contributed to increasing community cohesion and social interaction in several ways: there is a sense of pride and belonging in the community, a feeling of shared ownership and responsibility for the community assets, and people are encouraged to public spaces and facilities.

The results showed that rehabilitated community assets have a positive impact on community cohesion and community interaction, by improving relations between community members first, and then greater participation in community activities.

Maintenance & Operation

Results, as shown in Figure (21), indicate that 79% of community members confirmed that community committees formed by the beneficiaries took part in the handover of completed subprojects. This is also an indication that these committees played an effective role in monitoring, implementing, and facilitating the takeover of the subprojects by the beneficiary community. Similarly, 54.7% of respondents indicated that a mechanism for the sustainability of subprojects had been developed - an indication that the committees have developed plans and mechanisms to ensure the sustainability of the subprojects to ensure that the communities continue to benefit for a long time from the subprojects. The results also confirmed that community committees played an important role before, during, and after the implementation of subprojects. This is important because the committees' key role is to ensure the continuity and effectiveness of the subprojects and maintenance of agricultural and water resources infrastructure. They do that through the maintenance of water equipment and systems such as wells, canals, pipes, and pumps. They also ensure the safety and effectiveness of these equipment. The committees also carry out periodic inspections and regular maintenance. They also monitor and regulate the use and distribution of agricultural water effectively and sustainably. In addition, they monitor and evaluate the safety of projects and take necessary actions to prevent safety

incidents and ensure the safety of workers and farmers.

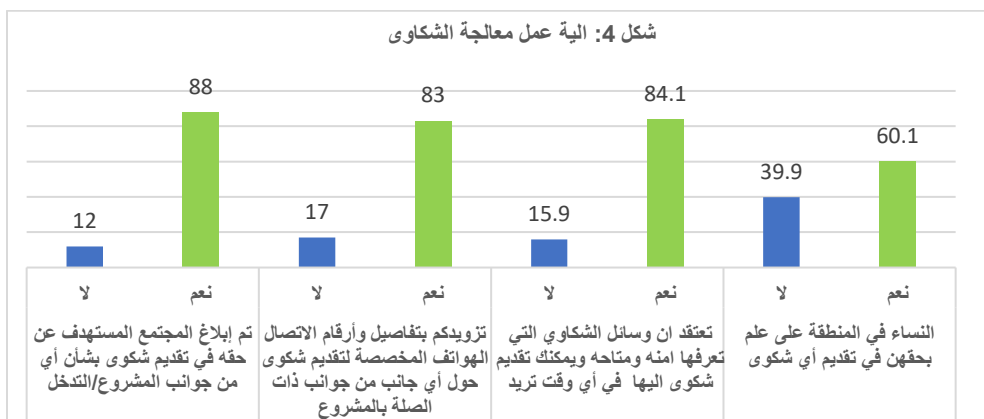


Complaints Handling Mechanism

88% of community members confirmed that the target community was informed of the right to file a complaint about any aspect of the subproject from implementation to completion. This confirms that efforts have been made to educate the community about their rights and on the possibility of submitting complaints if they detect a violation or problems related to the subproject. They confirmed that they were provided with the details and dedicated contact numbers if they wanted to raise a complaint about any aspect of the project, which indicates that there is an existing mechanism to be used for making a complaint and that individuals know who to contact to speak about problems related to the subproject.

84% of the beneficiaries also confirmed that all avenues for making a complaint are safe and accessible and that they can use them any time they want. This confirms that they are satisfied with the mechanism and trust it to address complaints, and that they feel safe in making complaints trusting that an effective mechanism to address problems raised by the complaints does exist. While 60% of women in the beneficiary areas confirmed that they were aware of their right to lodge any complaint, an indication that efforts

were made to educate women about the available mechanisms and their rights to file complaints.

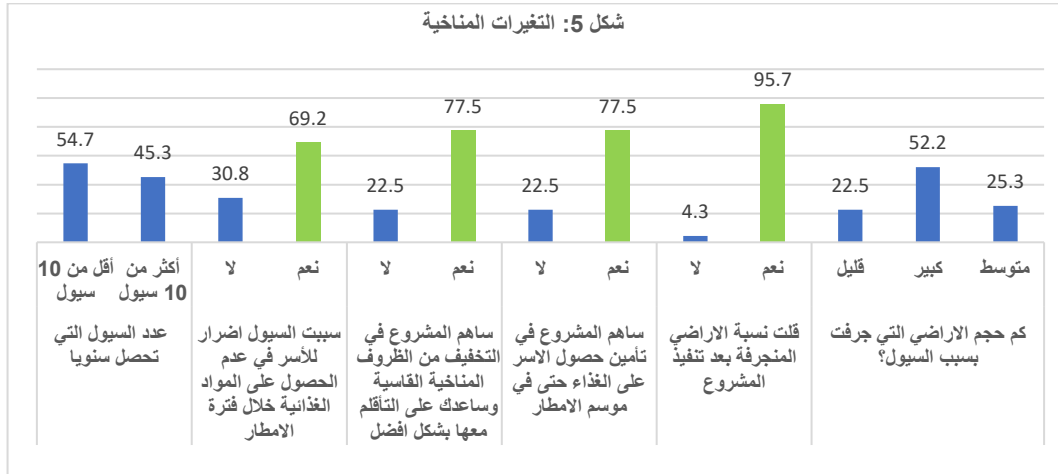


Climate change

The evaluation of agricultural subprojects showed that 54.7% of the community members said that the amounts of rainfall seen in the normal rainy season decreased as well as the flowing torrents. They said, however, that there is rain in the off-season, an indication that there are negative effects of climate changes on the natural pattern of rain and torrents in the targeted areas. Flash floods have caused damage and impacted the food supply during the rainy season and the flow of torrents. This harsh climatic phenomenon affects the ability of households to obtain the needed food supplies. In addition to that, the area of land washed away by the floods is between medium, large, and small, an indication that torrent flows were very strong resulting in high impacts on the terrain and the soil. Heavy material damage and a negative impact on the surrounding environment occur as a huge amount of soil and natural material is moved leaving a severe negative impact on the environment and infrastructure.

77.5% of the beneficiaries of the implemented agricultural subprojects believe that these projects contributed to mitigating the severity of harsh climatic conditions and to better adaptation. Likewise, agricultural subprojects contributed to improving access to food in the rainy season for households. This reflects the importance of agricultural subprojects in addressing the impacts of climate change by providing solutions to the affected communities.

95.7% of community members confirmed that the portion of land washed away by the floods after the implementation of agricultural protection subprojects decreased. This is evidence that the agricultural subprojects are effective in preserving soil, controlling floods, and reducing erosion of agricultural land.



Success Story:

Project Name: Protection and Rehabilitation of Al-Mawsafi Canal, Al-Hakamia Village

Project Location: Zabid District – Hodeidah Governorate

Beneficiary Name: Mohammed Ali Jaafar

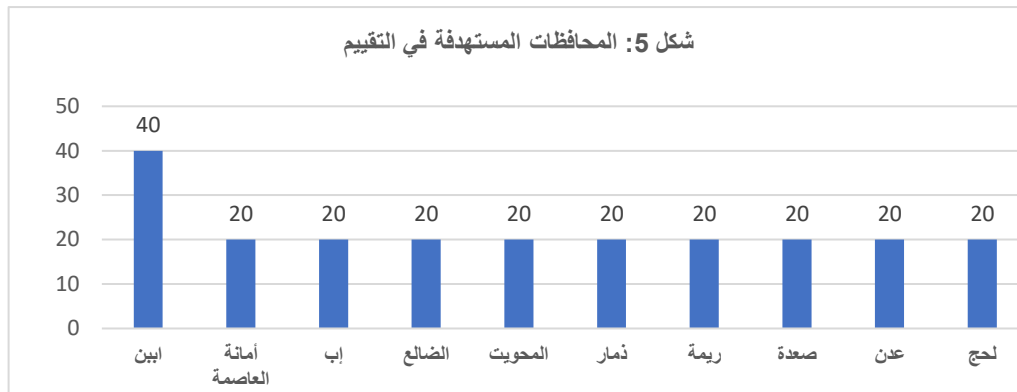
Mohammed, who hails from the village of Al-Hakamia reported that “90% of the people of Al-Masawfa subdistrict rely on agriculture as their main source of livelihood. But because of the drifts of agricultural land that we have been facing during the past years, water did not reach our farms. However, after the implementation of the project to protect the Al-Mawsafi Canal by PWP, we now irrigate 75% of our farms from the canal. PWP must be credited for that. Thank God our community, the people, and the farmers are now benefitting from this canal. Even the numbers of our animals and livestock have multiplied due to the availability of free fodder. We hope that PWP will continue to implement more of these projects in the region because



they rely on farming as their main source of income. They have no other source!”

2. Evaluation of Urban and Rural Roads Subprojects

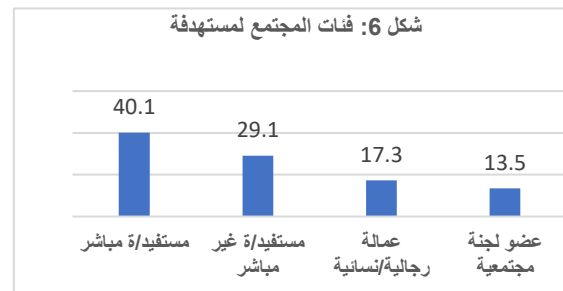
In this section, the evaluation of rural and urban roads subprojects is explained



from the point of view of community members (target group). The aim is to get to know more about the effectiveness of these subprojects and their impact on the environment, the community, and the economy. This assessment includes environmental impacts, social impacts, direct impacts, and the impact on improving income, education, health, community, and community cohesion. It also includes the role of maintenance and operation committees and what type of mechanism is used to address complaints.

11 subprojects were evaluated (4 urban and 7 rural projects) in 11 governorates. The total number of respondents in the sample group was 237 people from all the selected governorates as shown in Figure (28).

The sample group as shown in Figure 29 was selected from different segments of society (direct beneficiaries of the subprojects, indirect beneficiaries, workers, members of community committees). 90% of these categories are residents in the same areas while the rest are returnees. As mentioned by the target group in this evaluation an average of 5510 males, and 6510 females benefit from these subprojects. The size of the subprojects implemented was 94.5% medium, 4.5%



large, and 9% small. The types of intervention in these subprojects were restoration, improvement, and construction subprojects. See Figure (30).

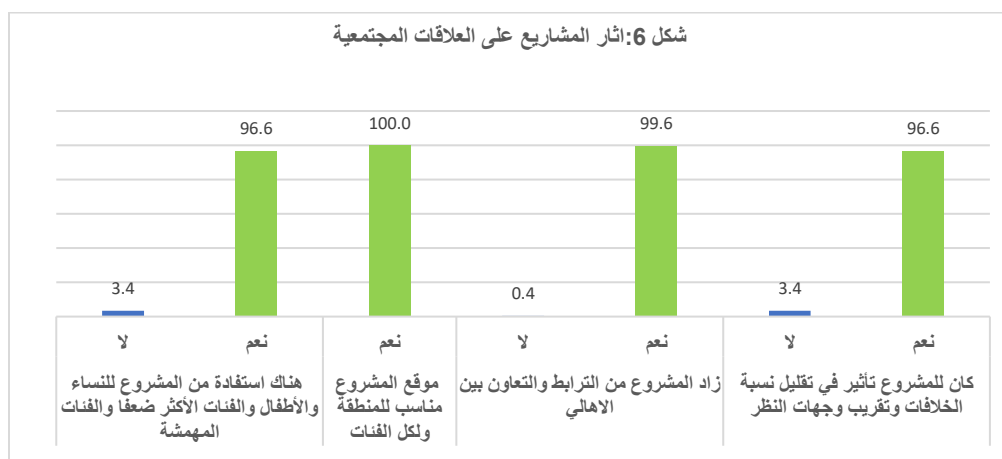
Environmental Impacts of Road-Paving Subprojects:

Evaluation results showed that community members confirmed the use of natural resources in the implementation of rural and urban road subprojects. The resources used in the implementation of these subprojects varied between 93% stones, 80% sand, and 60% aggregate; in addition to 84% of the manpower required for implementation. This confirms that the subprojects had a positive impact on the environment.

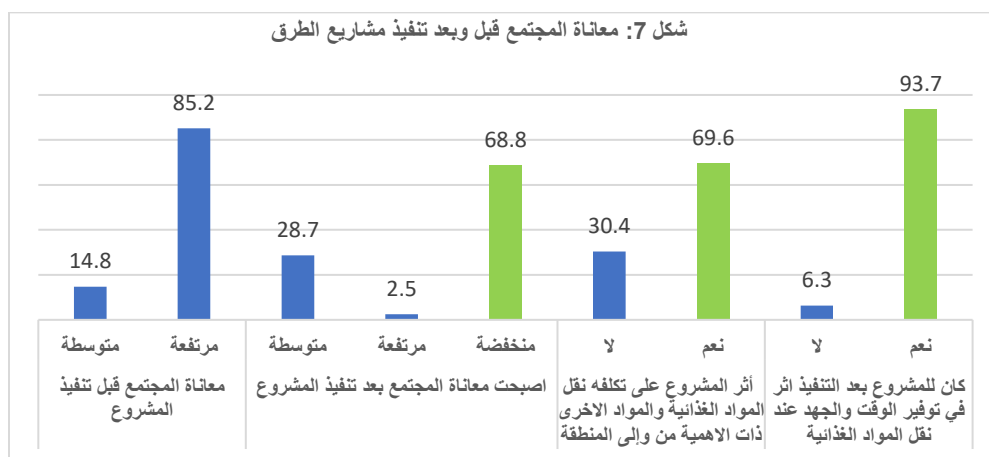
As for the direct environmental impacts of road paving subprojects, the majority of community members pointed out that the implemented subprojects did not have any impact on the normal water course or tributaries, or irrigation water diversions for the farms nearby. No damage to the neighboring farms occurred and the subprojects were implemented in areas where there were no trees or pastures and did not lead to the occurrence of landslides or collapses of soil or rocks. The waste produced by the subprojects did not cause any harm to the surrounding area. This confirms that the designs of the implemented rural and urban road subprojects were well thought out to prevent damaging the surroundings and surface water pollution, and that necessary measures to reduce potential damage by controlling waste disposal and use of techniques to redirect rainwater away from sensitive areas were taken.

Social Impacts of Road Paving Subprojects and on Improvement of Standards of Living.

The evaluation results showed that the majority of members of the target community confirmed that all members of their community benefitted from the rural and urban road subprojects, especially women, children, and the most vulnerable groups. Locations for the implemented roads were suitable for the target areas and all groups - and that contributed to enhancing interdependence and cooperation between the people. Similarly, the subprojects also had another impact by reducing disputes and making people in the region see eye to eye and settle their differences. This goes to proof that the implementation of road subprojects creates opportunities for improving communications between the residents of the region, which in turn leads to increased opportunities for interaction and exchange of experiences and knowledge, strengthening social ties, and reducing disputes between the people. In addition, the implementation of these subprojects improves access to basic services such as schools, hospitals, and markets - which translates to saved time and effort for women and children. In addition, it improves access to economic opportunities in rural and urban areas, and easy access to employment, training, and trade opportunities, which contributes to the improvement of living standards and poverty reduction in those areas.



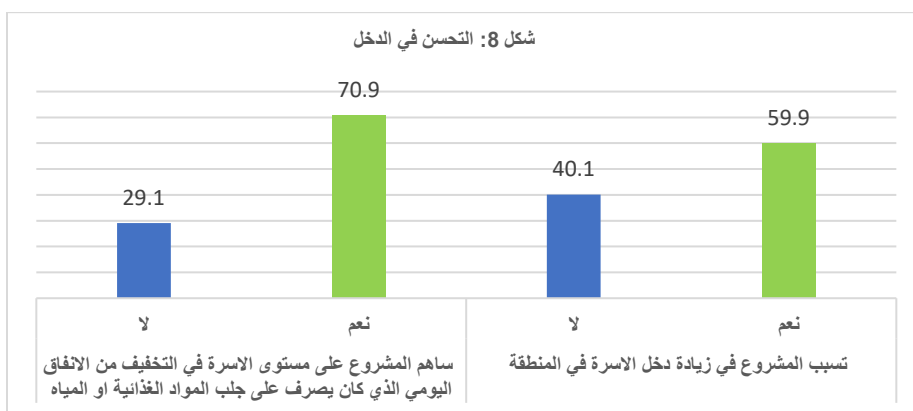
Results also showed that more than 85% of community members suffered higher levels of hardship before the implementation of road subprojects. Access to basic services such as schools, markets, hospitals, and health centers was difficult, while the hardship was low after the implementation of road subprojects. 69.6% of community members confirmed that road subprojects contributed to a reduction in the cost of transporting food and other important materials to and from the region. The average transport cost of foodstuffs before the intervention was upward of YER 7738, and after the implementation of the interventions, the cost went down to an average of YER 3425. The roads also saved the community time and effort when transporting foodstuffs.



The road subprojects also contributed to the reduction of the cost of transporting water. The beneficiaries indicated that the average purchase price per unit of water (one unit equals 1000 liters) from water tankers before the implementation of the road subprojects was YER 8700, while after the implementation of the subprojects, the average purchase price of a unit of water went down to YER 5200. They also facilitated the transporting of farm products from target regions to the closest markets. Additional job opportunities were also created in the target areas, where new shops, money exchange stores, health centers, restaurants and cafeterias, food and grocery stores, and others were opened. In addition, the road subprojects also facilitated the marketing of farm products daily in nearby markets and eased peoples' movement to exchange social

visits. 82% of the beneficiaries confirmed that they saw an improvement in the health situation of households after the implementation of road subprojects, resulting from ease of movement and access for patients to health services. Safety was improved for women fetching water from nearby distribution points. Community members noted that it used to take an average of 44 minutes to reach the nearest market in the center of the district before the implementation of the road and only by using 4x4 vehicles. while after the implementation of the road subproject, that time went down to 24 minutes, access to the market became easier, and all types of regular cars were able to travel on the paved roads, which facilitates the transport of goods and access to basic services with ease.

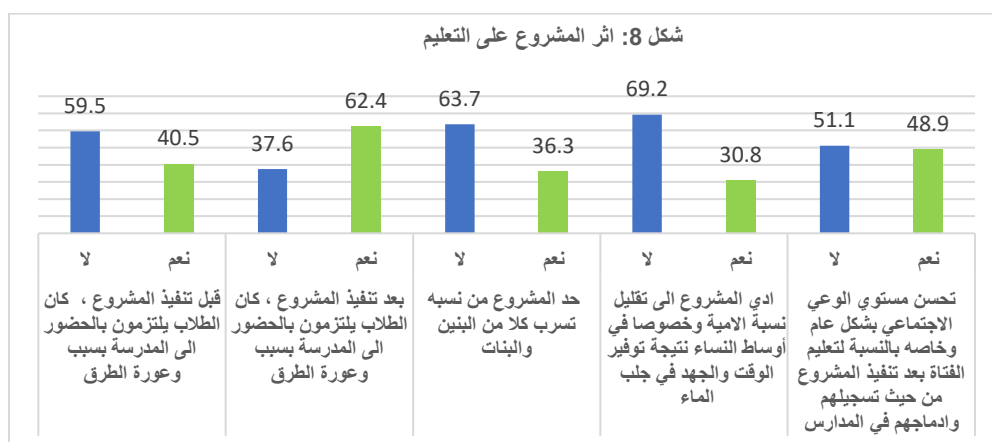
"The cost of transporting a tank of water went down significantly from YER 90,000 before the implementation of the subproject to YER 60,000 after the implementation. Prices of building materials and commuting fares also went down," according to a member of the Community Committee, Zaid Ali Haidara from Abyan's District of Russod.



Impact of Road Subprojects on Education

59.5% of the target community members reported that the bumpy roads that went unpaved caused students to skip attending school, but after paving the roads, the situation improved. 62% of the community members confirmed that students' attendance improved because of ease of access. They also indicated that they noticed an increase in attendance of approximately 30% and that road subprojects reduced the dropout of both boys and girls.

In general, members of the community confirmed that the road subprojects motivated a large group of young people to complete their secondary or university education. In the past, many students stopped going to school after graduation from the basic stage because of the lack of secondary schools close by, but now that taxi fares have gone down and the expensive fares of four-wheel drive vehicles are no longer there, students can ride a taxi from all areas to the district center at an affordable fare for all households. This has contributed to raising the efficiency of schools and increased the number of male and female students wishing to complete their education.



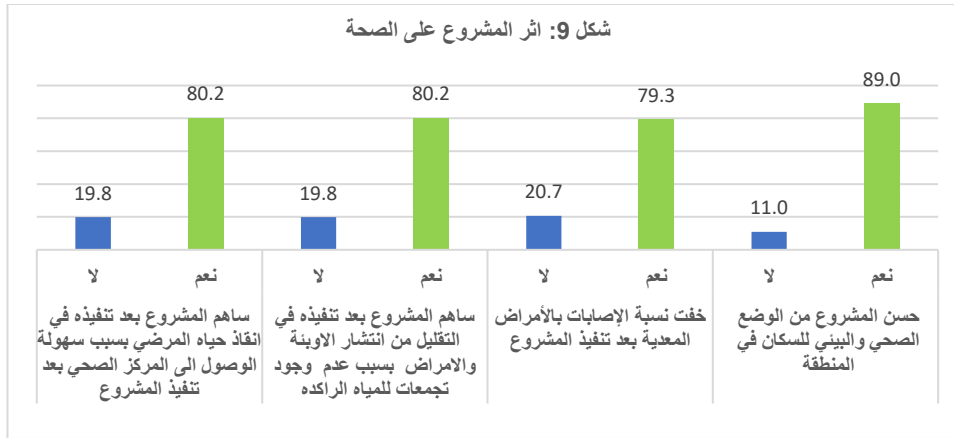
Impact of Road Subprojects on Health

Results of the evaluation indicated that the health situation before the implementation of road subprojects was bad, with people suffering on many fronts. 80% of the sample members indicated that people died before they could reach the nearest health center and pregnant women used to suffer from having to travel the rough roads to seek medical attention. In addition, stagnant water on the roads resulting from rainfall caused the spread of epidemics and infectious diseases such as acute diarrhea or fevers and malaria. These can be attributed to several reasons, including:

- High costs to hire transport vehicles to the district or the region due to the ruggedness of the road.

- The road is dangerous and slippery, which is why many people are reluctant to use it.
- Health centers are located in the district center and the cost is high, on top of bumpy roads.
- Stagnant water collects during rainfall making it difficult to travel.

After the implementation of rural and urban road subprojects, the situation improved. 80% of community members confirmed that the implemented road subprojects contributed to saving the lives of patients due to easy access to the health center. Similarly, the paving of neighborhoods contributed to a reduction in the spread of epidemics and diseases. There is no longer stagnant water collecting on the roads and streets. The incidence of infectious diseases went down and the health and environmental situation of the population in the targeted areas improved remarkably.



In general, the road subprojects have had a significant impact on improving public health. Previously, the level of suffering in the communities was high. There were deaths among pregnant mothers or newborns due to complications and the challenge of access to health services. It was nearly impossible to transport patients to the nearest health facility on time to save their lives due to rough and bumpy roads. Sometimes, cars would tip over causing additional loss of lives. However, after the paving of the roads, it became easier and faster to transport patients anytime with ease and affordability.

"A pregnant woman who was on her way to the hospital died because she couldn't reach the hospital on time due to the bumpy road. In another incident, a man died after an accident because he couldn't be taken to the hospital on time", said Asia Ahmed Farea Qahtan, one of the beneficiaries in Al-Udayn District – Ibb.

Another beneficiary in Maqbanah, Taiz, Abdul Salam Marish Hammoud, spoke about another incident: **"A man died due to a roadblock where traffic had to be rerouted."**

Promoting Community Cohesion

Most community members who benefitted from rural and urban road subprojects mentioned that these subprojects contributed to better engagement by the different communities. Listening to the local population and what they have to say to express their needs, and their contribution to the decision-making process - for the type of subprojects they need most - has enhanced inclusiveness and the sense of ownership and strengthened the links between PWP and the communities. It has also enhanced sustainable economic opportunities and the communication and interaction between the various groups. Among the positive changes mentioned by the target group are poverty reduction, improved access to services or resources, increased economic opportunities, and improved quality of life for local people, enabling people to easily access schools, hospitals, and other essential services.

Maintenance & Operation

Maintenance and operation play a crucial role in maintaining the condition of roads and infrastructure. Through regular maintenance and effective operation, road safety is maintained, and cracks and landslides that adversely impact the safety of road users and vehicles are prevented, thus improving the quality of life by facilitating people's access to basic services such as schools, hospitals, and commercial centers. It also provides better economic and development opportunities, which



leads to environmental sustainability, and raises awareness of the need to maintain these projects and consider them community assets that must be preserved after the implementing agencies leave.

"The road is maintained continuously by replacing some cracked stones and building stone barriers in dangerous slopes, in addition to planting a type of weed between the openings of the stones, so these weeds work like cement and even stronger, preventing landslides or breaks in those stones, which prolongs the life span of the road," says A member of the local council (Z.A.H).

Complaints

More than 86% of respondents from the community members group indicated that the target communities were informed of their right to lodge complaints if they suspect anything about any aspects of the project/intervention being implemented in their area. Residents were given contact details and dedicated phone numbers to be used to report a problem or file a complaint about any aspect of the implementation of a project. Residents also know that the means through which they can file complaints are safe and accessible anytime.

Climate change

Results of the assessment also showed that before the implementation of rural and urban road projects, rain and floods would cut off roads for up to 13 days on average. This shows that the road infrastructure was weak and unable to deal with the increased flow of water caused by heavy rainfall and torrents. As a result, the affected population would be isolated, preventing them from accessing basic services or food sources for that long, causing a severe shortage of food and water and a total break in access to basic services. In addition, people's health becomes at risk, sometimes causing fatalities, students not being able to go to school, transportation costs increasing, and delays in important trips people must make.

Ghalia, a member of the beneficiary communities said that the road paving subprojects have contributed to securing access to food even in the rainy season for families residing in their area. This confirms that the road paving subprojects implemented have had a positive and tangible impact in keeping the families' food secure and able to meet their nutritional needs even during the rainy season. They say that the subprojects have contributed to alleviating the impacts of harsh climatic conditions and helped the communities adapt better.

In general, road subprojects have reduced the negative effects of climatic conditions and prevented landslides that used to occur on roads due to rain and torrents. No mudslides or rockslides were reported after the implementation of the subprojects, either on the roads or outside. One of the respondents pointed out that this has also helped the springing of new plants on both sides of the road.

Satisfaction of beneficiaries:

According to the results of the evaluation, the road improvement and paving subprojects filled the needs that community members had demanded, including ease of transportation, improved access to services and opportunities in rural and urban areas. All of this reflects a positive outcome – the satisfaction among individuals in the communities that the subprojects implemented have effectively met their needs.

3- Evaluation of Rainwater Harvesting Reservoirs and Mechanized Water Subprojects

Rainwater harvesting reservoirs and the mechanized water subprojects implemented by PWP varied in size: Large, such as the construction of tower tanks for water distribution, or the rehabilitation or installation of water networks, or medium, such as the construction of control rooms and water pumping lines, or the expansion of water collection pools or rainwater harvesting tanks.

Various community groups were interviewed to evaluate the subprojects from their perspectives. They included groups from different governorates such as Al-Mahra, Al-Dhalea, Al-Hodeidah, Taiz, Socotra, Shabwa, Aden, and Amran. 97% of individuals in these groups live in the same areas of the subprojects, and the remaining 3% are returnees.

Environmental impacts of water projects:

Most members of the community groups confirmed that natural resources were used in the implementation of water harvesting reservoir subprojects, as well as local labor. The implementation and operations procedures in these subprojects also ensured that there was no negative impact on the nearby farmlands. Additionally, the subprojects were implemented in an environmentally friendly and sustainable manner, designed to protect nearby farmland, and prevent environmental pollution. 98% of community members explained that the implemented subprojects did not have any negative impact on the traditional water course or diversions and no water was diverted that was designed to irrigate another plot of land. Furthermore, no damage was caused to nearby farms. The subprojects were in bare areas that didn't have any trees, plants, or vegetation. The groups pointed out that no environmental damage was caused, such as landslides, rock falls, or collapse of the soil during the construction of the subprojects.

Social Impacts:

Results of the evaluation of water subprojects showed that the water harvesting reservoirs subprojects achieved immense benefits for women and children who are traditionally responsible for fetching water to their homes. Based on the responses of most of the community members who participated in the evaluation, this has contributed to the improvement of access to safe drinking water, the improvement of personal hygiene, women's and children's health, and the reduction in the spread of diseases caused by water shortages. In addition, they have enhanced educational opportunities for children, especially girls - when water is available in a sustainable manner, children

can spend less time fetching water and more time on education. The community members emphasized that these subprojects had a positive impact on social relations in the local communities, in terms of enhancing cooperation and interdependence between residents and enhanced community participation in terms of communication and social interaction. The water harvesting reservoirs subprojects have also promoted community autonomy in water supply - when residents have local access to water, their ability to meet their daily needs independently is enhanced and as a result, living conditions in their communities are improved.

Direct Impacts of Mechanized Water Subprojects and Harvesting Reservoirs.

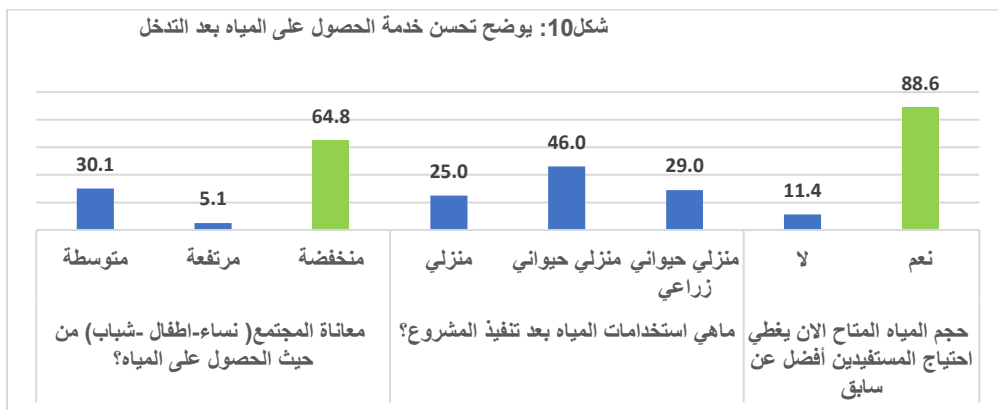
According to approximately 93% of the community members and beneficiaries, who participated in the evaluation of the water subprojects implemented by PWP: water sources that were available before the implementation of the water subprojects in their areas were limited and were far away from the communities. These were in the form of water wells, springs, ponds designed to collect rainwater, old and polluted ponds, or through purchasing water tankers. In short, the water supply situation was a source of many problems and immense suffering in these communities. But most of all, they were reliant on unsustainable water sources which dry out in some seasons. 57.39% of the beneficiaries said they were using water intended for animals for domestic use. More than half of community members, around 61% of persons interviewed in this evaluation, confirmed that the level of suffering in their communities of women, children, and youth was high, especially when it comes to access. Water supply was not available throughout the year for a variety of reasons, such as power outages, high fuel prices, poor maintenance of transmission lines and deteriorating water networks, or the long distance they have to travel to fetch water, which increases the time and effort to access water. All these

translate to a lack of easy access to sustainable and stable sources of water. (Figure 61).

"We lived through eight years of suffering without water and the problem of accessing a source nearby, but now that water is available, suffering has decreased", one of the beneficiaries of Al-Qatea' Aidarous subproject and a member of the community committee in Aden.

Before the implementation of the project, the average distance to the nearest water point took at least 45 minutes. This was a long time that women could have used on other activities and enough time for children to go to school.

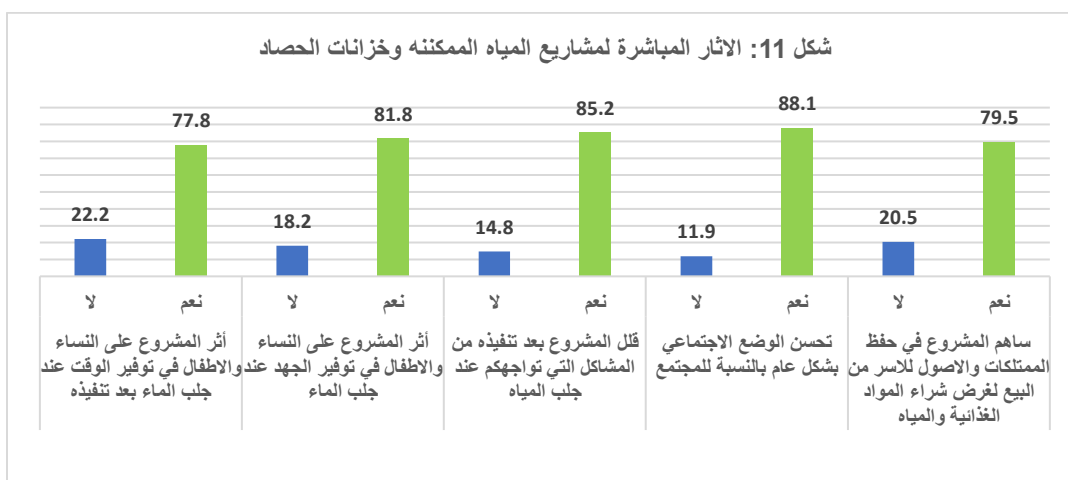
Figure (62) shows improvement in water availability and access in the areas after the implementation of water subprojects, water harvesting tanks, and efforts to improve the water infrastructure. The subprojects have led to a reduction of suffering in the communities in accessing water and positively impacted their lives. Community members can now easily meet their household and personal needs and spend less time in doing so. 88.6% of Community members have also confirmed that water coverage is now up to 54%, a remarkable improvement over the previous situation.



A direct impact of the mechanized water and harvesting tanks shown in Figure (63) is that 77.8% of the members of the beneficiary communities have seen access

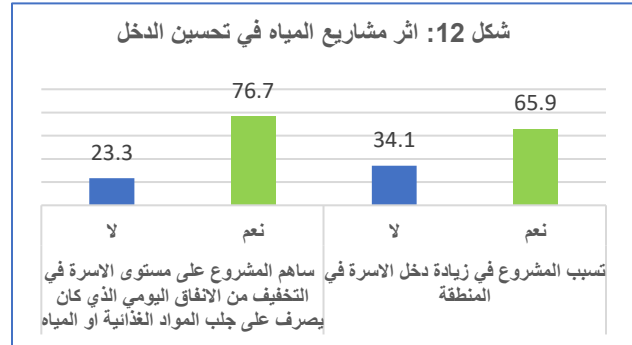
to clean water improve with people spending less time fetching water. Women and children have saved time and that helped them allocate their saved time to other valuable activities. Distance to the nearest water access point has decreased to an average of 20 minutes from 45 minutes before the implementation of the subprojects. This means that the subprojects are providing sustainable and accessible sources of water.

Additionally, 85% of the beneficiaries indicated that the water subprojects reduced disputes over water in the communities and improved the situation in terms of health and hygiene, access to clean water, and reliability of the sources. Households' assets are protected, and families no longer need to sell any of their assets to buy water or food. This is real evidence that the local economy has benefitted from water subprojects, especially in agriculture and livestock, which have led to increased food production and income in the local communities.



1.1.1 Impact of the Subprojects on Improving Income Levels:

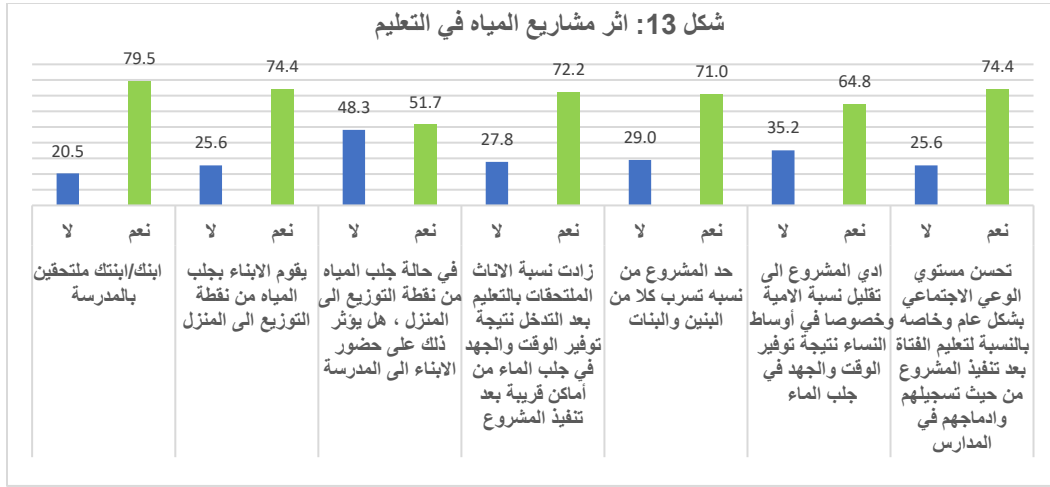
Figure (64). Results of the evaluation showed that 76.7% of water subprojects contributed to a reduction of time spent daily in the households to fetch water and food. These subprojects have provided an opportunity for households to direct their financial resources towards other important needs instead of spending heavily on fetching water or accessing food. Households are now able to save an average of YER 2000 daily. 65.9% of water subprojects have also helped improve household income and contributed to the creation of economic opportunities to increase income. Monthly income improvement is estimated at an average of YER 15,522 or 34%. Community members have also reported a reduction in the cost of one unit of water from an average of YER 31,500 to YER 21,900.



Impact of Water Subprojects on Education

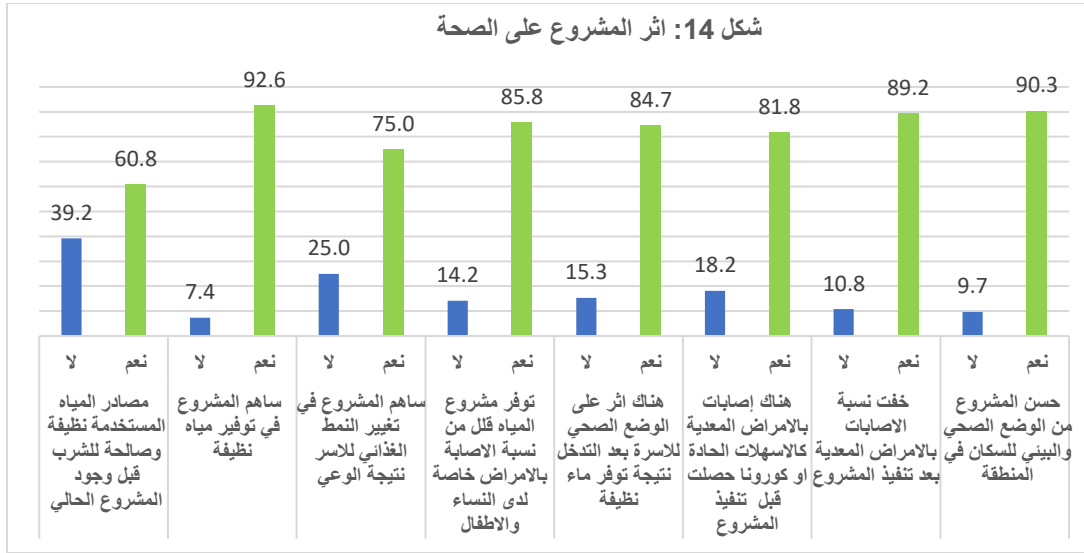
Figure (65) shows improvements in education after the implementation of water subprojects and harvesting tanks. 79.5% of the community members have confirmation that their children are enrolled in schools and that girls' enrollment in school has also increased. Evidently, after the implementation of the interventions, children are now able to enroll in schools after they have been relieved from the burden of fetching water which used to consume a lot of their time.

71% of the beneficiary community members reported that the improved access to water has reduced school dropout among boys and girls, and thus reduced the rates of illiteracy, especially among women by up to 64.8%. 74% of members of the sample group also confirmed that there is improvement in the level of social awareness in general, especially toward girls' education. They reported that the implementation of the water subprojects has contributed to increased girls' enrollment in schools.



Impact of Water Subprojects on Health:

As for the contribution of implemented water subprojects and their impact on health, 92.6% of the members of the beneficiary communities confirmed that the subprojects have contributed to improving water quality, cleanliness, and suitability for domestic use. They also contributed to a change in households' dietary patterns because of increased awareness. They explained that water made available by these subprojects has reduced the incidence of diseases, especially among women and children, and due to the availability of water, the incidence of infectious diseases and cases of waterborne diseases have been reduced. This is noticeable through the reduction of cases of diarrhea. In general, 90% of the members of the beneficiary communities indicated that water subprojects interventions have improved the health and environmental situation of the population in the targeted areas. All of this indicates that the subprojects have had a positive impact. The construction of water systems infrastructure: water purification plants, and improvement in the water supply and sanitation systems, which include expansion of the water network, and construction of new water wells or purification plants have all introduced improvements to the quality of available water.



Impact of Water Subprojects on Community Cohesion

Community cohesion is one of the essential elements that may be faced by implementing agencies building water subprojects. Community cohesion is needed to enhance the chances of success of such projects and to ensure that they respond to the needs of the local communities. This can be attained through building stronger partnerships, enhanced cooperation, and delivering positive and sustainable impacts on the environment and people's lives.

According to the results of the impact assessment, 96% of community members participating in the study indicated that water subprojects and rainwater harvesting tanks brought different communities together because these projects play an important role in enhancing community cohesion, social ties, and cooperation. Collective work is important in these subprojects to avoid challenges that may hurt social cohesion, such as choosing a location for the subproject, existing conflicts, lack of cooperation, or disputes that arise because of insufficient water in the communities.

Most community members reported that they have noticed positive impacts in their community after the completion of water subprojects. Among those impacts are reduced poverty, improvement of the quality of life by improving access to services or resources, increased economic opportunities, and improvement in the economic situation in general.

76% of the respondents said the interventions also helped different segments of the community to better integrate into the water subprojects' target communities. From their perspective, they see improved cooperation between community members, better relations between beneficiaries, strong signs of community cohesion, a sense of responsibility and understanding of the importance of the project, access to services, and the availability of clean water. This reflects the importance of community cohesion in the implementation of water subprojects.

Maintenance and Operation of Water Subprojects:

After implementation, maintenance and operations committees carry out periodic maintenance of water subprojects. They work to improve the efficiency of operation and sustainable use of water resources, improvement of control and monitoring systems, evaluate performance, identification of potential problems, and propose future improvements.

Most community members taking part in this evaluation indicated that the beneficiary committees, who took over these subprojects, developed a mechanism for the beneficiary committees' continuous operations, achievement of the objectives for periodic maintenance, and evaluation of the performance of the subprojects.

Beneficiaries Satisfaction:

Results show 98.9% of the community members participating in the evaluation confirmed that the water subprojects have met the needs of their communities. They said they were satisfied with the quality of implementation. Such satisfaction is important for the success and sustainability of these subprojects. In general, the satisfaction of the beneficiaries shows that the subprojects have met the needs and have improved the quality of life in the target communities.

Success Story

Abdul Rahman Ahmed Abdul Rahman Nadilan, forty years old, is one of the beneficiaries of a water subproject. He is the head of a household and owns a parcel of farmland with a water well. The farm is his only source of income. He plants his small parcel of land with animal feed, especially white sorghum. He also grows oranges and lemons, but he always faced a problem of delivering water to the land for irrigation and had to run through a 50-70 waterway that he dug. He wasted a lot of water in the process and took four days on average to irrigate the land under very hot weather conditions. Thanks to the intervention by PWP, Mr Nadilan now has an irrigation network that connects his parcel and delivers the full amount of water faster and safer with so much less time and effort. In addition, water waste has been reduced to zero. This has encouraged Mr. Nadilan to expand his farm by reclaiming another parcel. He has also expanded his crops by growing tomatoes, potatoes, onions, cucumbers, zucchini, carrots, okra, etc. depending on the season. He now has a sustainable production operation where he supplies the products to homes in the area and sells the rest in the local market. This has brought him incredible savings.