World Vision

CASE STUDY: Building resilience of women in an arid area through adaptable technology

Project	Alimao agri-nutrition project
Sector	Water, Resilience, and Livelihoods
Timeframe	2015-2020
Beneficiaries	800 people
Location	Wajir County
Donor	USAID
Goal	Building resilience of communities in the arid areas of Kenya

Context

Kenya Resilient Arid Lands Partnership for Integrated Development (Kenya RAPID) programme is a five year program being implemented in five Arid and Semi-Arid Lands (ASAL) counties of Kenya namely: Garissa, Wajir, Marsabit, Isiolo and Turkana) to build resilience for the communities.

It strongly supports the Ending Drought Emergencies Common Program Framework launched by the Government of Kenya in November 2015, recognizing that "*Sustainable management of rangelands, water, crops, and increasing the contribution of livestock to the pastoral economy are critical to resilient livelihoods in the Arid and Semi-Arid Lands (ASALs).*" The objective of this case study is to bring out the benefits of adaptable technology in the ASAL that can gradually transform pastoralists into agro-pastoralists and build resilience within a community.

Background and Challenge

The main economic activity for the community living in the Wajir region is livestock keeping. The region receives less than 200mm of rainfall in a year and though people are willing to do farming, they encounter challenges due to lack of water. However, as the saying goes," *Necessity is the mother of invention*" the struggles of women in the middle of the desert after losing their livestock to drought, opened another window of exploration beyond livestock keeping.

The Ali Mao women group was formed as a support group with an aim of improving their member's living standards despite living in a drought stressed environment. The group consists of 40 women with different social status including single household and divorced mothers abandoned by pastoral husbands. The women decided on vegetable production for both domestic consumption and as a source of income for their families. The main vegetable crops produced are kales, capsicum, cowpeas, tomatoes and spinach.

The group identified a piece of land in 2007 and contributed the little they had to dig a shallow well to irrigate their vegetable crops. Luckily, despite the drought, the water table in Wajir Township is high, giving the group promising results. A shallow well was dug at 12 meters and has a yield of $1m^3$/hr. The success of the well-motivated the women to start vegetable farming.

Due to excessive heat, the women adopted use of old mosquito nets and clothing's to protect the plants from the excessive heat and for pest control. The drawing of water from the well using a bucket for plant irrigation was a major challenge as it limited the square area the group could reach without over exertion. Additionally, they could not all draw water from the well at the same time and so they had to work on a watering shift, where the last farmer left the farm after 8pm.

The plight of the women captured the attention of the county government of Wajir who supported the group with a petrol generator and a water storage tank of 5000litres. This reduced the burden of drawing water using bucket from the well, but increased the cost of production since each member had to contribute Ksh 500 ($5) per day for purchase of fuel. Those who could not afford continued manually fetching water. Production was also affected by pests that damaged the leaves of the plants leading to reduced production. This low production and expensive cost of fuel had discouraged the women group from pushing forward.

The Kenya RAPID program in the county and through the county department of agriculture, brought new hope to the Ali Mao Women's group. The use of *solar powered pump technology* has improved the farming methodology and increased benefits to the families of the Ali Mao Women's group.

Kenya Rapid Interventions

Kenya RAPID embraces partnership approach bringing communities, the private sector, and the county governments together to resolve development challenges in water and sanitation. The Program Implementation Facilitation Approach (PIFA) principles provides for the county to take full responsibility in decision making, coordination, and adaptation of innovations. Prioritization of interventions is done through the county program steering committee. Ali Mao women's group was vetted among other eight groups as the most focused and self-driven group determined to improve their family livelihoods.

Through the Kenya RAPID support, the women received four shade nets measuring 8mx30m which were divided among the 40 women. The shade nets provide a good environment for crop production and protection against pesticides. They have used the shade nets to produce kale, spinach and tomatoes. The first round, the group produced kale and spinach and second round tomatoes. Additionally, two shallow wells were installed with solar powered pump system which has reduced the cost of fuel to zero making it more affordable and have even increased production further for the women.

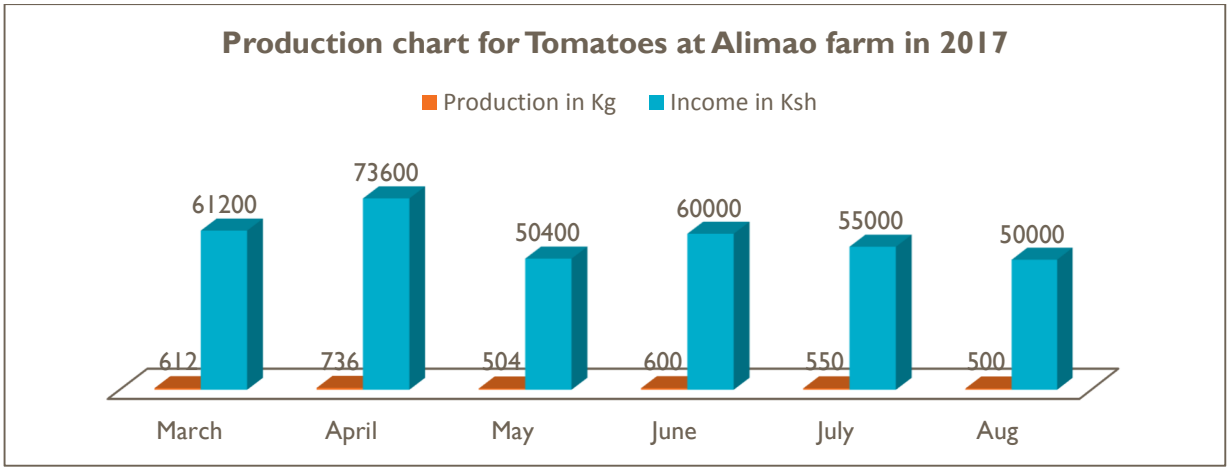
In addition to the solar powered pump, the women were provided two latrines near their farm since they had to walk 2 kilometers to the nearest sanitation facility. The salinity of water from the borehole also posed a health concern as the mechanized water system was a multiple use source including water for drinking. To purify the water to drinking standards, a reverse osmosis system was installed. The system treats 500 liters of water per day and the women no longer have to buy drinking water from the shops which retails at Ksh 50 per 1.5 liter bottle.

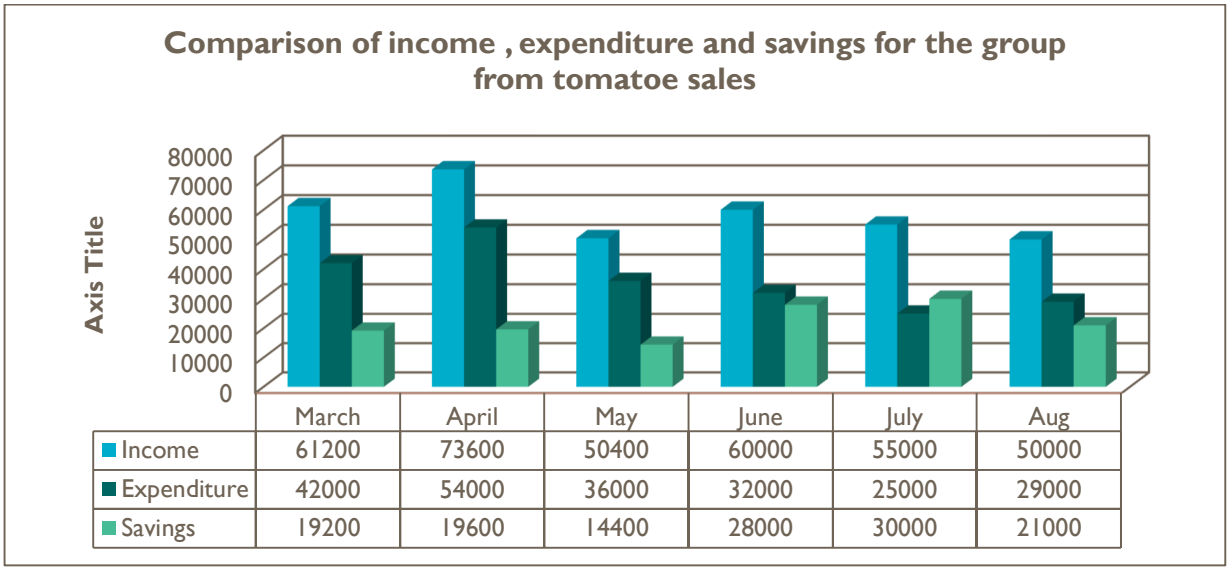
The irrigated vegetable farm is frequented by wildlife especially giraffes. To prevent losses due to wildlife, the program in partnership with the county supported the fencing of 5 acres of land which included the Ali Mao vegetable farm.

Results

Empowering women through agriculture

The Ali Mao women's group became key decision makers over agricultural production and the income gained from is prioritized for their children's education. A percentage of the vegetable production has also been consumed by their households improving nutrition results for their children. With the success of the crop production, the women have sufficient funds to pay school fees for their children and purchase other basic needs for their households.





	March	April	May	June	July	Aug
Income	61200	73600	50400	60000	55000	50000
Expenditure	42000	54000	36000	32000	25000	29000
Savings	19200	19600	14400	28000	30000	21000

Graph 1 and 2: Production of tomatoes at Alimao Farm

Improved technology

- The use of reverse osmosis to purify saline water for drinking reduced the cost of buying bottled water which retails at Ksh50 ($0.5) per 1.5 litres bottle at local markets.
- Agro-nets including drip kits have improved vegetable production by reducing pests and other diseases.
- Installation of solar powered system has reduced the cost from Ksh 500($5) per member
- The group was trained on agronomic practices, food safety and hygiene and sanitation in collaboration with the County department of agriculture and have been able to share this their behavior change efforts and skills with their families and neighbors.


Left and right Mama Zeynabu the chairlady of the group inspecting tomatoes in a shade net. ©2018 World ion/photo by Joseph Egesa


Left: Overview of shade nets and on the right at background are the original traditional technics of vegetable production. Front right is the solar system that replaces the generator for water abstraction from the well.

Challenges and solutions

Salinity and reduced production: Wajir County generally has high levels of salinity which affects crop production and potable water needs. With the introduction of reverse osmosis, clean water was provided for multiple use.

Agronomic Practices

To increase production, the farmers provide a grace period of two months for the soils to rest after one crop harvest.

Market demand: The production of tomatoes and kale increased along with the increased demand thanks to the use of shade nets. The women plan to save and borrow to increase acreages for vegetable and tomato production to meet the continual increasing demands.

Energy Efficient Water Production: With an increase in 5 acre of land for the women to produce more crops, thanks to the solar powered pumps, they can invest in more boreholes. The county government of Wajir has promised to drill an additional borehole to support the women's group.

Recommendations

- The group can diversify production by including pasture production with low water requirement and yet very high value at local market
- The group can be linked to suppliers of the shade nets for self-replication through a repayment model so that the number of farmers per shade net is reduced for greater income
- Diversifying value chain production: Linking the women to local hotels for supply of vegetables and tomatoes could save the women time for direct selling at the market and more time on vegetable production
- The women can make an additional income from the sale of purified water to the villagers and even part of the population.

Conclusion

The Kenya Rapid project in Wajir county was launched by His Excellency the Governor of Wajir County Hon. Abdullahi Ahmed and the Swiss Ambassador to Kenya. This give strong recognition and voice to the Ali Mao Women's group. Solar technology combined with local social capital in arid and semi-arid areas can increase food security and help women build resilience against environmental shocks. The introduction of agricultural livelihood also helped pastoralist to diversity and increase their income generating activities. When livelihood is introduced and integrated into water and sanitation activities, it increases the likelihood of adoption of good behavioral practices.

His Excellency the Governor of Wajir, left, and His Excellency the Swiss Ambassador to Kenya, right, during the launch of the project in Wajir County