Mvua

Tuvune Mvua Tupate Ustawi

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EDITORIAL

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Completed Cattle Trough - Narok South

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Tuvune Mvua Tupate Ustawi – Rainwater Harvesting for Development

Welcome to the 19th edition of the Mvua newsletter which mainly focuses on the Greater Horn of Africa Rainwater Partnership/Kenya Rainwater Association (GHARP/KRA) activities, GHARP/KRA Secretariat news, stakeholders' workshops, community initiatives, and success stories on rainwater harvesting (RWH) from across our network members. This issue covers the period July to December 2011 and highlights case studies, and experiences from the current GHARP/KRA projects and partners' activities in Eastern Africa. The newsletter also includes fascinating contributions from our stakeholders working in rainwater harvesting (RWH), including an article on Promoting Use of Rainwater Harvesting to Improve Access to Water and Sanitation in Ghana. It also reports back on the recent Kenya Rainwater Association (KRA) Winning the Global Giving Challenge and Raising Funds for *Matuiku* Primary School Improved Water and Sanitation Project in *Nyandarua* County. The challenge was a resounding success and KRA managed to fundraise over USD. 5,000 to support the school water and sanitation project, as well as securing a permanent spot on Global Giving's fundraising website, which will enhance our fundraising profile.

The GHARP/KRA Secretariat has successfully completed and commissioned a number of projects since the start of the year and the impacts of our work are already being felt by the target communities. Project commissioning events were held in *Laikipia* East, *Laikipia* West and *Nyandarua* North. These are part of the target districts of the on-going the EU-Skillshare International project, which targeted eight semi-arid districts of Kenya. The project is on-going in *Narok* South, *Baringo* and *Mogotio* districts. KRA is also continues to implement a number of on-going projects, which include the KRA/New Life Mission (NLM) project in *Mashuru* district (*Kajiado* County) and The USAID/KHCP project in *Ukambani* and Coastal region.

In Uganda, the Uganda Rainwater Association (URWA) has been focusing on capacity building to empower the communities of *Rakai* district in Uganda and assisting them to efficiently use rainwater for agricultural purposes in order to improve their food security. The article focuses on a feedback of a recent trip to project site in *Rakai* district in South-western Uganda.

Our feature article focuses on the promotion of integrated rainwater harvesting and management (RHM) technological package which provides a captivating insight into development packages for different target groups that KRA has developed, through research and has piloted in many Semi-Arid Districts of Kenya. The three main target groups are pastoral communities, agro-pastoral communities (smallholder farmers), and primary schools (which are targeted as demonstration sites and innovation centres to influence children as change agents and different school stakeholders and visitors). We will serialize the three technological promotion packages in our next issues of *Mvua* Newsletter starting with the school-based interventions in this issue.

GHARP's promotion and implementation of rainwater harvesting and management (RHM) systems and complementary technologies can only continue with the financial support of development partners, and building partnership with various stakeholders. The GHARP/KRA Secretariat is continuously seeking for new partnerships to support the on-going initiatives aimed at helping the vulnerable communities in arid and semi-arid lands (ASALs) improve access reliable water sources for productive uses, sanitation and hygiene, and food security and nutrition for sustainable livelihoods and environmental conservation. We have developed and tested integrated technological packages that we are striving to promote and scale up to reduce water scarcity, food insecurity and poverty in Kenya and Eastern Africa region.

For information on our work and how to partner or support our efforts, please contact the GHARP/ KRA Secretariat by email: gharp@wananci.com or visit our website: www.gharainwater.org

GHARP/KRA EU-Skillshare Project Updates

Integrated Rainwater Harvesting and Management Project in Semi-arid Districts, Kenya

By Ronald Kamadi, Paul Ng'ang'a and Joseph Mwaura, Technical Assistants GHARP/KRA

Background

Since January 2008, the Greater Horn of Africa Rainwater Partnership/Kenya Rainwater Association (GHARP/KRA) Secretariat has been implementing a project entitled: *'Integrated Rainwater Harvesting and Management Systems and Complementary Technologies for Poverty Reduction and Sustainable Livelihood in Semi-Arid Districts of Kenya.'* The four-year project is by European Union (EU)-funded through UK-based Skillshare International, and targets eight semi-arid districts in Kenya: *Baringo, Koibatek/Mogotio, Laikipia* East, *Laikipia* West, *Narok* North, *Narok* South, *Nyandarua* North, and *Transmara*. The project implementation schedule has four phases – focusing on neighboring districts to ease monitoring logistics – each spreading over one year and covering at least two districts.

The first two phases which covered five districts i.e. *Narok* North and *Transmara;* and *Laikipia* East, *Laikipia* West, and *Nyandarua* North, have been completed and commissioned. The last two phases commenced concurrently in January 2011 and covers the remaining three districts i.e. *Baringo, Mogotio,* and *Narok* South. The implementation process is in different stages and it is expected to be completed by June 2012. The last project site to be launched was *Baringo*, which was a great success and attracted substantial media coverage.

Excavation of water pan, Baringo district

The project is broad in scope and includes a wide range of integrated technological package for different target groups – pastoral communities in five districts (*Narok* and *Baringo* Counties); agro-pastoral communities (smallholder farmers) in *Laikipia* and *Nyandarua* Counties; and eight primary schools in each of the target district. The components of the technological package include: earth dams/water pans; farm ponds; roof catchment systems and improved sanitation for schools; complimentary technologies like drip irrigation systems; alternative and supplementary livelihoods activities; and community capacity building to enhance project sustainability. This update highlights what has been accomplished between June – December 2011, and including project commissioning in *Laikipia East, Laikipia West and Nyandarua* North districts, project launching in *Mogotio* and *Narok* South districts), some project impacts, and pending activities.

Project accomplishments

The accomplishments are as diverse as the different livelihood systems of the target communities. The following are some of the main accomplishments so far:

Earth dams/water pans:

The project aims to rehabilitate/construct five earth dams/water pans over the entire project period. Currently construction of four water pans (*Tapwale, Iltumtum, Ildungisho and Bekibon*) has been completed, including fencing to maintain water quality by ensuring that animals do not access the water directly, but instead use livestock troughs downstream. The last earth dam is under construction in *Baringo* County.

Completed Water pan, Narok South District

Auxiliary structures:

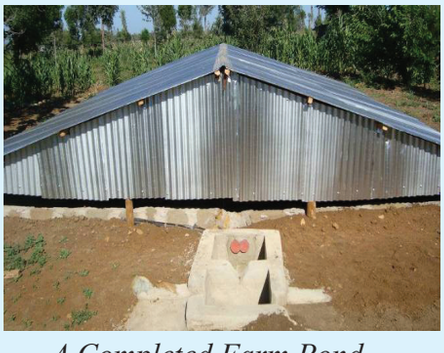
The auxiliary and water regulation structures are part of the communal earth dams/water pans, and they are necessary to ensure that the community and their livestock do not get the water directly to prevent contamination and siltation of the water reservoir (soil erosion). These include water regulation structures (i.e. an intake/filtration system, livestock troughs, and community water points) and sanitary facilities (community latrine and bathrooms – separate for men and women). These structures have been constructed and are in use


Completed cattle trough, Narok South

in four out of five project sites. At *Narok* South project site, ecological sanitation (ecosan) has been piloted and its impact is being monitored. Ecosan latrines, which separate urine and feaces, provide safe disposal of human waste, which after decomposing for up to 6 months, can be used as organic fertilizer for crops and fruits. KRA has partnered with UK-based development partner, Wherever The Need (WTN), to pilot a type of ecosan latrine - the Urine Diversion Dehydrating Toilet (UDDT). Ecosan has a high potential especially where pit latrines are not feasible due to unstable soils or in areas with high groundwater table – prone to biological contamination.

Farm ponds:

The project has constructed a total of 90 farm ponds (of 50m^3 storage capacity) *Laikipia* East, *Laikipia* West, and *Nyandarua* North districts as the main component for the technological package for smallholder farmers. The project is promoting upgraded farm ponds, which have been improved to control water losses through seepage and evaporation. The farms ponds have increased water availability for vegetable production under drip irrigation. The farm ponds have proved to be a sustainable climate change adaption strategy for smallholder farmers where rain-fed agriculture is being affected by recurrent droughts. Besides low-head drip irrigation, hip pumps from Kickstart International Inc. have also been introduced to lift water from the farm ponds into the drip irrigation systems – as a complementary technology.


A Completed Farm Pond

Improved water supply and sanitation in schools:

The project aims to benefit one primary school in each of the eight target districts with improved water supply and gender-sensitive sanitary facilities. The water supply consist of roof catchment system – construction of 50m^3 rainwater storage tank and improvement of guttering system, including a simple foul-flash device. The improved sanitation includes separate boys and girls VIP latrines and hand-washing facilities. To date, 6 out of 8 primary schools have been covered. The school component also includes a 50m^3 farm pond for vegetable production under drip irrigation to supplement school meals programme, and establishment of tree nursery for environmental conservation – greening the schools programme. These are *Iltumtum* (*Narok* North), *Kisiara* (*Transmara*), *Mutamaiyu* (*Laikipia* West), *Murungai* (*Laikipia* East), *Ndururi* (*Nyandarua* North), and *Ildungishu* (*Narok* South). Construction is underway at *Lelen* (*Mogotio*), and *Seraton* (*Baringo*).

Complementary technologies and supplementary livelihood systems:

The project recognizes the need for complementary technologies to enhance the benefits and impacts of RHM systems on the livelihoods of the target communities. This includes micro-irrigation for vegetable production; improved beekeeping (apiculture); fodder production and preservation (manual hay baling) and draught animal technology (DAT) which includes dam scoop for de-silting of water pans, tined harrow for rangeland rehabilitation, and conservation agriculture.

Most of the complementary technologies have been undertaken in 5 out of the 8 target districts, and implementation is under way in the remaining 3 districts.

Improved Beehives

Definition of a Farm Pond

A farm pond is a hand-dug, underground surface run-off reservoir with capacity ranging from 30–300m^3. The farm pond is normally lined with either concrete or masonry ultra-violet resistance plastic material to control seepage, but KRA recommends an improved structure that is roofed with iron sheets or shade net to control evaporation and reduce risk of children or animals drowning.

Environmental conservation:

To enhance project sustainability, environmental conservation is also an integral component of the project to mitigate the effects of land degradation and climate change. This component involves establishment of tree/ fruit seedlings nurseries and tree seedlings planting to enhance afforestation and agro-forestry. Community training on integrated natural resources management also enhances environmental conservation. Besides tree planting, the project promotes planting of high-value fruits under agro-forestry – on-farm soil and water conservation, and watershed protection and income generation.

Community capacity building:

Community capacity building through demonstrations, training and exposure visits is an important aspect to enhance project ownership and sustainability. This is a continuous activity which starts with community mobilization and sensitization to enhance their participation and contribution, and covers governance and leadership, operation and maintenance, complementary technologies, and sustainable livelihood systems. Capacity building adopts different methods, mainly formal training sessions and informal sessions (focused group discussions and general community meetings – *barazas*). The exchange visits exposes some of the community members to other project sites - visit their peers in other districts who are practicing similar work and learn from them. Most of community capacity buildings interventions have been accomplished, except in the last three districts – where it is on-going. Commemorative certificates are issued for formal training sessions, which covers a wide range of topics related to the project.

GHARP/KRA institutional strengthening:

The project aims to strengthen the institutional capacity of the GHARP/ KRA Secretariat through the recruitment of competent development workers and to conduct leadership training for the staff. A new development worker, a Partnership and Fundraising Officer, arrived at the Secretariat in January 2011 to replace one who had completed her contract. She has been working alongside the Information and Communication Officer. The review and revision of the GHARP and KRA strategic plans has also been completed, along with the publication of the 2011 Annual Report. The GHARP website has been upgraded and launched and is now much more interactive and filled with useful resources to download – take a look at the new site: http://www.gharainwater.org. In addition, seven members of staff and board members have attended leadership training which has proved to be helpful especially in improving understanding and the segregation of duties between the governing board and the management (Secretariat).

Project commissioning:

Once the major activities have been implemented, commissioning is done so that the community can take full responsibility for the project. Commissioning involves taking stock of the project accomplishments and the roles of the community after completion to ensure sustainability. So far, 5 out of 8 project sites have been commissioned i.e. *Narok* North, *Transmara, Laikipia* East, *Laikipia* West and *Nyandarua* North.

Project impacts

The following are some of the notable project impacts as highlighted by the beneficiaries:

- Increased and improved access to a safe and reliable water supply available for domestic, livestock, and agricultural uses.
- Close proximity to water sources which ensures that women, children, and also animals, do not trek long distances in search of water, hence increasing their productivity.
- Reduced conflict over water and pasture – the Tapwale water pan in *Transmara* has reduced the conflict between the neighbouring *Kipsigis* and *Maasai* communities, who used to fight over limited water resources.
- Reduced seasonal movements of livestock and men in search of pasture ensuring production of healthy animals and increased financial returns.
- Improved water supply and sanitation for schools leading to reduced water-borne diseases (e.g. diarrhoea among children), better health and pupils' performance.
- Enhanced water availability for vegetable production under drip irrigation even leading to adoption of small-scale greenhouses for weather-sensitive horticultural crops (e.g. tomatoes and capsicum).
- Improved food security and enhanced income generation through the sale of vegetables and honey – enhance economic empowerment.

GHARP/KRA regularly visits the field to meet with beneficiaries and monitor project progress and document views from the beneficiaries.

The following are some testimonies from the beneficiaries.

Ms. Susan Karungari

Ms. Susan Karungari a farmer who have benefited from a farm pond (50m^3) installed with a hip pump and drip irrigation kit (50-litre) in *Laikipia* East District. She has one of the success stories of the project, and she reported *that she is very happy with her new farm pond* since upon receiving the pond she has gradually built up her farming and has now built a greenhouse where she is growing large numbers of tomatoes under drip irrigation. Her garden also revealed extensive, successful use of drip system with peppers, passion fruits and sukuma wiki (kale) all growing well.

Another testimony is from the head-teacher of *Nanyuki* High School also in Laikipia East district, who expressed great enthusiasm for the benefits the school farm pond has realized. He said that the 50m^3 farm pond and drip irrigation system were in full working condition and much-needed water had made a big difference to the lives of those at the school. A thriving vegetable garden was in evidence with many carrots and cabbages growing well. Cliff Allum of Skillshare International and Martin Cumella of Tribal Group Foundation expressed their satisfaction with the project after talking to a number of the beneficiaries including the head-teacher about the impacts and the savings on buying vegetables for the school meals.

Therefore, the project is on track in terms of implementation and achieving the expected outputs. It is hoped that the project will be scaled up to benefit more vulnerable communities in the semi-arid districts – since it demonstrates that benefiting communities are becoming self-sufficient and shifting from subsistence farming and reliance on rain-fed agriculture to small-scale commercial farmers. Kenya Rainwater Association has been able to attract two development partners to scale-up the technological package for smallholder farmers – UNDP/SGP in *Laikipia* East and *Buuri* Districts, and USAID-KHCP in *Ukambani* and Coastal regions.

Nanyuki High School Boys display some of the Vegetables from the farm

Forthcoming activities

The following are some of the forthcoming activities in the remaining three districts *(Baringo, Narok* South, and *Koibatek/Mogotio)*:

- Completion of the construction of water pans/earth dams including construction of auxiliary structures.
- Environmental conservation and management which will include establishment of tree/vegetable seedling nurseries.
- Community capacity building which will include project management, maintenance and operation of project facilities, sanitation and hygiene, integrated water resources management, environmental conservation and protection, and marketing and entrepreneurship, among others.
- Improved sanitary facilities (VIP latrines separate for girls and boys).
- Introduction of complementary technologies and supplementary livelihood systems (drip irrigation system, fodder/pasture production, DAT, and apiculture.
- Information documentation, dissemination, and experience sharing.
- Monitoring, evaluation, and reporting.
- Project commissioning of the three remaining project sites.

USAID-KHCP Rainwater Harvesting and Utilization Project in Ukambani and Coast Regions of Kenya

By Patrick Warui, Technical Officer and Angelina Musembi, Technical Assistant, GHARP/KRA

Background

In May 2011, the Kenya Rainwater Association (KRA) started a new three-year project funded by the United States Agency for International Development (USAID) as one of the partners for the Kenya Horticultural Competitiveness Project (KHCP) being implemented through Fintrac Inc. (USA). The project is on-going and will be completed by April 2014.

The overall goal of the USAID-KHCP is to increase rural household incomes through growth in the horticultural sector, assisting with agricultural development, market access, and business initiation. The value chain-based project brought in to implement rainwater harvesting and management (RHM) component to enhance small-scale horticultural production in the drought-prone regions where food security and economic empowerment is major development challenge. The phased project targets three counties in the two regions - *Makueni* (year 1), *Kitui* (year 2), and *Kwale* (year 3).

The project is promoting RHM system and complementary technology – farm ponds and drip irrigation - and facilitating farmers' training on rainwater harvesting, utilization and management. It will also integrate in-situ soil moisture conservation, and tree/vegetable seedling establishment and fruit production. Capacity building is an integral project component and it targets smallholder farmers' groups, local extension staff, partners' staff, and local artisans to enhance technical skills development and project sustainability.

The project targets 190 farmer groups, mainly comprised of women groups and youth groups – in total 4,000 farmers will be direct beneficiaries. In total, through on-site demonstration training, and 80 farmer field days, the capacity building component will benefit 4,750 farmers and 15 extension staff who will be trained on RHM systems and complementary technologies. It is envisaged that the project will improve food security and household income, besides demonstrating the cost-effectiveness and potential of the technological package for improving the livelihoods of the vulnerable communities, and as a sustainable climate adaptation strategy in the water-scarce regions of Kenya.

Project activities

The specific project activities are:

- Increased clarity on socio-economic conditions in the area by the conducting of a household baseline survey for each of the counties.
- Promotion of improved livelihoods and access to water by constructing 190 farm ponds of 50m^3 in size. The ponds will be lined with ultra-violet plastic lining to control seepage, and roofed with shade net to prevent evaporation and contamination.
- Improvement of water use efficiency by installation of 230-litre mini-tank drip irrigation systems at each farm pond site. A hip pump from Kickstart International will also be provided for pumping water from the pond.
- Establishment of 9,500 tumbukiza (planting) pits to grow paw paw, mango, banana, passion, and citrus fruits – in-situ soil moisture conservation technology.
- Market diversification in rainfed agriculture achieved through three main crops.
- Capacity building and training on RHM and complementary technologies for 4,750 farmers to promote long-term sustainability of the project sites and technology transfer.
- Linking of 190 farmer groups to credit facilities at microfinance institutions and banks in order to promote agri-business development and marketing of products.
- Monitoring and evaluation of project work and dissemination of relevant information.

Tomatoes under drip irrigation system nearing maturity

Quote:

"The way I see it, if you want the rainbow, you gotta put up with the rain." **Dolly Parton**

Project accomplishments

Despite being in the early stages of implementation, the project has already made some significant accomplishments in *Makueni* and Coast Regions as follows:

Staff training and office set-up: A GHARP/KRA Technical Officer and Technical Assistant have been seconded to the project for three years. They will work on-site with the community members, and establish strong working relationships with other key stakeholders such as local government and USAID-KHCP staff. They have already established a field office and set it up with office equipment in order that they can perform their roles effectively. The two staff members have also undergone a comprehensive training and induction programme with USAID-KHCP to ensure they are full conversant on all aspects of the programme and its objectives and methods of working.

Community mobilization and sensitization: As of September 2011, 31 of the 70 farmer groups required for the *Makueni* county phase of the project have been established. The groups have already undergone a sensitization training programme and they have been formally and legally established with a constitution drawn up. The remaining communities have been mobilized and group identification and selection is ongoing for the remaining 39.

A woman using a hip pump

Farm pond site preparation/excavation: Site selection and marking of farm pond sites has already begun and excavation of the 50m^3 farm ponds has been started at ten established community based sites. Community members are being trained during the process and excavation is part of the community's contribution.

Project impacts

It is expected that this project will greatly improve the lives and livelihoods of the 190 target farmer groups, as well as the community at large, in the following main ways:

- Increased and improved access to a reliable water supply available for agricultural use.
- Increased water-use efficiency and crop diversification as a result of micro-irrigation systems.
- Greater understanding of soil moisture stress and how to avert this using *tumbukiza* pits.
- Increased technical and construction knowledge for farmers and youth.
- Close proximity to water sources which ensures that women and children do not trek long distances in search of water.
- Improved market access and commercial market linkages, particularly for the youth and women.
- Improved food security and enhanced income generation through the sale of vegetables.

Forthcoming activities

The following are the forthcoming activities for year one of the project (*Makueni* county):

- Completion of community sensitization and group formation.
- Baseline socioeconomic survey across the county of 20 sample households.
- Community capacity building and training.
- Continued site selection and excavation of the 70 farm ponds of 50m^3, followed by construction work.
- Installation of 70 drips irrigation systems of 230-litre capacity.
- *Tumbuzika* pit preparation and planting of fruits.
- Farmer field days (minimum of 20) in order to assist the wider community to learn the new RHM technologies.
- Information documentation, dissemination, and experience sharing.
- Monitoring, evaluation, and reporting.

Drip irrigation

Drip irrigation is a water use efficient technology in which water is supplied to the plants root-zone drop-by-drop through emitters at predetermined spacing along a plastic tube. can help you use water efficiently. Drip irrigation reduces water contact with crop leaves, stems, and fruit. Thus conditions may be less favorable for the onset of diseases. Irrigation scheduling can be managed precisely to meet crop demands, holding the promise of increased yield and quality.

KRA Wins Global Giving Challenge and Raises Funds for Matuiku School Water Project in Nyandarua County, Kenya

By Katie Allan, Former KRA Information and Communications Officer

Introduction

In August 2011, Kenya Rainwater Association (KRA) decided to try out a new and innovative fundraising technique by taking part in the Global Giving August fundraising challenge. The challenge was a resounding success and KRA raised over $5,000 to help fund a water and sanitation project at *Matuiku* School, as well as securing a permanent spot on Global Giving's fundraising website. This article charts the progress of KRA through the challenge and gives updates and plans for the project.

Global Giving and the August Challenge

Global Giving is an international online giving platform which accepts donations by debit and credit card. Their site allows non-profit organisations to have access to their website and online fundraising space in return for a minimum fundraising target of $4,000. The catch – the funds need to be raised within the space of one month! KRA bravely took on the challenge in August 2011. You can access the fundraising page here: http://www.globalgiving.org/projects/water-and-sanitation-for-kenyan-school-children/

Matuiku Primary School

Global Giving ask that organisations focus their fundraising efforts on one particular project if possible as this encourages donor enthusiasm and also ensures that the funds are spent in a clear and transparent manner. KRA decided to focus their efforts on *Matuiku* Primary School in the semi-arid *Ndaragwa* Division of *Nyandarua* North district in Kenya. The school had no access to running water, poor sanitation, and the children attending the school come from very poor backgrounds. It was felt that the school would benefit greatly from a rainwater harvesting and management (RHM) system, comprising a water tank capable of holding 50,000 litres, a farm pond also of 50,000 litres capacity, an irrigation system for growing vegetables, new ventilated improved pit (VIP) latrines, tree planting for improving the water catchment, and capacity building and training for the students and staff.

Kenyan-themed dinner parties

KRA began concerted efforts to alert supporters and potential donors to the challenge well in advance of the August 1st start date. Emails, letters, Facebook updates and website articles were all used to motivate and inspire supporters and explain the importance of the project for KRA. One of the methods used to inspire international enthusiasm and encourage people all over the world to think about the water problems suffered in Kenya, was a series of Kenyan-themed dinner parties. These parties took place in a range of countries, from Singapore to France to England!

KRA provided detailed recipe cards for four Kenyan dishes, a project explanation to be read out at dinner, recommendations for Kenyan music, and a Kenya facts quiz. In total, ten dinner parties were held and each host encouraged friends to donate to the cause. Traditional Kenyan dishes such as *Ndengu*, *Kachumbari*, *Pilau*, and *Mukimo* were all cooked and enjoyed! One imaginative host even decided to hold a cake-baking party with friends donating to KRA in return for a cup of tea and a delicious cake or two...

Traditional Kenyan dishes

Kenyan themed party

Tile and Carpet Centre and AAR Health Insurance pledge their support

Half-way through the challenge, KRA received two unexpected and very welcome offers of support from two Kenyan local businesses – Tile and Carpet Centre Ltd. and AAR Health Insurance.

Tile and Carpet Centre offered to donate a 10,000-litre plastic water tank (branded 'Top Tank') to the school! Within days of the donation pledge, KRA had accompanied staff to the school and it was presented to the Headmaster, Mr. Ndegwa, and the students. The enthusiasm was very clear to see and the headmaster promised to work with the parents and the community to install the tank and fix it to the roof for rainwater collection. The tank will supplement the 50,000-litre tank planned by KRA and allow even more space for water storage.

AAR Health Insurance also stepped forward and pledged to support KRA with the tree-planting aspect of the project. In addition they will set-up a comprehensive de-worming scheme at the school in a bid to improve the general health of the children. AAR will take over the tree-planting component and propose to bring the first batch of seedlings to the school in March 2012.

Success for KRA

On the 1st September 2011, KRA received the happy news that their Global Giving challenge had been successful and they had raised over $4,720 from 87 different donations! Since then, further donations have come in, taking the total so far to $5,131. The fundraising success will have a great impact on the 137 children of Matuiku School in the following ways:

- Provide clean and safe sanitation for the children through the provision of VIP latrines.
- Support nutrition for the children through the provision of a farm pond and drip irrigation system for growing vegetables.
- Provide much-needed water for drinking and hand-washing with a large water tank and roof-water harvesting system – allowing the school to stay water-secure throughout periods of low rainfall or drought.
- Improve the water catchment and the soil moisture content with the provision of tree-seedlings.
- Protect the health of the children with a regular de-worming programme in partnership with AA Health Insurance.

Future plans

KRA plans to commence the water project in March 2012 and will situate an experienced technical assistant at *Matuiku* School to manage project implementation. The project will start with the construction of the school latrines as this is the area most in need. Funds permitting, the implementation will then move onto the other project components. The tree-planting will also start in March.

The full project cost was estimated at just over $17,000. KRA is still seeking further donors and partners to work together to cover the remaining cost for full project implementation. If you feel you would like to support then you can donate online via Global Giving using this link: http://www.gharainwater.org/gg-challenge/ or if you wish to discuss a possible partnership then contact the office on gharp@wananchi.com.

KRA would like to thank all our generous supporters for their donations and also to thank Tile and Carpet Centre Ltd. and AAR Health Insurance for their ongoing support. Without you we could not have achieved so much in terms of fundraising for the school.

KRA/New Life Mission Project on Improving Water and Food Security in Mashuru District, Kajiado County

By Nichodemus Munyao, Technical Assistant, GHARP/KRA

Introduction

Since August 2010, Kenya Rainwater Association (KRA) in partnership with New Life Mission (NLM) – a faith based NGO, has been implementing a project entitled: '*Improved Food Security – Child, and Gender based Rights in Mashuru District, Kajiado County.*' The project mainly focuses on promoting rainwater harvesting and management (RHM), in particular farm ponds for micro-irrigation, targeting over 7,000 direct beneficiaries including 20 schools. The project is funded by Swedish development partner, *Eriksjhalpen*, through NLM, and will be implemented over a period of three years with the aim of improving and diversifying the livelihoods of the vulnerable *Maasai* community.

The life of the *Maasai* people in *Mashuru* is extremely difficult due to harsh ecological conditions and limited opportunities to develop sustainable livelihoods. Frequent droughts related to climate change, a fragile ecosystem, and unsustainable economic activities (e.g. charcoal production) have led to land degradation and low productivity. Inadequate water and fodder for livestock forces men and boys to migrate with their animals in search of water and pasture. The ensuing poverty in the area encourages high rates of school dropouts and forced early marriages for girls (in an effort to secure the bride price – as a means of restocking diminishing livestock). The joint project aims to achieve the following outcomes in *Mashuru*: improved food security and nutrition; increased access to clean water; environmental conservation; improved gender and child rights; increased access to care, education, and training; and increased community capacity to manage and sustain project activities. KRA's role is to implement RHM systems and complementary technologies to help NLM achieve its goal. This article highlights what has been accomplished so far, including some project impacts, and the forthcoming activities.

Project activities

The specific project activities are:

- Improvement of water access and use at 20 schools by repairing guttering systems and installing 20 tanks of 10,000 litres for drinking water.
- Promotion of improved livelihoods by constructing 20 community farm ponds of 72m^3, lined with ultra-violet plastic lining to control seepage, and roofed with iron sheets to control evaporation and reduce risk of drowning and to supply water for establishment of tree/vegetable seedlings and kitchen gardens including fencing to prevent damage by livestock and wildlife.
- Construction of 20 farm ponds of 72m^3 with 20 drip irrigation systems (230-litres kits) at each school to supply water for tree seedlings production, tree planting, and vegetable production.
- Establishment of 120 vegetable gardens with 50-litres drip irrigation systems and 20 drip irrigation systems (230-litre kits) for community-based organisations (CBOs), as well as 0.6 and 0.5 acre drip irrigation systems for the NLM community centre and one CBO respectively.
- Introduction of draught animal technologies (DAT) for ferrying water, rangeland improvement, and tillage.
- Diversification of livelihoods systems through promotion of income-generation activities

KRA's Technical Assistant, Nicodemus Munyao with rippen tomatoes

such as vegetable gardens, youth enterprises (assisting with DAT), and establishment of tree and vegetable seedlings adjacent to water sources.
- Construction of 12 shallow wells lined and installed with an Afridev hand pump for easy access to clean water.
- Capacity building through awareness creation and training on all the project technologies; the running of commercial tree/vegetable nurseries; child nutrition; and the importance of environmental conservation.
- Promotion of child and gender rights.

Project accomplishments

The following are some of the main accomplishments so far:

Project launch and planning workshop:

A project launching and planning workshop was held on 18th March 2011 for stakeholders, KRA, NLM, local administration, village elders, and community members. Participants shared experiences, opinions, and challenges on life in *Mashuru* which were then incorporated into the project. Project implementation plans were developed to guide the process and a project management committee was elected to work together with the project staff during the implementation. The formation of such a committee ensures that the target community understands the project and its benefits in order to enhance management and sustainability.

Construction of farm ponds:

The project aims to construct 20 farm ponds in 20 schools. So far six ponds have been completed at *Elkidemi* (72m^3), *Odarpoi*, *Oletepesi* (50m^3), *Marwa* (72m^3), *Iltumbule* (72m^3) and *Olmaiyana* (72m^3) Primary Schools. Once the ponds collect water they will assist the school by supplying water for the school feeding programme, drip irrigation system, drinking, hand-washing, and cleaning of classrooms.in a bid to improve water accessibility for drinking and cooking, three 10,000-litre roof water tanks have been purchased and delivered to the NLM centre in *Mashuru*, An additional 17 tanks will also be procured and distilled in the schools

Micro-irrigation and establishment of vegetable gardens:

Six 230-litre mini-tank kits, five 50-litre jerrican kits, and two 2,300-litre systems for 0.5 and 0.6 acres have been procured and delivered to the NLM field office in *Mashuru*. Demonstration training on micro-irrigation systems has been done in nine individual community members' farms and schools targeting teachers, parents, community members, and school children. These include a 1000-litre tank, six 230-litre mini tanks, and two 50-litre jerrican kits. Rehabilitation of previously installed systems has also been done at *Elkidemi*, *Eselengei*, and *Oletepesi* Primary Schools, as well as at *Enyuata* Self-help Group. The training component focused on: installation; operation and maintenance; and irrigation water management (use of a simple portable handpump and drip system). The micro-irrigation systems will use water harvested in the farm ponds, which will be pumped using a simple hand pump – hip-pump from Kickstart International Inc. However, water can also be ferried using donkey carts from existing shallow wells in case of poor rains. This project component will ensure vegetable production and hence improve nutrition and health in the target schools and communities, besides income generation. The vegetable gardens will also be used as demonstration sites for promoting diversified livelihood systems among the entire community.

Establishment of tree/vegetable nurseries and planting:

A key part of the project is the establishment of tree/vegetable

Tomatoes under drip irrigation in Mashuru

seedling nurseries for promoting improved livelihoods and nutrition. Vegetable seedling nurseries have now been established at the NLM Centre and the *Ang'ape* Women's Group sites. These sites will then be cultivated to supply other gardens with seedlings. Vegetables such as tomatoes, spinach, cabbages, and onions have been included in order to supplement the local/traditional vegetables and for integration into the school feeding programme. A tree nursery has also been established at the NLM Centre and drought-resistant tree species, plus some other trees chosen by the community, are being cultivated there. Different species of grafted fruit seedlings (oranges, mangoes and three other exotic tree seedlings) have been planted in three schools *Elkidemi, Oletepesi,* and *Oldarpoi* around the fenced areas of the farm ponds, and watering is being done regularly thanks to a plentiful supply in the nearby ponds.

Community capacity building and DAT training:

Throughout the project, ongoing community capacity building and training is essential to ensure that community members are keeping their skills and knowledge up-to-date and are learning how to use the new technologies in drip irrigation, tree planting, and improved farming methods. One recent example of this is training on draught animal technology (DAT). DAT is a practical and low-cost method of land cultivation using animal-drawn equipment. A week-long workshop was held in June 2011 for a select group, designed as 'training of trainers' (TOT). The participants were drawn from each location and each person is expected to transfer the skills and knowledge gained, to the larger *Mashuru* community as they were treated as Trainers of Trainers (ToTs). Practical demonstrations using donkeys were combined with theory to give a fully comprehensive training course. Topics covered included: Animal Traction in Kenya; Animal Selection, Age Estimates, Training, and Harnessing: Animal Needs, Restraining Techniques, Commands, and Guiding Principles; Mould Board Ploughs, Adjustments, and Field Marking; Cultivators, Planters Utilisation, Stripping and Adjustment, and Care and Maintenance; Harrows, Ridgers, and Dam Scoop; and Conservation Tillage and Equipment. Feedback from the event has been very positive and the participants really appreciated and embraced the opportunity to learn these technologies. The use of the donkey is not common practice in *Maasai* communities and so the participants were very interested to learn how they could be utilised for agricultural work.

Donkey being trained on pulling cart

Project impacts

It is expected that the project will greatly improve the lives of the *Mashuru* community in the following ways:

- Increased access to safe and clean drinking water.
- Increased access to reliable water supply for vegetable production for community and schools.
- Improved water management for vegetable production under micro-irrigation.
- Improved food security and enhanced income generation through the sale of vegetables.
- Improved rangeland and fodder availability and hence survival of lactating cows left behind when the main herds migrate during droughts.
- Diversified livelihood systems – employment opportunities for youth and women, and income generation – vegetable production, water supply, fodder production, seedling production, tillage, etc.
- Increased awareness of gender and child rights.

Mr. Andrew Mooke, Head Teacher at *Oldarpoi* Primary School provided positive feedback on the farm pond and micro-irrigation system installed at his school. He explained that in the previous season, vegetables worth Ksh. 6,000

from the school garden were used to supplement the school feeding programme for a total of two months. He added that tomatoes produced were given to the parents and pupils in appreciation of their efforts in terms of managing the operation and maintenance of the farm pond and irrigation system. He expressed high hopes for continuing good yields from the farm pond, and potential income from the vegetables grown. This positive attitude seems to be reflected across all the beneficiaries who have so far benefitted from a pond. The project activities in the area have also attracted interested external groups who are keen to learn from the work of KRA.

One example is the *Ngong* Organic Farmers, a group that works to promotes adoption of environmental friendly-farming methods.

This group invited NLM and KRA together with project beneficiaries to an open field day where farmers interact and learn new ideas.

Forthcoming activities

The following are some of the forthcoming activities:

- Construction of the remaining 17 farm ponds (72m^3) and installation of 20 (230-litres) and 120 (50-litres) drip irrigation systems for vegetable gardens.
- Construction of 12 shallow wells
- Continued environmental conservation and management with establishment of more tree seedling nurseries, and rangelands improvement.
- Repairing of 20 school guttering systems
- Community capacity building through training.
- Monitoring, evaluation, and reporting.
- Information documentation and dissemination.
- Sensitisation workshops on gender and child rights.

Conclusion

The project is still in the early stages, but notable progress has been made despite logistical challenges related to site accessibility; community apathy; inadequate community construction skills; and high procurement and transportation costs.

Nevertheless, the preliminary impacts of the project are encouraging and the local community is getting interested, which is a positive indication that they will embrace the project. It is envisaged that the project will be completed within the targeted period, and bring the anticipated benefits to the community. The project will demonstrate that appropriate RHM systems and complementary technologies can improve food security and the livelihoods of the predominantly pastoral *Maasai* community by diversifying sources of income and improving the environment. Targeting schools as demonstration sites has many advantages since most people visit the schools and school children are agents of change. The pupils also benefit directly through improved nutrition.

A Youthful farmer harvesting tomatoes in Mashuru

Draught Animal Technologies (DAT)

Draught animal technologies (DAT) utilise domestic animals to improve agricultural productivity by assisting in crop production, environmental conservation, and rangeland rehabilitation (ploughing, harrowing, and de-silting) by drawing appropriate equipment. Animals can also save households time and effort by carrying water and fuel wood.

GHARP/URWA UPDATES

Capacity Building of Community Artisans for Scaling up Rainwater Harvesting in Rakai District, Uganda

By Kikundwa A. Birungi, Uganda Rainwater Association(URWA)

Introduction

Uganda Rainwater Association (URWA) has for many years been promoting domestic rainwater harvesting (RWH) by providing capacity building for RWH interest groups; technical support to RWH practitioners; and documentation of RWH best practices for up-scaling and adoption by stakeholders. This article will focus on the work of Uganda Rainwater Association (URWA) in capacity building to empower the communities of Rakai district in Uganda and assist them to efficiently use rainwater for agricultural purposes in order to improve their food security.

Background

Rakai district is located in the South-western region of Uganda. The main cash activity is subsistence agriculture. The area is one of worst affected by the HIV/AIDS pandemic and has one of the highest percentages of orphans per household in the country. Rakai is one of the districts in Uganda with minimal natural water sources. People used to walk long distances for water hauling in search of safe drinking water. Rainwater harvesting was practiced on a low scale, and more so, it was informal since no systems were put up specifically for collection of rainwater. Household utensils were used for harvesting the rainwater.

It is against such a background that URWA intervened with an aim of reducing water stress in the disabled (AIDS/HIV/TB) Households by providing them with roof water harvesting systems, enabling them to obtain water without walking for long distances. The main objective is to provide safe drinking water to the people living with HIV/AIDS, those affected by HIV/AIDS and TB.

With funding from the World Bank under the 'Development Marketplace, URWA is able to equip orphans and women community based organizations with construction skills for purposes of up scaling rainwater harvesting. URWA introduced Rainwater harvesting as the best option for provision of safe water at household level and different technologies used for collecting and storing rainwater from rooftops.

The target groups will be taken for an exposure visit to another community who are promoting RWH for irrigation and production. The visit will help inspire and motivate the groups to decide if they want to adopt utilisation of RWH and irrigation for improved agricultural productivity. URWA hopes that once the project takes off and low-cost irrigation techniques are developed, there will be an enhancement in water use efficiency, increased sustainability of water resource utilisation, increased agricultural production and farm income, and hence empowerment of Rakai community members.

Community training

After the training, the masons embarked on the construction of the rainwater harvesting systems first for their group members and later scaled up to other community members. URWA also trained the groups in software aspects of community mobilization, general hygiene and sanitation issues and leadership skills.

As a result of acquisition of such a skill, these groups have become models to other districts and exchange visits made for experience and knowledge sharing. A case in point is Buyanga Women group from Kabale district. They were facilitated by Kigezi Diocese Water and Sanitation Programme to have an exposure visit to Rakai. The Rakai women group later trained this team in construction too. Other women groups became products of this training.

Conclusion:

Capacity building is the way to go for purposes of up scaling promotion of rainwater harvesting and accelerating self supply in our communities.

A completed tank by Rakai women group

For more information contact: Kikundwa A. Birungi, Uganda Rainwater Association (URWA), email: ugandarainwater@gmail.com or visit our website: www.gharainwater.org

SECRETARIAT NEWS

Appointments

Technical Officer EU/Skillshare/ GHARP/KRA Projects

Mr. Albert Gatuta was employed as the Technical Officer EC-Skillshare/ GHARP-KRA with effect from October 2011. He started his role on 1st October 2011. Mr. Gatuta holds a B.Sc. Degree in Water and Environmental Engineering from Egerton University. As Technical Officer, Mr. Gatuta will oversee the implementation of EU/Skillshare projects through the supervision of the technical assistants based at the project sites. He will also manage the work of the technical assistants working on all other projects and provide technical guidance.

Technical Assistant EU/ Skillshare- GHARP/KRA Project

Mr. Paul Ng'ang'a was employed the Technical Assistant for EC-Skillshare/ GHARP-KRA Project with effect from 1st October 2011. Mr. Ng'ang'a holds a B.Sc. Degree in Environmental and Biosystems Engineering (Agricultural Engineering) from Jomo Kenyatta University of Agriculture and Technology (JKUAT). As Technical Assistant, Mr. Ng'ang'a will assist in the implementation of the EC/Skillshare GHAPRP/ KRA project through the supervision of construction works; provision of technical assistance to Community Based Organizations (CBOs); monitoring contractors, coordinating community mobilization and training on project activities; information documentation and dissemination to local stakeholders; logistical support to the Technical Officer and co-ordination of field work; preparation and presentation of field progress reports.

Technical Assistant EU/ Skillshare- GHARP/KRA Project

Mr. Joseph Mwaura was employed as the Technical Assistant for EC-Skillshare/ GHARP-KRA Project with effect from 1st December 2011. Mr. Mwaura holds a B.Sc. Degree in Environmental and Biosystems Engineering (Agricultural Engineering) from Jomo Kenyatta University of Agriculture and Technology (JKUAT). As Technical Assistant, Mr. Mwaura will assist in the implementation of the EC/Skillshare GHAPRP/KRA project through the supervision of construction works; provision of technical assistance to Community Based Organizations (CBOs); monitoring contractors, coordinating community mobilization and training on project activities; information documentation and dissemination to local stakeholders; logistical support to the Technical Officer and co-ordination of field work; preparation and presentation of field progress reports; representing KRA in field project meetings; and resource mobilization and fundraising.

Programmes Officer- GHARP/ KRA Projects

Ms Joyce Njigua was employed as a Programmes Officer EC-Skillshare/GHARP-KRA projects based on eight semi-arid districts of Kenya. Ms. Njigua holds an M.Sc. in Integrated Water Resources Management (I.W.R.M.) from the University of Zimbabwe, a post Graduate Diploma in Applied Hydrology and Water Information from the University of Nairobi B.Ed. Degree in Arts. As the Program Officer, Ms. Njigua will oversee the implementation of projects, management and administration prepare projects progress reports for various developments partners and offer advisory services on administration.

Accountant GHARP/KRA Projects

Mr. Torgoti Kiplangat Gilbert was employed as an Accountant for United States Aid Agency for international Development (USAID)/Kenya Horticultural Competitiveness Programme (KHCP) project in the Eastern and Coast regions of Kenya. Mr. Torgoti has completed CPA part 1 (sec1&2) and CPA part 2 (sec 3&4). Mr. Torgoti will oversee financial management and accounting of the GHARP/ KRA projects, prepare financial reports for development partners, be in custody and maintenance of accounting and financial management systems, assist in resource mobilization and fundraising and assist in budgeting and procurement of office equipment and supplies.

STAKEHOLDERS' NEWS

Promoting Use of Rainwater Harvesting to Improve Access to Water and Sanitation, Blue Schools Program in Anwiankwanta, Ghana

By Hannah Price, Communication Officer, International Rainwater Harvesting Alliance (IRHA)

Introduction

In 2005, The International Rainwater Harvesting Alliance (IRHA) created the Blue Schools Programme; this programme works towards the personal development of children by increasing their access to clean drinking water through harvesting the rain. Since 2006, it has been implementing this programme in several countries and has improved the lives of thousands of children.

Background

In 2009, The International Rainwater Harvesting Alliance (IRHA) started Blue Schools in *Anwiankwanta*, Ghana. This project took place in Anwiankwanta SDA Primary School and Anwiankwanta Orphanage, located in the Ashanti Region of Ghana, and affected over 660 children and 28 staff members.

Why IRHA's Intervention?

Before the project, the school had no access to water. The children had to get water from the town or, when this ran out, they would either walk long distances to get some or go without water for the whole day. There were also no toilets in the school, with the children often defecating openly in the neighbourhood, resulting in severe hygiene and health problems. This lack of sanitation lead to poor attendance rates, particularly with girls.

The IRHA, with its local partners Save our Lives Ghana (SOL-GH) and Rural Women and Deprived Children's Programme (RUWADCP), decided to work in these two institutions to improve the living and working conditions of the children.

Project Components

The first step was to create a PACT Committee in the school. PACT (Parents – Authorities – Children – Teachers) Committees are a vital part of all the Blue School projects; responsible for maintaining the new facilities and for strengthening the management capacity of the local population.

Once the PACT Committee was in place, it was time to start the construction work. To provide a sustainable supply of clean water, three 45,000 litre water tanks were built in front of the school, collecting the rainwater that fell on the roof of the school building. To improve the sanitation of the school, new toilet blocks with double VIP latrines were built. The new blocks were separate for boys and girls, and for teachers. Small tanks collecting rainwater falling on the toilet blocks could provide water for washing hands. To complement the improved access to water and sanitation, a vegetable and orchard garden were created and the school grounds were reforested.

Last, but not least, the children were given lessons on health and hygiene, plantation and garden maintenance; environmental protection; and peace and tolerance. This education is vital for improving the consciousness of the children, leading them to grow up more aware of their environment and the people around them.

Project Impacts

Almost two years on, the school and surrounding area are seeing the benefits: children arrive on time and are able to stay in class for the full school day, and the new toilets mean they no longer defecate outside. Over a thousand trees have been planted, and the children look forward to soon being able to harvest fruits from them. Finally, the children and their parents are involved in the development of the school, and the whole community feels like they own the project!

"We are grateful for this project, it has come at the right time. Because we were defecating all around and now there is a toilet for us. We were also bringing water from our homes to drink in school, now there is water at our door step. We are so much grateful to the organization that has provided them."
Eric Kwusi, school prefect

Conclusion

The Blue Schools Programme is expanding, and we are now working on seven Blue Schools in four countries and are in the planning stages for 18 more, which will get underway in the upcoming months.

For more information on Blue Schools Programme, please visit our website: http://www.irha-h20.org/?page_id=30

FEATURE ARTICLE

Rainwater Harvesting & Management Systems and Complementary Technologies for Different Target Groups in ASAL Environments: Integrated Technological Promotion Packages

By Dr. Stephen Ngigi, Programmes Coordinator, GHARP/KRA Secretariat

Introduction

Kenya Rainwater Association has developed, through research and piloting, an integrated technological promotion packages for different target groups in the Arid and Semi-Arid Lands (ASAL) Environments of Kenya (see Figure 1). The three main target groups are pastoral communities, agro-pastoral communities (smallholder farmers), and primary schools (which are targeted as demonstration sites to influence children as change agents), which have different components of the technological promotion package based on the livelihood systems and challenges. The primary schools package is usually an integral component of the other two packages, but it can also be implemented independently. We will serialize the three technological promotion packages in our next issues of Mvua Newsletter starting with our school-based interventions in this issue.

The following are the components of the technological package for schools-based projects that KRA has piloted in 20 primary schools in 10 counties of Kenya.

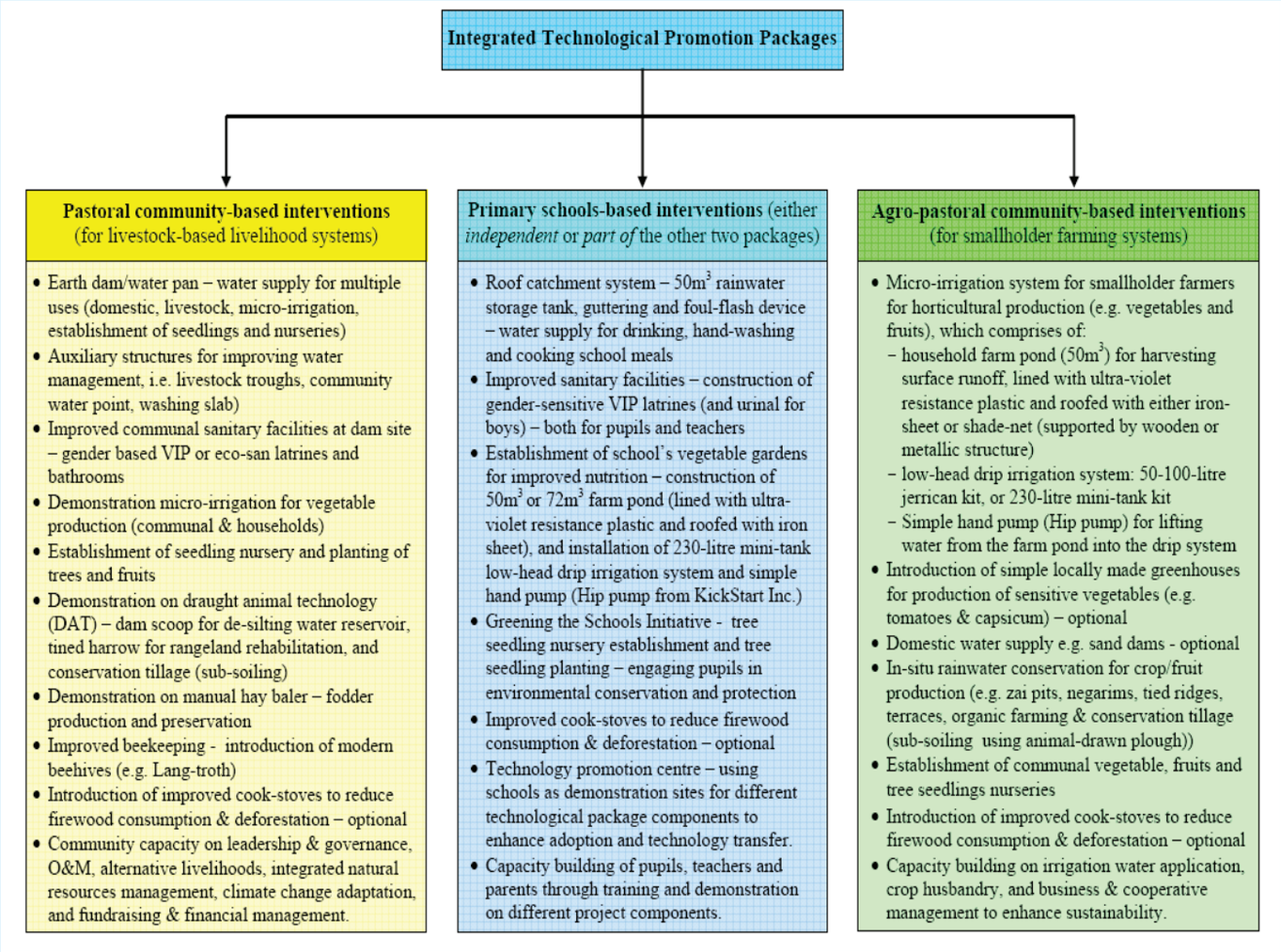


Figure 1: Components of different technological promotion packages

Overview

Water supply and sanitation in most rural schools are inadequate and sometimes do not exist at all. In most cases, school children have literally no source of water within their vicinity, and poor sanitation and hygiene is a norm rather than exception. Drinking water is brought by pupils from distance sources, which are normally unprotected/untreated. Pupils also fetch water for cooking their lunch-school meal programme, for their resident teachers, and dusting-off their classrooms (most classes have uncemented/mud floors). This means that pupils spend significant amount of their learning time to fetch water.

Besides water scarcity, poor sanitary facilities aggravate the learning conditions in most rural schools. Existing toilets are in poor condition and rarely separate blocks for boys and girls, which deprive girls (especially adolescent girls) their privacy. Poor sanitation and hygiene practices are a major cause of water borne diseases (such as diarrhea) related to contamination and hence poor health, especially among young children. As a result, school attendance and retention of children is low, and hence the poor performance leading to marginalization due to low academic grades.

Poor diet and nutrition is also a major concern in rural schools, even where the government provides lunch through the school feeding programme, the diet is not balanced as it mainly consist of boiled maize and beans. Improved water supply, sanitation, hygiene and nutrition are unfortunately not prioritized within limited school budgetary allocation. Moreover, community development projects rarely integrate schools' water supply, sanitation, hygiene and nutrition. To address environmental degradation and effects of climate change, our schools' project also integrates establishment of tree seedling nurseries and tree planting which also target the pupils as change agents among rural communities. This leaves the responsibility of ensuring access to safe drinking water, good sanitation and hygiene and improved nutrition to the poor parents, whose efforts are limited by financial resources especially in semi-arid districts. It is against this background that Kenya Rainwater Association (KRA) was compelled to integrate a school WASH and nutrition component in community-based projects in water scarce districts of Kenya.

Project Components

The main components are: construction of a 50m^3 rainwater storage tank; installation of gutters including a foul-flash system; construction of gender sensitive sanitary (VIP and/or ecosan) facilities (separate for boys and girls, and teachers); construction of a 72m^3 farm pond – truncated pyramid shaped underground tank lined with ultra-violet resistant plastic to control seepage and roofed with iron sheets to control evaporation and reduce contamination and risk of children and animals drowning; establishment of school vegetable garden under low-head drip irrigation; establishment of tree seedling nursery and tree planting (greening the school initiative); and capacity building – training on operation and maintenance (O&M), project management, health, hygiene and environmental conservation. Demonstration training approach—creating awareness through exposure—will be used during construction works for different components.

The project is implemented by KRA in collaboration with the Parent and Teacher Association (PTA) of the selected Primary Schools. KRA provides all the technical support and backstopping needed in collaboration the PTA during project implementation. KRA has qualified Technical Assistants, who will be in charge of monitoring and supervision of construction work to ensure quality control and adherence to engineering design. Procurement of material is done be jointly done by PTA and KRA Technical Assistants. KRA Nairobi-based team also undertakes regularly field monitoring visits to offer technical support.

Construction of 50m^3 rainwater storage tank

School buildings provide perfect roof catchment systems for rainwater harvesting. The main components are water storage tank and guttering systems. Water from roof catchment systems is mainly used for drinking, washing hands, and cleaning classrooms. The storage tank can be constructed using locally available dressed quarry stones, bricks or concrete blocks.

The tank foundation is adequately reinforced with steel bars or wire mesh, with more reinforcement required on unstable soils e.g. black cotton soils – which also requires removing the unstable soil and starting the foundation on sandy or murram soil underneath it. The guttering system will include a foul-flash device to pre-

vent the first contaminated water from entering the tank. This will increase water supply and improve access to quality drinking water for school children as well as the resident teachers in each school. To promote adoption and scaling up of roof catchment systems, local artisans are trained on construction of rainwater tanks and related components (e.g. guttering systems, water draw off and hand-washing facility).

Construction of improved sanitary facilities

This component includes construction of gender-sensitive sanitary facilities (especially ventilated improved pit (VIP) and/or ecological sanitation (ecosan) latrines) - separate blocks for boys and girls, and teachers).

The number of units for each gender depends on the pupils: latrine ratio (i.e. 30 boys per unit and 25 girls per unit) as per government policy. On unstable soils, lining is provided from the bottom of the pit, where on stable soils lining is not required and the latrine walls are supported by the concrete slab – which also include provisions for ventilation pipes and drop holes. Ecological sanitation is a good alternative to ventilated improved pit (VIP)

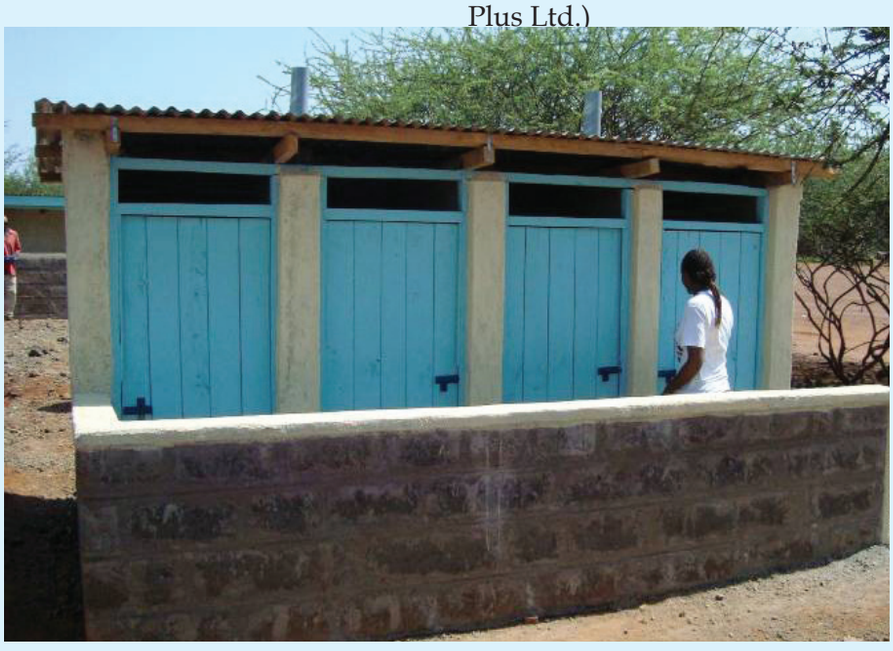
latrines in areas where there is hard subsurface rock, a high water table or collapsing soils (black cotton soil) as no pit is needed. The outputs from ecosan toilets are hygienically safe - the compost (organic) fertilizer removed from the faeces chamber after a certain period of time has very little smell. The by-products of ecosan (urine and decomposed faeces) will be used as organic fertilizer

for the school tree nurseries, establishment of tree seedling and/or vegetable gardens. However, correct usage of ecosan requires adequate training. Construction of improved sanitary facilities requires adequate skills and trained local artisans are used. The school communities normally provide locally available materials and manual labour for digging, while KRA provide technical skills and financial resources for other construction material and skilled labour.

Construction of farm pond for micro-irrigation

A typical ground catchment system includes a catchment area, diversion/conveyance channel (earthen bunds), silt trap/sedimentation chamber (for restraining sediments) and storage reservoir.

The catchment area consists of open surface (school compound or external catchment) for generating runoff, and the runoff storage structure is a farm pond/underground tank (50m^3 or 72m^3). The farm pond is lined with ultra violet resistant plastic (from A-Plus Ltd.)



to control seepage and roofed with iron sheets to prevent evaporation, minimize contamination and risks of children and animals drowning. Farm ponds collect and store run-off from ground catchment which can be used for micro-irrigation for vegetable gardens, supplying water for livestock among other uses.

The following are the steps that taken to complete this component:

Layout of the farm pond for excavation: -The siting and measurements of a 72m^3 farm ponds are done with the top dimensions being 10m long by 6m wide and the bottom dimensions 6m long by 2m wide. The slopes of the edges were at an angle of 45^o. The 50m^3 farm pond has 8m instead of 10m top length and 4m bottom length – all other dimensions are the same.

Excavation of the pit: - The excavation labour is normally contributed by the school community.

*Side slope smoothening: -*The side slopes are smoothened properly so as to allow the lining material fit properly and also ensure that there were no sharp objects that could puncture the lining material.

Lining of the ultra-violet plastic lining - lining of the farm ponds is then done after which a one course masonry wall is constructed around the farm pond to hold the lining material
on the ground. The masonry wall can be built of dressed stones, bricks or concrete blocks.

Roofing of the farm ponds - Roofing of the farm pond are done by the use of the iron sheets to prevent evaporation
and drowning of children and small animals. Water from the roofs is collected using gutters and down pipes and directed to the silt trap so as to increase the harvested volume of water. A small door is also included in the roof design so as to allow for cleaning and maintenance of the structure and also to enable the setting up of the suction pipes for the hand pumps that are installed in each pond to pump water to a vegetable garden.

Establishment of school vegetable gardens

KRA in partnership with WAREM Consultants Ltd. – a private enterprise – has been promoting low-cost low-head drip irrigation kits as a complementary technology for Rainwater Harvesting and Management (RHM) systems. The WAREM drip systems "*Dream Drip Kit*" are tailor-made to suit different clients' preferences/ specifications and land layout.

The WAREM drip irrigation systems are user-friendly in terms of cost-effectiveness, operation and maintenance, and can be repaired since they are assembled from locally available components. The school-based component adopts the 230-litre mini-tank system, which consists of 16-20 laterals of 15m long, covering an area of 250m^2, and 1,000 plants spaced at 30cm along the drip line. The drip irrigation system supply water twice a day – in the morning and in the evening – when evaporation losses are minimal. The water is lifted using a simple hand pump – Hip Pump from KictStart Inc – which is an integral part of the micro-irrigation system. Different vegetable species such as tomatoes, kale, spinach, cabbages, carrots and onions are considered to supplement any local/traditional vegetables and for integration into the school feeding programme – to boost nutrition

and health of the children. The 230-litre mini-tank system supplies 460 litres per day, hence 46m^3 seasonal water requirement considering 100 days growing period for most vegetables. The rest of the water is used for the school greening initiative – establishment of seedling nurseries and watering planted tree seedlings as described below.

Environmental Conservation

This integrates establishment of tree/vegetable nurseries and tree seedlings planting – the school greening initiative. Tree and vegetable seedling nurseries are established near the farm ponds and young farmers' clubs are encouraged to adopt them for income generation for the clubs and/or the schools. Drought resistant trees species will be included among others according to the preference of the schools. The tree nurseries on the other hand are used for sensitizing the children on the importance of environmental conservation and value of tree planting, both at home and in school. The trees planting component is dubbed "the greening schools initiative" where the children will be encouraged to take care of at least two tree seedlings per year until they are fully established.

The school-based component, where applicable, also include energy saving cook stoves (*Jiko Kisasa*), which save firewood for the school meals programme, and hence children time and energy for fetching firewood. This also reduces deforestation and enhances environmental conservation.

Capacity Building

To enhance project implementation process, continued capacity building, technical support and backstopping is a prerequisite. The impacts of capacity development include enhanced community participation, confidence and contribution. Thus project ownership and sustainability is guaranteed due to leading role of the community in project formulation, development and implementation. KRA in collaboration with the relevant government departments offers technical support & backstopping to enhance project implementation, management and sustainability. The training component focus on *inter alia*: water resources management; health and hygiene education; micro-irrigation for vegetable production; tree seedling nursery establishment & management; environmental protection and conservation, and operation, usage and maintenance of project facilities – rainwater storage tanks, farm ponds, improved latrines, etc.

The capacity building targets pupils, teachers and selected parents.

Quote:

"And when it rains on your parade, look up rather than down. Without the rain, there would be no rainbow."

Gilbert K. Chesterton

FEATURE ARTICLE

KRA Participation at the 2011 Nairobi International Trade Fair

By Wilson Maina, Logistics Assistant, GHARP/KRA

Every year in September, Nairobi hosts an international trade fair with participants from all over Kenya and also some international participants. A significant part of the event is dedicated to agriculture and the promotion of technologies to farmers.

KRA's Drip irrigation demonstration

The show takes place at Jamhuri Showground in Nairobi and is a large event opened by the President and attended by many farmers, stakeholders, and ordinary people looking to learn more. This year (2011) KRA was invited to attend as part of the Ministry of Agriculture section. We displayed and demonstrated a 20-litre drip irrigation system as part of the Ministry of Agriculture's model farm.

We also gave away our magazines and other information materials at the Agricultural Information Resource Centre (AIRC) stand. The event lasted for one week and the show was open from 8.00am-6.00pm (or later) every day from Monday 26th September 2011 to Sunday 2nd October 2011.

KRA contribution

We had a high level of interest from a broad range of people, particularly farmers, and potential farmers. We demonstrated the drip irrigation system and explained the benefits in terms of food security and economical use of water. We promoted the work of KRA and encouraged people to read more about us and visit our offices and website. The information materials were very popular and most people visiting the stand were keen to read more about our work.

Children Learn more about KRA projects from one of KRA official

Conclusion and Plans for Next Year:

The event was a success for GHARP/KRA and it worked well to be part of the Ministry of Agriculture stand. The Ministry said that it would be good to work together in the same way next year, but to arrange further in advance so that we can set up the drip irrigation system in good time so that our crops would be ready for the week of the Overally GHARP/KRA's presence at this event was informative for everyone in attendance as well as beneficial for the organisation as it provided an opportunity to raise awareness about GHARP/KRA's current and past projects and inform people who were not previously aware of the organisation.

Katie Allan, Former Information and Communication Officer explains GHARPKRA's Drip irrigation system

Quote:

"Criticism, like rain, should be gentle enough to nourish a man's growth without destroying his roots."

Frank A. Clark

GREATER HORN OF AFRICA RAINWATER PARTNERSHIP

The Greater Horn of Africa Rainwater Partnership (GHARP) is a regional network of National Rainwater Associations (NRWA) from the Greater Horn of Africa (GHA) countries. The partnership was formally established in March 2001. The current members of GHARP are:

- Ethiopia Rainwater Harvesting Association (ERHA)
- Kenya Rainwater Association (KRA)
- Rainwater Association of Somalia (RAAS)
- Rainwater Association of Tanzania (RHAT)
- Uganda Rainwater Association (URWA)

The GHARP Secretariat is hosted by KRA in Nairobi, Kenya. Legally, GHARP operates under the auspices of KRA, and the KRA Governing Board oversees its activities on behalf of the Governing Council.

Event	*Where*	*When*
Commissioning of Narok South District Project	Ildungisho sublocation	24th April, 2012
Commissioning of Baringo Central Project	Sereton Location	May 2012
Commissioning of Mogotio/ Koibatek Project	Lelen Location	May 2012

GHARP/KRA Secretariat expresses gratitude to the following development partners for their continued collaboration and support:

Christadelphian Meal a Day (CMAD) Fund, Eriksjhalpen (Sweden), European Union (EU), Kenya Post Office Savings Bank, German Agro Action (GAA), Government of Kenya (GoK), H2O for Life-USA, Herrod Foundation, Japan Water Forum (JWF), Kenya Community Development Fund (KCDF), New Life Mission, Safaricom Foundation, Self Help Africa (SHA), Skillshare International, Tribal Group Foundation (TGF), United Nations Development Programme-Global Environment Facility/Small Grants Programme (UNDP-GEF/SGP), Western Union Foundation, and Wherever the Need.

GHARP/KRA Secretariat also wish to acknowledge the contribution of Ms Florence Chepkoech, an Intern from the School of Journalism (University of Nairobi), and her tireless efforts and dedication in making the production of this Newsletter a success.

We hope you find this newsletter useful and informative. We welcome your feedback, articles, comments, questions, news stories or ideas. Your articles and news for our next edition should be submitted by 20 May 2012. Thank you and keep in touch.