



Learning from Experience

Balancing water infrastructure in community-managed rangelands in the arid and semi-arid lands of Kenya



IUCN People and Landscapes Programme



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Acknowledgments

IUCN Eastern and Southern Africa Regional Office (IUCN-ESARO) sincerely thanks Swiss Agency for Development and Cooperation for funding this learning event through the Water for livestock project grant and also participating in the learning event to make it a success. We are grateful to all participants for sparing their valuable time to attend the learning event and sharing their experiences.

Special thanks to the project implementation team and community members for sharing their experiences and lesson learnt in the course of the project implementation. Special thanks to the review team (Lucy Maarse and Mike Wekesa) for their significant contributions to the learning event and promoting the use of a self-evaluation model.

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Balancing water infrastructure in community-managed rangelands in the arid and semi-arid lands of Kenya

Water for Livestock in Isiolo and Garissa Counties, Kenya - Enhancing water resource and rangeland management community capacity through training and strategic water infrastructure development

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Brief description of the partners

IUCN – International Union for Conservation of Nature

IUCN, International Union for Conservation of Nature, helps the world find pragmatic solutions to our most pressing environment and development challenges.

IUCN's work focuses on valuing and conserving nature, ensuring effective and equitable governance of its use, and deploying nature-based solutions to global challenges in climate, food and development. IUCN supports scientific research, manages field projects all over the world, and brings governments, NGOs, the UN and companies together to develop policy, laws and best practice.

IUCN is the world's oldest and largest global environmental organization, with more than 1,200 government and NGO members and almost 11,000 volunteer experts in some 160 countries. IUCN's work is supported by over 1,000 staff in 45 offices and hundreds of partners in public, NGO and private sectors around the world.

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IUCN in eastern and southern Africa

IUCN's Eastern and Southern African (ESARO) region comprises 24 countries in the Horn of Africa, eastern and southern Africa and the western Indian Ocean namely: Angola, Botswana, Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, Somalia, South Africa, South Sudan, Sudan, Swaziland, Rwanda, Tanzania, Uganda, Zambia and Zimbabwe.

Swiss Agency for Development and Cooperation (SDC)

The Swiss Agency for Development and Cooperation (SDC) is part of the Federal Department of Foreign Affairs. SDC is operated by financing programs both directly and in partnership with other agencies to countries around the world.

The agency aims to support the populations of the Horn of Africa in their efforts to live in peace, improve living standards, deliver effective public services, prevent and mitigate crises and human suffering, enhance resilience, foster democracy, human rights and social accountability, reduce maternal and child mortality and address migration flows. Its present cooperation strategy aims at increasing the coherence, effectiveness and impacts of Switzerland's contribution.

The Kenya Red Cross Society (KRCS)

The Kenya Red Cross Society exists to be the most effective, most trusted and self-sustaining humanitarian organisation in Kenya. Its mission is to work with vigour and compassion through our networks and with communities to prevent and alleviate human suffering and save lives of the most vulnerable. As a voluntary organization, the Society operates through a network of eight Regions and 62 Branches spread throughout the country. The Society is a member of the International Red Cross and Red Crescent Movement, the largest humanitarian relief Movement represented in 185 countries worldwide.

African Development Solution (ADESO)

African Development Solution is an African based international development and humanitarian organization that aims to improve the lives of those who are living in marginalized areas in the Horn of Africa. We strengthen rural livelihoods through environmental awareness, training, technology transfer and innovative humanitarian projects in pursuit of a peaceful, self-reliant, and greener future. Adeso works in the following sectors: food security and livelihoods, natural resource management, education (formal and non-formal), water, sanitation and hygiene (WASH), and humanitarian programs

Appropriate Development Consultants Limited (ADCL)

Appropriate Development Consultants Ltd. (ADCL) is a private consulting firm established and registered in Kenya, in 1999. It provides consulting and engineering design services in the fields of water, environment, poverty alleviation, sustainable livelihoods, and rural development. Services provided to development projects include project identification, preparation, appraisal, pre-implementation studies, project review, reformulation, institutional capacity building, participatory planning, backstopping, evaluation, and management.

This publication has been produced by the People and Landscapes Programme of the IUCN Eastern and Southern Africa Regional Office, Nairobi.

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Acronyms

ADCL.....	Appropriate Development Consultants Limited
Adeso	African Development Solutions
ASAL	Arid and Semi -Arid Lands
CETRAD.....	Centre for Training and Integrated Research in ASAL Development
CIDP	County Integrated Development Plan
IDDRSI	IGAD Drought Disaster Resilience and Sustainability Initiative
IGAD.....	Intergovernmental Authority on Development
IUCN	International Union for Conservation of Nature
IUCN-ESARO	IUCN Eastern and Southern Africa Regional Office
KRCS	Kenya Red Cross Society
M&E.....	Monitoring and evaluation
NGO	Non-Governmental Organisation
SDC.....	Swiss Agency for Development and Cooperation
SSD	Sub-Surface Dam

Executive summary

The Water for Livestock in Isiolo and Garissa Counties of Kenya — Enhancing water resource, rangeland management and community capacity through training and strategic water infrastructure development was the pilot phase of a project supported by the Swiss Agency for Development and Cooperation (SDC) and implemented by the International Union for Conservation of Nature (IUCN), Kenya Red Cross Society (KRCS), African Development Solutions (Adeso) and Appropriate Development Consultants Limited (ADCL). SDC was also involved in overall project management and supervision. The project aimed to improve livelihoods and resilience against drought for targeted communities in GarbaTula sub-county of Isiolo County and Modogashe sub-county of Garissa County project area by piloting interventions specifically aimed at:

- Improving access to water for livestock in ways which promote more sustainable management of rangeland resources and as such strengthening the resilience of local communities;
- Strengthening the capacity of local institutions - both state and traditional - to understand and implement integrated water and range management practices in the drylands and build ownership for the sustainable governance and maintenance of water infrastructure; and
- Documenting and sharing lessons on project approaches with a wider audience involved in water infrastructure development and natural resource management to adopt best practices for sustainable utilization of available range/natural resources.

The project was implemented over a period of 24 months (September 2012 to September 2014) in two sub phases (termed 1A and 1B) where 1898 household benefited and 71,740 livestock including camel, goats and sheep. The entry phase 1A activities were implemented between September 2012 to July 2013 and implementation of phase 1B activities from September 2013 to September 2014.

As the project was considered a pilot the project partners took a learning approach. This report is the product of the Learning Event convened to critically examine the project successes and failures as a learning process involving both partners as well as key stakeholders.

The project achieved some notable successes but also faced significant challenges. The successes of the project manifested in various aspects. Water infrastructure (sub-surface dams and shallow wells) strategically developed and subjected to validation by local communities to fit within broader sustainable rangeland management improved access to water for livestock in a manner that ensured sustainable and efficient utilization of pasture and browse resources in targeted areas. The increase in water supply allowed livestock to graze additional 2-5 months in target areas before shifting to dry grazing areas where previously they prematurely migrated without exhausting the pasture and browse resources due to scarcity of water. The initial analysis also indicates no disruption in grazing patterns traditionally observed by communities and no evidence of degradation was recorded. The validation exercise also ensured community ownership of the process.

The distance travelled and effort required to access water was reduced. Community members reported reduced distances travelled and time spent in search of water for livestock. In some instances the distance reduced from 12-15 Km to 3 Km. Community members also mentioned reduction in conflict incidences over water resources in some areas due to adequate supply of water as a result of construction of water infrastructure.

Similar to livestock, domestic water supply was also prolonged for 2-5 months and water quality improvement was recorded. Community members noted improvement in color and taste of water as result of the constructed water infrastructures. In some areas there were reduced incidences of water borne disease such as diarrhea among children which community members attributed to supply of clean water from the constructed structures.

Capacity development initiatives in forms of training, dialogue and participatory planning related to integrated water and land management in drylands to enhance sustainable management of resources in particular balancing water development in the context of sustainable rangeland management were well received by different actors that participated in the planned activities.

Training conducted for County government officials, community members and other stakeholders on integrated water and land management approaches in drylands improved understandings of importance integration to ensure holistic resource management that enhances livelihood and resilience. Prolonged training was recommended to achieve maximum impact.

County and inter-county dialogues that brought together different stakeholders in water and rangeland sector provided platforms to discuss and explore ways of fostering coordination and enhance resource governance. Modalities and initiatives to enhance cooperation and collaboration were formulated to be pursued by different actors. This included the integration of the outcomes from the dialogues into County Integrated Development Plans (CIDP). It was further proposed the dialogue needed to be entrenched into county processes.

Documentation of the lesson learnt through the learning event was endorsed by stakeholders as a good way to take stock of achievements and challenges the project faced to inform future interventions with a view to improving success rates.

Challenges faced by the project emerged as a consequence of a number of factors, including operational mechanisms as well as the external environment.

For example, the funding mechanism was based on a call for proposals where successful proponents formed a loose partnership under the leadership of SDC. As a consequence, the partnership comprised of diametrically and culturally different organizations – which could have been strength if the project had a long term period that allows implementing partners to form a shared vision and principles to guide the collaboration. However, the fundamental differences between the organizations were not fully addressed or resolved and resulted in a number of challenges during the course of implementation.

An example of challenges contributed to by external factors was with regards to seasonal flooding. Infrastructure was being built in dry river beds and because of delays in planning and pressures to fit within funding cycles, two structures were washed away and about six prematurely stopped and reconstructed afterwards. Planning appropriately and adequately was observed as prerequisite for effective implementation of an initiative of this nature, particularly in light of the involvement of multiple partners and new technologies.

Despite these challenges significant achievements were realized. All Sub Surface Dams (SSDs) and ancillary infrastructure planned for were completed and positive feedback received on the infrastructure and its effects on supporting livestock in the context of community rangeland management.

Key lessons emanating from the project with regards to suitability of the intervention to the context, appropriateness of technology and delivery mechanism include the following:

Investing in harnessing multiple and diverse types of knowledge and technical expertise is critical to achieving a balance between water access and sustainable range management

- Achieving a balance between water access and sustainable range management is a possible but challenging undertaking that requires multiple and diverse sets of expertise. It is therefore equally critical to invest in ensuring the necessary partnerships are effective.
- Local communities are at the sharp end of conflicts when rangeland becomes over grazed or there is too much pressure at a particular water sources. They therefore have a depth of knowledge on the balance between water access and range management and need to be engaged throughout the process.

Meaningful participation of local communities is critical and requires deliberate effort and investment

- Allowing for community validation of the proposed infrastructure was one of the most successful elements of the project – and the project evaluation recommended that this process should be institutionalized at the county level. Nonetheless this additional procedural elements was also viewed by some as a hindrance to their activities. A far greater effort to bring about a deeper understanding across stakeholders for the need to balance water with range management is required in future;
- The project recognized that strong rules are required to be established and adhered to in order to achieve effective use of water and range resources in a manner that enhances community resilience. Strong rules automatically, in turn, require strong and coordinated institutions
- Despite being neighboring counties the community and range contexts were different and so the project needed to be ‘tailor made’ to the specific contexts, particularly with regards to resource endowment and natural resource governance systems. This includes being cognizant of the fact that traditional institutional arrangements differ from one community to another and have a marked bearing on water governance

The technology used needs to be both technically as well as socially and culturally appropriate to the context

- The preliminary community perceptions about the subsurface dams indicate that they are a valuable addition to the methodologies already available to communities since SSDs enhance water storage resulting to improved water access.
- The value of other engineering techniques including trapezoidal bunds and triangular micro-catchment semi-circular remained in doubtful and needs further evaluating in the context of extensive rangelands management as they are targeted to settled communities with intention of crop cultivation
- The technology selected should be based on the appropriateness to the context and it is important that multiple factors need to be understood and taken into account including needs, governance arrangement and capacity.

At the end of learning event workshop project partners identified a number of key considerations that they felt would increase the effectiveness of water infrastructure and increase the resilience of communities. These included the following:

- The 'Water-Pasture balance' is critical for resilience as too much water for too long can lead to an increase in population density, permanent settlement, conflict and degradation;
- It is very important to understand and build on traditional grazing patterns; and
- Equal, if not greater importance needs to be given to the governance and ecological considerations of range management, as opposed to simply focusing on the technologies used for water infrastructure.

The key summary conclusions of the learning event were as follows:

- The livestock and pastoralist sector is productive and a potentially highly resilient land use for arid and semi-arid lands (ASALs) that needs better understanding and recognition;
- Optimizing pastoralism depends on sustainable range management with balanced water provision;
- Achieving a balanced water supply is challenging especially working across sectors and introducing new concepts and modes of operation;
- Fundamentally a balanced water supply requires a shared vision, the development of grounded team formation, team building and careful implementation, management and monitoring;
- This, in turn, demands the formulation of flexible multi-disciplinary teams that includes community leadership, and that demonstrate a willingness to understand each other's perspectives; and
- Funding frameworks and project cycles need to be adapted with mechanisms that take into account unpredictable weather and minimize the risks of both normal and extreme events such as seasonal river flows and flooding.

Introduction

The pilot project “Water for Livestock in Isiolo and Garissa Counties of Kenya — Enhancing water resource, rangeland management and community capacity through training and strategic water infrastructure development” was a project funded by Swiss Agency for Development and Cooperation (SDC) and implemented by International Union for Conservation of Nature (IUCN) and Kenya Red Cross Society (KRCS) in Isiolo County and African Development Solution (Adeso) in Garissa County with Appropriate Development Consultant Limited (ADCL) providing technical expertise on water infrastructure in both Counties. SDC was also involved in overall project management and supervision. The first phase of the project, termed in this report ‘Water for Livestock Project’, aims to improve the livelihood and resilience against drought for targeted communities in GarbaTula sub-county of Isiolo County and Modogashe sub-county of Garissa County project area by piloting interventions specifically aimed at by piloting interventions, and specifically targets to:

- Improving access to water for livestock in ways which promote more sustainable management of rangeland resources and as such strengthening the resilience of local communities;
- Strengthening the capacity of local institutions - both state and traditional - to understand and implement integrated water and range management practices in the drylands and build ownership for the sustainable governance and maintenance of water infrastructure; and
- Documenting and sharing lessons on project approaches with a wider audience involved in water infrastructure development and natural resource management to adopt best practices for sustainable utilization of available range/natural resources.

The Project adopted a phased approach to activity implementation which involved entry phases 1A and 1B. During the course of project implementation project partners, in close collaboration and with support of SDC, accumulated a wealth of experience and knowledge. In line with the objectives of the project and in light of the need to ensure that subsequent phases and similar initiatives can benefit this knowledge, the Project convened a 3 day learning event from the 5th to the 7th of May, 2014 aimed at:

- Identifying and documenting lessons drawing on the experiences from strategies, approaches and processes utilized in the project in relation to:
 - o Increasing access to sustainable water supply and pasture for livestock in targeted areas of Garissa (Lagdera sub-county) and Isiolo (Garba Tula sub-county) Counties; and
 - o Improved awareness and capacity in sustainable water and rangeland management in the targeted communities and at district and county level in Garissa and Isiolo
- Sharing lessons and engaging the wider community (both at local and national levels) in discussions related to challenges and best practices with a view to influence longer term development interventions related to improved livelihoods and drought resilience;
- Developing concrete recommendations to feed into the development of planned future Swiss engagement in the area of natural resource management in North Eastern Kenya (water and rangeland mainly); and
- To utilize the opportunity to build the capacity of project partners in strategic planning processes, particularly with regards to the development of initiatives based on a well thought out theory of change and that utilize monitoring and evaluation processes as an integral tool for adaptive management.

Importantly the learning event aimed to take an honest and critically constructive look at what did and did not work. This was approached with a spirit of not apportioning blame but learning and providing inputs into the next phase. The first two days (5-6 May 2014) was dedicated for SDC, project partners (IUCN, KRCS, Adeso, and ADCL), community representatives and external review consultants to discuss and document the lesson learnt in the course of the project implementation. The 3rd day lessons and experiences documented were presented to wider audience representing stakeholders involved in water, natural resource management and resilience building in Kenya and horn of Africa region including donor agencies, government officials, NGOs and community members representing different user groups.

The learning event was facilitated by Mine Pabari, Deputy Regional Director IUCN Eastern and Southern Africa Regional Office (IUCN-ESARO) and supported by the technical team that were directly engaged in project implementation including Robert Wild (IUCN-ESARO Technical Coordinator, People and Landscapes Programme) and Yasin Mahadi (IUCN-ESARO Programme Officer).

Introductory sessions

Introductory remarks by SDC project team

The two SDC staff engaged in water for livestock project implementation and supervision John Nyachieo and Christel Dischinger welcomed participants and provided an overview of the project, describing the original intentions of project, mode of engagement in project implementation, achievements and reflections on the future.

The team described the phased approach that the project took to activity implementation. In the entry Phase 1A, the main focus was on the identification of the technologies to be implemented, identifying project areas and methods of execution. Under phase 1A the project also piloted a few of the technologies and practices. Under phase 1B, there was up scaling of the piloted technologies.

Pilot technologies were Sub-surface dams (SSD), infiltration galleries, off-take wells, trapezoidal bunds and micro-catchments. For micro-catchments and trapezoidal bunds, concerns were raised with regards to the appropriateness of the technologies in pastoralist areas.

Mr. Nyachieo also described that the mode SDC used in engaging the project implementers was one of competitive bidding. Non-Governmental Organizations (NGOs) and private sector were engaged in both counties, with the training, dialogues, capacity building and infrastructure development conducted by NGOs and private consultants. His closing remarks challenged participants to critically reflect on the following questions;

- Have our initiatives been successful and have they had an impact?
- If the approaches and technologies were successful where do we go from here? Do we move to a new, longer phase?

The SDC team thanked the project partners for work completed in the last 2 years of the project and acknowledged the complexity of the situation in which the partners were working especially with regards the intricate institutional arrangement that exists in the project areas. It was acknowledged that the short life span of the project was not favorable to project partners to deliver all the components comprehensively.

The team informed participants that the SDC programme has been moving from emergency work towards development since 2013. The Water for Livestock project was amongst the first of the initiatives that SDC has implemented that makes the transition from humanitarian towards development work. SDC is looking for long term engagement in Kenya targeting interventions with a scope of about 10 years distributed in 3 year phases. The office undertaking the development work is new and there is a lot to be learnt from this first initiative and the learning event will inform SDC on the progress and effective way of engaging in new initiatives moving forward.

Brief overview of the learning event process

The objectives and intended outcomes of the Learning Event were outlined by Ms Mine Pabari as follows:

- To identify and document lessons drawing on the experiences from the strategies, approaches and processes utilized.
- To share lessons and engage the wider community.
- To develop concrete recommendations for planning for future interventions.
- To utilize the opportunity to build the capacity of project partners in strategic planning processes.

In terms of process, the learning event was spread over 3 days, with each day dedicated to a specific task. Day 1 was set aside for reflecting on experience gained from the project. On Day 2, participants were to work towards defining and documenting key lessons from the project. Finally, Day 3 was dedicated to sharing the lessons and experiences amongst a wider group of stakeholders, many of whom were not involved in the project but who would benefit from the lessons learnt.

Development context – “The Drawbridge”

In order to get things rolling it was first considered important to ‘set the scene’ and ensure all participants understand the complex nature of human perception as an important factor in the learning experience.

To demonstrate this, the facilitator narrated a story of a love triangle called “The Drawbridge” which resulted in the tragic death of the lady involved. Workshop participants were divided into groups and each group was tasked with answering a set of questions about the tragic story. Questions included: Who was at fault? Who was responsible for the death of the lady? Why? The results from the group presentations exposed diametrically opposite views about responsibilities of different actors, both from the within and between groups. Discussion by the groups revealed the following lessons around group dynamics, perceptions and learning processes:

- There are always lots of different viewpoints for any given situation.
- There are also several divergent interests at play, which influences the responses to a particular situation.
- Responses to a situation are also based on/influenced by one’s cultural background as well as gender roles.
- It is important to take the time to understand how a group is able or unable to negotiate and agree on a collective response within a specific context.
- It was evident that it is often quite difficult to get to a common understanding amongst different actors and this has an impact on how decisions are made.
- Reflecting on issues of responsibility and accountability is never straightforward, and how we negotiate around those issues becomes an important element of collective decision-making.
- We need to be able to put all our issues on the table, respect the different viewpoints, and then negotiate, discuss and learn around them.

Participants acknowledged that the exercise had clear lessons for the Water for Livestock Project

Overview on managing for impact

This session was designed to enable participants understand the ‘why and the what’ of managing for impact – how does one manage a project such it delivers maximum impact with respect to project objectives and ground realities. This involves processes such as guiding the project strategy, ensuring effective operations, creating a learning environment, and using M&E for adaptive management.

It was noted that development interventions still grapple with how to create sustainable and positive impact, despite intensive project workflows and design processes. Often, these processes fail to consider the impact of external variables (e.g. elections, floods, corruption, etc.) on a project’s ‘plan’ (project workflow and design). Development interventions tend to be weak at integrating considerations related to the complexity and dynamics of a particular operating environment. For example, extremely good scientific modelling and analysis is usually carried out by a strong team of experts, but failure to consult with communities and take into account traditional practices and norms leads to limited engagement by communities and the risk of elite capture. Also good community-level forums are organized and held with wider participation but a failure to engage with high level decision makers from the onset means that they do not attend the forum and actual influencing may be limited.

Managing for impact is essentially having an integrated approach to project design, management and monitoring and evaluation (M&E), so that each informs and feeds off each other. One needs a learning environment to facilitate this, and integrating M&E on a constant basis underpins this process.

Guiding the project strategy

An in-depth understanding of a particular situation is critical at the onset of any initiative in order to carefully define effective theories of change. There must also be space and mechanisms to allow for the adaptation of strategies in response to learning and changes over time. For both NGOs and donors, putting this into practice is often influenced by different circumstances - in some cases, for example, there is an urgent need to secure funds (sending out project proposals within tight deadlines) or the need to urgently disperse funds.

It is also important to recognize that taking the perspectives of any one group alone is not appropriate in decision-making, as these perspectives can sometimes be misguided or determined by ulterior motives and vested interests. It is necessary to bring these perspectives on board, but negotiate these around other perspectives. Thus NGO's, Development Partners, local communities, local government and the private sector all have interests and biases which need balancing.

An assessment of trends and relationships within a situation analysis during project design is often missing. Incorporating assessments of the stakeholders (including power relations), issues, problems, the biophysical setting, infrastructure and institutions would help account for ground realities and possibly being better placed to influence circumstances and bring about positive change.

It was also highlighted that applying tools during project implementation without critiquing/interrogating the thinking behind those tools is not the best way to implement aspects of projects. This could lead to misguided conclusions (for example during data analysis), or worse still unintended but harmful consequences.

Ensuring effective operations

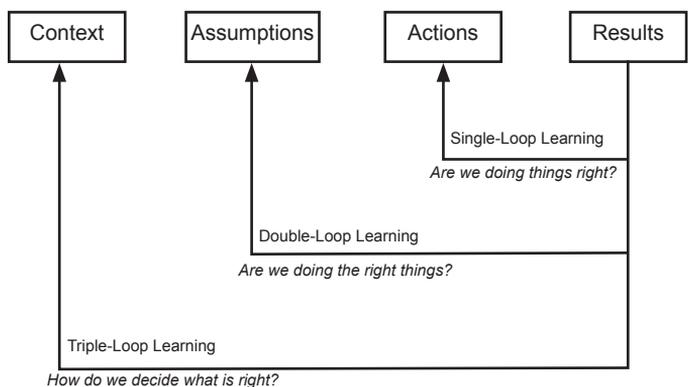
The key elements of effective operations include developing a realistic budget and work plan, discussing and agreeing on partnership modalities, and understanding organizational procedures (e.g. contracting, procurement, HR management, reporting, etc.).

Creating a learning environment

Learning is not a passive process. It is a continuous, active process that leads to change. In any given context, the learning process occurs across a spectrum that involves individuals, teams, organizations and society. Moving from the individual level to society, the 'events' that occur are usually the creation of continuous learning opportunities, promotion of inquiry and dialogue, collaboration and team learning, establishment of systems to capture and share learning, and finally the empowerment of people towards a collective vision. It is vital that these elements are linked to each other and overlap, where the outcomes of one element feed into the other.

If we are to consider that learning is formed of a loop of the following elements "context – assumptions – actions – results" then the different types of learning are as follows:

- Single loop learning occurs between the actions and results, and it helps answer the question: are we doing things right?
- Double loop learning occurs between the results and assumptions, and it helps answer: are we doing the right things?
- Triple loop learning occurs between the results and the context, and it answers the question: how do we decide what is right?



The barriers to learning that exist are as follows:

External barriers

- Donor priorities
- Pressure to demonstrate low overheads
- Competition for funding resulting in a need for uncomplicated success stories
- Expert opinion is 'always right'

Internal barriers

- A 'doing' culture - learning is seen as luxury (especially in the humanitarian field)
- Hierarchical, centralised, control-oriented structures
- Community learning or traditional knowledge is not sought
- Communities seen as passive beneficiaries not active partners
- Incentives and rewards for learning are weak
- Systems for accessing, storing, transferring and disseminating learning are underdeveloped, under-resourced, and/or inefficient
- Inability to deal with challenges that learning poses to management, decision making, etc.

Using monitoring and evaluation for adaptive management

Monitoring and evaluation should be used to support management to improve performance and effectiveness/ impact.

M&E, to put it simply, asks the following questions:

- What has succeeded or failed?
- Why have we had success/failure?
- So what are the implications for the project?
- Now what are the actions we will take to make improvements?

The M&E Framework comprises of:

- Purpose and scope – why do we want M&E? How participatory should the system be? What level of analysis would we require?
- Defining information needs – What questions would we want answered? What data/information do we need to answer these questions?
- Information gathering and organizing – What tools/methods would we use to collect information? How best can we analyze and organize information?
- How would we best use the information? How would we make sense of the information? How would we communicate?
- What systems would we need to operationalize this? Human resources? Financial resources? Physical resources?

Initial reflections on project implementation

This session started the discussion on the project by inviting participants to comment on what were some of their most important reflections. These are reported as they arose and fed into the ensuing reflection process. They do not necessarily reflect the opinions of all parties and some were contested. Most were further discussed and clarified later in the workshop:

1. Approach taken by SDC:

The project was initiated by the issue of a 'call for proposals'. Several organizations responded as individuals and consortium members and during project implementation an informal partnership was formed managed directly by SDC.

ADCL, for example, responded to SDC's call for the design and construction of water pans. However, SDC proposed the development of SSDs. This was a positive development as it demonstrated the flexibility/adaptability of the donor to the ground realities.

However, due to tight deadlines there was a rush to complete the work with insufficient consideration given to the practicalities of integrating the different aspects of the project - in particular how trapezoidal bunds and micro-catchments fit with the broader sustainable rangeland management context

The project set-up in some instances didn't foster common understanding regarding piloting some of proposed interventions in particular appropriateness of technologies like trapezoidal bunds and micro-catchments towards achieving the project objectives of enhanced resilience of the pastoralist communities to drought through balanced water and pasture/browse access. There were high transaction costs involved by all parties in this process. The positive is that this helped SDC learn lessons which it can take into the next phase of this project.

2. Insufficient coordination amongst partners:

The project partners included a humanitarian organization transiting to development phase, a private sector company, and a partnership between a humanitarian organization and a nature conservation organization. These crossed the disciplines of water development and ecosystem management and included water engineers, rangeland ecologists, emergency relief workers and long-term development specialists.

Different partners had different roles to play in project implementation and to some level all the activities were not synchronized to achieve the overall goal of resilience building to drought at landscape level. Lack of synchronization made the smooth-running of project implementation difficult. For example, Phase B implemented new technologies (trapezoidal bund and micro-catchments that were not tested during Phase A.

For the KCRS in Phase A, there was not a sufficiently close collaboration with the infrastructure designers which was complicated by inadequate provision of technical staff by KCRS hence challenges in the field when issues arose, but lessons were learnt and consequently there was smoother implementation in Phase B.

It was noted that time and resources are needed for project partners to meet often and think about coordination and implementation of project activities. Also, continuity was required between Phase A and Phase B of the project, especially in terms of staff carrying out the work, to ensure lessons learnt are carried over.

In phase B, each partner had different timelines for activity implementation, and since there was not enough time allocated for design work especially factoring in possibility of the rejection of the sites by local community based on various criteria they set to ensure sustainable range management. The need to develop joint work plans and coordinate planning/implementation (factoring in the wider context of the community and the environment as well, not just the project partners) was noted. Time and resources are required for this (joint work planning and coordination). There were also some important questions that were asked which could inform thinking behind future phases of the project. Did perceptions about the partners and donors influence project implementation? For example, was the private sector consultant considered an implementation partner? What were the perceptions about accountability and reporting – should one partner report to the other partners, or should a partner be accountable only to the donor? Where did the contractor fit into all of this?

3. A shared vision not fully achieved:

Project organizations responded individually to the tender, but once having come together as the implementing partners they did not engage in a joint visioning process and developing a clear and common understanding on what the project was trying to achieve. For example, was this a project about delivering water infrastructure or was it about working work together on building community resilience to climate change? Since this is an experimental project (with experimental phases) then it is expected that some mistakes would be made from which we would learn. Did we, therefore, have an action learning framework to encompass this? It was therefore concluded that the partner organizations were experts in their fields but the cross-sectoral approach required common understanding and shared vision which took time to emerge and was not complete at the end of the project. Staff turn-over from the project implementing partners was also considered a challenge as it hindered taking forward some lessons from phase A to phase B.

4. Positive impacts of the project

Although the Water for Livestock project was implemented on a pilot basis, it was recognized that there were a number of notable and tangible successes:

- Water infrastructure (sub-surface dams and shallow wells) strategically developed and subjected to validation by the local community to fit within broader sustainable rangeland management improved access to water for livestock in a manner that ensured sustainable and efficient utilization of pasture and browse resources in targeted areas. The increase in water supply allowed livestock to graze for an additional 2-5 months in target areas before shifting to dry grazing areas where as previously they prematurely migrated without exhausting the pasture and browse resources due to the scarcity of water. The initial analysis also indicates no disruption in grazing patterns communities normally observe and no evidence of degradation was recorded. The validation exercise also ensured community ownership of the process.
- Community members also reported a reduction in the distances travelled and time spent in search of water for livestock. In some instances the distance reduced from 12-15 Km to 3 Km.
- Community members also mentioned a reduction in the incidences of conflict over water resources in some areas as a result in the change in the supply of water from the construction of water infrastructure.

- Similar to livestock, domestic water supply was also prolonged by a period of 2-5 months and water quality improvements were recorded. Community members noted improvements in the color and taste of water from the constructed water infrastructure facilities. In some areas there were also reduced incidences of water borne diseases reported, such as diarrhea among children. Community members attributed this to the supply of clean water from the constructed structures.
- Capacity development initiatives in the form of training, facilitated dialogue and participatory planning on integrated water and land management in drylands to enhance sustainable management of resources with a particular focus on balancing water development in the context of sustainable rangeland management were well received by different actors that participated in the planned activities.
- Trainings conducted for County Government officials, community members and other stakeholders on integrated water and land management approaches in drylands improved understanding of the importance of integration to ensure holistic resource management that enhances livelihoods and resilience. Prolonged training was recommended to achieve maximum impact.
- County and inter-county dialogue that brought together different stakeholders in water and rangeland sector provided critical platforms to discuss and explore ways of fostering coordination and enhance resource governance. Modalities and initiatives to enhance cooperation and collaboration were formulated to be pursued by different actors, including the integration of the outcomes from the dialogues into County Integrated Development Plans (CIDP). It was further proposed the dialogues need to be entrenched into county processes.
- Documentation of the lesson learnt through learning event was universally endorsed by stakeholder as good way to take stock of the achievements and challenges the project faced to inform future interventions and increase the probability of realizing desired outcomes.

Presentations by project partners

IUCN and Kenya Red Cross Society consortium

Following the initial reflections, each participating group made presentations on the development of the project.

Mr. Yasin Mahadi of IUCN and Mr. Sylvester Bett of KRCS jointly presented the consortium's achievements, challenges and lessons learnt during course of project implementation and also highlighted recommendations for the next phase.

The IUCN/KRCS consortium was responsible for project implementation in Isiolo County. IUCN was also tasked with capacity building of Adeso and community members from Garissa on integrated water and rangeland management. This was carried out by conducting trainings as well as supporting the initial development of a participatory rangeland management plan for Modagashe in Garissa during rangeland planning training. IUCN was also responsible for conducting county dialogues on institutional and capacity needs in the water and rangeland sector in Isiolo and Garissa Counties. The dialogues were organized to discuss effective coordination and improve water and range governance by engaging relevant stakeholders. The discussions explored mechanisms of fostering cooperation and capitalizing on existing and emerging opportunities. Additionally IUCN conducted trainings for project partners (KRCS and Adeso) on ecosystem based approaches to natural resource management.

In Isiolo County the pilot project targeted Garba Tula and Merti sub-counties. Construction of water infrastructure in Merti sub-county was not achieved due to lack of suitable locations to site the SSDs. The project adopted a phased approach where activity implementation was divided into three phases. Entry Phase A activities were implemented between September 2012 to July 2013 and phase B activities between September 2013 to September 2014. The overall objective of the project in conformity with the SDC tender document was to improve livelihoods and resilience against drought for targeted communities. Specific objectives of the project were as follows:

- Improve access to water for livestock in ways which promote more sustainable management of rangeland resources and as such strengthen the resilience of local communities
- Strengthen the capacity of local institutions - both state and traditional - to understand and implement integrated water and range management practices in the drylands and build ownership for the sustainable governance and maintenance of water infrastructure
- Document and share overall lessons on project approaches with wider audience involved in water infrastructure development and natural resource management to adopt best practices for sustainable utilization of available range/natural resources.

During project implementation the IUCN/KRCS consortium capitalized on the complimentary skills of the two organisations. Kenya Red Cross Society was responsible for leading infrastructure construction and management that is the “hardware”, while IUCN was lead institution on the rangeland management linkages and community consultation - the “software”.

Hardware: The planned activities for ‘hardware’ component included construction of water infrastructure and sanitation facilities. The main structures constructed were:

- Sub-surface dams,
- Improved shallow wells,
- Trapezoidal
- Semi-circular bunds
- Latrines.

KRCS was also responsible for conducting site specific trainings for water committees on operations and maintenance. Community members were engaged through cash for work to deliver the infrastructure and in some cases engaged private contractors.

Software: IUCN was the lead institution for the ‘software’ component including:

- Development of a baseline and monitoring indicators;
- Participatory rangeland planning training in Garissa;
- Site trainings for water committees, water governance & sustainability;
- Technical support to ADESO and KRCS to build staff skills on the ecosystem based approach to natural resource management and planning;
- County level dialogues on institutions for water and rangeland governance.

Hardware outputs:

The main outputs delivered under the ‘hardware’ components include 5 sub-surface dams (Dharer Shai, Qur qura, Lehele, Madokone and Madho shariff). The fifth site, Eltokoch (in Merti area), had problems of salinity and security and was replaced by Madho Shariff in Garba Tula sub-county. 5 shallow wells and 5 latrines were also constructed. KRCS also constructed 6 trapezoidal bunds and 220 micro catchments in Atir and Kulamawe areas.

Table 1 Water infrastructure outputs and household beneficiaries

Sites	Sub-surface Dams	Shallow wells	Latrines	No. of households
Dharer shai	1 (phase A)	1		169
Qur Qura	1	2	2	59
Lehele	1	1	1	43
Madokone	1	2	1	45
Madho sharif	1	1	1	41
Total	5	7	5	357

In addition to above water infrastructure done by IUCN/KRCS three SSDs, 7 infiltration galleries, 7 off-take wells and 18 water troughs were constructed by private contractors in Ires Dhulo and Dharer shai areas.

Software outputs:

Under the ‘software’ component the main outputs delivered included:

- **Validation workshops:** Validation workshops were held for six sites before SSDs were constructed. The validation exercises ensured alignment of SSDs with traditional grazing regimes to allow for efficient resource utilization without degradation. Communities gauged the appropriateness of the proposed sites using preset criteria set by themselves including range conditions, need (whether additional water is required), capacity of the institutions on the ground to manage the water infrastructure, salinity levels, conflict sensitivity and proximity to urban centers. Community members in some instances rejected the proposed sites and one example was Eltokoch site which was rejected based on the salinity level and security concerns.

- **Rangeland training:** IUCN conducted rangeland training on water and rangelands management using ecosystem based approaches. These were for government officials, NGOS, CBOs at district level and also for community members. A total of 52 participants were trained (41 men and 11 women). IUCN also conducted participatory rangeland planning training for community members and Adeso staff in Garissa. Forty community members and 5 Adeso staff trained. Some participants comments were as follows:

This was a good platform to integrate traditional and conventional resource management practices to come up with a holistic plan that involves the views of the community and the government officials”, “The training has enabled us to consolidated the natural resources we have in one map and the enable us to prepare action plans that we will focus on to better our livelihood and better the rangeland conditions”, “The training will enable us to engage with the communities in better way than before as we forge ahead to plan and implement interventions highlighted by community member

- **Integrated land and water management trainings:** IUCN trained KRCS and Adeso staff on ecosystem based approaches to natural resource management. A total of 13 partner staff were trained. Comments from the some representatives were; “The training will add value to what we are doing relating to water and rangelands and fits well with our work”, “Helpful in our programming. We hope to have more training of the same nature to benefit us and borrow some of these approaches in our work”.
- **County dialogues:** County dialogues on institutions and capacity needs in water and rangeland sector were convened one in Garissa and one in Isiolo County. The participants were drawn from different stakeholder groups including County government officials, community members, NGOs and resource user groups like Water Resource User Associations (WRUAs), Rangeland User Associations (RUAs). In Garissa 22 men and 4 women participated while in Isiolo 16 men and 2 women attended the dialogue session. Participants appreciated the initiative and these are a sample of their comments: “A good arena to brainstorm on appropriate interventions that will feed into the County Plan”; “An eye-opener forum to track changes in water and rangeland sector policy and legislation”.
- **Operations and governance training:** Site specific trainings covering operation and maintenance, water governance and sustainability for water committees were conducted. A total of 74 community members were trained including 21 women in Qur Qura, Escot (Madokone and Lehele community), Garba Tula covering Dharer Shai and Eres Dullo sites.

Indicative outcomes

The presenters also highlighted the key indicative outcomes of the project i.e. what has been achieved in the course of the project implementation. The following were key achievements and benefits:

- **Increased water column:** Following the installation of SSDs, an increase in the water height in community shallow wells was reported: Before the SSD community members would dig the shallow wells between 42 - 21ft deep. After SSD construction the depth at which water is accessible was reduced considerable.
- **Improved water access:** Improved access to water by both livestock and people. After construction of the SSD and shallow wells, access to water was improved with community members reporting that water from SSDs lasted them an extra 2-5 months.
- **Significant reduction in distance to access water:** The table below shows the distance travelled by community members to access water for their livestock before and after SSD construction. The distance was significantly reduced.

Table 2. Distance travelled in search of water

Site	Before	After SSD
Qur Qura	10-11km	1km
Dharer Shai	12-15km	3 km
Madokone and Lehele	15 -19 km	4km

- **Durability of infrastructure:** The dams constructed prior to the onset of the rains are nearly flood proof. SSDs are constructed below natural sand surface level.
- **Pasture Accessibility:** Due to increase in duration of the water availability the community members indicated that they utilized pasture in the wet season by an additional 3 months which allowed them to efficiently utilize the pasture before shifting to dry season grazing area.
- **Improved Water Quality:** Community members reported improvement in water quality at Dharer Shai site due to reduced contamination of water by livestock faeces which by extension lead to improvement of health conditions (cases of diarrhea in children were reduced according to community members).
- **Water based conflicts:** Some community members reported reduced level of conflicts attributed to increased water availability after construction of the water infrastructure.
- **Cash for work:** In Phase A 70 community members benefited from cash for work initiative with total amount of of KSh 1,295,190 injected into local economy and for Phase B 130 community members also benefited.

Challenges and lessons

Presenters also highlighted the challenges faced during the project implementation. The challenges and lessons were clustered into three categories: those relating to infrastructure development; range integration; and partnership building. Key challenges/lessons per each category are as follows:

Infrastructure

- **Selection of the site:** The technical feasibility study on SSD placement requires a specific and narrow array of conditions. Identifying these conditions and subsequent community validation consumed a considerable amount of time before confirming a particular site.
- **Perceived inequity:** The limited number of suitable sites for SSD led to a perceived inequitable distribution of resources/benefit by some community members. They raised concern why most of the SSDs were concentrated in particular area and requested alternative infrastructure.
- **Prioritization of the infrastructure technology:** SSD technology was prioritized by the donor. However, in most cases community members were in favor of strategic boreholes. The donor was reluctant to supporting the establishment of boreholes due to concerns around sustainability, especially poor operations and maintenance and also caveats on salinization due to depletion of the underground water.
- **SSD Design and Siting:** In some cases the poor siting of the SSD necessitated relocation to alternative sites and consequently the actual construction coincided with rainy season.
- **Cash for work:** The rate for cash for work was too low for some community members who refused to participate in construction.

Range integration

- **Shared understanding of the integration of land and water management:** Integration was a new concept to some partners and a shared understanding not developed among all partners during the project;
- **Community validation:** Community validation was considered the main success point for range integration but some implementing partners were slow in embracing it.
- **Ground presence:** The range integration lead organization, IUCN, had little time in terms of engaging with the community and stakeholders at the grass root level and in some instances depended on partners to execute the integration component, particularly in Garissa. It was realized that this resulted in insufficient time input and direct presence is required to ingrain a new concept.
- **Training:** Training for partner staff on land and water integration came late in project implementation and needed to be carried out earlier and target more people to be fully effective.

Partnerships

- **Shared vision:** Different sectors have differing visions, understandings and views – there were challenges in developing mutual understanding as insufficient time was allowed to develop the common vision the partners were working towards and this situation was compounded by staff turnover for most of implementing partners.
- **Transaction costs:** Partnership arrangements had its own challenges especially time consumed in organizing activities where multiple partners are involved. This had delivery implications.
- **Duration:** The project lifespan was short, in a number of ‘stop-start’ phases with very many activities planned hence the team challenged to complete all the planned activities on time.
- **Monitoring and evaluation:** The M&E framework was weak and delayed and developed by all partners input nearly at the end of the project lifespan

Lessons regarding governance and institutions

- **Institutions:** In Isiolo, the team worked with existing institutions and did not establish water users at each water point because:
 - o A traditional system exists in all sites locally known as Dedha committees (or council of elders) with main contact person being Aba Herega – an elder whose duties are to allocate water and resolve conflict at the water point(s) under his responsibility.
 - o Communities use the water facility seasonally, whereas the WUAs model is for permanent water points.
- **Access:** In instances where community members locked out the visiting communities cases of vandalism were reported. Hence mechanism for engaging between the resident and visiting communities need to be strengthened.

Recommendations

The presenters highlighted the following recommendations to better deliver the next phase of the project. This mainly focused on the infrastructure development and elements of integrated land and water management.

Water infrastructure

- For the design of SSDs, trial pits are essential to verify the depth of the dam prior to construction to enhance accuracy on the appropriate location (the probing rods are not 100% reliable).
- The project duration should be longer, particularly to accommodate uncertainties of weather.
- Selection of the technology needs to be done in consultation with community members and interested parties, other appropriate technologies should be explored.
- It is preferable for contracting agencies to engage the consultant/surveyors as opposed to the donor.
- The use of solar pumping for ground water technologies should be considered.

Water-range integration

- Increase the effort of developing a shared vision on range-water integration amongst partners at the outset.
- Greater awareness raising of benefits of range and water integration at all levels.
- Support greater integration of range and water planning at the county level e.g. by Institutionalizing Rangeland Plans.
- Have a longer-term focus which community is driven by engaging the communities from the project design through to the implementation phase. The project needs as much as possible focus on the pastoralist at the grassroots (direct beneficiary) through engagement of the pastoralists' forum.

Other recommendations

- Consider a longer project duration starting with 'software', then 'hardware' and finally 'software'.
- More long term thinking about capacity building is needed (more than 1 training is required). Consider using a training of trainers approach with more trainings/repeat trainings for same community members and extend the training period not just few days.
- The partnership expectations should be clearly spelt out at the beginning of the project where each partner clearly understand their roles and supporting each other in achieving the overall project goal.

The presentation was concluded by giving quotations from the community members about their feeling about the approach the project has taken. Commenting on the technology (SSD) constructed in the area Mzee Diba in the validation meeting held at Eskot village of Garba Tula made these remarks

I was present in the first validation meeting in Garba Tula town, and when they told us of how the technology works, we all thought that this was just another scam to waste money, especially because the technology was to use clay as its main construction material. But true enough, it did work and worked very well because we have never seen water from Dharer Shai lagga stay for so long. Hence this is a technology that we people from Eskot should embrace.

Commenting on the validation workshop and participatory approach project adopted one elder in validation meeting for Eltokoch site held in Biliqo village in Merti remarked

This is the first time we have seen an organisation consulting us before the construction of water infrastructure. Previously others have developed water infrastructure without consulting the community and that brought harm than good. We are happy the approach the project has taken.

After the presentation the following comments and contributions were made by participants

- It was suggested that the calculation for average no. of livestock in Qurqura using the new infrastructure should be reconsidered.
- The community members suggested that a boreholes be dug with proper and long term training on “operations and maintenance” be conducted for relevant community members (Dedha). Donors and project implementers should not withdraw from projects immediately after project ends, but stay on for about 6 months to ensure that community management structures are properly in place and functioning.
- It was suggested that validation for other infrastructure like trapezoidal bunds and micro-catchments should have been carried out similar to what was done for SSDs. The response from the presenters at this point was that the locations for trapezoidal bunds and SSDs were different, and trapezoidal bunds were developed at the request of communities by the contractor – hence were not validated. Lagdera only had SSDs.
- It is necessary to gather evidence of the success of project outputs other than relying on anecdotal evidence from communities.

Adeso

Mr. Chris Kamau presented the Adeso component. He mentioned that the overall objective of the project was to improve livelihoods and resilience against drought for communities in Lagdera Sub-county of Garissa County. He briefly highlighted the relevance of the project location. Among the reasons given for suitability of the project were:

- The provision of water for livestock was a highly relevant intervention since Garissa County is amongst water-stressed counties in Kenya, with relatively low water resources per capita.
- Other than the villages in the vicinity of the River Tana, most of other villages in Garissa County experience chronic water shortages since ground water is generally not easy to extract with the exception of boreholes along the river Tana basin or in the Merti aquifer.
- The sub-surface dams and shallow wells were therefore relevant under the prevailing conditions and this project addressed the problem through innovative water management and water treatment technologies, which were appropriate for local needs.
- The wells and infiltration galleries presented a technological advancement from the traditional way of digging shallow wells and extracting water from the dry riverbeds.

The main project activities were clustered around both hardware and software components. In Lagdera the project targeted the following activities:

- Training of rangeland & water resources management committees;
- Construction of 6 SSDs;
- Construction of 10 shallow wells and 6 galleries; and

Construction of 12 toilets. In addition to above infrastructures 3 SSDs, 6 infiltration galleries and 6 off-take wells and 15 water troughs were constructed by private contractor in Barquge area.

After enumerating the outputs of project for phase A and B the presenter explained the main outcomes of the project so far. All the water structures (phase A) were constructed after the 2013 long rains (March-May 2013) but the subsequent short rains (October-December 2013) were poor in both intensity and distribution, hence there was no water flow in the lagga (seasonal or dry river). The shallow wells remained dry after the construction. It's only after the current 2014 long rains that the laggas had good flow of water and recharged and it is expected there will be adequate water to push the pastoralist for additional months if not the whole of the next dry season..

With regards the infrastructure constructed SSD communities were satisfied with the sub-surface dams (SSDs) because they expect water will be more easily available / accessible to them and their livestock going forward. Before SSD construction communities had to dig/scoop holes (“shallow” wells that were three persons deep) to obtain water with the risk of the walls collapsing with injury and even death. Mr. Kamau highlighted that community members can invest their time, labour and financial resources in other productive activities such as taking better care of their livestock, investing more in the household, children attending school, spending more time in collecting firewood as opposed to previous time where a lot of time spent in digging out the well to access water. This is a significant advantage of the SSD.

The institutional arrangement at the community level had also been improved where they are organized into groups to register as water resource user group. One community group had already registered and the others are in the process of registering their groups.

Lesson learnt

The main lessons presented were as follow:

- **Cash for Work:** The cash for work (CFW) approach in the construction of the water structures (sub-surface dams, galleries) and especially involvement of women is a relevant methodology. The reasons for its suitability were that it improved the economic status of the beneficiaries and also enhanced ownership of the water sources. The approach also helps beneficiaries to build productive assets, offset long standing debts as well as meeting immediate family needs. To take two examples; Hawa Abdi Omar, one of the CFW beneficiaries in Janju bought two goats during the project implementation, and Fatuma Haret Muse who is widowed with 6 children used her earnings to offset debts at the local shop in the village and also paid the outstanding fees amounting to KSH 2000 for her three children in the Duksi (Quranic school).
- The most opportune time to undertake construction of water structures is at the peak of the dry season (between long and short rains); at this time the lowest possible water table level is reached so that the maximum water reserve is acquired, water logging during construction is minimized, activity can then be completed on time and within budget.
- In the event that there are different partners doing different components of the project (e.g. feasibility study, design, and implementation), the feasibility study should be undertaken before bringing on board the implementing partners. This will reduce the project implementation period and also reduce unnecessary conflicts and misunderstandings between partners.
- Traditional natural resources management practices are essential for the success of training and capacity building of community institutions. In areas where there were weak or no traditional water and grazing management systems/practice, the changing of community attitudes and uptake of management skills remain a challenge and there is need to undertake longer term mentorship rather than one-off training.
- Longer planning periods through the use of participatory approaches in which the community defines its problems, sets its priorities, and makes the decisions on how to solve them, will enhance possibilities to take into account local realities, not just of single communities, but also relations with other communities in the same catchment area. It will also help in designing and implementing quality projects since the process will involve many stakeholders that will add value to the proposed projects.
- Involving communities in every stage of the project helps foster not only good relations but also empowers the communities to be drivers of their own development

ADCL

Moshe Finkel of ADCL presented the work they have been undertaking in support of the water for livestock project in Isiolo and Garissa Counties. He stressed that the work undertaken by ADCL was geared towards the project objective of increasing access to water supply and pasture for livestock. Towards achieving the objectives the core activities conducted by ADCL include:

- Identification, assessment, investigation, survey, and detailed engineering design of subsurface and sand dams¹ for supplying water for livestock and humans in Garissa County;
- Identification, assessment, investigation, survey, and detailed engineering design of trapezoidal bunds for growing of fodder and crops for livestock and humans in Isiolo and Garissa counties;
- Identification, assessment, investigation, survey, and detailed engineering design of triangular micro-catchments for tree crops for livestock and humans in Isiolo and Garissa counties;
- Supervision of construction of subsurface and sand dam systems designed by ADCL-BG including galleries, shallow wells, and troughs
- Supervision of construction of trapezoidal bunds, and triangular micro-catchments designed by ADCL-BG including cultivation, and planting of grass, crops and trees
- Training in identification, assessment, investigation, survey, and detailed engineering design of subsurface and sand dams for supplying water for livestock and humans
- Training in identification, assessment, investigation, survey, and detailed engineering design of trapezoidal bunds and triangular micro-catchment for growing of fodder and crops for livestock and humans

1 No sand dams were actually constructed by the project

The presenter indicated that the water infrastructure types selected; subsurface dams and sand dams are effective in providing sustainable water for livestock and humans near dry riverbeds. Additionally he mentioned that water infrastructure constructed are low yielding technologies which are appropriate for the local conditions, do not over tax the environment and do not tip the delicate balance between available water and pasture. The main consideration in selection of sites for subsurface and sand dams is proximity to existing areas along the dry riverbeds where traditional hand-dug shallow wells are used for watering of livestock.

He explained that currently water in the hand-dug shallow wells lasts for 1-2 months after the rain/flood seasons and construction of subsurface dams and sand dams expands the volume of water stored in the riverbed subsurface, and enhances the recharge through galleries to the shallow wells. As result, the water in the shallow wells may last longer, up to 4 months making them permanent water sources, since they are recharged by floods twice a year.

In the course of the project implementation Mr Finkle enumerated the tangible deliverables they accomplished among them:

- Design of 15 subsurface and sand dams; 25 galleries and shallow wells;
- Design of 19 trapezoidal bunds;
- Design of 540 triangular micro-catchments;
- Supervision of the construction of 6 subsurface/sand dams and 11 galleries/shallow wells completed and 4 subsurface/sand dams and 7 galleries/shallow wells underway;
- Supervision of the construction of 9 trapezoidal bunds completed; and 400 triangular micro-catchments completed;
- Five-day training for 13 participants in identification, assessment, investigation, survey, and detailed engineering design of subsurface and sand dams for supplying water for livestock and humans; and an additional two-week-on-job-training for ADESO foreman/mason
- Five-day training for 10 participants in identification, assessment, investigation, survey, and detailed engineering design of trapezoidal bunds and triangular micro-catchment for growing of fodder and crops for livestock and humans; and an additional two-week-on-job-training as foremen for three community members from Atir-Chumvi Yare

Following one set of rains after the construction of the water infrastructure (mainly SSD and galleries) , water was available in the constructed shallow wells and the community commented that water in the hand-dug traditional wells within the riverbed lasted longer than usual. The contribution of the project had on improving community livelihoods was highlighted. The first element mentioned was improved water supply. The construction of the SSD and sand dams with galleries and shallow wells and successful harvesting of subsurface water has contributed to improved security of water for the communities. The project had also led to improved supply of fodder and crops. Construction of the trapezoidal bunds and triangular micro-catchments and successful harvesting of water enables growing of fodder crops and crops for humans.

He also highlighted some of the emerging issues from the project implementation. Introduction of new technologies requires extensive engagement with the recipients including staying in contact as the project unfolds. He mentioned that community engagement and training was assigned to NGOs which to him raised some concerns. The main concerns were that baseline questionnaire he developed was rejected by project team; community engagement conducted by NGOs was not synchronized with the design and the construction process, Water Users Associations were not established nor was there any follow-up training conducted. He also enumerated some of the innovations introduced by ADCL during the project lifespan including:

- A new approach to design, including topographical survey linked with probing;
- A preference of extraction of water through galleries and shallow wells;
- A preference for construction of subsurface dam from cement/stone mix rather than clay to enable larger storage capacity and to form base for sand dams;
- The probing and analysis for improved approach to siting of dams;
- The probing and analysis for improved approach to siting of shallow wells;
- Designing and construction of more than one gallery/shallow well per subsurface dam

The following were the recommendations and ways forward in next phase according to ADCL:

Construction of all works designed: Complete the construction of all works designed including trapezoidal bunds, triangular micro-catchments; and subsurface/sand dams & galleries/shallow wells; after completion of works assigned to ADESO remaining works already designed will include 5 subsurface/sand dams with 7 galleries/shallow wells; 10 trapezoidal bunds; and 140 triangular micro-catchments. Preference should be given to work during the dry season.

Community engagement and development: Enhance community engagement and development; establish WUAs at communities involved in the project; complete water users association (WUA) registration; open bank accounts; assist with elections, by-laws, and guidelines for management of the water; challenge the communities to participate in cash or in kind to continue improvement of their water systems.

Dedicated manual: Prepare dedicated Design & Construction Manual for the technologies implemented under the Project; the manual to target engineers designing similar project; foremen and masons leading construction; and decision makers.

Design and construct additional structures in project area: Design and construct additional subsurface dams and sand dams with galleries and shallow wells; additional trapezoidal bunds; and additional triangular micro-catchments. The identification, design and construction process to be synchronized with community engagement and development.

Option for expanding techniques to other areas: Consider the option for specializing in design and construction of: Subsurface dams; Sand dams; Galleries and shallow well; Trapezoidal bunds; and Triangular micro-catchment and disseminating these techniques to other counties where they have potential.

Key lesson

Introduction of new, appropriate technologies to communities require extensive engagement with the recipients. Appropriate community engagement as envisaged by ADCL-BG includes continuous contact with the community as the project unfolds. This includes:

- In depth baseline study with emphasis on human and animal populations, water requirements; livestock husbandry including herd splitting, trekking routes;
- Detailed discussions on the technology to be introduced with communities, donor and implementing partners
- There is need to dedicate effort to manage perceptions and expectations of community and partners as well
- Training community on construction, management, maintenance on the specific technologies to be introduced and sustained
- Establishment of water user associations; objectives; by-laws; elections; key officers; training of key officers; community cash or in-kind contribution. This should be done on context specific especially to avoid duplication of roles not to form another community structures where one exists for example dedha committee in Isiolo performing similar roles as WUAs

Preliminary findings from the external review

This session covered the feedback from the external evaluators. The external evaluators, Ms Lucy Maarse and Mr Mike Wekesa, presented the framework they used in evaluating the project impacts by assessing to what level of good practices had been entrenched. Broadly they looked at aspects of technology, delivery and sustainability.

A set of parameters were used in assessing how technology, delivery and sustainability elements were achieved. The key elements assessed were:

- Successful adoption;
- Sustainable benefits;
- Sustainable in that future generations have the same access to resources as the current generation;
- Strengthening of community livelihoods; and
- Community empowerment.

Technology: The technology implemented to enhance access to water and improve pasture production had yielded mixed results with majority of the community members highlighting its usefulness. The water infrastructures comprising of sub-surface dams and shallow wells located in wet season grazing areas to allow efficient pasture utilization had improved water supply. The long term impact of the SSD on range conditions had not been given sufficient consideration in the design phase. The building of shallow wells also did not necessarily serve the communities very well. In some community members preferred the use of traditional shallow wells and even after construction of the improved shallow wells they continued using traditional wells. This was in part that the improved wells actually increase the labor of hauling water (by rope) which is much slower than the 'human chain'. In some instances changes to the materials used to construct SSD was clay indicating innovative approach which is economical on resource utilization.

Other technologies targeted to improve pasture production including the trapezoidal bunds and the micro-catchments did not yield good result as community needs were not addressed. Rather than to produce pasture in some areas trapezoidal bunds were used to plant cow peas and other crops like sorghum. Micro-catchment construction had negative impact on the environment and livestock browse especially for nursing goats for women. Trees were cut to build micro-catchments, most of the seedlings introduced had died and inappropriate grasses were introduced although the area had previously supported good browse species. The observation in the areas indicated shortage of water not fodder hence introduction of the grasses did not yield good result and was not an efficient utilization of the project resources.

Delivery mechanisms: The evaluation assessed the way the project was organized towards achieving planned activities in timely, coherent and using the right mix of skills and capacity. The time period for achieving the planned activities was short and the delivery of the partners in short time was commendable. The project should have been designed on a long term frame to consolidate the impacts. The people involved in delivering the project came from different institutions with different cultures of working and focusing on different areas of operations. Although the different skill pool from the partners was an asset, an integrated multi-sector partnership was not achieved. Due to the short implementation time frame the team were not able to spend enough time to craft common vision for the project which in some instances shows signs of each partner operating in isolation.

It was not clear that the local communities fully participated in project implementation. During the field visit by the evaluators some community members who were watering their livestock mentioned that they were utilizing water from the infrastructure but they don't know who constructed them. Although this may not be unusual where communities are mobile. The cash for work mechanism used to engage the local communities in constructing the infrastructures as much as it creates employment are also raises other issues. In particular whether this approach promotes community ownership of the infrastructure was not clear and needs to be investigated further. The cash for work model might be better channeled through organized community institutions rather than engaging members of the community on an individual basis. A co-funding model should be considered in future where community members also contribute either financially or in kind so that the model is not cash for labor. The self-organization of the community before and after project intervention is not clear as there was no evidence in improvement in self-organization.

Gender: The project activity implementation was weak in in mainstreaming gender. The dependency of the women and men on natural resources are different. Women are responsible for village herds (small stock) and water for household use. This aspect needs to be given much greater consideration in the next phase of the project and in meantime explore ways of improving gender mainstreaming in the remaining activities. To gather more information and allow meaningful participation mainly in training the project need to consider organizing separate sessions for women.

In terms of building on the entry phase activities and consolidating them in the subsequent phases there was gap. Site selection and bylaws were not subsequently used in sub-phases A and B. The number of activities planned for project was many and sequencing the steps was demanding for all the partners.

Common understanding and working towards common vision: Partners did not engage fully to work towards common vision. Having come from different backgrounds the team should have focused on ways of synergizing their complimentary skills to come up with common vision. Agreement on the approaches to be undertaken was not evident after gathering information from the implementing partners. Although the team had frequent coordination meetings less emphasis was given towards a common vision but was targeted towards activity implementation. Some team members also were concerned on the frequency of the coordination meetings as it consumed considerable time. An option of having steering committee was proposed by evaluators to avoid whole project implementing team meeting to frequently meet.

Constant interaction with the stakeholders including community members was pointed out as another element that need much attention for the next phase of the project. Related to the constant interaction element was

trainings conducted by partners. The time frame for most of the trainings was too short to achieve meaningful impact. The proposal for next phase of the project is to ensure trainings are given ample time and should be repeated on needs basis.

Validation workshops for site selection and county dialogues: These activities initiated during the project lifespan were an innovative approach. The validation workshops for site selection brought together all the stakeholders to agree on the right place to construct water infrastructure that ensure balance between water and pasture/browse resources. The county dialogues formed a platform to discuss issues of mutual concern to all stakeholders in water and range sector, and in particular the governance aspect that is institutional arrangements at all levels. The validation process needs to be institutionalized at both county level and community levels to ensure adoption by all stakeholders involved in water infrastructure development. The county dialogues need to be sustained not just one dialogue but series of dialogues that build on previous ones.

Monitoring: The monitoring and evaluation framework though initiated early in the phase B was finalised late when project was winding up hence some of the data that was to be collected over time were not captured compromising tracking of the impact of activities. For the next phase of the project the monitoring and evaluation framework needs to come at the inception phase.

Sustainability: project activities were interrogated to what extent they were feeding to national policies and plans. The ASAL policy was particularly mentioned due to its relevance to the project area. Engaging the traditional institutions on the ground as earlier planned in the entry phase of the project during the project implementation was, some extent, wanting. Effects of the water infrastructure and the pasture enhancement technologies on ecosystem health need to be evaluated thoroughly to gauge their suitability and sustainability for the areas where the project plans to upscale. Many counties are preparing for the land use planning hence next phase of the project need to feed into this process.

Reflecting back – what were core lessons

The second day of the learning event was dedicated to reflecting back and identifying the core lessons emerging from the experience of pilot project implementation. The partners including SDC and the community members present contributed both their personal as well as collective institutional lessons. The lessons and good practices from the project were also documented to be presented to wider stakeholders on the third day of the learning event.

Personal lessons and recommendations

In this session all the participants gave their personal lessons and also recommendations on ways to avoid shortcomings and strengthen the best practices that came out of project implementation (Figure 1).

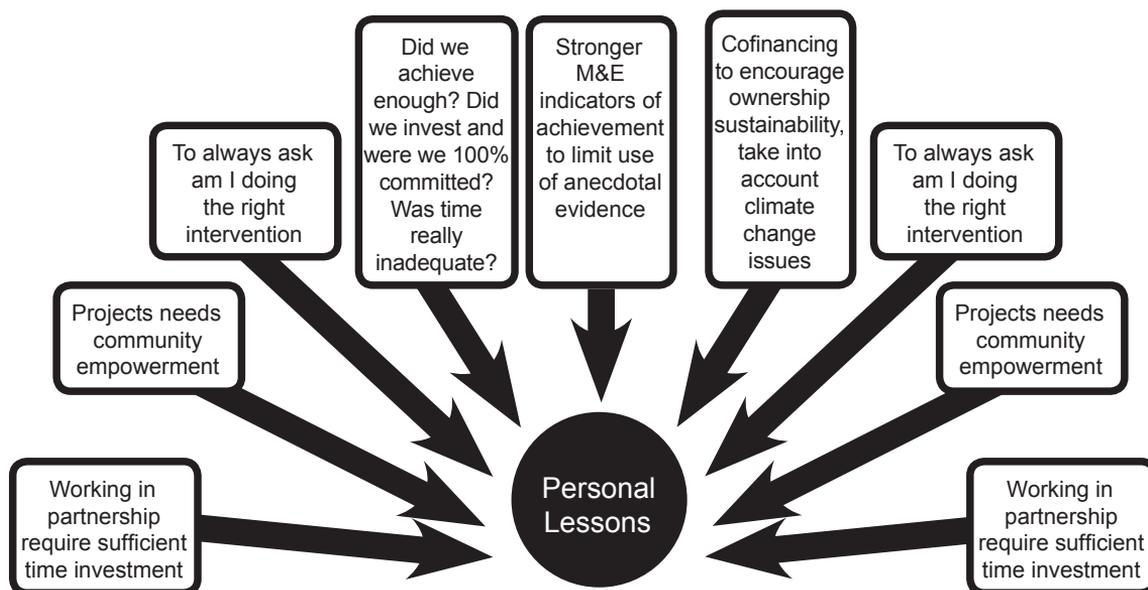


Figure 1. Personal lessons from the implementing partners

Community perspectives on the reviewer's initial findings

Based on the presentation of the evaluators initial findings the community representatives at the workshop were given the opportunity to respond. On technology (SSDs and other infrastructure) the community members acknowledged that the technology was new and introduced by partners.

The process: The project partners mainly used Chiefs who informed local institutions such as the Dedha committee (Council of Elders), Resource Management Council (RMC), Rangeland Users Association (RUA), village elders, women and youth. The partners then organized the workshops and informed the community members about the technology and the programmes they propose to implement. Community members highlighted to the team the water problems they face and after some time partner organisations came back with proposed technologies and potential sites. Detailed site selection was jointly carried out by field work with selected knowledgeable elders and subsequently the sites were subjected to wider community validation. After agreeing on the appropriate sites the construction commenced.

Suitability of technology: Community members expressed there was initial reservations over the SSD but after piloting the technology they embraced it. They mentioned more prolonged pasture utilization after construction of the SSDs in comparison to the early shortage of water before the complete usage of the pasture, and hence the premature need to move to other livestock watering sites before SSD construction. Generally community members consider the project suitable but they stressed the need to have more capacity building of the local institutions on operation and maintenance as the technologies are unfamiliar. After completion of the infrastructure the project needs to support local institutions for at least six months to ensure that the infrastructure is working well. Thereafter the community members will manage the infrastructure to ensure sustainability.

Governance: With regard to governance, in Isiolo County communities have the traditional council of elders still in place. That is the Dedha committees that run the traditional natural resource management system. The community representatives emphasized that the Dedha committees were responsible for management of the natural resources in an integrated manner and are also responsible for conflict resolution. Although the Dedha committees still exist they are weakened by external forces. The County Government, therefore, has responsibility of supporting and reviving traditional resource management institutions. Community members mentioned even before the donor interventions they had previously managed their resource well and they encouraged full engagement of local institutions in next phase of the project. It is important that project proposers get input from the community members on the appropriate technologies to be supported in a particular area.

Participant response to community reflections

- In summary the framework used to evaluate the project impact is valid. Weakened traditional governance structure acknowledged and the recommendation to strengthen them was noted.
- It was recommended that the County Governments support the traditional resource management institutions and not undermine their roles. A possible area that the project could facilitate is seeking recognition and formalization of traditional natural resource management institutions at the County level. Facilitation of the Dedha Committees is, however, required to ensure they operate well, with further support to operation and maintenance training.
- The communities also need to contribute to support their own initiatives and avoid the dependency syndrome, while community members indicated that they had contributed during the site survey period where elders volunteered and supervised construction without pay.
- It was suggested that funding partners should consider other technology options suggested by community members within the resources available.
- Also regarding training, the events should be tailored to needs of the community members by assessing existing levels of knowledge to avoid wastage of time and resources.

Reflecting forward – recommendations for future programmes

Framing water to rangeland balance and generating key lessons

Through group work participants elaborated the special importance of water in building resilience of pastoralists communities against drought. The discussions focused on how water supply can both result in resilience and can also undermine resilience. The latter occurring when water points lead to rangeland degradation, which is quite frequent and vouched for by community participants who gave graphic examples of resulting conflicts. The framework (Figure 2) emerged from discussions as a way to visualize the issues in terms of the ‘Water to Rangeland Balance’.

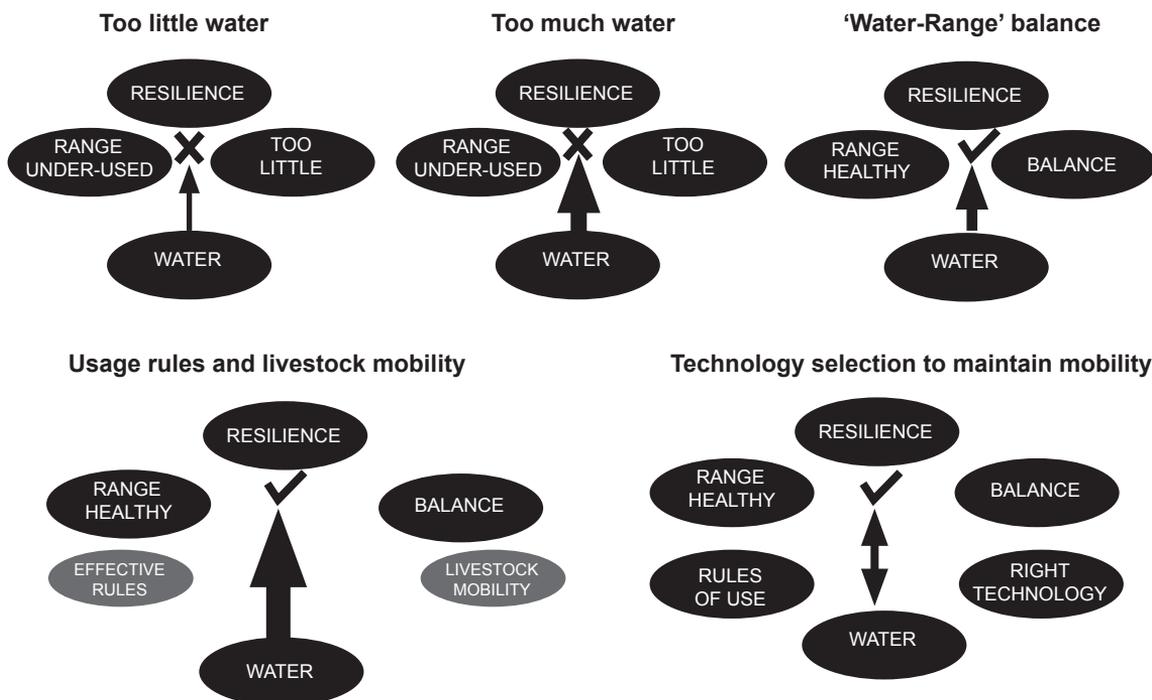


Figure 2. Framing the ‘Water to Rangeland Balance’

This framework further elaborates that water will result in increased resilience in the pastoral communities when supply is balanced, livestock mobility retained, rules of use are accepted and enforced and governance strengthened.

This water-rangeland balance framework to promote resilience was then combined with the evaluation framework used by the evaluation consultants focusing on three elements; technology options, suitability to context and delivery mechanisms. These three elements were examined in group work. Following the group sessions each team presented their findings in plenary. The outcomes were consolidated in further group work for presentation to the wider stakeholders in third day of the learning event (see section below - “Water and resilience - lessons from the partners”).

Issues requiring further interrogation

In the course of discussing different components of the project, participants highlighted some issues as ‘hot’ issues which required further interrogation. These included those identified below and discussed further on day 3.

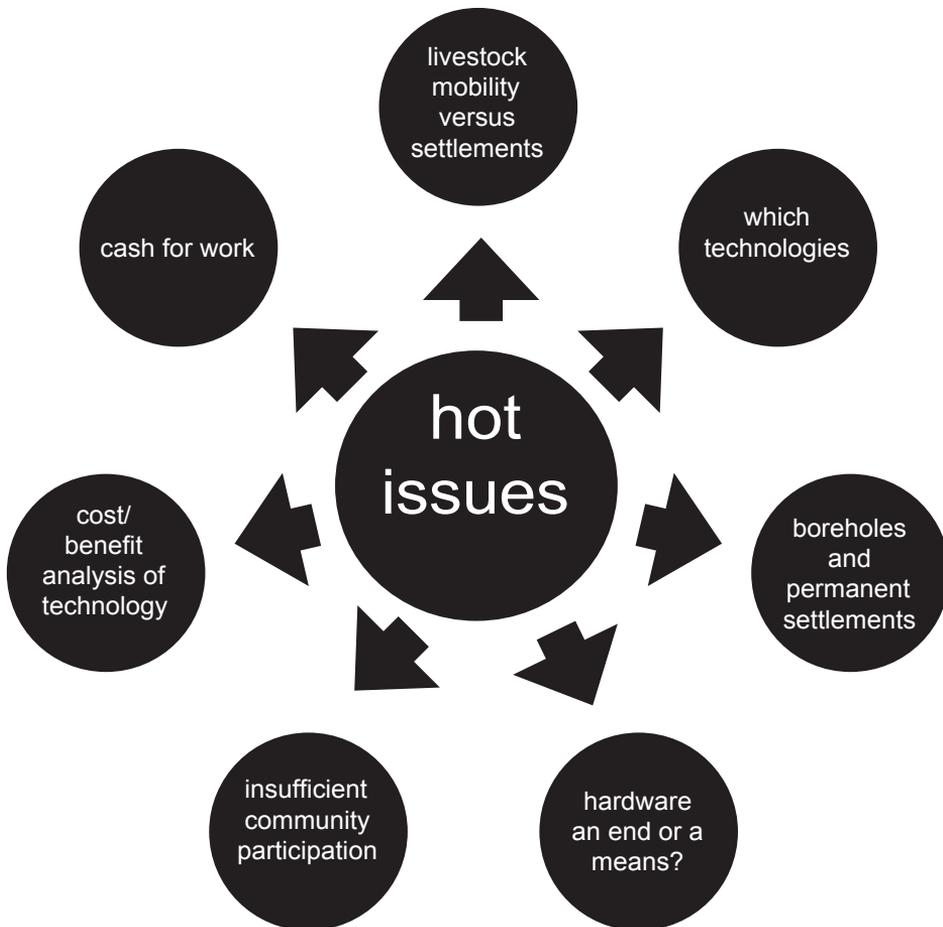


Figure 3. ‘Hot’ issues requiring further interrogation

Presentation and discussion with wider stakeholders

The third day of the learning event was attended by diverse stakeholders including funding agencies, government officials, community members, NGOs and CBOs and project implementing partners. The sessions were dedicated to present and discuss the lessons from the project.

Project overview original intentions, achievements, challenges and the future

Mr. Giacomo Solari, SDC Regional Director Horn of Africa welcomed the participants and thanked the team for organizing the learning event. He briefly highlighted the engagement of the SDC in Kenya and horn of Africa. He stated that the bilateral relation between Kenya and Swiss government was good and of benefit to two countries. Some of the initiatives undertaken by SDC in Kenya include establishment of the Utalii College, support to the Water Act and watershed management in Ewaso Nyiro through CETRAD. As a result of the crisis in the Sudan and Somalia SDC focused its attention to humanitarian work but since 2009 the agency is moving away from the emergency work towards projects that enhances livelihood in Horn of Africa with special focus to drylands of Kenya and Ethiopia. SDC engaged number of organizations including FAO especially on the pastoralist field schools and REGLAP on learning approaches. In 2013 SDC started engaging in ways of incorporating holistic approach in its strategy in drylands of Kenya, Somalia and Ethiopia. Mr Solari also mentioned that SDC is directly engaging in project implementation and learning from the experience. One such initiative he mentioned was Water for Livestock project where experience was being shared in the learning event organized by the team. He also mentioned collaborative model SDC is engaged in especially with GIZ in Ethiopia, FAO in Somalia, African Development Bank and also the engagement with IGAD on resilience framework in the region.

Mr Solari briefly explained the target of Water for livestock project in Isiolo and Garissa Counties the focus being improving access to water and improve natural resource management. He mentioned that SDC work in Kenya with regards water and resilience is focused on Ewaso Nyiro watershed and Merti aquifer. In Merti the study on behavior of an aquifer has been commissioned where scientific analysis is currently being undertaken. He mentioned the approach taken by SDC under water for livestock project for sharing the learning to larger audience is welcome and will enable SDC to see how to compliment what others are doing in the second phase of the project. He mentioned SDC is particularly interested in supporting improving governance and keen on assessing its intervention on conflict sensitivity.

Water and resilience - lessons from the partners

The partners presented their experiences during the implementation of the project that had been discussed and debated during the previous two days.

Water-Range Balance and integrated evaluation model

Figure 4 below shows the Water-Range Balance and integrate evaluation model used to assess the technology options, the suitability to the context, and delivery mechanisms towards achieving community resilience through Water to Rangeland Balance.

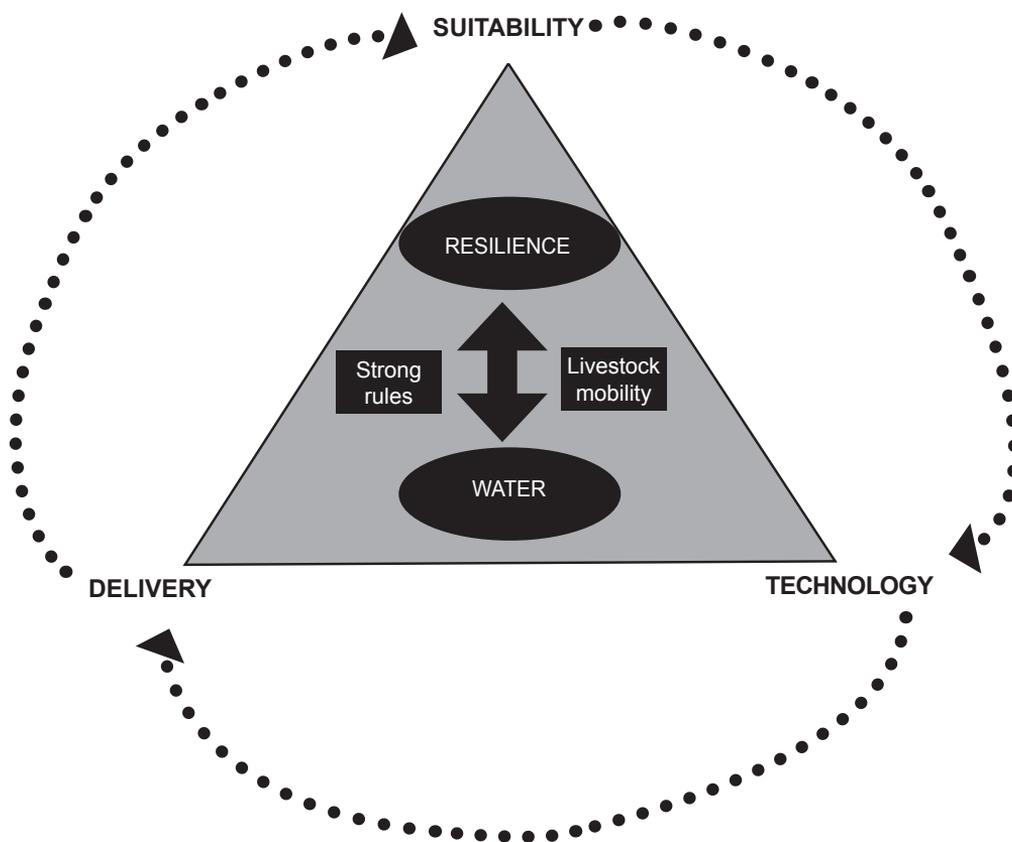


Figure 4. Water-Range Balance and integrate evaluation model

The model identified a number of key elements that help to achieve community resilience through a healthy rangeland with adequate water for livestock. These include maintaining herd mobility, having strong rules regarding both the use of water points and the use of rangelands. Implementing and enforcing a strong set of rules implies strong institutions. Thus institutional analysis becomes implicit. The model identified ‘technology options’ ‘suitability to context’, and ‘delivery mechanisms’ as the frame around project evaluation was carried out.

Suitability to context

Three elements were identified under suitability to context; these were context, validation and institutions.

Understanding the context

An initial step in defining suitability to context is to understanding the context. A number of key elements were identified.

- **Baseline:** The significance of an in-depth baseline cannot be underestimated. In the project context, however, this is challenged by a number of factors which include:
 - o Data deficiencies: There is a paucity of relevant, accessible and accurate data of relevance to water, livestock and human demographics. The lack of reliable data undermines the confidence and trust and ultimately the use of data. Decision-making become based on perceptions.
 - o System dynamics: The project operated in a very dynamic environment including mobile communities presenting challenges to government structures not well-equipped to deal with this. The unpredictable climate events including droughts and floods adding to uncertainty;
 - o Project baseline A project baseline survey was produced for Garba Tula, Isiolo (IUCN/KRCS 2012)
- **Appropriate tools & methods:** In understanding context and collecting baseline data appropriate methods and tools are essential. Mapping was identified as one of the approaches. Participatory mapping in particular helps to include community knowledge and views. Repeated mapping may be necessary to reflect changes over space and time and this implies that maps need to be regularly updated, while the mechanisms and resources to do this are not usually identified or in-place.
- **Multiple data types:** The importance of multiple types of data was recognized and especially community/traditional knowledge. Pure 'expert' knowledge is insufficient to achieve water-range balance.
- **Validity, ethics and equity:** In recognizing and using traditional knowledge, the need for communities to validate this knowledge is implicit. Further communities need to have data repatriated to them in accessible form for their own use. It is a valid question then is who owns what data? This is a pertinent question, for example, any data entered onto google maps becomes the property of the Google Company. Thus projects working with communities may inadvertently pass data from community ownership to global commercial ownership with unknown consequences.
- **Multiple linkages:** It is important to establishing linkages and building on existing or previous initiatives. Particularly important in the current devolution context is linkage to County Government processes.

Validation

Validation and cross checking community understanding of the project or infrastructure plans emerged from the project as a critical element. Validation is needed at the level of approaches, site selection and technologies. Validation becomes the equivalent of 'free, prior and informed consent' (FPIC) a principle that is increasing in importance and acceptance in development processes. Community consultations and validations need to achieve the following:

- Locating the right mix of community members for the consultations;
- Training and awareness creation about the validation;
- Enabling communities to understand the pros and cons of different technology options.

Cross-visits to other areas in which different technologies have been used can be very helpful to achieve this.

Institutions

Institutional mapping: The project identified that strong rules are required to be adhered to in order to achieve effective use of water and range resources in a manner that enhances community resilience. Strong rules automatically imply strong and coordinated institutions. A first step in understanding local institutions is institutional mapping. This requires identifying the appropriate bodies for different roles, roles which are changing in the transition from centralized power to county level devolution. This also requires an awareness of the decision-making powers of technocrats and bureaucrats, e.g. through budgeting and access to resources, which can undermine the legitimate role of community actors.

Effective coordination: To achieve strong rules effective coordination is necessary based on a number of principles. These include: Engage existing institutions in a meaningful manner by ensuring that institutions involved have decision-making powers (not just a rubber stamping engagement). It is important to embed coordination within the county legislation and county integrated development plans (CIDPs). Devolution, however, is process that

is still underway, and there remain institutional frameworks and processes still under discussion and pending endorsement by Parliament and other organs. Important here is the County Development Committee (CDC) and the County Steering Group which is under the Drought Management Authority.

It is also important to recognize and take into account that Counties have reached different development and devolution stages. It is also important to realize that institutions are not static and that they often evolve. A fundamental principle is to work through & strengthen the existing structures (e.g. County and Sub-county Steering Groups, Water and Environmental Sanitation Coordination - WESCOORD, etc.)

Technology options

Key to the success of the projects was the appropriate application of a number of existing and new technologies

- Traditional shallow wells
- Improved shallow wells
- Sub-surface Dams (SSD)
- Trapezoidal bunds (TZB)
- Semi-circular bunds
- Micro Catchments

Range context for technologies

Given the project was aiming to achieve ‘Water to Range Balance’ the range context was vital. The range contexts were different for the two counties and are described individually and then an assessment of the options for each was made.

Range context Isiolo County

- Within Isiolo County there are traditionally identified and named grazing zones where livestock are controlled;
- Livestock are controlled by a still extant and functional traditional structure of the Boran people called the Dedha Council. The Dedha Council is analogous with a council of elders. The traditional rules and norms of the Dedha council still operate although they have been weakened by government laws;
- The allocation of water at each point managed (time, location, livestock) by named individual with the title *Aba Herega*. The *Aba Herega* for the different water points are members of Dedha Council;
- In recent years by-laws have been developed in Ewaso Nyiro Rangelands of Isiolo County through facilitation of the Dedha Council and that build on the traditional rules. These by-laws are aimed to formalize the traditional grazing rules and formally recognize the Dedha Committee for different area. Currently there is not a legal mechanism to recognized the by-laws developed by County Governments and this needs to be developed;
- This process however, is gaining some traction and there currently is a request for local rangers paid by the county to enforce these Dedha Council by-laws.

Technology options in Isiolo

The following table outlines the technology options in Isiolo County based on the project experience

Table 3. Technology options for Isiolo County

No.	Grazing area	Resources	Technologies implemented	Water situation	Additional technologies
1	Chari	Lagas, springs	4 sub-surface dams(SSD)	Water deficient	Borehole (with controlled use), SSD
2	Omara	Lagas	None	Water deficient	To assess
3	Bule	Wells, Lagas	Trapezoidal bunds	Water deficient	To assess
4	Wayam	Lagas, pans	1 sub-surface dam	Water deficient	To assess

Range context Garissa County

The following is the range context for Garissa County.

- In contrast to Isiolo County the grazing zones are only named areas. The herds move freely and where livestock are not controlled within these zones. There is need to ask only for the permission of elders to graze there but patterns of grazing are not stipulated;
- Most people are considered pastoralist and people are alleged to have large herds;
- Traditionally there was a norm that only goats are grazed near villages specifically by women for house hold food security. Nowadays there are reported to be an increase of wealthy people with large herds who do not follow this norm and are disrupting grazing patterns

Technology options – Garissa

The following table outlines the technology options in Garissa County based on the project experience

Table 4. Technology options for Garissa County

No.	Grazing area	Resources	Technologies implemented	Water situation	Additional technologies
1	Kunya	Lagas	7 SSDs	To determine after use new SSDs	SSD, sand dams, trapezoidal bunds, wells
2	Adhamla	Flat for pans	9 Pans	Water deficient	To assess
3	Lagdera	Ground water	3Boreholes bunds	Water sufficient	Micro-catchments

Appropriateness of technologies

The technology selected should be based on the appropriateness to the context and it is important that multiple factors need to be understood and taken into account. These include:

- **The needs:** What are the water requirements, including the number and type of livestock, the household needs? What are the grazing patterns and watering timetables? What is the current supply and deficits of water?
- **The governance arrangements:** What are the existing norms, rules and regulations (e.g. local norms, bye-laws, county and national government policies and laws). What is the structure and effectiveness of governing institutions e.g. Dedha Councils, WUAs). How do they deal with challenges:
 - o Cross-border movements (between Counties and even Countries)
 - o Risks e.g. spread of diseases and conflicts
- **The capacity:** Are the technologies affordable to construction and maintain?. Do communities have technical capacity for maintenance/sustainability?

Delivery mechanisms

The final section looked at the delivery against three sets of factors; environmental, community and the partners. It also looked at cash for work as a specific delivery mechanism.

Environmental factors

Delivering appropriate water infrastructure in what is frequently a challenging physical environment is difficult and can have negative and sometime tragic consequences. Rainfall patterns are becoming unpredictable and extreme events (droughts and floods) more frequent. The project experienced difficult events and two sub-surface dams were washed away before completion, although they were eventually completed. While planning follows the funding cycle, ground realities follow the seasonal cycle. Seasonal (and not budgeting) cycles can be more important when working with pastoralist communities whose livestock movement varies seasonally between wet and dry season grazing areas.

Community factors

While short-term effectiveness can be achieved by technical delivery, long-term sustainability requires community acceptance and capacity building. There is therefore a need to balance expert input and community acceptance, management and cultural suitability when introducing new technologies. It is important wherever possible to achieve an all-inclusive community input. This will require digging beneath the surface, going beyond the gate keepers, understanding the uniqueness of transhumant² communities and the cultural sensitivity of engaging women, among others. If delivery is also to help empower communities, a very different approach is needed which needs to be taken into account in contracting arrangements. Critical, as emphasised before, is working with appropriate and preferably strong governance, water and range management mechanisms.

Partner factors

The project was unusual in that it trialed both private sector and NGO delivery. There was also what could be described as 'hybrid' delivery where private sector and NGOs worked together. The cultural differences in these institutional types, however, made delivery challenging at times. During the learning event the community members expressed a preference for NGO delivery.

Supervision of delivery is critical to success. This includes addressing who is supervising and how are they doing this. What also is the modality of supervision across different disciplines and in what ways are community members involved. Community members at the workshop stated at times they were not aware of the processes and what stages had been reached. Related to supervision this is challenges of managing funds and corruption risks which is a challenge in all models of delivery.

In the selection of any group, whether it is NGO, Contractor or Community a number of factors need to be taken into account including;

- The selection process;
- The experience and track record of the institutions concerned;
- The confidence on the part of key stakeholders including the community and donor;
- Levels of transparency.

Community engagement and cash for work

Cash for work received special attention in the discussions and was a point where resolution and agreement was not reached. Some partners were convinced that cash for work was a very valid approach while other partners were certain it undermined long-term development processes (see Box 1).

Recommended considerations and summary steps

The workshop developed a number of key consideration and summary steps that would increase the effectiveness of water infrastructure and increase the resilience of communities these were:

- The 'Water-Pasture balance' is critical for resilience too much water for too long can lead to population increases, permanent settlement, conflict and degradation;
- It is very important to understand and build on traditional grazing patterns;
- Much greater importance need to be given to governance and ecological considerations of range management, compared to a focus on the individual water technologies.

A set of summary steps were identified that could help achieving water-rangeland balance.

- Mark out the grazing areas;
- Make sure each area has balanced water points;
- Make sure each has a set of rules;
- Make sure each area has an effective governing body.

These key considerations and summary steps of course include quite high levels of complexity within the contexts of the project counties.

² Transhumance is the seasonal movement of people with their livestock between fixed summer/wet season and winter/dry season pastures.

The summary conclusions of the learning event were:

- Livestock and pastoralist sector is productive and potentially resilient ASAL land use that needs better understanding and recognition;
- Optimising pastoralism depends on sustainable range management with balanced water provision;
- Achieving a balanced water supply is challenging especially working across sectors and introducing new concepts and modes of operation;
- Fundamentally it requires shared vision, the development of grounded team formation and building and careful implementation, management and monitoring.
- This demands the formulation of flexible multi-disciplinary teams that includes community leadership, and that demonstrate a willingness to understand each other's perspectives.
- Funding frameworks and project cycles must be adapted with mechanisms that take into account unpredictable weather and minimise the risks of both normal and extreme events such as seasonal river flows and flooding.

A number of areas complete agreements were not reached by different participants and these were:

- The need to maintain livestock mobility and the avoidance of permanent settlement at all water points as this leads to rangeland degradation;
- Using the cash for work (CfW) methodology worked in some cases but less well in others. The overall pro's and con's about CfW remained somewhat controversial and its use requires careful thought and exploration of alternative modalities;
- Establishing very small (<1ha) micro-catchments for crops and fodder and so privatizing communal resources in rangeland extending to many hundreds of hectares
- How to effectively mainstream gender where there are cultural and religious barriers to female leadership
- Water provision for livestock cannot be totally separated form water for people

Box 1: Cash for work — the arguments

FOR		AGAINST
<ul style="list-style-type: none"> • Effective - job gets done • Relevant • Cash reaches community • improvement of economy • Community involved in building own structures • Capacity building communities 		<ul style="list-style-type: none"> • Low responsibility • Not sustainable in the long run (disaster) • Deepen dependency • Low ownership • A poor understanding of cash for work approach

Scenarios and models towards positive impact:

After the lessons presentation by partners Lucy Maarse, one of the evaluators presented “From Water for Livestock towards Natural Resource Based Livelihoods in ASALs” focused on key issues for phase.

The overall objective of the next phase of the project she recommended should be the same as the pilot phase of Water for Livestock but adapted to two key issues: water supply development and governance; governance and management of natural resources.

Using key lessons of the water for livestock to guide second phase: The presenter mentioned that cohesive team is required in implementation of the project activities. Different (contracted) actors do not make a partnership/team and proposed investment in team building and being cognizant of the implications of contracting different organisations. The project also requires investing time in coming to common understanding among different partners where joint vision and approach is required. The project also need to adopt a non-negotiable approach where priority need to be given to conflict sensitive planning, oriented to peace building, adhering to enhancement of ecosystem health and propagate for gender transformative approaches.

Guidance and inspiration: The next phase of the project needs to be guided and inspired by local, regional and national policies on pastoralism and natural resource management. Special focus need to be given to African Union (AU) Policy Framework for Pastoralism, IGAD Drought Disaster Resilience and Sustainability Initiative (IDDRSI). Common framework programming is also important where water development needed to be looked in broader natural resources management. The project also need to document good practices emanating from activity implementation and approaches undertaken.

Geographical boundaries: Ms. Maarse proposed the project to focus on Ewaso Nyiro River Basin focusing on strategically selected pockets. The project should also focus on North Eastern Kenya and Somalia “The so-called Somali Ecosystem+”

Strategy: The project need to be field rooted and consolidate on the current sites but fine tuning sub-surface dams technology and shallow wells; enforcement of governance structures, continue with on-going natural resource activities implemented under first phase; evaluate the potential risks of the proposed technologies; sort out hot issues; develop manual and document achievements and employ monitoring systems using maps and related software.

The project should also adopt step-by-step in scaling up of the approaches. Strategically select sites first starting with County then Inter-County and finally cross country border and also expand current sites where relevant. Explore the option of watershed cum landscape approaches and use stakeholder and power analysis tools. The entry point for reaching pastoral communities should be pastoral field schools and pastoral forums as opposed to using the settled communities. The project should also target to put systems in place at County level: land use planning, monitoring systems, sound data base, laws and by laws on water and land tenure and build capacities of the County level personnel and develop appropriate tools and methods. The project should also target to set up community of practice at cross county and cross border levels.

Under research and studies component the presenter mentioned that there is need to link the studies project under takes to IGAD studies for example CETRAD worked supported by SDC on Merti Aquifer should be clearly linked to IGAD and also conducted other studies on need basis at field sites and County institutions. The project should also create space for funding Masters and PhD student programmes through North-South cooperation model. The project need to arrive at evidence based lobbying and advocacy through mix of field experiences backed up by sound data and analysis

Set-up/Implementation modalities: The entry point for different geographic focus need to be considered clearly. It was mentioned that the entry points preferred by Isiolo County are those anchored within County and in case of Garissa the County preferred partnership arrangement with NGOs and CBOs. With regards Somalia further thoughts are required. In terms of funding Lucy mentioned channeling money through the County treasury is too great a risk at this point and SDC need to learn first from other donors to assess the suitability directly sending the money to County.

Focus areas: Lucy highlighted direct and indirect (synergies with others) ways through which SDC can engage. Directly SDC should engage in water and natural resources sector. For water explore appropriate technology options e.g. sub-surface and sand dams and others and for natural resource focus on natural resource governance (management, land use, land tenure etc.). Indirectly SDC should engage in animal production, animal health and pastoral value chain. Co-financing of the pastoral field schools and other programmes need to be given consideration and in case of animal health explore working with Swiss (Vétérinaires sans Frontières) VSF, Belgium and other programmes. Value additions, diversification, addressing marketing constraints are areas that need focus under the pastoral value chain section.

Target groups (lead actor): The main target for the project should be pastoral people which practices mobile livestock husbandry.

Concluding discussions

After the presentations comments and inputs came from the participants:

- The first reaction was on research and studies section where MSc and PhD were recommended Abdullahi Wario from Isiolo asked what about short courses and exposure tours. They need to be given consideration. The short courses need to be supported by County and need to be factored under capacity building component.
- On appropriateness of the technology Ms. Doris Kaberia from the Millennium Water Alliance mentioned that the technology to adopted need to consider retention, recharge, reuse aspects. To cater for the SSD which is a new technology reviewing the Ministry of Water guidelines is required. L. Maarse

additionally mentioned that linking the county water bill, master plan are areas of focus for support and also mentioned that there is need to formulate bills that are backed by data.

- Dr. Boniface Kiteme of CETRAD mentioned that based on his experience he had rarely seen situation where water abundance is reported in the ASAL (too much water as presented by implementing partners). The reference was too much water resulting to degradation. The community members present gave a specific example from Isiolo where too many pans were constructed next to each other in short distance (8 pans in 40 km distance) and resulted in environmental. They referred to their recommendations to decommission some of the pans/dams. Dr Kiteme questioned the community preference for using NGOs in implementing the SSD construction as opposed to local contractors. Community members explained that NGOs are accountable as opposed to local contractors. Additionally NGOs consult with the local community; local contractors compete unfairly leading to conflicts among community members.
- Ms. Maarse was asked to explain why the entry points she proposed for Garissa and Isiolo were different. She responded that natural resource management is organized is differently in Isiolo (Dedha committees) than in Garissa (clan systems).
- Ms. Vanessa Tilstone of the Drylands Learning and Capacity Building Initiative recognised the experiences and lessons from the project and requested the team to document and disseminates the lessons widely e.g. dissemination through WESCORD and other community forums. She suggested that there is need to do thorough assessment of the impact of technology and approaches proposed on the environment and socio-economic conditions before they are fully implemented. The plans the project should relate should not be only County Integrated Development Plan (CIDP) but others land use plans need also to be considered. She also stressed the need to include the government officials at the local levels.
- Mr. Ced Hesse from the International Institute for Environment and Development (IIED) appreciated the initiatives undertaken to balance water-pasture utilization through strategic water development because previously water infrastructure development in the ASALs had often been near catastrophic. There is need to link the technology with the grazing regime and mobility pattern communities have on the ground. He also stressed the importance of focusing on governance on natural resource in relation to the technology proposed. Focusing on the enhancement of the public goods is critical in the ASAL/pastoral areas, the role of the County government need to be considered keenly as the Country have devolved system of government. There is need to reconcile the role of the communities and the County government in resource management he gave example of Chad where community members were empowered and best placed to manage water resources at the local level.
- The County Executive for Water, Environment and Natural Resource for Isiolo County, Mr. Ali A Surraw, recorded his appreciation for the team for implementing Water for Livestock pilot project in Isiolo which will help in filling the gap that exists currently in meeting water demand for livestock and human population. Water demand for domestic use currently stands at 12,000 litres and interventions that try to address water issue in the County need to address different water uses including household, domestic, livestock, industrial, irrigation, wildlife etc. Governance especially institutional structure requires special attention. Current devolved system of government put emphasis on the participation where community have been given rights to manage their affairs and County government playing a number of key roles in ensuring participation to facilitate communities to manage their resources. Putting in place enabling legislation that brings on board community members is critical. Towards enhancing water governance Isiolo County had prepared Water Bill that will be debated in the County Assembly and also the County is in the process of employing staff to help in water management and conservation at different levels.
- Mr. Surraw went further to say that Isiolo County through the proposed bill is planning to strengthen WESCORD by converting it into sector wide forum platform that coordinate water development and management. The option is also to see how Sector Wide Forum helps feed into County Steering Group at County level. Different funding models need to be explored including county, donor and community initiatives. He mentioned that the County government can also borrow money locally and internationally to finance the water sector in the County. With regards data availability and usage he mentioned that in reality there is sufficient data but what is needed is coordination. Isiolo County has diverse water resources including surface flows and aquifers. The County has also done water supply and demand study and also water source mapping. Currently 20% of the water infrastructures in the County are non-functional. The County has also has preferences for the kind of water infrastructures it will invest in: County Water Policy has not prioritized water pans and is now targeting mega dams that will allow multiple uses including irrigation, electricity supply, livestock etc.

Closing remarks

In his closing remarks, the County Executive for Water Isiolo stressed there are different approaches of engaging different institutions at different levels. The dynamics are changing in the Country and at the county level also including devolution, the value of pastoralism and livestock production given more importance than earlier and there are also big projects like the Lamu Port Southern Sudan-Ethiopia Transport Corridor - LAPPSET which are being commissioned. The County also has to decide on the multiple uses of the water by prioritizing. He commended the idea of organizing the learning event and encouraged sharing the proceeding with different people and forums. Finally he thanked everybody involved in making the learning event success and those involved in implementation of Water for Livestock project in two counties of Isiolo and Garissa.

References:

IUCN/KRCS, 2012. Synthesis of baseline condition on water supplies and rangeland resource use and management in Garba Tula District of Isiolo County. December 2012

Annexes

Annex 1: Workshop Agenda

Day One: 5th May 2014

Participants: SDC, Project Partners, Community Representatives & External Review consultants

Time	Activity	Process	Lead
0900-0930	Introductions & welcome		SDC
0930-1000	Overview of the workshop	Presentation and facilitated	Mine Pabari
1000-1030	Overview of the project – original intentions, key achievements and challenges and reflections on the future	Presentation	SDC
1030-1100	Tea Break		
1100-1130	Background on using strategic planning, adaptive management and experiential learning to better Manage towards Impact	Presentation and facilitated discussions	Mine Pabari
1130-1200	Reflections on Managing towards Impact in the Water for Livestock Project	Facilitated discussions	Mine Pabari
1300-1400	Lunch Break		
1400-1530	Presentations from partners on key achievements, challenges & lessons learnt	20 minute presentation by each partner + 10 minutes discussion	Mike Wekesa
1530-1600	“Food for thought” - Preliminary findings and reflections from the external review	Presentation	Lucy Maarse
1530-1630	Reflecting back – identifying the core lessons emerging from the projects experiences to date around “Natural Resource based livelihoods in ASALs”	Facilitated discussions	Mine Pabari
1630-1700	Wrap up & closure		

Day Two: 6th May 2014 (*Note – Programme is tentative and may change depending on outcomes of Day 1)

Participants: SDC Project Partners, Community Representatives & External Review consultants

0900-0930	Documenting & communicating lessons learnt: An overview of good practices	Presentation	Facilitator
0930-1100	Unpacking core lessons & key messages around Natural Resource based livelihoods in ASALs	Group work	Each group to be facilitated by IUCN & External Review team
1100-1130	Tea Break		
1130-1300	Presentations by groups on core lessons & key messages	Presentations	Facilitator
1300-1400	Lunch Break		
1400-1630	Reflecting ahead – identifying core recommendations for future Programming	Group work and plenary discussions	Facilitator/External Review Team
1630-1700	Final preparations for dissemination to wider audience (Day 3)	Plenary discussion	SDC
1700-1730	Wrap up & closure		

Learning from experience and developing concrete synergies and cooperation around innovative models for making a positive contribution to Natural Resource based livelihoods in ASALs

7th May 2014

Participants: SDC Project Partners, Community Representatives, External Review consultants; and Representatives from Government and Donor community

Time	Activity	Process	Lead
0800	Arrival/Registration		
0815-0830	Introductions and welcome		SDC
0830-0900	Overview of the project – original intentions, key achievements and challenges and reflections on the future	Presentation	SDC
0900-0945	Natural Resource based livelihoods in ASALs – Experiences and lessons from the Water for Livestock Project in Garissa and Isiolo	Presentation	Water for Livestock Project Partners
0945-1030	Reflecting on the future – Scenarios and different models for thinking and working better towards positive impact	Presentation	SDC Water for Livestock External Review Team
1030-1045	Closure		SDC
1030-1100	Tea Break		

PARALLEL SESSIONS: Exploring the potential for developing concrete synergies and cooperation around innovative models for making a positive contribution to Natural Resource based livelihoods in ASALs

1100-1300	Donor Round Table	Facilitated discussions	SDC
1100-1300	Stakeholder consultative workshop	Facilitated discussions	IUCN
1300-1400	Lunch Break		

Annex 2: Participant list

	Name	Institution	City	Designation	Email
1	Mukthar Bulale N	County government	Garissa	CEC Water Garissa	bulalmohd@yahoo.com
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