

**Project Title:** **Providing sustainable water supplies through sand dams for people, livestock and wildlife in Lekurruki Conservancy, Kenya**

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**Funding Period:** **November 2014 – October 2015**

**Grant:** **£79,250**

## Project Context

Lekurruki Conservancy is a community-owned area of land in the Rift Valley Province, northern Kenya, managed by the resident Mukogodo Maasai, protecting and improving it for the benefit of people, livestock and wildlife alike. It is one of now 33 conservancies that collectively make up the Northern Rangelands.

This harsh, semi-arid environment is characterised by drought, land degradation, insecurity and conflict, contributing to increased hunger and poverty. Rainfall is low and erratic, and people report that droughts are becoming more frequent. The scarcity of water and pasture is causing community conflict and internal displacement, as well as making access to education and health services more difficult than they already are. When we started working in this area, there was no access to clean water anywhere in the conservancy. Within the 159km<sup>2</sup> of land there are just eight freshwater springs, all of which are unprotected and contaminated from use by livestock and wildlife. All other water collection is from hand-dug holes in dry riverbeds.

Excellent Development and the Lekurruki Conservation Trust (LCT), operating under an umbrella organisation, the Northern Rangelands Trust (NRT), formed a partnership in 2014 to improve the management of water resources in Lekurruki. We are achieving this together in a variety of ways, including with sand dams, as well as by supporting people to take advantage of the opportunities that access to water provides.

This project followed the successful completion of a pilot sand dam to test the technology in the Lekurruki context. Sand dams are a cost-effective rainwater harvesting method for drylands. We are extremely grateful to the Isle of Man International Development Committee (IDC) for this grant which has been used to build Lekurruki Conservancy's capacity to construct more sand dams with the aim of transforming access to water for people, livestock and wildlife. This has been in an effort to address **Millennium Development Goal 7 (Ensure Environmental Sustainability)** and **Goal 1 (Eradicate Extreme Poverty and Hunger)**. The IDC's 2015-2018 multi-year grant is expanding on the progress of this project in Lekurruki.

## Objectives & Activities

The objectives of this project were to:

- 1) Provide sustainable water supplies** for people, livestock and wildlife. This will enable Lekurruki's pastoral community to develop resilient livelihoods from their livestock, provide water for the neighbouring Samburu from sand dams built on the river bordering this community (reducing encroachment into Lekurruki) and reduce pressure on natural springs used by Lekurruki's agro-pastoral community.
- 2) Build long-term capacity** for LCT to construct sand dams.
- 3) Support agro-pastoralists** in Lekurruki to use sand dams to improve food production.

To achieve these, the IDC's grant was used to fund these activities:

- Detailed planning and engagement** with community members to agree their priorities and participation in the project, and the recruitment of four community members as artisans to provide skilled labour for site preparations and construction. Two community mobilisers (responsible for engaging with communities and mobilising them to prepare dam sites and

- collect local materials) were also recruited, as well as one Water Resources Manager responsible for overseeing the whole project and managing the other community employees
- **Technical training** at the headquarters of Kenyan NGO, the Africa Sand Dam Foundation (ASDF), in Makueni County (in the Ukambani region) for the Lekurruki artisans to gain understanding and experience of the impacts of sand dams and how to site, design and construct them.
- **Design and construction of six new sand dams** (five funded by this IDC grant with the sixth dam match-funded by Rotary) to create sustainable water supplies for people, livestock and wildlife.
- **Sustainable agriculture learning visit** to Makueni for 12 members of Lekurruki's community to learn about sustainable farming techniques from farmers who are experienced in optimising the value of sand dams to support food production.

## Beneficiaries & Community Involvement

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This report details how the project directly benefitted approximately **2,000** pastoralists from Lekurruki's community, **2,500** Samburu pastoralists from adjacent Mpus Kutuk Conservancy, plus approximately **7,000** cattle and **17,500** sheep and goats– all of whom now have direct access to the new sand dams. The number of beneficiaries is difficult to precisely quantify because these nomadic and semi-nomadic pastoral communities and their livestock by their nature move around regularly. We also benefitted **12** community members from Lekurruki directly through training them on sustainable agriculture techniques and how to utilise sand dams to support food production, and **7** other community members through employment as artisans, community mobilisers and as a Water Resource Manager.

These beneficiaries have been involved at every stage of the project, after having identified the need for the work themselves. They have been proactive in consulting with LCT, agreeing construction sites and registering ownership of dams, as well as carrying out manual work on the dams themselves and contributing building materials such as sand and stones. We expect approximately **1,000** further community members from Lekurruki to also benefit indirectly from the project because they will be able to take their animals to graze and water at the sand dams and pressure on natural springs (their current main water source) will reduce.

*“Excellent Development is coming to fill a very big gap that we have been trying to manage... In 10 years’ time I would like to see this conservancy able to manage itself, be sustainable... The community able to live a better life: having good schools, health centres, water sources, clean water, and able to conserve wildlife and the environment.”* - **Peter Matunge, LCT Manager**

## Challenges to Implementation

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As you may be aware from our interim report, the project suffered construction delays which in turn, delayed the sustainable agriculture workshop until January 2016 as the community became difficult to reach. The major issues have been around security as communities come into competition and conflict as a result of a consistent lack of water in the region. Six people were killed near to Lekurruki's boundary in June 2015 prompting the community to flee the area. Once they returned and construction was ready to start, fresh incursions and violence occurred near to the sand dam sites forcing the community's evacuation once more. Dams had to be reprioritised to focus on sites away from the violence. Thankfully, we were able to continue with construction again from January 2016 once the situation had settled and the rains had ended, with the final dam completed in July 2016.

In parallel to the security issues, there were also unforeseen delays registering the dams with the Water Resources Management Authority (WRMA). The WRMA in Laikipia, where the Lekurruki Conservancy is located, was unfamiliar with dealing with sand dams so technical approval took longer than originally assumed. Authority to start building the dams was provided in September 2015 but due to security concerns and the start of the rains, no construction could take place. As a result of these challenges to implementation, we anticipate some knock-on delays to our expansion project in the area, which began in 2015 with a multi-year grant from the IDC.

Communication with LCT has been difficult at some points during the project but the situation has now greatly improved after the installation of a repeater (an electronic device that boosts phone signal and provides limited internet), paid for jointly by Excellent Development and LCT.

## **Sustainable Water Supplies for People, Livestock & Wildlife**

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Despite setbacks to construction and delays to acquiring permits, we were able to collect baseline data and carry out scenario planning in October-November 2015. The scope of these activities covered both the small grant project objectives as well as the IDC's multi-year grant project to scale up this programme in Lekurruki.

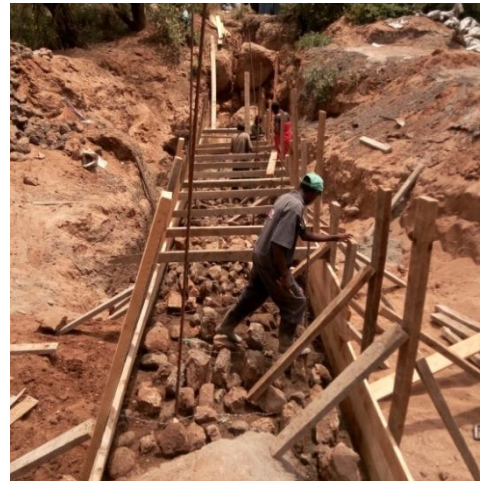
We have now been able to fully complete four sand dams which were funded by this grant. The fifth and final dam, for which all materials have now been bought, is in the final stage of construction and is expected to be completed by early August. All the dams were based on designs compliant with WRMA standards, in line with national plans for development. Cattle troughs and shallow wells have been incorporated into the dam structures where appropriate to allow access to safe water for drinking as well as for domestic use, irrigation for agriculture, and for watering livestock and wildlife.

After the next rains (due in October), a dam evaluation will take place and information will be shared with project stakeholders in order to improve technical quality, delivery and management of future dams in the region. Since our feasibility study and pilot dam showed such promising results, we are confident that these dams will soon be providing a valuable sustainable water source for people and their livestock as well as the local wildlife. Sand will protect water stored in the dams from evaporation, contamination and water-borne diseases prevalent in the area such as malaria and schistosomiasis (bilharzia), contributing to improved health. We are also hopeful that the increased availability of water will reduce the time taken and distance travelled to collect water, as well as reducing competition over natural resources, which currently threatens peace between communities and therefore further development in the region.

A Water Resource Management implementation plan has also been agreed with the community. This includes plans for more sand dams in the area in the future, as well as other activities such as a school rainwater harvesting tank and the protection of further springs.



Excavating bedrock ahead of construction



Dam construction in progress



Completed New Picnic Dam funded by the Isle of Man IDC 2014 Small Grant

## Capacity Building for Lekurruki Conservation Trust

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The capacity building element of this project progressed as planned. Several members of the Lekurruki community were recruited to roles that supported with project implementation. Two community mobilisers were responsible for organising the other community members to collect materials (including sand and stones) for construction, and for ensuring that the community remained committed to participating in the project at every stage. These mobilisers also helped to keep the community informed about project meetings and liaised between community members and the project team.

In August 2015, LCT recruited a Water Resources Manager to provide support to both this project's sand dams as well as those covered by the IDC's multi-year grant.

Four community members were recruited and trained up as skilled artisans. They were selected having each helped to build the pilot sand dam where they demonstrated a high level of commitment to the project and greatest potential to become skilled in sand dam building. Their training involved a one week technical training visit to ASDF, whom we have worked with since 2010, to build sand dams in Makueni County. This visit took place in May 2015 with the four members of Lekurruki's community plus seven representatives from Excellent Development's partners in India, Zimbabwe and Mozambique. The mix of organisations enabled participants to learn from each other as well as from ASDF's technical team and to share experience on the challenges and progress being made in this range of dryland contexts.

Lekurruki's artisans then remained with ASDF for a further three weeks to continue their training by shadowing ASDF's construction work to gain experience of the sand dam build process before beginning construction on their own dams.

The focus of the learning visit was to provide a sound understanding of the theory and practice of sand dam siting, design and construction and the factors that affect feasibility and success. The format combined classroom sessions covering the theory with field visits to community groups and their sand dams to provide practical training and context.

Key areas covered by the training included:

- Siting theory and practical – including river bed walks to identify sites
- Design theory and practical – including examination and critique
- Construction theory and practical
- Feasibility and pilot planning

The artisans reported acquiring new skills from the training and that they enjoyed learning about the life of the Kamba people in Makueni, an ethnic group whom they would not otherwise have had the opportunity to interact.

Having an artisan's salary is an important new source of income for the community members, but requires balancing with household duties and looking after livestock. To manage their responsibilities, their wives took care of smaller livestock (shoats), and they paid for someone to look after their cattle when they were working on projects.

*"This is a new beginning of community having sand dams and will transform us as individuals and communities."* - **Laban Peterson, Artisan**

*"I really appreciate the skilled we learned. I am now able to come back to my community with skills to help develop our community."* - **Simintei Sanang'i, Artisan**



[From left to right] Artisans Simintei Sanang'i, Laban Peterson and Mukai Kanija with Community Mobiliser John Parmashu

## Improving Food Production

As well as providing water sources and building the capacity of LCT, this project also sought to improve food production for the Lekurruki community. A key aspect of this was organising a learning visit in Makueni for 12 members of the Lekurruki community to visit our partner ASDF and learn about sustainable agriculture and optimising the value of sand dams for food production. This community are traditionally pastoralists and so less familiar with dryland agricultural practices.



The learning visit took place over one intensive week in January 2016, led by ASDF and teachers comprised of local Kamba farmers. Each morning, the participants gathered for theory sessions, punctuated with lively debate, technical learning and team building exercises with an emphasis on finding their own solutions to their own problems. In the afternoons, participants went out into the field together to learn directly from farmers already implementing sustainable agricultural practices.

Learning centred on methods such as terracing, water harvesting, crop rotation, effective use of manure and compost, and the importance of planting different types of crop that are specifically resistant to drought.

On the last day of training, the trainees came together to plan how to incorporate their new knowledge into existing efforts and disseminate it to further community groups. Participants reported that the training was useful as it gave them an opportunity to acquire knowledge and learn new skills.

**Saalo Nole Liba, Chairlady of Women's Groups and Board member for Nadungoro Zone**, was one of the participants on the learning visit. She told us about the knowledge she gained.

*"I was surprised to see people diverting water from the nearby roads by using terraces. I'm now happy because I was taught farm management... I must practice terracing, crop rotation, use of manure and introduced [sic] new varieties of crops...I never thought soil can be sick, I only know animals getting sick but not soil...[I] have already taught two women how to use tea manure in the kitchen garden and their sukuma wiki [a local green vegetable] is doing very well now".*



**Kataka Matunge, Chairman of the Board for Sieku Zone**, shared his thoughts about the learning visit:

*"I came back from Ukambani a different me. Imagine you can plant animal foods! So, when your animal get[s] sick you can easily feed [it] using the planted fodder rather than going [a] long distance to look for something to feed it."*

## Project Expenditure to Date

We received the IDC's initial payment of **£71,325** (of a total of **£79,250**) in November 2014.

	Full Project Budget (6 Sand Dams)	IOM Small Grant Budget (5 Sand Dams)	IOM Grant Expenditure	Variance to IOM Grant Budget
ASDF Planning Consultancy	£ 1,028	£ 1,028	£ 1,028	£0
	£ 7,845	£ 7,845	£ 7,274	
<b>LCT Project Management</b>				£571
<b>Sand Dam Technical Capacity Building</b>	£ 11,610	£ 11,610	£ 9,814	£1,796
<b>Participatory Learning - Climate Smart Agriculture</b>	£ 3,919	£ 3,919	£ 3,002	£917
<b>Sand Dams</b>	£ 60,051	£ 46,986	£ 51,162	£(4,176)
Cement	£ 20,983	£ 14,430	£ 14,864	£(434)
Steel & Barbed Wire	£ 2,201	£ 1,834	£ 2,163	£(329)
Timber Shuttering	£ 1,728	£ 1,440	£ 2,406	£(966)
Tools	£ 469	£ 390	£ 643	£(253)
Materials Transport	£ 9,214	£ 7,679	£ 7,808	£(129)
Dam Permits	£ 579	£ 482	£ 481	£1
Water Abstraction	£ 11,088	£ 9,240	£ 7,107	£2,133
Water for Construction	£ 2,739	£ 2,283	£ 3,923	£(1,640)
Community Lunches during Construction	£ 2,250	£ 1,875	£ 2,092	£(217)
Skilled Labour	£ 2,229	£ 1,857	£ 3,338	£(1,481)
ASDF Construction Support	£ 6,571	£ 5,476	£ 6,337	£(861)
<b>Community Contribution</b>	£ 18,311	£ 15,260	£ 15,260	£0
<b>Total Charitable Expenditure</b>	£ 102,764	£ 86,648	£ 87,540	£(892)
Fundraising & Communications	£ 9,301	£ 7,862	£ 7,862	£0
<b>Total Budget</b>	£ 112,065	£ 94,510	£ 95,402	£(892)
Less Community Contribution	£ (18,311)	£ (15,260)	£ (15,260)	£0
<b>Grant Requested</b>	£ 93,754			
<b>ACTUAL GRANT AWARDED / SPENT</b>		£ 79,250	£ 80,142	£(892)
The difference between the original budget and the IOM grant awarded has been provided by other donors				
Using £1 = 130 Kenyan Shillings as per oanda.com on 25.07.2016				

Sand dams ultimately cost more than budgeted because communities took longer to build them than has been our experience in Makueni, where we have partnered with ASDF on the bulk of our sand dam projects in Kenya. The reason for this is that sand dams are still very new to Lekurruki so the community was less familiar with the construction process. As such, more labour, community lunches and water for construction were required than were originally budgeted for.

Sand dam capacity building cost less than expected because the artisans required less accommodation and subsistence expense for their learning visit than originally estimated.

## **Sustainability & Replication**

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This project has been designed from the outset to be sustainable of IDC small grant funding at its completion. This has been achieved by placing beneficiaries at the heart of the project and encouraging and utilising their participation at every stage, thereby garnering community buy-in and ownership from the start. It is the community who have made sure that the dams have been located at sites where people need them and will make effective use of them. The fact that they have invested their own labour and raw materials into this project further fosters community ownership and therefore sustainable change.

This is compounded by the skills and knowledge learnt by the Lekurruki community through their participation in the project. The skilled artisans for instance are now well placed to become self-sufficient in utilising sand dam technology for future water resources management work in the region. The 12 members of the Lekurruki community who attended sustainable agricultural training are now equipped with the skills and knowledge to improve food production in the context of their challenging dryland environment. Working through LCT has further offered strong prospects of sustainable change as this organisation is led by representatives of the Lekurruki community – the primary users and owners of the sand dams, which are all built to last 50+ years, usually with little to no maintenance cost. LCT also works closely with the local government (representatives of which attend LCT's Board meetings) to ensure wider alignment to wider development and conservation objectives.

We are confident that the skills and knowledge LCT and the wider Lekurruki community has gained from working on this project will enable them to continue similarly beneficial work in the future without external support.

## **Thank You**

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We are extremely grateful to the Isle of Man International Development Committee for the generous grant which allowed this project to take place. The IDC's 2015-2018 multi-year grant is already building on the successes of this project and further to this, we have also secured further funding to assess feasibility and carry out needs assessments in other parts of Kenya's Northern Rangelands.

Thanks to your help, this project has provided the springboard from which we are now able to explore further water resources management potential in this impoverished dryland region.

**Report compiled by:  
Emily Brewster, July 2016  
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