Project Evaluation Series

Evaluation of the project "Strengthening Resilience and Adaptive Capacity of Agro-Pastoral Communities and the Local Government to Reduce Impacts of Climate Risk on Livelihoods in Karamoja, Uganda"

Project code: GCP/UGA/042/UK

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
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Contents

Acknowledgements

The evaluation report of the Enhancing resilience in Karamoja Uganda programme (ERKP), was prepared in October 2016 by a team led by Bernard Broughton. The report integrates findings of assessment of the ERKP for the period of 2012-2016.

The evaluation team is grateful to all beneficiaries, stakeholders and FAO staff who generously gave their time and efforts to provide us support with materials, documents, and information that served as a foundation for the report. Many people participated in the evaluation providing inputs, opinions and responding to evaluation questions.

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Acronyms and abbreviations

CTA	Chief technical adviser
EM	Evaluation Manager
EMA	EMPRES-i Event Mobile Application
ERKP	Enhancing resilience in Karamoja Uganda programme (DFID)
ET	Evaluation team
ETL	Evaluation team leader
FAO	Food and Agriculture Organization of the United Nations
OED	FAO Office of Evaluation
SO	FAO Strategic Objective
SRO	Sub-regional office
TCI	FAO Investment Centre
TCSR	Donor Liaison and Resource Mobilization Team
ToC	Theory of Change
ToR	Terms of Reference

Executive summary

1. The Strengthening Adaptive Capacity of Agro-Pastoral communities and the Local Government to Reduce Impacts of Climate Risk on Livelihoods in Karamoja, Uganda (ERKP) aims (in broad terms) to increase the resilience of targeted communities to climate extremes and weather events. In terms of targets the ERKP is intended to support 700,000 people to cope with the effects of climate change, including: 800,000 cattle vaccinated against epidemic diseases; 6,000 agro-pastoralists and pastoralists with access to improved animal nutrition; 200,000 women & men with improved food security through participation in public works programmes; severe acute malnutrition (SAM) reduced by treating 37,500 children under five; global acute malnutrition (GAM) reduced by treating 175,000 children under five and pregnant and lactating women. Of these quantifiable outputs FAO is responsible for the first two mentioned.

2. The ERKP is a two-year initiative implemented by the Food and Agriculture Organization of the United Nations (FAO) with funding from the United Kingdom's Department for International Development (DFID). The project, which started in November 2013, with an initial end date of December 2015 which was extended (through a no-cost extension) to March 2016, covers the seven districts of Abim, Amudat, Kaabong, Kotido, Moroto, Nakapiripirit and Napak in the Karamoja subregion.

3. The overall objective of the project is to strengthen the resilience of agropastoral communities and the Local Governments in order to reduce impacts of climate risks on livelihoods in Karamoja. The project has two Outcomes:

(1) Improved strategic planning and response to climate risks/ shocks;
(2) Strengthened adaptive capacities of agro-pastoral communities and the District Local Governments (DLG) to reduce climate risks.

4. The total project budget was USD 12,479,904 funded 100 percent by the UK government with financing from the International Climate Fund. It is part of the 47 million DFID ERKP implemented through FAO, UNICEF and WFP.

5. The main purpose of the final evaluation is to provide accountability to the donors and partners by assessing FAO contribution to the overall Enhancing resilience in Karamoja Uganda programme and to draw lessons from the implementation processes that could inform future decisions by the DFID and FAO on the formulation of a second phase or follow-up intervention.

6. The **objectives** of the evaluation are to:

- Assess the appropriateness of the project's design and approach;
- Assess the project's achievements and contributions vis-à-vis its objectives;
- Assess the actual and potential impact of the project and its contribution to the *ERKP*;
- Identify key success areas and lessons, and make the appropriate recommendations to the project team, FAO, the donor and other stakeholders to guide decision-making and planning for subsequent phases or similar projects under the ERKP programme or within the Karamoja subregion.

7. The **key questions** specified for the evaluation are:
    - Qu.1: To what extent the project design, approach and implementation arrangements (including partnerships) were relevant and efficient?
    - Qu.2: To what extent the Early Warning Systems, Preparedness and Contingency Planning and Response System have been strengthened?
    - Qu.3: To what extent the Livestock disease surveillance, diagnostic capacity, veterinary services and animal nutrition have been strengthened?
    - Qu.4: How effective were the Agro-Pastoral Field Schools in developing communities' capacity on climate-resilient livelihood?
    - Qu.5: How the Integrated Water Management work will add value to other project components and to the communities in Karamoja?
    - Qu.6: How the project contributed to evidence based research and analysis and how the project incorporated the results?
    - Qu.7: To what extent the project responded to women's needs?
    - Qu.8: What is the potential impact of the project on increased resilience of targeted communities to climate extremes and weather events?

Main finding:

- *The Project's design is well researched and considered the three outputs/components are relevant and support the Project's intended climate risk resilience outcome.*
- *In Karamoja, It is difficult in practice to effectively shift the discourse beyond livelihoods and food security to resilience and climate change adaptation (CCA), particularly at the household level.*
- *FAO's engagement in the livestock sector is highly relevant and strategic, including the nascent emphasis on private sector service delivery and commercialisation.*
- *Investments in water for production are relevant but will need to be evaluated post-completion. The investments in situational analysis, early warning and action planning have increased capacity but require further external support. The lack of commensurate support at the sub-regional level for contingency planning and coordinated action detracts from the design.*
- *Although EW studies were conducted there is no evidence of integration or rationalisation of EW systems in use in Karamoja.*
- *The updated Contingency Plans are comprehensive but they are yet to be formerly endorsed or utilised. The DEWS in particular has strong district level ownership. But it is not fully supported by NECOC/OPM and its future is thus uncertain.*
- *The DEWS is unique in bringing together information gathered by or for the district with national and regional information. Largely because of this a high degree of district level ownership has been achieved, particularly amongst members of District Production Departments. This is a remarkably positive achievement.*
- *The Drought Bulletins are not disseminated beyond the districts and DEWS remains to be fully institutionalised (owned by Government), which was the main objective. The HEA remains valuable however it may not be reaching its full utilisation potential.*
- *The Project contributed to strengthening surveillance and diagnostic capacity and veterinary services generally, including human resource capacity and cold-chain and diagnostic*

equipment (NADDEC, Regional Vet Lab, District, Sub-County). These gains will only be sustained by further external support unless national government intervenes.

- *The Regional Vet Lab is not yet well utilised reflecting resource constraints. Vaccinations were supported including an unplanned response to an FMD outbreak. This was much appreciated by Government and vulnerable communities and enhanced FAO's standing. It also tested and enhanced early response capacity. Tick borne and Tsetse fly transmitted diseases (not addressed by this project) remain overwhelming challenges. CAHWs are a valuable resource however there are uncertainties about the institution that now need to be addressed to ensure its effectiveness.*
- *The concept of improving access to veterinary drugs and supplies through private shops was sound but not fully developed and had a modest impact. First steps were taken to introduce resilient technologies for livestock including haymaking. Direct rangeland rehabilitation was planned but not undertaken, and more consideration is required as to how to proceed.*
- *There is evidence that APFS were at least moderately effective in developing human, financial and social capital relevant to climate-resilient livelihoods, recognising that in 2015 APFS were negatively impacted by a shorter timeframe, delayed inputs, and a drought that constrained potential gains in productivity. There is good evidence of viable alternative livelihoods and diversification, specifically through a) an increased investment in market gardening; b) investments in enterprises like cereal banking and bee-keeping; and c) investments enabled by VSLA, which are the most remarkable amongst these.*
- *Watershed/catchment management provides a comprehensive, unifying framework for all actors with an important emphasis on conservation. The Lokok and Lokere sub-catchment assessments and related work on micro-catchments contribute to an improved knowledge base for further investments.*
- *The micro-catchment management plans developed will require very considerable external funding if they are to be implemented.*
- *The 'water for local production' investments are vital and complementary, although relatively modest in relation to needs. They have been utilising cash-for-work scheme which has assisted those engaged to invest in production. The multi-function solarised water systems are a novel initiative and their micro-irrigation systems will benefit APFS.*
- *The sub-surface dams have very good potential as an alternative water source.*
- *There has been a focus on gender equality in the design of the project, with strong women targeting, yet some limitations remain in terms of lack of gender sensitive indicators, lack of gender analysis requirements in LOAs with IPs, gender action plans and limited gender equality monitoring within the project.*
- *Most project activities were designed to bring services nearer to households and since women are at the forefront of household activities it can be urged that they were typically direct beneficiaries. Although there are no gender sensitive indicators in the project logframes, gender has been mainstreamed into APFS process. IPs/NGOs in charge of APFS have some gender awareness, capacity and targeting women in many of their activities.*
- *Women have enhanced their access to productive resources, ranging from agriculture inputs to finance and land. Land tenure for women was not addressed in this project. Through APFS, women also improved their access to agriculture extension services, market information, and weather and climate information to some extent. APFS also contributed to more equal decision-making power of women members at group level and at home, yet more needs to be done.*
- *The Project has made aggregate improvements in strategic planning and to some extent preparedness for climate shocks (and livestock disease outbreaks and burdens), but the translation into effective responses by DLG will take a longer timeframe.*

- *FAO support for vaccinations including FMD reduced losses of productive animals and mitigated potentially negative impacts on resilience. Valuable lessons have been learned and the sub-region is now also better equipped to respond to livestock disease outbreaks.*
- *Communities targeted by APFS are in a marginally better position to withstand a further climate shock due mainly to livelihood diversification and income generation.*
- *FAO investments in adaptive capacity including watershed management and increased involvement of the private sector in veterinary service delivery are very effective with the potential for a transformative change.*
- *There is potential for transformative change in both areas. APFS could contribute to a transformation if FAO can a) determine which soil and water conservation measures are feasible (particularly given labour constraints), and b) make a convincing case to farmers for investing in these changes.*

Conclusions

Qu.1: The extent to which the project design, approach and implementation arrangements (including partnerships) were relevant and efficient

Conclusion 1.1 The Project is part of the ERKP, which DFID intended would be implemented collaboratively by FAO, WFP and UNICEF. While this was a sensible strategy on the part of the donor the ET is not aware of any assessment of the extent to which the strategy enhanced FAO-WFP-UNICEF collaboration on climate resilience. The three agencies are said to have cooperated quite closely in response to the 2015 drought, but that is normal and not indicative of a joined up effort to address resilience.

Conclusion 1.2 partnering with diverse and multiple yet relevant and capable implementing partners (IPs) at outcome level is appropriated to engage in social/institutional change and diversify the sources of results, reduced institutional risks, created incentives and expanded the channels of advocacy for change.

Qu.2: The extent to which the EWS, Preparedness and Contingency Planning and Response System have been strengthened

Conclusion 2.1 District capacity in EW, preparedness and contingency planning has been strengthened considerably. The critical test for DLG will be whether or not updated Contingency Plans (CPs) are utilised if and when they are formally endorsed. While DLG may be in a better position to influence the response, this scenario does bring into question the likely return on the investments made in EW, preparedness and contingency planning.

Conclusion 2.2 FAO's HEA makes a valuable contribution and FAO should do more to promote it to WFP, UNICEF and other stakeholders. Providing a detailed IPC assessment for Karamoja has been useful but FAO will need to attract funds to continue it. The extension of EMA to Karamoja has also been valuable but similarly requires ongoing support. All these investments need to be considered within the context of reaching a consensus amongst stakeholders on priorities and rationalisation.

Conclusion 2.3 DRR clubs and DEWS dissemination to children in schools in Karamoja are highly relevant to engage children, as active family members in reducing vulnerabilities and

building resilience, and transfer of knowledge from children to their parents with low level of literacy and limited means of communications.

Qu.3: The extent to which livestock disease surveillance, diagnostic capacity, veterinary services and animal nutrition have been strengthened

Conclusion 3.1 Human resource capacity for livestock disease prevention and control has been strengthened considerably including ability to plan and systematically organise an emergency response. Cold-chain and diagnostic equipment was availed. Although not quantified, it is apparent that these investments collectively provided a good return given the contribution to the reduction of animal disease morbidity and mortality, in particular facilitating service providers to carry out emergency interventions and vaccinations (including FMD).

Conclusion 3.2 It is risky to continue to depend on the activation of external support to incentivise staff and CAHW to maintain critical veterinary systems and undertake emergency responses.

Qu.4: The effectiveness of the Agro-Pastoral Field Schools in developing communities' capacity on climate-resilient livelihood

Conclusion 4.1 there is some evidence that APFS were at least moderately effective in developing human, financial and social capital relevant to climate-resilient livelihoods. The evidence for widespread household adoption of the agronomic practices and technologies promoted through APFS for staple crops is weak, including soil and water conservation measures that relate to natural capital.

Conclusion 4.2 At the core of the issue of low adoption of the agronomic practices and technologies promoted is the need for more research and analysis concerning the constraints that operate in Karamoja, including amongst others: people's perceptions about investing labour and cash in staple crop production and livestock; labour constraints and the role of gender in decision-making about production; the variable physical characteristics and opportunities across the six livelihoods zones.

Conclusion 4.3 There is good evidence of viable alternative livelihoods and diversification, specifically through a) an increased investment in market gardening; b) investments in enterprises like cereal banking and bee-keeping; and c) investments enabled by VSLA (which are the most remarkable amongst these). The really successful VSLAs are uncertain how to get to the 'next level' and are seeking guidance.

Qu.5: Value added by Integrated Water Management to other project components and to the communities in Karamoja

Conclusion 5.1 The watershed management approach, which FAO is now engaged in, provides a potentially unifying framework for stakeholders working in all sectors with an emphasis on conservation and good application to climate resilience.

Conclusion 5.2 The 'water for local production' investments for 'home' livestock and horticulture will support adaptation and the resilience of the households concerned. The provision of water for livestock in particular is critical for resilience as it de-concentrates animals at watering points, and contributes to reducing the number of potential land

access conflicts during grazing and along migratory routes as well as the potential for increased disease outbreaks due to congestion.

Qu.6: The extent to which the project contributed to evidence based research and analysis and incorporated the results

Conclusion 6.1 FAO has generated a large body of research and analysis within a short timeframe, providing evidence in relevant areas. The research is considered to be from excellent to good quality. While the results often have fed back into the Project or will be utilised in a subsequent phase, further actions and follow-up are required in some cases to address the issues identified. In many cases results have not been as widely communicated to IPs, DLG and development partners as they should have been to ensure utilisation.

Conclusion 6.2 Indigenous knowledge, local varieties, and livestock/species, managed by the pastoralists and women in the six different livelihoods zones in Karamoja are critically challenged in the climate change context, yet there is little attention to these issues in research to direct the future utilisation, conservation and protection by the local people, national academics and local governments in supportive of their resilience.

Qu.7: The extent to which the project responded to women needs

Conclusion 7.1 Through APFS process and project activities, gender has been mainstreamed, enhancing women's access to knowledge and advice and apparently ensuring equal access to the inputs provided and opportunities availed (finance, access to markets). Progress has been made in empowering women members of APFS to be more equal in decision making with men and their husbands, although stronger efforts are required given current barriers. The 'model men' approach and other creative means of achieving this through VSLA were found to be relevant. Some labour savings technologies and practices were promoted, but on a modest scale and not very successfully. Women's rights to control land for cultivation was not addressed.

Qu.8: The potential impact of the project on increased resilience of targeted communities to climate extremes and weather events

Conclusion 8.1 The Project has made aggregate improvements in strategic planning and to some extent preparedness for climate shocks (and livestock disease outbreaks and burdens). Apparently this has not (yet) translated into DLG led responses to assist communities to cope with disasters/crises. This is primarily due to the lack of funds. But even if some contingency funds are allocated to DDMC and these are helpful as a first response, external responders are likely to overwhelm the district and its contingency plans and response structures.

Conclusion 8.2 FAO has demonstrated that it can play a valuable role in preparing for and supporting a response to livestock disease related disasters/crises in Karamoja that mitigate negative impacts on the economy and the resilience of livestock owners (delays in mounting a response to the FMD outbreak notwithstanding). This is a key area where FAO is well placed to contribute to resilience over the longer-term.

Conclusion 8.3 Support for private sector drug shops shows signs of adaptation in improving veterinary service delivery. FAO can reasonably be expected to take this further and the ET believes that there is potential for the greater involvement of the private sector

and the commercialisation of livestock to make Karamoja more resilient in the longer-term (provided the benefits of this development are shared and not too concentrated).

Recommendations

Project Design/Theory of change

Recommendation 1

To provide process dimensions to its ToC, FAO should include strategies in a second phase or follow-up intervention for a) generating and sustaining social and institutional change, and b) improving coordination and collaboration with Government partners, WFP and UNICEF, implementing partners and stakeholders, and c) a broader partnership strategy that includes private sector.

Early warning, planning and response

Recommendation 2

To protect the investment made in DEWS to date, FAO should collaborate with a wide range of international agencies to a) ensure the Districts to mainstream DEWS into existing work-plans and budgets b) advocate for OPM to provide contingency funds to DDMC, and c) engage children and youth as active family members in reducing vulnerabilities and building resilience and reaching out to their parents and local communities, FAO should support IPs to set up and running of DRR/CC clubs in schools in all the project areas.

Livestock sector

Recommendation 3

FAO and development partners should promote the development of livestock owner networks as a mode of entry to promote a business mode and paying for services, and to increase the accountability of all veterinary service providers.

Recommendation 4

To promote self-sufficiency in veterinary service delivery and a more commercial orientation, FAO should seek effective means of promoting and supporting private sector service delivery in a second phase or follow-up intervention, advocating that free service delivery be curtailed. Before providing further training for CAHWs, FAO should review the CAHW institution in collaboration with MAAIF and in consultation with livestock owners including women to strengthen regulation, community accountability and sustainability.

Recommendation 5

To enhance the effectiveness of APFS in building resilience to climate extremes and weather events in Karamoja, FAO should conduct research and analysis on the leading constraints to the adoption and/or adaptation of climate smart agronomic practices and technologies, including soil and water conservation measures.

Recommendation 6

To establish a methodical approach to learning, FAO should attach a 'season long' action research component to the next phase designed to critically evaluate the following in collaboration with NARO, District Production Offices and IPs:

Water for production

Recommendation 7

FAO should consider technical and leadership training for water users' association members, particularly for women members so that they can take up the leadership and technical positions. And to create ownership, resource efficiency, and the accountability of government agencies, future water investments should include some matching funds from the Ministry of Water and Environment and District Local Government and Sub-counties.

Research and analysis

Recommendation 8

To ensure utilisation, FAO needs to disseminate research widely and prepare policy briefs based on the research to share with relevant ministries. To inform further programming concerning EWS, water, crop production and livestock FAO should ensure research is conducted in each case on relevant indigenous knowledge, by different ethnic groups, across the six livelihoods zones in Karamoja.

Gender Mainstreaming

Recommendation 9

To fully meet the gender equality policies of FAO, gender mainstreaming should be taken up more systematically in successor programmes, including

1. Introduction

1.1 Purpose of the evaluation

8. The purpose of the evaluation is to provide accountability to the United Kingdom's Department for International Development (DFID) and partners by assessing the contribution of the Food and Agriculture Organisation of the United Nations (FAO) to DFID's "Enhancing resilience in Karamoja Uganda" programme (ERKP), implemented by FAO, the World Food Programme, UNICEF and their partners, and to draw lessons from the implementation processes that could inform future decisions by DFID and FAO on the formulation of a second phase or follow-up intervention. Box 1 highlights the purposes established and the intended users according to the purposes.

Box 1. Main purposes and intended users of the evaluation

Purpose		Intended user
Accountability: to respond to the information needs and interests of policy makers and other actors with decision-making.	Inform decision making Provide Accountability	Donors FAO Management Governments
Improvement: Program improvement and organizational development provides valuable information for managers or others responsible for the regular program operations.	Improve program	Project Management and PTF
Enlightment: In-depth understanding and contextualized the program and its practices normally caters to the information needs and interests of program staff and sometimes participants.	Contribute to knowledge	FAO staff and futur developers and implementers

9. The contributions of FAO, WFP and UNICEF to the ERKP have been in the form of stand-alone projects funded by DFID, in FAO's case Project GCP/UGA/042/UK titled "Strengthening Adaptive Capacity of Agro-Pastoral communities and the Local Government to Reduce Impacts of Climate Risk on Livelihoods in Karamoja, Uganda" (the Project). The evaluation's purpose is served by evaluating the Project, while considering collaboration between FAO, WFP and UNICEF within the ERKP framework.

10. The FAO Project is a two-year initiative that started in November 2013 with an initial end date of December 2015 extended (through a no-cost extension) to March 2016. This evaluation coincides with the completion of the Project.

1.2 Scope and objective of the evaluation

11. The evaluation covers the entire implementation period of the Project, from November 2013 to March 2016 and all key activities undertaken within the framework of the project as described in the Project Document. The focus is on output and outcome results, as required by the ToR.

12. The **objectives** of the evaluation are to:

- Assess the appropriateness of the project's design and approach;

- Assess the project's achievements and contributions vis-à-vis its objectives;

- Assess the actual and potential impact of the project and its contribution to the *ERKP*;

- Identify key success areas and lessons, and make the appropriate recommendations to the project team, FAO, the donor and other stakeholders to guide decision-making and planning for subsequent phases or similar projects under the ERKP programme or within the Karamoja subregion.

13. The **key questions** specified for the evaluation are:

- Qu.1: To what extent the project design, approach and implementation arrangements (including partnerships) were relevant and efficient?

- Qu.2: To what extent the Early Warning Systems, Preparedness and Contingency Planning and Response System have been strengthened?

- Qu.3: To what extent the Livestock disease surveillance, diagnostic capacity, veterinary services and animal nutrition have been strengthened?

- Qu.4: How effective were the Agro-Pastoral Field Schools in developing communities' capacity on climate-resilient livelihood?

- Qu.5: How the Integrated Water Management work will add value to other project components and to the communities in Karamoja?

- Qu.6: How the project contributed to evidence based research and analysis and how the project incorporated the results?

- Qu.7: To what extent the project responded to women's needs?

- Qu.8: What is the potential impact of the project on increased resilience of targeted communities to climate extremes and weather events?

The evaluation team (ET) developed sub-questions for each key question in consultation with the evaluation manager.

1.3 Methodology

14. The evaluation commenced with a desk review of FAO normative and knowledge products; the DFID ERKP Business Cases and FAO Project Document; international, regional, and national reports related to the project areas and themes; project documents and reports from FAO and IPs. A full list of documents reviewed is provided in Annex 2.

15. Fieldwork in Uganda was conducted from 17 April to 12 May 2016 with the period 21 April to 6 May spent in Karamoja (17 days).

16. Key informant interviews were conducted in Kampala with FAO staff, government ministries and related agencies (MAAIF, MWE, Kyoga Water Management Authority, Prime Minister's Office, WFP, UNICEF, DFID, IPs and external agencies such as Oxfam in Uganda.

17. At the request of FAO Uganda, fieldwork included all seven districts (Kaabong, Kotido and Abim Districts in northern Karamoja and Moroto, Napak, Nakapiripirit and Amudat Districts in southern Karamoja). In each district the ET endeavoured to meet relevant government political and administrative leaders, technical personnel, the entry point being District Production Offices. Within the towns/district HQ, the ET also sought to interview IPs.

18. The first step in determining where the ET should go in each district beyond the HQ was to purposively select a Sub-County, the objectives being to include (for Karamoja as a whole) a good range of livelihood zones, a good range of Project investments, and to ensure the inclusion of some relatively hard to reach locations. The Sub-Counties selected were Abim, Amudat, Kaabong, Kotido, Moroto, Nakapiripirit and Napak Districts.

19. Two APFS were then selected for each Sub-County by random sample from lists of APFS. If both selected randomly were 'old' groups, the second selected was redrawn randomly until this yielded a 'new' group. In total the ET visited 35 groups out of 380 i.e. not necessarily a representative sample. Focus group discussions (FGD) with APFS were designed such as to include only three or four women and three or four men so as not to impact much on ongoing gardening given that it was rainy season. In a number of cases participation was generally higher, on few occasions the entire group of 30. Following the FGD, the ET conducted short individual interviews with two members and made home visits with them or others to directly observe technologies and activities carried out individually and/or collectively.

20. In each Sub-County the ET also visited the Sub-County and/or Parish offices and incorporated observation visits to (where available) water for production activities, micro-catchment pilot projects, livelihood resilient technology trials, ongoing vaccinations or a kraal. In some cases the ET visited such sites en route to the selected Sub-County, in others the ET made a specific trip to a Sub-County to do so.

21. A summary of the methods used for responding to key evaluation questions appears in the following table. The key questions formed the basis for interview checklists, tailored and with special emphasis depending on the interviewee's responsibility/role. A full list of key informant interviews is provided in Annex 3. Gender concerns were integrated into all evaluation methods. The approach took 'Beneficiary Assessment' and 'MLLE' principles into account. Findings were corroborated by triangulation where possible.

Key evaluation question	Overall approach
Qu.1: To what extent the project design, approach and implementation arrangements (including partnerships) were relevant and efficient?	Assessment of DFID ERKP Business Case and LogFrame; and the FAO Project Document. Tailored version of question posed in all interviews at national and district level, in particular to FAO Managers and Staff, and donor agency (DFID). A prime question for IPs.
Qu.2: To what extent the Early Warning Systems, Preparedness and Contingency Planning and Response System have been strengthened?	Assessment of ACTED, IIRR, IUCN LoAs and final reports. Meetings with IPs, stake-holders involved (District Production Office, sentinels and sub-county leaders), and other government agencies such as OPM in Kampala and/or Karamoja. Tailored version of question posed in all interviews at national and district, and sub-county level. Benchmarks
Qu.3: To what extent the Livestock disease surveillance, diagnostic capacity, veterinary services and animal nutrition have been strengthened?	Meetings with MAAIF Tailored version of question posed in all interviews at national and district level. Key informant interviews of District Production office, CAOs, CAHWs, APFS and attention to Theory of Change. Research conducted by FAO Uganda in this area was reviewed to reveal the magnitude of the situation. Interviews with APFS members were conducted to answer the question. Observation in the kraals and in the field. Benchmarks
Qu.4: How effective were the Agro-Pastoral Field Schools in developing communities' capacity on climate-resilient livelihood?	Assessment of IP LoAs and final reports. Meetings with IP in Kampala and/or Karamoja. Tailored version of question posed in all interviews at national and district level. Focus group discussions (FGD) with APFS and APFS networks in each district, key informant interviews. Observation in the field around APSF also provided some additional information. Benchmarks
Qu.5: How the Integrated Water Management work will add value to other project components and to the communities in Karamoja?	Assessment of C&D LoA and final report and two meetings with C&D in Moroto and two meetings with FAO Uganda's water specialists at national and Karamoja level. Site visits to water facilities and community member interviews including workers. Focus group discussions and research on water feasibility, conducted by FAO Uganda. Benchmarks
Qu.6: How the project contributed to evidence based research and analysis and how the project incorporated the results?	Desk review of all the research, conducted by FAO technical staff at HQ, Regional, national and Karamoja-based staff, external consultants and NGOs. Interviews with FAO staff at national and Karamoja level. In-depth interview with donor agency (DFID) and UN agencies. Some FGDs with the district production offices to check the relevancy and quality.

Qu. 7: To what extent the project responded to women's needs?	FAO Gender Equality Policy and TOR. Tailored version of question posed in all interviews at national, district and community level. FGDs with IPs and APFS and APFS networks. Review of all IPs reports and FAO reports; Project Document (regarding the design and context), and in-depth interviews of FAO Gender focal point staff, Project Coordinator and APFS specialist staff. Review of gender analysis of FAO Uganda, GOAL and other gender related research, conducted by FAO staff and external consultants. Review of APFS manual and curriculum; Observation of APFS leaders and members in discussion; case-studies of beneficiaries and non-beneficiaries members of APFS; Case-studies of APFS and APFS networks.
Qu. 8: What is the potential impact of the project on increased resilience of targeted communities to climate extremes and weather events?	Assessed with reference to the Project's contribution to absorptive, adaptive and transformative capacity[1]

22. The focus of the evaluation was not on activities nevertheless performance against benchmarks specified in the Project LogFrame was assessed with reference to FAO and IP final reports and evidence obtained at interview and from observation.

23. A feedback meeting was held in Moroto with the FAO CTA and his staff and two presentations were made in Kampala to inform and validate the evaluation results – one presentation to FAO Uganda staff followed by one to DFID.

Limitations

24. The ET has not been able to have in-depth interviews with the local communities who have been benefiting from the DEWS dissemination from ACTED; The ET could not provide feedback meetings to all District Local Governments an IPs as requested, due to the time limitation and inconvenience of joint meetings among the DLGs due to far distances. The fieldwork took place in the early rainy season and farmers were in their fields ploughing and in some cases sowing. Efforts were made not to disturb them, including starting meetings mid to late morning. This impacted on the fieldwork. Since the evaluation was done several months after the cropping season had ended it was not possible to see APFS demonstration gardens or, more often than not, application by households. The ET had to rely heavily on in depth interviews with APFS members, DLG technical staff and IPs.

[1] OECD (2014) Guidelines for resilience systems analysis, OECD Publishing.

2. Background and context

2.1 Context of Karamoja

25. The Karamoja subregion in north-eastern Uganda is home to approximately 1.3 million[2] people, of nine ethnic groups. The subregion is endowed with vast land resources, wildlife and livestock, extractive resources, social and cultural bonds providing a safety net, and indigenous knowledge for managing traditional livelihoods and the environment. The livelihood systems are a mixture of nomadic and sedentary agro-pastoralism and crop farming, with six distinct livelihood zones[3] and a small urban population.

26. The region's potential is blighted by severe shocks and stresses[4]. Main shocks include: erratic and uneven rainfall resulting in severe dry spells and flooding; livestock disease outbreaks; crop pests and invasive species of grasses; hikes in food prices; and insecurity. Main stresses are: livestock losses; youth disempowerment; weak community leadership; poor agricultural extension services, contributing to low agricultural productivity; inadequate access to basic education and health services; inadequate access to water and sanitation; poor infrastructure especially roads, and difficult access to markets for livestock; illiteracy; severe land degradation and tensions; some negative social norms including the disempowerment of women and the impacts of alcohol and violence on women and children; and a long-standing dependency on external aid. The subregion is emerging from many years of civil insecurity including cattle raiding, and disarmament operations, which greatly reduced livestock numbers.

27. Climate change and variability are now adding an extra layer of vulnerability to the sub-region. According to the Uganda National Adaptation Program of Action (NAPA)[5], the frequency of droughts increased from 1991, with seven droughts between 1991 and 2000. Extreme weather patterns have become more frequent since 2001. Most perennial rivers and streams have become seasonal[6]. Significant flooding occurred in 2007.[7] Most recently, a succession of drought periods has been recorded[8]. In 2015 normal rains set in at the start of April in most districts, enabling planting, however rains then failed in some districts from June and in others from early July. In the first case this resulted in losses for crops sown earlier in April while in the second case it impacted on recently sown 'second season' crops. This unfavourable pattern was attributed to a predicted El Niño episode. The failure of crops not only interfered with the demonstration of agronomic practices – the lack of cereals undermined cereal banking. The ET questions how well FAO and IPs adapted to the

[2] UBOS projections for 2012 estimate Karamoja's total population to be 1,294,000
[3] Classified by FEWSNET, FAO and the Government of Uganda
[4] FAO IGAD's Resilience Study in Karamoja, 2014
[5] Ministry of Water, Land and Environment (MWLE), Government of Uganda, 'Climate Change: Uganda National Adaptation Programmes of Action' (2007)
[6] Three agencies Joint Resilience Strategy in Karamoja, 2013
[7] Climate Change and Adaptation Option in Karamoja, Mubiru, DN, 2010
[8] http://www.observer.ug/news-headlines/39969-several-dead-as-drought-famine-hit-karamoja
http://www.un.org/africarenewal/news/uganda%E2%80%99s-karamoja-faces-drought-emergency
http://ugandaradionetwork.com/story/rains-bring-hope-to-thirsty-karamoja
http://cdkn.org/wp-content/uploads/2015/12/Uganda_CC-economics_Karamoja_case-study2.pdf

2015 drought - theoretically a drought year presents both challenges and opportunities in terms of climate change adaptation.

28. Climate variability is projected to continue to manifest itself through extreme weather conditions in Karamoja in years to come, affecting crop production and pasture for livestock, with direct negative effect on livelihoods. The content and expectations of APFS should be reviewed to adapt to this quickly changing climate context.

29. Many international development partners have operated alongside the Government of Uganda in Karamoja over the past decades including IGAD, UN agencies (UNDP, UNICEF, WFP and FAO), the World Bank, DFID, USAID, ECHO/DEVCO and numerous international and national NGOs[9]. Since 2010, a major shift has taken place in externally supported programmes, from humanitarian assistance to livelihood protection and promotion. In 2011, this shift resulted in the phasing out of EC Humanitarian Assistance (ECHO) and the UN Office for the Coordination of Humanitarian Affairs (UN OCHA), with support of the main humanitarian donors (ECHO, USAID, DFID)[10]. NGO partners have welcomed the new developmental approach of reducing input-dependence among local government agencies and communities, although the approach of reducing dependency is not well coordinated among external agencies.

2.2 Context of the project

30. The broader programming context is DFID's ERKP, which aims (in broad terms) to increase the resilience of targeted communities to climate extremes and weather events. In terms of targets the ERKP is intended to support 700,000 people to cope with the effects of climate change, including: 800,000 cattle vaccinated against epidemic diseases; 6,000 agro-pastoralists & pastoralists with access to improved animal nutrition; 200,000 women & men with improved food security through participation in public works programmes; severe acute malnutrition (SAM) reduced by treating 37,500 children under five; global acute malnutrition (GAM) reduced by treating 175,000 children under five and pregnant & lactating women.[11] Of these quantifiable outputs FAO is responsible for the first two mentioned.

31. The direct beneficiaries of the Project included agropastoral communities and individual farmers and herders, farmer trainers (Agropastoral Field School facilitators), community animal health workers, and national and local government departments and officials, while the indirect benefits accrued to the entire population of Karamoja. The original target for direct beneficiaries was 11,400 (38% men and 62% women).

32. The total project budget was USD 12,479,904 funded 100 percent by the UK government with financing from the International Climate Fund. It is part of the 47 million

[9] FAO's IGAD's Resilience Study in Karamoja, 2014

[10] DFID Business case

[11] DFID Business Case, pages 1, 2

DFID ERKP[12] implemented through FAO, UNICEF and WFP. The implementing partner NGOs and institutions included:

- ACTED – Strengthening Drought Early Warning System (DEWS)
- IUCN and IIRR – Conducting comprehensive watershed status assessments and delineation; capacity needs assessments; and developing integrated micro-catchment management plans and contingency plans;
- ADRA, Happy Cow, GOAL, Caritas, COMWO, ZOA - Agropastoral field schools (APFS)
- NADDEC – Livestock disease serosurveillance and monitoring; early warning and response to livestock disease outbreaks
- PENU – Conducting an evaluation & refresher training of CAHWs
- Mercy Corps – Strengthening Private Sector engagement in veterinary supply systems
- C&D – Construction water for production and establishing geodatabase; and radio programming and broadcasting
- National Drug Authority – Strengthening pharmaco-vigilance in veterinary drug supply services
- NaLiRi – Strengthening Livestock nutrition through pasture management

33. FAO's primary government partners have been the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) and the District Local Governments of Abim, Amudat, Kaabong, Kotido, Moroto, Nakapiripirit and Napak Districts. Human resources comprised the FAO Project Team in Karamoja under the lead of a Technical Advisor. The Deputy Representative of FAO was the key livestock advisor for the project. The national FAO Uganda team specialising in APFS, livestock, water supply, DEWS, watershed management, climate change adaptation, gender, and M&E, provided further technical assistance throughout the project.

2.3 Theory of change

34. The Project contributes to the ERKP by strengthening the resilience of agropastoral communities and Local Governments to reduce the impacts of climate risks on livelihoods. The five quantifiable 'main outputs' included in the ERKP include two as FAO contributions: 800,000 cattle vaccinated against epidemic diseases and 6,000 agro-pastoralists and pastoralists with access to improved animal nutrition.

35. The Project has two Outcomes supported by three Outputs:

Outcomes

(1) Improved strategic planning and response to climate risks/ shocks;

[12] https://devtracker.dfid.gov.uk/projects/GB-1-203603

(2) Strengthened adaptive capacities of agro-pastoral communities and the District Local Governments (DLG) to reduce climate risks.

Outputs

(1) Early warning, preparedness and contingency planning and response system strengthened;

(2) Livestock disease surveillance, diagnostic capacity, veterinary services and animal/livestock nutrition strengthened;

(3) Agro-pastoral production systems strengthened through support to DLG, APFS and improved access to water.

36. Outputs 1 and 2 potentially benefit the whole population, while Output 3 potentially benefits perhaps 5% of the population. The Outputs/components are well demarcated and defined and logically support the overall objective. The Outcomes level in the hierarchy is poorly conceived however and not helpful logically as a link between Outputs and the Overall Objective (this is reflected in the poor differentiation of indicators between Outputs and Outcomes).

37. There are significant missing *process* steps in the theory of change (see Section 3.1).

3. Evaluation questions: key findings

3.1 Evaluation question 1: To what extent the project design, approach and implementation arrangements (including partnerships) were relevant and efficient?

Main finding:

- *The Project's design is well researched and considered the three outputs/components are relevant and support the Project's intended climate risk resilience outcome.*
- *In Karamoja, It is difficult in practice to effectively shift the discourse beyond livelihoods and food security to resilience and climate change adaptation (CCA), particularly at the household level.*
- *FAO's engagement in the livestock sector is highly relevant and strategic, including the nascent emphasis on private sector service delivery and commercialisation.*
- *Investments in water for production are relevant but will need to be evaluated post-completion. The investments in situational analysis, early warning and action planning have increased capacity but require further external support. The lack of commensurate support at the sub-regional level for contingency planning and coordinated action detracts from the design.*
- *The theory of change lacks a description of enabling processes including for engaging with WFP, UNICEF and other stakeholders and for generating and sustaining social and institutional change. FAO Uganda has a strong team and capable IPs.*
- *The Project is part of the ERKP, which DFID intended would be implemented collaboratively by FAO, WFP and UNICEF. While this was a sensible strategy on the part of the donor the ET is not aware of any assessment of the extent to which the strategy enhanced FAO-WFP-UNICEF collaboration on climate resilience. The three agencies are said to have cooperated quite closely in response to the 2015 drought, but that is normal and not indicative of a joined up effort to address resilience.*

Concept and design

38. FAO's design for the project was strategic and well informed by climate change related research and previous experiences including the Karamoja Livelihoods Program (KALIP) which ended in August 2014. This is evident both from the detail in the Project Document and Letters of Agreement (LoAs) signed with implementing partners (IPs). The Project is based on the premise that to improve livelihoods and food security under conditions of increasing climate variability and change amid environmental degradation, the project should focus on strengthening the resilience of agro-pastoral communities and the local government to reduce the impacts of climate risks.[13]

39. The emphasis on resilience reflects one of FAO's strategic objectives[14] and the broader consensus reached in recent years by agencies and donors. This is

[13] Project Document, p 16

[14] Strategic Objective 5: Increase the resilience of livelihoods to threats and crises (see particularly Outcomes 5.3 and 5.4.)

reflected in Uganda in the Government's draft Resilience Strategy of March 2013 and the FAO, WFP, UNICEF Joint Strategy for Building Community Resilience in Karamoja of May 2013. Project objectives and results were aligned to the National Development Plan (NDP-I 2010/11 – 2014/15 and still relevant to NDP-II Natural Resource and Environment objective 5 of increasing the Country's resistance to impact of Climate Change. There are also linkages with the National Adaptation Plan of Action (NAPA) 2007, and the Agriculture Sector Development Strategy and Investment Plan (DSIP) 2015/2016.

40. The three areas of investment incorporated by FAO in the Project[15] are relevant to climate resilience and within FAO's competence and mandate. (See the assessment of each Output in Sections 3.2 following.) The three Outputs address distinct processes, sectors and coverage. Watershed management necessarily starts with a very broad assessment with pilot activities; support for the livestock sector is relatively self-contained; while support for production mainly through APFS is focused on a relatively small percentage of the population through individual level capacity development.

41. The ERKP, described in DFID's Business Case, includes a joint ERKP LogFrame. FAO, WFP and UNICEF report to DFID against the indicators for which they are responsible. This is in addition to project level reporting obligations, although there is considerable overlap. One of the main outputs supporting DFID's Theory of Change for ERKP is 'improved development coordination in Karamoja'. One means adopted for achieving this is integrating the efforts of all partners in district level planning[16].

42. The ERKP LogFrame usefully illustrates how the three agencies contribute to a shared climate resilience purpose, but of itself this does not ensure a collaborative partnership. The formal mechanism for this is the ERKP Programme Management Committee meeting quarterly to ensure strategic and operational coordination. In separate interviews with FAO, WFP and UNICEF it was apparent that each is focused on its project and the ET gained the strong impression that the overarching ERKP changes little in this respect. In all the time spent with FAO staff in Kampala and in the field there was virtually no mention of WFP or UNICEF. But even if the ERKP is a DFID construct, it is a useful framework and a step towards a more collaborative UN approach.

43. It is difficult in practice to effectively shift the discourse beyond livelihoods and food security to resilience and climate change adaptation (CCA), particularly at the household level where Karamojong will tell you they are simply struggling to survive from year to year. Giving practical meaning to these concepts must be a challenge for APFS facilitators, who themselves may have difficulty relating resilience to community and group action planning. Thus although the discourse about resilience and CCA is relevant at all levels, those engaging communities almost certainly require more relief support.

[15] Output 1 Early Warning, Preparedness and Contingency Planning & Response; Output 2 Livestock disease surveillance, diagnostic capacity, veterinary services and livestock nutrition; and Output 3 Agro-pastoral production systems through support to DLG, APFS and improved access to water.
[16] DFID BC p 26

Project Output 1 (early warning, planning and response)

44. It is relevant and helpful for FAO to support early warning (EW) systems at the national and district levels and to seek to disseminate information directly to at risk communities, which is one of the features of the Drought Early Warning System (DEWS) supported by the Project. The monthly Drought Bulletins produced under the DEWS are a valuable planning tool for districts, which consolidate regional, national, district, sub-county and parish information for analysis and reporting. District Production Departments (technical people) expressed ownership and support for the DEWS, so they clearly think it is relevant.

45. The investment in updating district Contingency Plans (CPs) is relevant in principle. They are comprehensive and relevant to the National Policy for Disaster Preparedness and Management and, the institutionalisation of disaster risk reduction. Further work required includes linking the CPs and DEWS in real time. The relevance in practice of the Contingency Plans is however yet to be tested.

46. IPC, EMPRES-i Event Mobile Application (EMA) and HEA are relevant. Stakeholders have welcomed the application of IPC to Karamoja, and extending EMA to Karamoja has improved real time reporting in passive surveillance. HEA contributes to inter-agency assessment. However within the broader context of all agencies and actors there is still a lack of integration and rationalisation across tools and systems. Although the Project included studies that should have supported integration and/or rationalisation, the difficulty of FAO Uganda leading/driving change might not have been adequately considered at design.

47. DEWS, HEA, IPC, CPs are all ongoing investments, which were initiated several years before this Project and will realistically require further external support. Considerable risks have become manifest in not having Government commitments up front e.g. DEWS (OPM) and Contingency Plans (District Executive Committees).

Project Output 2 (livestock surveillance, services & nutrition)

48. Livestock is vital to the economy of Karamoja and addressing the low productivity of livestock is a crucial element in strengthening resilience i.e. addressing lack of water and pasture; and endemic diseases impacting on production and productivity including: milk production, body weight, calving interval as well as morbidity and mortality during disease outbreaks. It is clearly within FAO's mandate to lead assistance in the livestock sector and it was the primary contribution expected of FAO under ERKP (see main outputs).

49. DLG resources to meet infrastructure, equipment and human resource needs are insufficient, so project support is relevant. FAO's assistance to government to control the 2015 FMD outbreak was appropriate and critical to livestock survival and communities' resilience.

50. It is highly relevant and strategic for FAO to support private sector service provision as one step towards a more commercial and potentially sustainable orientation to livestock in Karamoja, as opposed to continuing to provide free livestock services and have livestock owners continue to focus on social status and the number of their animals, rather than their quality and market value. Although culturally important, livestock need to be promoted by government and development partners as an economic enterprise for improved livelihoods. This is the direction FAO is taking.

Project Output 3 (climate resilient livelihoods)

51. APFS are a relevant entry point to communities and households and it was strategic and practical to build on KALIP. As with KALIP, geographic coverage is quite limited; under this Project 380 groups of 30 representing 11,400 direct beneficiaries and up to 70,000 indirect beneficiaries if all household members are considered (approx. 5% of the population). Cumulatively going back several years, up 20% of the population has been directly or indirectly exposed to APFS (with considerable variations between districts). Nevertheless APFS are not on a scale that readily lends the approach to integration with other Project components.

52. Providing 'water for production' for horticulture and 'home' livestock as was designed is very relevant but options are constrained. The valley tanks really only extend access to water for a couple of months given that they will dry up if there is no rain for two months. Moreover they may silt up within a few years. Solar systems for multiple users are attractive but relatively expensive and they draw on the water table meaning there are limits to how many systems can be put in place. FAO Uganda contracted very capable IPs and engaged appropriately with MWE and DLG to address some of these and challenges. Institutional support to DLG (equipment and training) was relevant and helpful.

Gaps in the Project's theory of change/design

53. The Project's theory of change (ToC) lacks a description of required process, including for example communication and engagement a) with WFP and UNICEF (critical to the collaboration expected of ERKP), b) with OPM (critical to agreement on DEWS in particular), and c) with communities (critical to make the shift to self-reliance.) These could helpfully have been described in a flow chart as steps supporting each Output.[17]

54. A related weakness is the lack of attention to how social and institutional change will be generated and sustained. Grounding the ownership of DEWS in District Production Offices and including support for private sector veterinary service provision are strategic elements; but FAO would have done well to include an explicit strategy for generating and sustaining social and institutional change over time, reflected in the ToC.

55. The design includes several systems and plans which the districts in Karamoja, some recently created, do not have the resources to adequately utilise or sustain e.g. DEWS, updated Contingency Plans, and the Micro Catchment Management Plans. It is also relevant to ask if national government will be able to satisfactorily utilise and sustain investments e.g. in the Regional Veterinary Laboratory in Moroto. FAO and DFID may anticipate continuing to provide support for Project investments and/or expect that others will do so (there were frequent references to the possibility of future World Bank funding). But there are clearly continuity risks. It would have been helpful if the Project document was more explicit about forward funding requirements and possible funding scenarios, recognising that the efficient use of development funds demands longer term cooperation between development partners and with government to ensure investments are coherent and each has the ongoing funding required to realise the previous investment.

[17] One way of depicting this is to insert process 'steps' between Inputs and Outputs in a flow chart.

56. DFID (and some other donors) are focusing capacity development at the district level due to previous issues concerning the provision of funding at the national level. In designing ERKP DFID recognised the risk that national government may not fully engage with the programme if funding is not being directed to the national level. This risk has perhaps become manifest with respect to FAO's difficulties in gaining full endorsement for the district focused Drought Early Warning System (DEWS).

Engagement with implementing partners and government

57. FAO Uganda's approach included cooperating with diverse and multiple yet relevant and capable implementing partners (IPs). All could be described as outcome focused with a strong organisational or institutional imperative to engage in social/institutional change. The approach enabled the project to diversify the sources of results, reduced institutional risks, created incentives and expanded the channels of advocacy for change.

58. The selection of NGO/CBO IPs to support APFS in each of the seven Districts was undertaken competitively with direct involvement of DLGs to foster cooperation in project implementation and ownership of results. Strong working relationships and trust appear to have been established between FAO, the APFS IPs and DLG. While each of the seven IPs appears to have performed quite well, it is evident from interviews and their final reports that there is a wide range of expertise and experience amongst them from fair to excellent. Some APFS IPs expressed the view that their LoA is too prescriptive with no flexibility to change or adapt activities.

59. Other partners included national research institutes, private sector companies, government agencies and DLGs. It was appropriate to engage NADDEC to address livestock disease control and diagnosis, NaLIRRI to handle livestock nutrition and production technologies, and PENU to review the CAHW institution and further develop CAHWs capacities in veterinary service provision. IIRR and IUCN have competencies in watershed management. The National Agricultural Research Organization (NARO) and its zonal institute for the Karamoja and Teso sub regions, NABUI-ZARDI based in south Karamoja, could have been engaged to advise on climate-smart agriculture practices and for the multiplication of high quality seeds (maize, cassava, beans etc.).

60. There was some cooperation and information sharing amongst IPs e.g. ACTED, GOAL and Caritas for DEWS; C&D and GOAL for water; IUCN, IRRI and DLGs on updating Contingency Plans; all NGOs partners and DLGs through Climate Change Training, and among NGOs partners through APFS external exchange visits, and a regional trade fair. Coordination and sharing amongst IPs could be enhanced in a programme of longer timeframe, by introducing formal joint sharing and learning mechanisms.

61. FAO cooperated closely with the Government of Uganda in the design and implementation of the Project, including most notably MAAIF at the national level and DLG in Karamoja. Government is highly appreciative of FAO Uganda's engagement and contribution.

62. FAO Uganda has excellent staff implementing the Project and has provided sound technical backstopping to IPs. The FAO Project team, including the Deputy Representative and the Chief Technical Adviser, has a wealth of international and national experience in project management, and strong technical expertise in water, livestock, APFS, watershed

planning and management as per positive feedback gained by ET from all IPs and DLGs in Karamoja.

Monitoring and reporting

63. There is evidence of considerable attention to design in the Project Document and in the LoAs with IPs. This high quality does not flow through to FAO's monitoring and reporting, which applies no real rigour in assessing results. While this may not be exceptional in so far as it is weakness FAO shares with others, it is fatal over the longer term because by not really capturing what has worked well and what has not.

64. Whereas FAO's LoAs with APFS IPs specify that their final reports should address successes and challenges, lessons learned, and recommendations for improvement, only one of the seven IPs did this thoroughly. Three were of such a poor quality that they should not have been accepted by FAO.

65. DFID provided FAO Uganda (and WFP and UNICEF) GBP 500,000 in support of independent monitoring and evaluation and specific formative research and analysis[18] In this evaluation exercise, the ET observed a lack of research dedicated to results-based learning, outcome level assessments and programme level reviews.

66. FAO did not apply metrics to estimate cost benefit or value for money. The Business Case for ERKP provides estimates for value for money however. Animal disease control was estimated by DFID to be particularly good value and highly cost-effective with a cost benefit of 7.2 (£7.2 gained for every £1 invested). DEWS and IPC were estimated to have good benefits and represent good value for money. Action research on watershed management was estimated to potentially yield a high benefit-cost ratio (£3.6 gained for every £1 invested).[19] As far as the ET is aware, none of these estimates have been re-visited and the ET was neither asked nor attempted to do so.

67. FAO deployed M&E and gender focal point staff at FAO National Office to support the M&E and gender study, plus several senior national staff with technical capacity in APFS, watershed management, water and livestock. The case of gender, more technical support for the Project and IPs on gender mainstreaming would have been additionally beneficial.

Delays in implementation

68. As designed, the Project duration was October 2013 to December 2015 (27 months), a challenging duration for a project involving diverse sectors, many partners (18 LoAs) and seven districts. The inception period took longer than anticipated and the startup of all components other than DEWS was delayed. APFS IPs did not sign their LoAs until 24 September 2014. Even if they began hiring staff and making commitments in advance of receiving their first tranche from FAO (some did, some did not) they had no more than 14 months to deliver an APFS curriculum designed to be delivered over 18 months. Vaccinations were delayed from 2014 to 2015 following slow progress with planning, which

[18] DFID ERKP Business Case, pp 1, 2

[19] ERKP Business Case, pp 35, 36

lead to an ICF budget reallocation.[20] There were also delays signing the main LoA for the provision of 'water for production' assets with C&D in 2015 (in part in obtaining approval from Rome for the cash-for-work modality). Then there were delays releasing funds to C&D (up to July 2015, leaving very little time for implementation). The demonstration of improved pastures and hay making through NaLIRRI also took place late in the project cycle. To address the challenges, DFID and FAO formally redesigned Year 2 and 3 activities in a no-cost extension to end March 2016. FAO in turn extended several LoAs (most by three months, longer in the case of the water works mentioned). Nonetheless, not all activities will be completed within this period however, including the water assets. Project Output 4 (the 18 month 'water addendum') has now also had a delayed start.

69. Within a short period of such a complex project with many IPs and activities, the large body of research conducted were found highly demanding in terms of time, administration and technical expertise of FAO project staff, given the fact that all the topics were very relevant informing the programme activities. Prioritisation of research, integration of research topics, and human resources for research management might be needed in the future.

Procurement challenges

70. FAO has longstanding difficulties with the timely procurement of inputs to Karamoja and this remained true for this project impacting on implementation and in some cases results. Procurement delays impacted on the livestock component with some products, output and outcomes affected, leaving them incomplete even after 3 months of no-cost extension e.g. sero surveillance work with NADDEC and the Tsetse fly survey. While actual costs foregone were not precisely estimated, the delay in early detection and procurement of vaccines has a cost and effectiveness negative effect on disease control.

71. There were also serious procurement delays in relation to FAO inputs for APFS. In Kaabong, Napak and Nakapiripirit Districts, IP reports state that the provision of planting materials specified in LoAs as an FAO in kind contribution were delayed until late October or November 2015. This included seed for maize and beans, which should have been provided several months earlier. The IP for Moroto District reported that over 50% of FAO supplied seed planted in November was lost. Some livestock inputs (including goats) that should have been provided to APFS in time to be associated with animal husbandry training and/or enterprise development are still outstanding. Consequently, since IPs and facilitators are out of contract, FAO will have to arrange for direct or alternate delivery approaches.

3.2 Evaluation question 2: To what extent the Early Warning Systems, Preparedness and Contingency Planning and Response System have been strengthened?[21]

Main finding:

[20] First ERKP Annual Review, p 5.

[21] The wording of the question mirrors Project Output 1.

- *Although EW studies were conducted there is no evidence of integration or rationalisation of EW systems in use in Karamoja.*
- *The updated Contingency Plans are comprehensive but they are yet to be formerly endorsed or utilised. The DEWS in particular has strong district level ownership. But it is not fully supported by NECOC/OPM and its future is thus uncertain.*
- *The DEWS is unique in bringing together information gathered by or for the district with national and regional information. Largely because of this a high degree of district level ownership has been achieved, particularly amongst members of District Production Departments. This is a remarkably positive achievement.*
- *The Drought Bulletins are not disseminated beyond the districts and DEWS remains to be fully institutionalised (owned by Government), which was the main objective. The HEA remains valuable however it may not be reaching its full utilisation potential.*
- *The 2014 baseline and 2015 seasonal assessment informed the IPC acute analyses and influences UN response planning for Karamoja. The investment in providing a detailed IPC assessment for Karamoja has been welcomed but this will cease without funding from some source. The extension of EMA to Karamoja has also been valuable but similarly requires ongoing support. Overall, although knowledge and institutional capacity have been strengthened the capacity and tools developed are only likely to be sustained by further external funding.*

Overview

72. This component of the Project includes several related activities: a review of early warning systems (EWS); revitalisation and final institutionalisation of the Drought Early Warning System (DEWS); revitalisation and updating of District Contingency Plans (CPs); making an ongoing investment in Household Economy Assessment (HEA) assessments; and extending the Integrated Food Security Phase Classification tool (IPC) to Karamoja. Investments in watershed management and piloting action in identified 'hotspots' are also of some relevant (see Section 3.5).

Studies and strategies for integrating EWS

73. FAO Uganda undertook a review of existing EWS in Karamoja in 2014, and a broader review of EWS in Uganda in early 2015, the latter concluding that Uganda does not have an effective EWS, notwithstanding that numerous information and hazard monitoring systems are operated by Government and development partners, including several by UN agencies. The critical weakness in this review was not specifying how its recommendations could be implemented e.g. 'Outline clear roles and responsibilities for each stakeholder by region and district'. That involves a lot of negotiation.

74. Related to the foregoing FAO had hoped to agree with OPM/NECOC how to work together towards an integrated national early warning system (NEWS) but a consensus is yet to be reached. In its most recent progress report to DFID FAO stated its intention to

"employ a strategy for a multi-stakeholder sustainable integrated early warning system incorporating multi-disciplinary approaches ensuring strong synergy."[22]

Strengthening ICT capacity and updating Contingency Plans

75. To strengthen information resources for early warning including analysis of satellite imagery and strengthening ICT technologies, FAO has partially equipped the seven districts with ICT equipment and software for GIS analysis. Some further equipment is to be handed over by one of FAO's IPs (ACTED). A comprehensive weeklong capacity building training of DLG and national government agencies was conducted in January 2016. This was followed by technical backstopping and monitoring of progress and impacts up to May 2016.

76. District Contingency Plans (CPs) were developed by OCHA/OPM in 2010-11. These were updated by FAO under this Project through IIRR and IUCN. The CPs specify response scenarios and thresholds for a range of sectors and hazards including floods, crop/livestock diseases, hailstorms, human diseases, land conflicts, environmental degradation, cattle theft, vermin and famine). They prioritise responses and specify roles and responsibilities, with the District Disaster Management Committee (DDMC) leading (chaired by the CAO) and NGOs and other partners expected to mobilise resources or providing assistance in line with specified response scenarios.

77. The updated CPs are yet to be endorsed by District Executive Committees, however FAO expresses confidence this will be achieved. The Project indicator 'level of alignment of plans and response strategies within the DLG' was to be assessed by FAO Uganda after the endorsement of the CPs. A critical indicator will be the introduction of a budgetary provision for disaster/crisis response in District Development Plans.

78. In their final report IIRR and IUCN jointly state that a critical assumption is that the districts have the capacity to implement the CPs (awareness, resourcing and commitment)[23]. Critical assumptions not mentioned are a) that CP response scenarios will be followed by UN agencies and international NGOs, and b) that DDMCs will have the capacity to lead and be left to lead the response.

79. Early action initiatives and triggers drawn from CPs that were to have been piloted in Abim and Napak Districts had not been funded by end April 2016. An early response plan prepared for Amudat District was however submitted to the Chief Administrative Officer for approval.

Strengthening the Drought Early Warning System (DEWS)

80. FAO's largest investment under Project Output 1 has been the DEWS, established in Karamoja in 2008 with ECHO funding[24]). DFID requested FAO to include support for strengthening and institutionalising the DEWS, through continued support to ACTED. The DEWS usefully combines hazard monitoring information (NDVI, rainfall, temperature,

[22] FAO 6 Month Progress Report to DFID, July-December 2015, p 7

[23] Capacity Assessment and Contingency Planning in Karamoja, Process, Results and Recommendations, 9 February 2016 (Joint IIRR, IUCN presentation)

[24] DEWS is based on the Arid Lands Resources Management Programme (ALRMP) Kenya

weather forecast) with livelihood/coping mechanism information (various indicators for livestock, crop, water and livelihood sectors). MAAIF is responsible for half the indicators (including information provided by DVOs and DAOs). The DEWS is unique in bringing together information gathered by or for the district with national and regional information. Largely because of this a high degree of district level ownership has been achieved, particularly amongst members of District Production Departments. This is a remarkably positive achievement.

81. The baseline specified in the Project Document was a "weak DEWS" implying that DEWS had weakened following the cessation of ECHO funding in mid 2013. After 27 months of support under this Project the DEWS had been revived and strengthened with equipment, financial and technical capacity and coordination and integrated within existing DLG/LLG. The DEWS has strengthened each District's information base and risk awareness e.g. helping to identify animal disease 'hot spots'. There are examples of District and Sub-County staff using DEWS information to prepare emergency requests to OPM during the drought of 2015[25].

82. The DEWS has been helpful to the Districts in updating their CPs. DEWS and District level contingency planning, preparedness and response are probably not linked in real time. Operationalization of the DEWS at the district level has led to the observed, unplanned effect of closer working relations and information-sharing between technical staff of different District departments during the monthly situation analysis (water and environment department, education and health department, and production department).

83. Although described as an 'early warning' system, the messages disseminated to communities (through drama and school children) are oriented more to risk mitigation than forecasting. Social topics are also addressed including alcoholism, gender-based violence, sending children to school. The dissemination of information direct to the community makes DEWS unique in Karamoja, although sustaining this will be a challenge. There were a total of 124 drama presentations during the Project period. The dramas are rather labour-intensive and rely on a dedicated vehicle to transport the group. DEW dissemination through schools and children and DRR clubs seem to be highly suitable and desirable to strengthen the understanding of risks and measures of the children, and then knowledge transfer from children to their parents, who have low level of literacy and limited means of communications in the communities. Other avenues are reportedly now being used/explored to disseminate the DEWS messages either directly or indirectly through kraal leaders, extension workers, and radios spots.

84. DEWS messages and dissemination are gender responsive to reach both men and women in their common information channels, aiding the decisions-making process by men or women or both to deal with warnings regarding crops, small ruminants, livestock and other disasters.

85. Through ACTED, FAO was to have worked with the Uganda National Meteorology Unit (UNMA) to secure monthly and more localised weather forecasts for the DEWS (UNMA

[25] Mentioned in Kathile Sub-County, Kaabong; and Amudat and Napak District Meetings

only provides quarterly forecasts for the Karamoja and Teso sub-regions as a whole). This could not be accomplished and weather forecasting remains a weak aspect of the DEWS.

Institutionalisation of the DEWS

86. FAO Uganda intended to ensure both the functionality and institutionalization of the DEWS i.e. handover a fully functioning system to the Government of Uganda that was integrated nationally and at the district level. Although revived and strengthened the DEWS remains to be fully institutionalized, with ACTED unable to achieve its LoA Outcome 1, securing at least partial national and local government funding, and only partially able to achieve Outcome 2, which was to reach a point where the DEWS is more autonomously managed by local and national governments, and better integrated with national and regional systems. There has been success in the former part, but not the latter.

87. FAO and ACTED tried hard to influence districts to integrate DEWS in their District Development Plans, including two rounds of political awareness raising workshops in all districts attended by key decision-makers. This may yet come to pass but because the district budget process tends to exclude 'software' like DEWS. Although the operational costs do not appear high, but some funds would be required for district officers to continue to travel within the districts to undertake routine monthly surveillance and conduct quality assurance of the data provided by parish chief sentinels.

88. On the other hand some districts were more positive about being able to continue DEWS. Abim District has budgeted resources for internet access and plans to utilise District and Sub-County monthly Disaster Management Meetings to support DEWS analysis. Amudat District has plans to train extensionists at the Sub-Country level on DEW (5 at the moment, and 8 in the future). The DEWS Focal Point of MAAIF and district staff discussed DEWS financing, and the Ministry Focal Point proposed to include DEWS in the WB Regional Pastoral Livelihood Resilience Project. There has also been discussion between ACTED, FAO and MAAIIF.

89. By April 2016 the DEWS was certainly more autonomously managed by the districts, which can gather and analyse data and produce monthly Drought Bulletins, albeit with some backstopping from FAO and former ACTED staff still in some Districts. However integration of the DEWS with national and regional systems remains a long-term goal, despite joint consultations with MAAIF and OPM/NECOC (which manages the National Early Warning System), and a National Stakeholders' Meeting to determine the roles and responsibilities between OPM/NECOC and line ministries.

Utilisation of Contingency Plans and DEWS

90. In terms of converting contingency planning and early warning into a response, FAO reports that the outcome indicator 'timeframe to respond to disasters/crisis' will only be measurable/tested in the event of a crisis and a response from the districts. This implies that there were no disasters/crises to which districts responded in 2015-2016, and that DEWS recommendations were not acted on and CPs not 'activated' in this period.

91. The monthly Drought Bulletins for each District could usefully inform preparedness and response.[26] They include sector situation ratings - normal, alert, alarm or emergency (a few alarms were flagged in 2015 e.g. Amudat in March and April). The bulletins also include recommendations some directed locally, some to development partners. But in March 2015 OPM requested FAO/ACTED to cease national and regional dissemination (after three editions for each District). FAO is now unable to publish them or provide them to partners (e.g. WFP and UNICEF). This essentially means that outside the districts they "don't exist". Even if available informally within the Karamoja sub-region, it is unlikely the bulletin's recommendations would be influential because the information is district focused and there is no aggregation for the sub-region.

92. DEWS information disseminated to communities through drama presentations, meetings and school clubs influences household decision-making. Specifically the IP reports that more than 50% of people who received the messages are putting them into practice, determined by extensive community consultation attended by district political and technical staff. An example of a positive impacts linked to community meetings with community-based health workers and district veterinary staff to address the FMD outbreak in Napak were numerous communities relocated animals to safer areas following advice from the veterinary team.

93. Indigenous pastoralist knowledge of EWS is not included in DEWS information and there was no specific study/research on this.[27] A stronger emphasis on indigenous knowledge may be relevant.

The contribution of Household Economy Analysis (HEA)

94. Household Economy Assessment (HEA) is an ongoing investment by FAO. Under this project, FAO established a HEA baseline for Karamoja in 2014 with the reference year as 2012. A similar assessment was conducted in 2010 but the baseline needed to be updated to provide a complete coverage of livelihood zones with new livelihood profiles and outcome analysis tools. The baseline establishes the sum of ways households within identified geographic and wealth groupings access food (whether by production or purchase). An analysis can then be made of the likely impact of a shock or hazard in a subsequent bad year, and the most appropriate types of intervention.[28] The HEA clearly strengthens situation analysis. FAO Uganda also maintains that HEA complements assessments conducted by others including WFP and UNICEF.

Integrated Food Security Phase Classification tool (IPC)

95. IPC is a standardised, transparent and consensus-based classification tool for acute and chronic food insecurity. FAO leads on the IPC in Uganda. Project funding has allowed FAO to provide a detailed IPC assessment for Karamoja, which is developed by government and

[26] A performance indicator in FAO's LoA with ACTED is the percentage of communities, local governments and partners reporting having implemented DEWS recommendations.

[27] IIRR and UNICEF have conducted the indigenous indicators for pro-long dry spell in Karamoja with children, women and elderly. Yet the cooperation and sharing with ACTED and FAO is uncertain.

[28] Karamoja HEA Baseline Report 2014, p 5

non-government stakeholders in an annual workshop. IPC products are well regarded and improve food security analysis and can be relied on to advocate action because IPC is endorsed by government. If further funding cannot be found the Uganda IPC reports will revert to not having a detailed Karamoja assessment.

96. FAO conducted the first seasonal assessment under the project in April 2015. Results were shared with stakeholders in July 2015. The second assessment was conducted in January or February 2016. The objective in each case was to make projections of food security and livelihood conditions based on the performance of the preceding production year and with reference to the 2012 reference year.[29] The 2014 baseline and 2015 seasonal assessment informed the IPC acute analyses and influences UN response planning for Karamoja.

3.3 Evaluation question 3: To what extent the Livestock disease surveillance, diagnostic capacity, veterinary services and animal nutrition have been strengthened?[30]

Main finding:

- *The Project contributed to strengthening surveillance and diagnostic capacity and veterinary services generally, including human resource capacity and cold-chain and diagnostic equipment (NADDEC, Regional Vet Lab, District, Sub-County). These gains will only be sustained by further external support unless national government intervenes.*
- *The Regional Vet Lab is not yet well utilised reflecting resource constraints. Vaccinations were supported including an unplanned response to an FMD outbreak. This was much appreciated by Government and vulnerable communities and enhanced FAO's standing. It also tested and enhanced early response capacity. Tick borne and Tsetse fly transmitted diseases (not addressed by this project) remain overwhelming challenges. CAHWs are a valuable resource however there are uncertainties about the institution that now need to be addressed to ensure its effectiveness.*
- *The concept of improving access to veterinary drugs and supplies through private shops was sound but not fully developed and had a modest impact. First steps were taken to introduce resilient technologies for livestock including haymaking. Direct rangeland rehabilitation was planned but not undertaken, and more consideration is required as to how to proceed.*

FAO support for surveillance system and diagnostic capacity

97. The project was designed to strengthen disease surveillance and diagnostic capacity in all seven districts of Karamoja with a focus on screening, risk assessment and treatment for Contagious Bovine Pleuro Pneumonia (CBPP), Contagious Caprine Pleuro Pneumonia (CPPP) and *Pestes des Petits Ruminantes* (PPR). Foot and Mouth disease (FMD) was added following an outbreak. Starting from a semi–functional system and limited diagnostic capacity, much was accomplished, discussed in the following paragraphs.

[29] Karamoja Seasonal Assessment, 2015, pp 1-2

[30] The wording of the question mirrors Project Output 2.

98. Human capacity was strengthened to undertake field data collection, laboratory testing of samples and analysis of findings for effective decisions on treatment and control. This ranged from training of laboratory technicians to further training of Community Animal Health Workers (CAHWs). When an FMD outbreak occurred more funds were availed to specifically train and skill animal health service providers including CAHWs and other key stakeholders from various agencies and organizations offering related services. Several stakeholder trainings in epidemio-surveillance, laboratory diagnosis and early warning in control of FMD and other Transboundary Animal Diseases (TADs) like Lumpy Skin Disease (LSD), New Castle Diseases (NCD) and African Swine Fever (ASF) were undertaken.

99. The project supported creation of an effective surveillance system, with a functional communication and network system for early field level detection; expedited diagnosis; rapid reporting and, timely results dissemination. Smartphone-based animal disease surveillance technology (EMA), a technology that existed in only 10 other districts in Uganda has now been introduced to Karamoja. After overcoming some challenges like high technology specifications and validation of data by DVOs before sending it to the centre, the approach is now in use in five of the seven districts with the other two in the process of being brought on board. The centre appreciates receiving timely real time data/information from previously identified hard to reach locations. This has strengthened early disease reporting from sub-counties and districts to the Centre. Consequently, it has stimulated early responsive investigation and, subsequent timely feedback. Constraints still to be overcome before full popularisation of this technology include handling of the high volume and frequency of data received at the centre, pricy smart phones models that can handle bulky volumes of software and data, and intermittent telephone networks especially in remote locations.

100. The programme reinforced the existing diagnostic system as a critical component of the surveillance system. This included diagnostic kits, reagents, materials and the testing of field samples for diseases in question at the referral laboratory, National Animal Disease Diagnostics and Epidemiology Centre (NADDEC). Furthermore, a study was funded which established the situation analysis of all regional and district labs in the country following which Karamoja Regional Veterinary Laboratory (KRVL) was upgraded and equipped with assorted equipment and reagents. The Evaluation Team however observed that the aforementioned lab in Moroto is currently not maximally utilised as a regional diagnostic hub majorly because of inability to pick samples from other districts due to transport limitations. The other six district labs are not yet functional although with laboratory space and a possibility of being fully upgraded with support from another project[31].

101. Although the DEWS and mobile events application messaging (EMA) took root, linkages are required between stockowners/communities and national level policy makers to sustain this, further buttressed with a network of functional laboratories.

102. FAO introduced additional useful diagnostic support tools like a Karamoja adopted Pictorial Evaluation Techniques (PET) manual used to rapidly estimate Livestock body condition. The manual is ready for use and users have been trained. It is however yet to be widely disseminated as the ET found some key technical persons in some districts who

[31] Possibly the World Bank Regional Pastoral Livelihood Resilience Project

were not versed with the concept. FAO also introduced the knowledge-packed international set of guidelines and standards for designing, implementing and evaluating livestock interventions for assisting people affected with humanitarian crisis, the Livestock Emergence Guidelines and Standards (LEGS) tool. The manual, now available is a key asset for future planning and implementation of livestock emergencies.

FAO support for livestock vaccination and treatment

103. In support to strengthening disease control, the project planned to vaccinate animals against key diseases of which FMD had not been included. However, between May and July 2014, an FMD outbreak that started in Kotido and Nakapiripirit districts soon spread to other districts in and beyond Karamoja. The total number of districts affected eventually rose to 33. A special FAO Mission backstopped by Critical Management Center moved to Karamoja to give a technical backup to GoU MAAIF in investigation. For Livestock-dependent communities including Karamoja, this was a hefty challenge as death of over 80,000 animals occurred and a six-month quarantine period was imposed over the region. Following an appeal for assistance by GoU and based on the Mission's results/recommendations, and considering the then ongoing programme for enhancing capacity for resilience for Agro-pastoral communities, FAO with approval of DFID, committed to support immediate containment of FMD outbreak and preparation of a long term national progressive FMD control plan.

104. Thus an emergency livestock vaccination programme was launched to strategically vaccinate cattle against FMD alongside the other originally planned vaccinations. By the end of April 2016 FMD vaccines were all used and the outbreaks were contained within the region. No new outbreaks have been reported within a period of 2 months, as affirmed by community leaders and animal owners. The vaccination programmes were successfully organized through regular and strategic planning and coordination meetings including instituting the well-regarded Karamoja FMD Technical Coordination Committee (KFTCC). The critical decision to save stock and cattle-dependent livelihoods was and is still overly much appreciated by GoU, Karamoja District local governments and the vulnerable communities themselves.

105. To support vaccinations and veterinary services in general, FAO strengthened DLG capacity by improving cold chain systems: 40 gas/electric fridges, 40 gas tanks, and cool boxes (60 of 60 litre capacity and 120 of 15.9 litre capacity) were supplied to sub counties through respective districts. By end of April 2016, FAO reported 75% achievement of planned vaccination coverage totalling 1,129,065 livestock of a planned 1,500,000[32]. Vaccinations coverage included FMD (253,300 cattle), CBPP (265,744 cattle), CCPP (187,295 shoats), PPR/pox 422,726 (shoats).

106. While, farmers have attested to reduced incidence of disease that were vaccinated against, there are no current records to compare with the baseline before the interventions, except for FMD outbreak where new incidences have continued to be monitored. A baseline data collection was part of the NADDEC LoA.

[32] FAO Uganda's original target was 800,000 animals, reflecting one of the five main outputs of DFID's ERKP

107. The capacity for early response to disease outbreaks in the sub region has been tested and is reported to have improved. Vertical and horizontal coordination mechanisms formed, now constitute organized structures like chains of command for disease reporting, data feedback mechanisms, and a risk based FMD control strategy as well as improved disease control infra-structures like animal holding grounds (AHS) and animal crushes in strategically placed locations within the region.

FAO support for Community Animal Health Workers

108. To address weak livestock extension, MAAIF has endorsed the role of Community Animal Health Workers (CAHWs) in Karamoja. When well supervised, CAHWs fill a gap in veterinary services, including disease surveillance and vaccinations. The Project provided training for CAHWs and involved them in vaccinations paying incentives.

109. Although the CAHW institution is valuable and further developing the capacity of individual CAHWs is a positive move, there are uncertainties about the institution that need to be addressed. Donors, agencies and NGOs have invested considerable resources in developing CAHW capacity over many years, but apparently without adequate analyse of the structure and function of the institution, or for that matter the varied motivations of individual CAHW. There has been a considerable ongoing investment in CAHW training including by FAO with a lack of attention to 'bigger picture' outcomes and without appreciating that some of the benefits associated with training (payments, the possibility of project employment) have attracted CAHWs away from serving livestock owners and relying on payments from them. The involvement of CAHWs in emergency vaccinations for which they are very well paid has had a similar effect.

110. CAHWs have an ill-defined framework in which they operate. Some kind of framework may be defined temporarily by a project but when the project ends they operate on their own without any accountability to the communities they serve. While the ET recognises that they are not in any formal employment and hence not salary earners, when employed under relief programmes, their facilitation is not stable and will vary from donor to donor, skewing expectations, which in some cases become inflated.

111. The lack of supervision and regulation undermines the potential for greater CAHW professionalism. At present CAHWs set different price levels for drugs, sometimes administer drugs using unacceptably low dosages, leading to resistance, while some reportedly stoop to selling or administering adulterated drugs.

112. CAHWs play a critical role synonymous with fire-fighting during emergencies, however, they have no capacity, nor are they adequately trained to organise preparedness for resilience post emergence e.g. advising stock owners to destock after outbreaks or nurturing them towards business mode livestock farming in which user fees are necessary. Their participation in research and early warning preparedness is equally limited.

113. There now needs to be more attention paid to how the CAHW institution should be further developed within a structured veterinary service system. A review of national standards, guidelines and supervision for their operations is required including critically ensuring that they correctly administer the right choice of drugs.

FAO support for private sector and CAHW drug shops

114. Through the NGO Mercy Corps, an initiative to improve and sustain supply of veterinary medicines was introduced. The project carried out mapping, and evaluation of veterinary drugs and supply points in Karamoja, trained 12 drug shop operators on passive disease surveillance; entrepreneurship, business skills, veterinary extension and customer care sensitization. They held useful sensitization and consultative workshops with 140 CAHWS. In effort to strengthen and initiate business linkages, they convened to a round table large veterinary drug suppliers/pharmaceutical companies with small drug shop. Each operator who was trained was given a voucher worth UGX 172,000 redeemed at the local agro-vet shops. They additionally, supported National Drug Authority (NDA) in its pharmaco-vigilance drive to curb non-registered suppliers. These activities were certainly a contribution towards risk reduction.

115. Implementation of passive surveillance envisioned by Mercy Corps, in which data was to have been gathered by CAHWs, was poorly conceived in so far as it was assumed erroneously that CAHWs would gather data while in the field and report it through the drug shops without 'facilitation' (payment).

116. District Veterinarians told the ET that livestock related initiatives at the community level resulted in improved livestock health, numbers and profitability due to reduced losses due to disease. While vaccinations seem to have had this effect, the APFS probably did not contribute markedly.

117. According to PENU's evaluation report of CAHWs conducted under the Project, the results from 7.4% (16/215) of the farmers indicated that traditional healers play roles in provision of animal health care services, a proxy indicator for the importance of ethno veterinary services, where conventional approaches are inadequate. The project has not yet strengthened this area either through CAHWs training or other interventions.

FAO support for resilient technologies

118. Appropriately, FAO sought to address the need for resilient technologies for addressing climate and environmental change. Through NaLIRRI FAO planned to demonstrate improved pasture production and management to increase access to quality forage resources throughout the year, starting with 1,000 acres benefitting 6,000 persons (which would have met one of DFID's quantifiable outputs for the ERKP[33]). But it was decided this was not feasible due to the difficulty of alienating the required land in the context of unrestricted communal grazing, as well as preventing the seasonal burning of land, a common practice.' Instead of direct rangeland rehabilitation, the activity was changed to awareness raising on improved pastures through demonstration sites. Attempts were made in late 2015 to sow three demonstration sites (1 acre each) however there was insufficient rain. Arrangements have been made to reseed the plots.

119. FAO also sought to demonstrate the conservation and utilisation of hay and fibrous crop residues and through NaLIRRI established four of five planned demonstration sites, including the construction of four hay barns each with a 1,500 hay bale capacity sufficient to sustain by supplementation 50 mature cows each of 250kg. While the benefits of the

[33] DFID ERKP Business Case, p 2

technology have aroused interest, adoption is doubtful due to perceived processing and storage difficulties. Livestock owners do not realistically have the means to replicate the hay compactor, although they might adapt other means. The floor of the hay barn is raised off the ground, but not high enough for someone to crawl under and regularly remove the termites that will infest the wooden floor and the hay when packed in the barn. FAO also sought to demonstrate means of supplementing the water needed by the livestock benefiting from the hay and through NaLIRRI demonstrated four of ten planned water-harvesting facilities (evaluated in Section 3.5).

120. Through NaLIRRI FAO also demonstrated genetic diversification technologies exploring breeding of superior dual-purpose breeds of cattle through Artificial Insemination (AI) using Tylorean grey and Simmental semen. Follow up to ascertain improvement (growth rates, milk yields, etc.) requires not less than three years.

121. Processing and utilization of mineral licks for small-scale use demonstrated in APFS has impact as attested to by animal owners. It is not widely used but for those adopters it increases milk production and/or income generation (each sells from USh 4,000 to USh 7,000).

Tick and Tsetse fly borne diseases

122. Although not targeted by the project directly, the high prevalence of tick borne diseases (and helminthiasis) in animals is an overwhelming challenge for the nomadic pastoralists of Karamoja and to resilience. The DVO Kotido estimated loss of 68,000 cattle in one year attributed to tick borne diseases. This would translate to loss of USh 5 billion in real terms. Previous efforts of tick control using dip tanks have been unsuccessful because of shortage of water and maintenance costs. Spray pumps have been provided and used but the ET observed at one collection centre that these were not being effectively used by the CAHWs who were carrying out the spraying. While, tick control is a private good under the delivery of livestock services policy, it is equally a toll good in areas like Karamoja where communal grazing and animal migration in search of water and pastures is still practiced. In this case, tick borne diseases become a risk constraint for building resilience. Some studies have shown marked improvement of livelihood and resilience where animals doubled productivity performance by addressing control of tick borne diseases and helminthes alone (this includes a study of a 2005 intervention by Oxfam in Afghanistan sponsored by FAO).

123. Several parts of Uganda including Karamoja sub-region are still heavily infested with Tsetse fly species transmitting both human and animal Trypanosomiasis. The two forms of the fly; *T.brucei rhodesiense* found in S.E and N.E Uganda and *T. Brucei gambiense* in North and N.W. Uganda are distinctly different. Effort has been made to keep them apart but distance between the two foci is progressively narrowing as a result of increased cattle movements in and across borders. If and when the merger occurs, disease detection and management will become complicated since the two parasites although morphologically similar will require different complicated treatment regimens. Currently, Tsetse infestation has alarmingly spread with unrestricted movement in and well south of Kidepo National Park. This is increasingly a challenge to livestock health and productivity, reduces access to grazing and farming land, and thus reduces resilience. The project has contributed a study, which will inform decisions for future national interventions.

3.4 Evaluation question 4: How effective were the Agro-Pastoral Field Schools in developing communities' capacity on climate-resilient livelihood?[34]

Main finding:
There is evidence that APFS were at least moderately effective in developing human, financial and social capital relevant to climate-resilient livelihoods, recognising that in 2015 APFS were negatively impacted by a shorter timeframe, delayed inputs, and a drought that constrained potential gains in productivity. Knowledge and awareness was imparted although evidence for widespread adoption at the household level of the agronomic practices promoted remains less than expected. Adoption of scalable technologies like energy saving stoves was weak. In 2015 the APFS continued to focus on previously promoted practices (much of which is not technically Climate-Smart Agriculture) and previously successful options e.g. VSLA (which are clearly sound). There is good evidence of viable alternative livelihoods and diversification, specifically through a) an increased investment in market gardening; b) investments in enterprises like cereal banking and bee-keeping; and c) investments enabled by VSLA, which are the most remarkable amongst these.

The APFS approach and implementation

124. The APFS approach relies on community-based adaptation (CBA) to build the resilience of communities and the ecosystems upon which they rely, to climate extremes and weather events. The methodology includes training and supporting groups (normally of 30) to adapt to climate change through a season-long curriculum that included experimental learning in agronomy and livestock husbandry, post-harvest handling, community action planning, farm enterprise management, soil and water conservation and nutrition.[35]

125. The target was to train 65 facilitators and supervisors on the APFS approach and establish and implement 180 new APFS for 18 months. The latter was revised and IPs were actually contracted to establish 80 new APFS and re-activate 300 'old' APFS instead (this change was never explained). Total direct beneficiaries are potentially 11,400 APFS members (30 per group) while total beneficiaries including all APFS household members are potentially up to 70,000 (approx. 5% of the population).

126. New APFS were intended to include "the economically active but with particular attention to communities at risk of climate related hazards, disadvantaged men, women and youth, selected with a gender lens".[36] IPs applied this sensibly, but with variations. The criteria applied in Abim District was that members must have the same enterprise interest, be from the same socio-economic and educational background and must be interested in improving (their farms). In Napak District members were supposed to be of the same

[34] The wording of the question substantially reflects Project Output 3.
[35] Drawing on material in the Project Document, pages 33-34
[36] Project Document, p 10

socio-economic background (wealth group). This does not necessarily mean the vulnerable were excluded in those districts. In Amudat District the criteria specified the inclusion of widows and young people with HIV/AIDS and in Nakapiripirit District communities were encouraged to include handicapped persons. All sought gender balance but in most cases had to compromise to allow more women than men due to the stronger interest of women.

Adaptation planning

127. The first step after group formation or reformation was adaptation planning using the Community Managed Disaster Risk Reduction (CMDRR)[37] approach. The process commenced with hazard mapping at the parish level. APFS groups were then facilitated to identify actions to address/mitigate the identified hazards/issues. The most commonly identified hazard was drought while the most commonly selected response was essentially anything that was less reliant on rain fed agriculture e.g. irrigated vegetable production, cereal bulking, rearing goats, apiary, etc. In a word: diversification. Some groups did nevertheless choose group crop production (maize and beans being the most common).

128. It is notable that the APFS action plans did not include plans for addressing the vulnerability of rain fed agriculture directly e.g. investing in soil and water conservation works. Perhaps members needed to be taken through the curriculum to appreciate feasibility and benefits, but if so it would have been appropriate to end the cycle with the revision of action plans to provide the opportunity to incorporate strategies for mitigating the risk to staple crops and the environment on which production depends, drawing on the principles of Climate-Smart Agriculture[38], Conservation Agriculture[39] or whatever variant of these the IP chose to promote (recognising that it will always be a struggle to reduce the impacts of climate variability on rain fed agriculture). The analytical skills imparted through the adaptation/action planning process will not be nurtured if the action plans of new APFS are not revisited. For old groups IPs appear to have revised their original action plans although only two IPs refer to this explicitly in their final reports.

Adoption and innovation

129. After the group action plans were finalised, the APFS process continued to be quite intensive, with weekly activities, demonstration plots, field days, exchange visits, enterprise selection, work on business skills, VSLA, etc. The main investment was training groups in basic agronomic practices including land preparation, planting techniques, use of organic fertilizers, pest and disease control, drip irrigation and bio intensive gardening. It is unclear how much time or opportunity FAO's IPs had to attend to the whole value chain from post harvest handling to market linkages (GOAL seems to have gone a lot further than others in

[37] CMDRR is a sustainable development approach that places the community at the forefront of identifying risks/hazards to livelihoods and food security, and empowering communities to design and implement risk reduction measures through a participatory process

[38] See www.fao.org/climate-smart-agriculture/en/

[39] Conservation agriculture has three characteristics: Minimal mechanical soil disturbance (i.e. no tillage and direct seeding); Maintenance of a mulch of carbon- rich organic matter covering and feeding the soil (e.g. straw and/or other crop residues including cover crops); andRotations or sequences and associations of crops including trees which could include nitrogen- fixing legumes.

this respect). It is assumed that valuable knowledge and awareness was imparted to APFS members in this process. Without intending to under-rate the importance of this, the ET's emphasis here is on adoption, which is more tangible and about which more information is available from IP reports.

130. The primary APFS success indicator specified is the level of adoption of climate-resilient/adaptive skills and technologies (including irrigation) by farmers/herders. For verification FAO commissioned a survey, partially funded by the Project, which included a purposive sample of APFS in Abim, Kaabong and Moroto Districts.[40] On the basis of the survey the authors concluded that farmers had embraced the use of recommended farming practices including proper spacing, use of organic manure, mulching, crop rotation, and row planting and strongly embraced environmental protection through agro-forestry (using Kei-apple for fencing *manyattas* and planting orange trees). Although results for APFS vary markedly depending on the geographical location, community dynamics, and technical skills and capability of the IPs, the conclusions of the FAO commissioned survey are generally at odds with the observations of the ET and the preceding evaluation of APFS under KALIP[41]. (See also discussion in Section 3.6)

131. It is difficult to get accurate information about adoption because what is demonstrated in the group garden is not necessarily replicated in individual gardens. When asked about adoption APFS members don't make this plain, and appear to be confirming adoption when they are confirming their participation in the group garden. The DAO Kaabong said strategies are needed to improve technology adoption by continuing with demonstration trial sites but putting more emphasis on follow up at household level. Through lessons learned one of FAO's IPs, GOAL, decided to shift its focus to action planning and implementation at the household level, helping to establish site specific interventions based on physical analysis. A common reason given by farmers for not adopting row planting for example in their own garden is labour, particularly women who do not have help. Respondents mentioned the added pressure of hurrying to sow in advance of impending rain. Critical studies on adoption seem not to have been undertaken by FAO to consider all relevant factors from the farmer's perspective.

132. LoAs require at least two adaptation options and locally adapted innovations for enhancing resilience to climate change tested in each APFS in the study sites. In 2015 the approach continued to focus on known options like market vegetable production, mineral licks, cereal banking, VSLA. The ET observed no innovations being tested. What was observed was the adaptation in a few cases of existing practices/technologies e.g. the livestock mineral licks made out bone ash and other locally available materials promoted under KALIP. There is some evidence of farmers adapting recommended practices e.g. dispensing with the rope to mark the line for planting, but planting sorghum in every third furrow of the ox-plough. In the absence of the ox-plough however APFS members continue to broadcast.

[40] Economic Analysis of the Farmer Field School Approach Based on its Contribution to Smallholder Farmer Livelihoods and Incomes in Northern and North-eastern Uganda, John Jagwe and Geoffrey Okoboi, FAO, Kampala, 2016

[41] An Assessment of the Outcomes of FFS and APFS Components of ALREP and KALIP in Northern Uganda and Karamoja" by Cardno Emerging Markets (UK) Ltd, (2014).

133. FAO provided in LoAs with IPs that they should put more focus and emphasis on environmental conservation and soil and water management activities among APFS (implying less emphasis on agronomic practices like row planting which are not technically 'climate smart'). Facilitators mobilised APFS group gardens and activities to demonstrate (variously depending on the IP and the agro-economic zone) drainage channels, retention ditches, cut-off trenches, grass bunds, trash bunds, stone bunds, terracing, contour ploughing, minimum tillage, legumes as a cover crop, mulching at least for vegetables, tree planting, live fencing using phobia species instead of felled wood. Although there are references to these techniques in reports as demonstrations, pilots or trials there is very little reference to adoption. ZOA reported for Amudat District that while a few APFS constructed soil and water structures in their trial plots the farmers are yet to try the technology in their own gardens due to labour requirements. It was intended that the project would incorporate bio-energy/woodlots and on-farm biomass production for fuel wood, but this was unrealistic in such a short-timeframe.

134. The landscapes and assets (livestock) in the different project sites present an opportunity for conservation farming including use of permanent planting basins and rip lines using oxen. Apparently, none of the IPs promoted these climate smart technologies/practices. It is likely that the limited technical capacity of the facilitators and in some cases IPs constraint the soil and water conservation and climate smart practices that can be appropriately adapted or conceived and successfully introduced.

135. Adoption and follow up of scalable technologies were a challenge (e.g. fuel efficient stoves, dung based charcoal). Through interactions with the APFS members, the ET extrapolated that the members were sensitised about the importance of the technologies, but adoption is evidently low.

136. FAO provided in LoAs with IPs that they should strengthen the livestock component of APFS to focus on nutrition, health and breeding by targeting the recruitment and mentoring of CAHWs as facilitators. The IP for Kotido District specified training on basic knowledge and skills in livestock management including identification of sick animals, disease detection, treatment using both modern treatment and herbal methods, nutrition and supplementary feeding. For Napak basic animal husbandry practices like parasite control, de-worming, de-hoofing, and supplementary feeding were mentioned. For Moroto tick control by proper spraying was mentioned. CAHWs assisted with training in return for a stipend in some cases, while some CAHWs were recruited as facilitators. In Abim District CAHWs involved in the training vaccinated 120,000 chickens (for a fee). Mineral lick block making was demonstrated and IPs collaborated with NaLIRRI to demonstrate hay making and fodder banks.

137. One IP reported not covering all aspects of livestock health and productivity included in the APFS manual due to limited time; others reported difficulties with the availability of animals to learn on; while others alluded to the point that approaches to training should not be based on the chronological sequence in the manual which puts livestock and health towards the end. Some IPs selected CAHWs and provided them with refresher training courses (5 days); but while practical and cost effective they might not be trained sufficiently for animal husbandry and crops (for example, at least two week training course for CAHWs were required by PENU). The selection of APFS facilitators and CAHWs and their limited capacity development support might also affect the quality of APFS delivery.

138. The FAO commissioned survey found that a few APFS members adopted good animal husbandry practices quoting castrating bulls, regular deworming and spraying/dipping. Some APFS members interviewed[42] reported learning useful things including the link between tsetse fly and *nagana*, the need to deworm after eating lush grass, and the identification of poisonous plants that shouldn't go into hay. There appears however to have been less attention to animal husbandry in the delivery of the APFS curriculum perhaps due to time constraints (referenced in Section 3.3).

Impact of APFS on production, alternative livelihoods and diversification (physical, financial and social capital)

139. FAO's immediate purpose for APFS is to strengthen agro-pastoral production systems. The FAO commissioned survey found that as a consequence of joining APFS most households increased their cultivation of staples in 2015 - overall from 3.3 to 4.9 acres, an astounding result.[43] Due to adverse climatic conditions in 2015 the increase in production for the main staple, sorghum, was reportedly slight and did not match the increase in area cultivated. The survey nevertheless recorded substantial increases in yield for sorghum attributing this to the use of a drought tolerant variety.[44]

140. Another success indicator for APFS is the level of engagement by households in alternative livelihood options/diversification. The ET agrees with the FAO commissioned survey that there is good evidence of viable alternative livelihoods and diversification, specifically through a) an increased investment in market gardening (tomatoes, onions, eggplants and cabbage); b) investments in enterprises like cereal banking and bee-keeping; and c) income generation enabled by VSLA through brewing, butchering, trading goods from town, etc.

141. Where VSLA are successful in mobilising and utilising significant savings they contribute tangibly to household resilience. Most of this is on a small scale and the loans are typically for no more than three months so they are mainly gap filling e.g. for school fees or for short-term income generating activities (usually not farming). Nevertheless one APFS visited had generated savings > USh 10 Million apparently in only five months. (This group exuded confidence and social capital.) Similarly FAO's IP for Napak District reported that one group saved USh 12 Million. The really successful VSLAs are uncertain how to get to the 'next level' e.g. members of one group in Kotido District talked of perhaps becoming a CBO but they were uncertain what to do. Theoretically the APFS networks are there to help them with market linkages, greater financial resources, a wider pool of knowledge through experience sharing, a stronger voice for other issues affecting the local farmers, and support from development partners. Under KALIP it was found that there are governance risks when the network manages resources and investments. It may be prudent to have networks focus on advocacy and advice and not use them to manage inputs or

[42] Atokyenyutu APFS Kapedo Sub County

[43] The increases in area under production were for sorghum, maize, groundnuts and millet. The ET is not sure if the increase in area under production included APFS demonstration gardens and enterprises.

[44] The ET finds it difficult to adequately critique the FAO commissioned survey without knowing more about how the survey was conducted and whether or not results were triangulated with field inspections and key informants interviews (e.g. DAOs).

investments. Cooperatives have the advantage of having an existing national regulatory framework and at least two of FAO's IPs favour progressing APFS networks to cooperatives.

142. Enforced savings and borrowing of itself promotes economic activity e.g. members who borrow for school fees often borrow a larger amount so they can invest in an economic activity to pay back the overall loan. The VSLA and its welfare fund provide a buffer in times of stress e.g. serious illness, drought although there were reports that this was exhausted in many VSLA in 2015. Indeed the drought forced some perhaps many VSLA to become inactive in 2015 because members did not have money to contribute to savings. One APFS visited for this evaluation in Kaabong District reported that they ceased saving after only two months due to the drought. For Moroto District the IP reported that the high cost of cereals in 2015 due to the drought meant those women wanting to brew beer could not afford to buy cereals.

143. Typically an APFS will meet once a week for the VSLA and once or twice a week to pursue group activities and/or be guided through activities by the facilitator (depending on the season and the cycle). After the conclusion of a cycle and the end of project support APFS members often continue meeting to manage their VSLA i.e. it is the VSLA that provides momentum. Members of one group said our VSLA "is what binds us together".[45] On the other hand it seems from interviews with IPs and some IP reporting that the majority of the VSLAs supported under KALIP were inactive by the time the latest project commenced (an intervening period of one year).

144. Some IPs if not all delayed the activation of the VSLA component for new groups until skills for crop and livestock farming had been imparted and members had an opportunity to generate savings. The ET is not convinced this is necessary and it limits the period of operation of the VSLA while the facilitator and IP are engaged.

145. Literacy and numeracy were piloted in some sub-counties and offers good potential as a standard elements of APFS, with a level of interest similar to VSLA.

3.5 Evaluation question 5: How the Integrated Water Management work will add value to other project components and to the communities in Karamoja?

Main finding:

- *Watershed/catchment management provides a comprehensive, unifying framework for all actors with an important emphasis on conservation. The Lokok and Lokere sub-catchment assessments and related work on micro-catchments contribute to an improved knowledge base for further investments.*
- *The micro-catchment management plans developed will require very considerable external funding if they are to be implemented.*
- *The 'water for local production' investments are vital and complementary, although relatively modest in relation to needs. They have been utilising cash-for-work scheme which has assisted*

[45] St Mary's APFS, Nakapiripirit Town Council

those engaged to invest in production. The multi-function solarised water systems are a novel initiative and their micro-irrigation systems will benefit APFS.

- *The sub-surface dams have very good potential as an alternative water source.*

The Project's investments in watershed management and water assets include (in Output 1) watershed management studies, plans and pilots; (in Output 2) a small pilot for water harvesting for 'home' livestock; and (in Output 3) water for local production. Each is assessed below. Further work in watershed management will be carried forward by FAO (and GIZ) as a new project component approved in 2015 by DFID (Output 4, too early to evaluate)[46].

Watershed management and ground water assessments

146. FAO adapted its approach to watershed management during the inception period in consultations with MWE and MAAIF. This led to FAO conducting status assessments (through IUCN and IIRR) of the Lokuk and Lokere sub-catchments in Karamoja, covering climate and livelihood risks, hydrology, soil erosion and vegetation loss. The status assessments have been circulated as drafts for comment. They are intended to guide the development of Lokok and Lokere Sub Catchment Integrated Watershed Management Plans, and presumably will. The head of the Kyoga Catchment Management Zone for MWE indicated to the ET that the status assessments have been "really useful in building the knowledge base" and "will feed into our catchment management plans". The Napak District Natural Resources Officer said the approach is "highly useful, with a holistic approach focusing on water, land-use planning, land management and soil conservation."

147. Further contributing to the knowledge base for water investments FAO through C&D is reviewing, analysing and digitalising existing ground water data including historical data and data held by MWE. According to C&D this work was 75% complete by end April 2016, with a draft completed and the next step being to present the database to the districts.

Micro-catchment management plans and pilot activities

148. Drawing on the Lokok and Lokere status assessments and further local consultations FAO with IIRR and IUCN have developed micro-catchment management/action plans for eight 'hotspots' (four in each sub-catchment). Each of these includes small-scale pilot risk reduction initiatives to address (as appropriate) gully erosion, flooding, bush burning, the loss of tree cover on hills, and the prevalence of invasive rangeland species.

149. The ET visited three of the small-scale pilots. A pilot in Nakapiripirit District addressed the flooding of prime river flats by widening the banks of the river. A pilot in Napak District addressed the flooding of a local road vital to the community (used by schoolchildren, herders, etc.) by installing diversion channels and culverts (Kokorio, Matany Sub-county). A pilot in Moroto District addresses water erosion on sloping agricultural land by the use of rock bonding. The effectiveness of these interventions cannot be ascertained

[46] Initially this will include ecosystem restoration in micro watersheds in Nakapiripirit and Kotido Districts (Inception Report of 30 September 2015)

until the rains intensify. Under IUCN support, the local comminities have planted agro-fruit trees provided by IUCN. Most of the fruit-trees seem to have died due to the drought last year, and the local communities are requesting trees to replant.

150. The IUCN report refers to establishing a Community Environment Conservation Fund (CECF) at each site and disbursing a total of UGX 8 million to communities.

151. The pilots were undertaken through cash-for-work, which would have been beneficial to the community, but paying for the work would have reinforced the strong association between risk reduction and external assistance. On the other hand the scale of the work required does require external assistance in some form.

152. Considerable external funding will be required over time to implement the micro-catchment management plans, which involve much more than the very limited work undertaken for the pilots. The Lochoman Micro Catchment Management Plan for example includes a budget of over USh 1,000 billion (USh 1,190 million, approx. USD 350,000). The costlier line items include substantial water infrastructure, stabilising erosion mainly with gabions, refilling large gullies, and cutting invasive rangeland weeds. FAO through IIRR and IUCN facilitated resource mobilisation by providing proposal-writing skills and the ET understands Amudat District has secured some funding from GIZ for their activities. Nevertheless the scale of the work required and the cost will require collective consideration by development partners if any of these plans are to be implemented as designed.

Water for local production

153. The 'water for local production' component of the Project includes: 21 valley tanks (VT), seven solar powered systems using existing boreholes (SPS), and 15 sub-surface dams on perennial rivers (SSD). A gravity flow system was to be included but omitted. The overall performance indicator for these systems is the number and reliability (capacity/yield, seasonal availability) of water sources for productive purposes.[47] The VT are intended to enable households to maintain livestock at home for longer periods. The SPS and SSD are intended mainly to boost access to water for off-season horticulture. The work is being implemented mainly through C&D (with Davis & Shirtliff responsible for the solar pumps and Balton Uganda Ltd for micro-irrigation).

154. All work was to be completed by end December 2015 however by end April 2016 work was still in progress. The LOA with C&D was only signed on 18 June 2015, much later than anticipated, and there were subsequent delays in providing periodic payments[48]. The solar systems were closest to completion, the main work remaining being the micro-irrigation systems. The VT were in progress (those visited were 50%-80% complete). The SSD still required major work. The contractors expect to complete all work by mid-year

[47] Targets are 21 valley tanks of 4,000 cubic metres each (4 million litre capacity), 14 sub-surface dams with average water storage capacity of 1,660 cubic metres (1.66 million litres), 1 gravity flow scheme with diversion volume of 50 cubic metres per day (50 thousand litres per day) and 7 solar powered micro-irrigation systems with discharge rate of 2.9 cubic metres per hour (2,900 litres per hour).

[48] The ET understands the second tranche was delayed by one month. Due to the total amount agreed with C&D each tranche had to be authorised from Rome.

although rains are a significant hindrance and at least one partially dug VT is said to have filled with water (Lolelia).

155. When completed, 30,000 household members are expected to benefit directly. The SPS are an upgrade of existing boreholes and are multi-function. In addition to including a micro-irrigation system for an APFS (direct beneficiaries) they include a public tap, which reduces the burden on women and girls fetching water and for anybody unable to use a pump like the elderly. Where the upgraded borehole previously served a school a school tap is provided in the school grounds. The VT and SSD will be community assets and not necessarily tied to APFS (micro-irrigation systems are not being provided). Total cost is USh 1.8 billion, a relatively modest investment given the needs.

Solarised water scheme in Abim District

Butiwuiy village in Lotuke Sub-County has 79 households with 920 people. The irrigation component (partially complete) is allocated to an APFS group for vegetable production. The APFS group has 22 women and 3 men. There are also two taps attached to the system. The APFS anticipate income from irrigated vegetable production and the community anticipate increased access to water and a reduction in labour, and more water for brick making. C&D is supposed to conduct the training for the Water Users Committees in the coming month.

156. The Project Document states that the water works are expected to provide all year round water access by households and livestock of neighbouring communities. However, FAO's design assumptions for the VT which after being filled will remain with some water for up to two months in the absence of further rain i.e. they are not expected to be useful at the height of the dry season. Only the solar powered systems drawing water from high yield boreholes are sure to provide year round water (if maintained and solar panels are not stolen[49]). The VT will present a convergence area for livestock disease control activities like vaccination, although there will also be an increased risk of disease transmission.

157. Although the VT have been designed not to silt quickly, de-silting work will be required from the second year of use, which is said to be difficult work. It is unlikely that communities will undertake de-silting on their own initiative. The effective lifespan of the VT may thus be short. The challenge is the absence of simple alternatives. Large valley dams can provide year round water however there are substantial risks associated with them including denuding pasture in the area and creating a significant hotspot for disease transmission.

158. The maintenance of all water facilities will depend on water user committees and their effectiveness. These committees are or are being established but their functionality stands to be tested. This has much to do with their ability to gather small user fees from communities and manage and apply these funds effectively.

[49] The ET saw evidence of solar panels for similar systems having been looted in the recent past. In the original design the solar panel was placed on the roof of the pump house but they were in fact erected on a short column rising from the ground making them more vulnerable.

159. The VT are being excavated through cash-for-work to contribute to dry season household incomes and provide social protection, typically USh 4,500 for 0.8 cubic metres excavated in 4-5 hours. By end December 2015 cash-for-work had injected nearly USh 250 million into 21 communities. Cash-for-work has translated into increased economic activity, a safety net for buying food, and income for buying seed and/or hiring oxen and plough. It is a cheaper method than using heavy machinery. Women have benefited, although the labour adds to their heavy burden particularly as work continued into the recent planting season. The ET is concerned that continuing cash-for-work after the commencement of rains will attract labour away from cultivation, although the ET found cases of those involved using the cash to pay for ox-ploughing.

Valley tank in Kaabong District

The work on the Kaabong West VT started three months before Christmas, with 70 people including 30 men and 40 women participating in the excavation (each receiving USh 4,500 per person per day). C&D recently reduced the workforce to 40. The VT will serve 11 villages and 4 kraals, with around 1,200 cattle per kraal and 400/300 more animals from other kraals will come here for water. The local herders normally take the cattle to a water point near Sidok sub-county, which is three hours away.

Women participate more than men and the work must compete with their home tasks and cultivation. The women mainly use the money to buy food for the family. The excavation is ongoing and soil dumped too close to the banks of the VT will have to be moved. The cement silt trap will need to be constructed and the surrounding area planted.

Water harvesting for 'home' livestock

160. Under Output 2 (livestock) FAO sought to demonstrate a means of harvesting water to meet the needs of 'home' livestock benefiting from a related demonstration of the conservation and utilisation of hay and fibrous crop residues. Through NaLIRRI, FAO demonstrated four of ten planned water-harvesting facilities each of approx. 35,000 m^3 litres (one each in Kaabong, Kotido, Amudat and Nakapiripirit Districts). Iron sheets on a structure close to the ground harvest water that is stored sub-surface. Each was designed for a household to support perhaps 10 lactating animals for approx. 100 days[50], complementing the provision of hay. Unit cost is approx. UGX 4 million, the dam membrane being the most expensive component. Each pilot facility was constructed next to the hay barn (i.e. in a public area). The water is being used for human consumption and demand far outstrips supply. A much larger quantity of water (perhaps 10 fold) could be harvested from the roof of each adjacent hay barn. The ET was informed that NaLIRRI anticipated that the community would provide guttering and pipe to feed the water into the below ground tank. Even if this had been a realistic expectation, the water harvested would quickly fill the below ground tank and the overflow would flood the area. NaLIRRI should critically evaluate the water harvesting pilots.

[50] FAO Uganda

3.6 Evaluation question 6: How the project contributed to evidence based research and analysis and how the project incorporated the results?

Main finding:

- *The project has contributed a substantial body of research and analysis that has contributed to the body of evidence in relevant sectors. The research and analysis generally relied on the technical staff of FAO at headquarter, regional and national level, as well as national academics and international NGOs.*

- *The research and analysis was generally found to be highly relevant and of good to excellent quality. While, some research results have been fed into project activities (such as water study, water and gender, climate change capacity assessment, and watershed action research), others require further actions, resources to follow-up and potential for policy advocacy at regional and national level (tsetse fly study, FMD outbreak's social and economic impact assessment, gender and water for example).*

- *There have been some missed opportunities for combination of some key research (water and gender) to enhance the time and resources efficiency. Some of the research and analysis has not been disseminated as widely as it should be.*

Review of Early Warning Systems in Karamoja

161. As mentioned in section 3.2, FAO undertook a review of existing EWS in Karamoja in 2014, and a broader review of EWS in Uganda in early 2015. The critical weakness in this review was not specifying how its recommendations could be implemented e.g. 'Outline clear roles and responsibilities for each of the stakeholders and found to be primarily descriptive and lacked analysis, critically in terms of how the various assessment and early warning tools and systems could be integrated and rationalised.

Tools and systems that incorporate research and analysis

162. The Household Economy Analysis (HEA) seasonal outcome assessments extended under the Project strengthen situation analysis in terms of the likely impact of a shock or hazard and the most appropriate types of intervention and feeds into UN planning. The Integrated Food Security Phase Classification (IPC) tool applied to Karamoja under the Project improves food security analysis and IPC products are widely disseminated and well regarded. The Drought Early Warning System (DEWS) are an aggregation of information from many sources, which is analysed to provide risk ratings and recommended actions. Updating the CPs required considerable assessment/research and collaboration with other stakeholders including ACTED and UNICEF. All of the foregoing are assessed in detail in Section 3.2.

Action research for watershed management

163. The project design made provision for participatory action research to be conducted within a watershed management framework to improve planning, implementation and knowledge management for climate change adaptation, mainly

focused at the district level (Activity 1.7). Implementation was to be in three phases: i) documenting lessons from natural resources management projects and related interventions in the region; ii) learning from field action research studies and the application of watershed assessments tools; and iii) linking this learning to watershed catchment plans to scale up adaptation beyond the term of the project. The work was undertaken, the process was consultative and the proposed technical responses to environmental degradation appear sound and could be applied, funding permitting. Micro Catchment Management Plans were presented as drafts in late 2015/early 2016, drawing on the Lokok and Lokere sub-catchment assessments.

Climate change adaptive capacity needs assessments

164. Climate Change Adaptive Capacity Assessments, Reports and Briefs are also listed as relevant docs. There is reference in an FAO document entitled Evidence and Learning Activities, Completed-Ongoing-Planned, 2015 to 'Review/Conduct Climate Change Adaptive Capacity Needs Assessment of DLGs/ NGOs/ CBOs and Rural Communities'. This was to have resulted in community level climate change adaptation plans being generated for review by end May–June 2015 (through APFS) and comprehensive district level adaptation plans by July 2015.

Social and Economic Impacts Assessment of FMD outbreak

165. FAO human resources from the regional ECTAD office in Kenya and national and FAO project technical team conducted the FMD Social and Economic Impact Assessment. The Assessment has been highly relevant, and well done with clear impacts at household levels, and implications of policies on FMD. The results were limited however to three livelihoods zones in five districts. Although the research did not focus on tick borne disease, the recommendations included actions on tick borne disease together with FMD control. This is an important contribution given that tick borne disease is having a greater impact than FMD or Tsetse fly. The recommendations have identified measures to mitigate the impacts at both policy and programme level, yet, more targeted audience to take specified actions will be helpful.

FMD Strategy

166. FAO with the support of DFID funding commissioned the development of a FMD Risk Based Strategy for Uganda. The FMD strategy was prepared mainly by Uganda's leading national academics and FAO livestock technical specialist, with the contributions from Technical personnel of: FAO Uganda; MAAIF; District and Local Government Officials; Veterinarians and Animal Service Providers from Private Sector and Academia; Officials from Ministry of Health; various stakeholders along the meat and dairy value chain processes and, Farmers and/or their representatives. The study is considered to be of excellent quality, highly relevant, and useful for all stakeholders, with the analysis of situation (historical and present), hotspots identification, a strategy with goals, objectives and activities, monitoring and evaluation with clear indicators and an operation plan with clear activities, stakeholders, and costs. There is a need for FAO Uganda to continue to support the government in realising this operational plan and the strategy in the long term.

Tsetse Fly Study

167. The study had not been completed by end April, but the topic is highly relevant, contributing to addressing the ongoing invasion of tsetse flies that has moved south from Kidepo National Park. Tsetse flies have now been reported in all seven districts.[51] As Uganda has the "National Policy for the Eradication of Tsetse Flies and elimination of Trypanosomoses", the study will be useful for the programmes/project in Karamoja as well as MAAIF in terms of policy direction and implementation. The study plan included the fieldwork and results presentation at MAAIF headquarters to inform policy decision on the findings and strategic control of tsetse and trypanosomoses. There is a need to complete the study and follow up on all the actions recommended to support DLGs and local communities to deal with this risk.

Vegetables and Milk Assessment

168. In October 2014 FAO conducted a rapid assessment to analyse the milk and vegetable production and marketing systems in Karamoja. This is highly relevant in the context of Karamoja. The objective of the assessment was to inform the ongoing resilience-building contingency and response planning processes which identified milk and vegetables as possible entry-point commodities in joint programming for nutrition and livelihood interventions. The recommendations focused on the support of the milk market through milk vouchers and vegetables production could be expanded through interventions that promote supplementary irrigation, leading to the growth of input supplies and agronomic skill improvement. As FAO conducted this assessment early on in 2014, this potentially informed the support of the vegetable production by APFS, and water component of the project. There has been some limitation in terms of identifying the drought resistant vegetable varieties in Karamoja to be promoted among the local women to reduce watering time, amount and resilience.

Economic Analysis of Agro-Pastoral Field Schools

169. As mentioned in Section 3.4, in 2015 FAO commissioned a study of the contribution of APFS to livelihoods and incomes.[52] The study is comprehensive and well presented however the ET has doubts about the rigour and validity of the survey methodology because several conclusions concerning the adoption of recommended agronomic practices are at odds with the ET's own assessment and with an evaluation of APFS supported by FAO under the preceding KALIP project (funded by the EU)[53]. The ET observed for itself that APFS members are strongly inclined to affirm that they have adopted recommended practices even if they haven't. If is difficult to control for this in a survey. The KALIP evaluation relied instead on 21 focus group discussions of three hours duration with randomly selected APFS. The recent FAO study noted the existence of the KALIP evaluation in its introduction but made no further reference to it.

[51] Tsetse study TOR, FAO

[52] Economic Analysis of the Farmer Field School Approach Based on its Contribution to Smallholder Farmer Livelihoods and Incomes in Northern and North-eastern Uganda, John Jagwe and Geoffrey Okoboi, FAO, Kampala (2016)

[53] An Assessment of the Outcomes of FFS and APFS Components of ALREP and KALIP in Northern Uganda and Karamoja" by Cardno Emerging Markets (UK) Ltd, (2014)

Water prefeasibility Study

170. A water prefeasibility study has been conducted by FAO water technical expert/staff in FAO Project team in Karamoja. The study is highly relevant and of excellent quality. In the context of importance of water and many failures of water schemes in Karamoja, the feasibility study was found to be helpful in informing the design and implementation of the water works in the project by FAO and IPs. The study covered the water related policies, water works and their distribution by all the important development partners, UN and NGOs working in Karamoja, and detailed analysis of different water harvesting schemes in Karamoja. Environmental assessments and risks mitigation for various water schemes were also done. However, gender has not been well mainstreamed into the study and limited reference has been done to indigenous water systems and practices in Karamoja.

Gender and water studies

171. FAO's Gender Focal Point and national M&E staff carried out a "*gender analysis of water for production among small scaled agriculture producers in Karamoja"*, with the aims of analysing the possible effects of the planned water for production intevention on household gender and labour dynamics and how it impacts on food production; and examining women´s role and participation in the design, development and management of water for production facilities in Karamoja. The study methods included household interviews and focused group discussions in all 7 districts. This is highly relevant in the context of gender inequality and critical water issues for both men and women in Karamoja. However, conducted in September 2015, the analysis results can only be limited to informing gender responsive implementation of the on-going water component of the project by other IPs such as C&D, and future national gender mainstreaming policy advocacy in MWE and MAAIF, and through the Water Forum in Karamoja.

172. FAO commissioned another desk-review research "Gender dimensions in the management and utilization of water for agricultural production among smallholders in Karamoja and the implications for agriculture production and productivity". An external national academic expert conducted the research in November 2015. Similarly to the above analysis in terms of its relevance, with additional desk-review method, the research focused on gender responsive analysis for both policy advocacy and programme implications, with clear recommendations, which are useful for the water component in the project and long term gender mainstreaming in water sector in Karamoja.

173. FAO water and gender studies identified that gender has strong implications for water for production, particular challenges faced by women in Karamoja, and women's roles in water schemes from the design, planning and maintenance. It is important that the study results are considered at project level (design and on-going implementation by C&D), and used for appropriate policy briefs including the government investment in water in Karamoja from central level such as the Ministry of Water and Environment and the Kyoga Water Management Authority.

174. The three preceding pieces of research should have been combined with the participation of FAO gender and water technical staff, external gender expert, and IPs partners to be more strategic and resources and time efficient. The set of results from such

integrated research could have also informed well FAO, IPs and DLGs in gender responsive water works planning and implementation.

Study on measuring transformation

175. A series of exercises to come up with a way of measuring transformation in climate resilience was undertaken by WYG (formerly Delta Partnerships Uganda) in 2014-2015, commissioned by DFID outside the Project. Although the results seem comprehensive, covering the different activities of FAO, UNICEP and WFP, with key achievements and follow up actions for further improvement, the transformation indicators have been viewed by UN agencies as too complex to apply and the ET agrees.

3.7 Evaluation question 7: To what extent the project responded to women's needs

Main finding:

- *There has been a focus on gender equality in the design of the project, with strong women targeting, yet some limitations remain in terms of lack of gender sensitive indicators, lack of gender analysis requirements in LOAs with IPs, gender action plans and limited gender equality monitoring within the project.*
- *Most project activities were designed to bring services nearer to households and since women are at the forefront of household activities it can be urged that they were typically direct beneficiaries. Although there are no gender sensitive indicators in the project logframes, gender has been mainstreamed into APFS process. IPs/NGOs in charge of APFS have some gender awareness, capacity and targeting women in many of their activities.*
- *Women have enhanced their access to productive resources, ranging from agriculture inputs to finance and land. Land tenure for women was not addressed in this project. Through APFS, women also improved their access to agriculture extension services, market information, and weather and climate information to some extent. APFS also contributed to more equal decision-making power of women members at group level and at home, yet more needs to be done.*

Project objectives and Design

176. Although gender equality was not reflected in the Project's objectives or in Project performance indicators, the design does address gender equality. Those invited to participate in APFS were "to be selected with a gender lens"[54] (relevant to the 80 new APFS) and FAO's social economic gender analysis tool is integrated in the APFS curricular. Surprisingly, the LoAs signed with IPs do not provide any direction in relation to gender equality. The IPs selected are of course gender aware and some mentioned ensuring women-headed households participated, appropriately given that as many as one-third of households in Karamoja may be regarded as women-headed[55].

177. The project components of early warning system, livestock, APFS covering both crops and animal husbandry with some piloted literacy classes, water for livestock and

[54] Project Document, p 10
[55] UNICEP and WFP Food Security study 2014

home consumption are highly relevant to meet the needs, priorities and constraints of both men/pastoralists, and women in Karamoja.

Project implementation and management

178. FAO deployed the gender focal point and M&E staff in gender analysis in the project, and external consultant for another gender research in water for production component, to identify gender related issues, both for programming and policy implications. Yet, the timing and the cooperation with other IPs and DLGs could have been better planned to ensure the results to be fed into the subsequent project activities by all IPs and DLGs.

179. Gender mainstreaming has taken place in APFS. During training, facilitators were provided with an understanding of gender and gender mainstreaming in the APFS cycle. Community-Based Trainers (CBT) were selected to support APFS in Amudat District. But the number of women APFS facilitators and CBT remains small. This limits the effectiveness of reaching women in APFS[56].

180. FAO and IPs provide sex-disaggregated data in their project reports. GOAL conducted gender analysis to identify gender inequality issues and to make recommendations for actions. Caritas and ADRA adopted Oxfam's Gender Action Learning System (GALS).

181. Neither FAO nor IPs provided information on progress in gender equality in reports, beyond case studies and women participation and leadership analysis in APFS. However, FAO has conducted a number of studies[57] during the project implementation to highlight the gender inequality issues and improvement in gender equality for APFS members, particularly women members. This would have supported the project monitoring and management on gender equality.

Equal decision-making

182. Joint decision making in group actions and enterprises has been adopted in APFS to varying degree (depending on the resources and capacity of IPs). It was clear from discussions with APFS that women do influence decision-making and that their engagement in a successful group increases their respect within their families and the community. All members have been encouraged to pursue equal decision-making at home. Although some women members reported enhanced decision making at home, it is still an area in need of strategic support, particularly related to livestock and large asset investment. Women members still have difficulty in successfully bringing change at household level[58]. Peer pressure among men (including youth), and good male role models in APFS, are raised by APFS women members as effective methods to change men's

[56] APFS women raised the needs for more women CAHWs to be trained from their groups

[57] Caisses de Resilience, FAO Uganda

[58] APFS female members interview by ET

attitudes. Extra childcare support among young mothers is identified as a key need.[59]The APFS has the potential to contribute over time to changes in social and cultural norms.

183. Many women of APFS have been empowered by gaining sufficient financial autonomy to make decisions for their own investments. As a result, they feel less dependent on men and more respected by them.

184. With women leadership positions in APFS, women are able to influence their decision making in the group, and being more sensitive to the needs and supporting the equal decisions of the women members. Some women have benefitted from leadership training, group dynamics and organisational skills, yet the number is low, compared to men.[60] Due to constraints of the cultural and social environment of Karamoja, to enable more women to be confident to take up leadership positions in APFS, they will need more intensive, targeted support.

185. Conducive decision-making environment within the households was also promoted through other family harmony related topics, with engagement of both men and women. Through APFS, topics such as gender-based violence, alcoholism, HIV/AIDS, child school attendance, and child immunisation have been discussed. Women members have been helping couples outside the APFS. Men members of APFS who have participated in these topics have been influential in changing attitudes with other men/husbands.

Equal access to productive resources

186. APFS have introduced agricultural inputs that are accessible to women including crop and vegetable seeds. Improved poultry and livestock are in the pipeline. A small number of women members of APFS in Abim District have been linked to private sector inputs and services, with support from GOAL, based on their value chain and market approach. Mercy Corps has linked some women engaged in drug shops to suppliers.

The Camkuuoki/Eat Your Sweat APFS in Abim District starting growing chili in June 2015 as a group enterprise and were successful making a good profit. With assistance from GOAL, the Group has applied for a Community Demand Driven Development Fund, a loan worth 2,160,000 UGX, for planting two acres of chili and vegetables. The group has been linked to a private company to buy all their chili, and this enterprise has been shared and adopted by other APFS supported by GOAL in Abim District.

187. A small number of women members of APFS and local communities benefit from the micro solarised water systems and small scaled irrigation works (on-going) for domestic and production purposes.

188. Only 1% of the population is estimated to have access to financial services[61]. Women in APFS have been able to access small loans through their VSLA. The loans are used for various purposes, including production (e.g. purchasing seeds), assets (e.g. buying livestock) and income generating activities (e.g. brewing). VSLA is vital to enable women to

[59] GOAL gender analysis report
[60] FAO progress report
[61] Caisses de Resilience, FAO (2015)

put new knowledge and skills into practice[62]. The poorest women members of APFS use loans for food during emergency (drought 2015) or school fees, rather than for investment.

189. Through APFS networks, some women have been enabled to access larger loans and formal banks such as Centenary Bank (GOAL). However, with no land ownership, and limited capacity, access to larger loans remains more challenging for women. Some APFS networks in effect exclude women due to the high fees and unlike men their inability to sell household assets like goats to raise funds.

190. FAO/ACTED has been disseminating DEWS (with weather, livestock, market and labour information) to the local communities including women. APFS supported by ADRA and GOAL enabled women to access private weather and market information services of 'FIT UGANDA', government programmes[63].

191. Gender inequality in land ownership in Karamoja, and women's lack of control of productive resources including sometimes access to land for productive purposes are deep-rooted issues in Karamoja. With growing competition for arable land, including from private stakeholders, and potential conflicts, customary and communal land ownership, including land rights for women needs specific attention. FAO is a pioneering agency globally in support of Voluntary Guidelines on the Responsible Governance of Tenure, and FAO Uganda has experience of implementing these Guidelines in Western Uganda. This expertise and experience should be applied in future programming in Karamoja.

Equal access to goods, services and markets

192. The APFS were the primary means employed by the project to increase access to agricultural services. Women are well represented (62% of APFS members). The APFS methodology probably more successfully engages women, even of low literacy levels, than a traditional extension service given the duration of the curriculum and the encouragement (if needed) to become more engaged over time. By imparting knowledge and skills, APFS have provided opportunities for women to increase production and improve yields, and through enterprise training and VSLA, to increase their income. Aided further by a literacy pilot intervention supported by ADRA[64], and by exchange visits to other APFS enterprises and agriculture fairs, women members are broadening their capacity for business.

Ms Adong Getrude is 31 years old, living with her husband and 6 children, and the secretary of the group 'DA 15'. Before joining she grew crops but did not sell produce. She says, "*Since joining APFS I've been able to produce more, because I borrowed money to pay for oxen and to hire more labour to grow crops. I have learned how to grow in rows, with more yield. I've also learned inter-cropping, and also how to do business, buying and then re-selling for profit, keeping records and keeping the money. It has been life-changing.*" She now wishes to start a mobile money business.

[62] APFS group discussions and GOAL Livelihoods Report (2015)

[63] Wealth Creation, Adult Education and Youth programmes

[64] ADRA Literacy programme report describes how improved literacy skills have enabled women to improve their marketing of produce.

193. Some APFS include CAHWs as members and most have links to them. Access to CAHWs is highly valued by women to treat disease in poultry, goats and lactating cows. CAHWs provided women members with vaccinations for poultry against Newcastle Disease, (with costs). GOAL reported 120,000 chickens vaccinated by 20 CAHWs in five sub-counties of Abim District. Higher quality and higher number of female CAHWs will facilitate women in their livestock production and care.

194. Women access markets through their vegetables, crops and poultry enterprises. There has been limited access of women to cattle markets, due to the traditional roles of men in charge of the cattle sale in Karamoja.

195. Women and men in APFS (ADRA in Kotido) found significant value in the literacy programme incorporated into the APFS. Literacy has facilitated their learning on production, savings, and enterprise. As women enhance their own education and increase their incomes, they are found to be more willing to send children to school, and to spend their income on children's school fees.

Reduction of Women work's burden

196. Women in Karamoja are shouldering a heavier burden than men in productive, reproductive and social spheres[65]. Women members have been exposed to some labour-saving technologies and practices through APFS, although FAO and IPs have not critiqued results. Initiatives have included:

- Early-maturing and disease-resistant varieties of maize, sorghum and cassava to help women farmers reduce their time for crop care.
- Minimum or zero tillage, mulching and cover crop, with potential for reducing labour for women working in the fields or watering the crops.
- Kitchen gardens, sack-mould gardens, and riverside gardens, which can save time for women pursuing horticulture.[66]
- Drip irrigation systems, small-scale irrigation kits, and treadle pumps, which can similarly reduce labour for women growing vegetables/crops.
- Boreholes and micro water facilities in APFS (some being finalised by C&D), which can reduce time for fetching water for vegetable gardens.

The introduction and adoption of these labour saving technologies has been modest. Before seeking to replicate, the reasons for limited adoption need to be better and more widely understood and addressed.[67]

[65]FAO and GOAL Gender Analysis

[66]Caution is needed in promotion of water-intensive vegetables, rather than local indigenous vegetables, which are more drought tolerant.

[67] E.g: fuel-efficient cook-stoves were produced but not widely used (ADRA)

3.8 Evaluation question 8: What is the potential impact of the project on increased resilience of targeted communities to climate extremes and weather events?

Main finding:

- *The Project has made aggregate improvements in strategic planning and to some extent preparedness for climate shocks (and livestock disease outbreaks and burdens), but the translation into effective responses by DLG will take a longer timeframe.*
- *FAO support for vaccinations including FMD reduced losses of productive animals and mitigated potentially negative impacts on resilience. Valuable lessons have been learned and the sub-region is now also better equipped to respond to livestock disease outbreaks.*
- *Communities targeted by APFS are in a marginally better position to withstand a further climate shock due mainly to livelihood diversification and income generation.*
- *FAO investments in adaptive capacity including watershed management and increased involvement of the private sector in veterinary service delivery are very effective with the potential for a transformative change.*
- *There is potential for transformative change in both areas. APFS could contribute to a transformation if FAO can a) determine which soil and water conservation measures are feasible (particularly given labour constraints), and b) make a convincing case to farmers for investing in these changes.*

197. The potential impact of the Project on the resilience of targeted communities and DLG is assessed below with reference to the Project's contribution to absorptive, adaptive and transformative capacity68. The potential impact with reference to the project's four outcome indicators is assessed at the end.

Absorptive capacity[69] to reduce climate risks

198. Improving absorptive capacity is reflected in the Project design as Intermediate Outcome 1: 'Improved strategic planning and response to climate risk/shocks.'[70] FAO has had a positive impact on absorptive capacity with Project investments contributing to an aggregate improvement in the ability of government and partners to plan and prepare for negative climate related impacts. Relevant investments include livestock surveillance and diagnostic capacity; DEWS (including the Drought Bulletins); resources made available to district institutions including ICT equipment and software; updated Contingency Plans with some contingency funding; the application of the IPC tool to Karamoja; and annual

[68] OECD (2014) Guidelines for resilience systems analysis

[69] "The ability of a system to prepare for, mitigate or prevent negative impacts, using predetermined coping responses in order to preserve and restore essential basic structures and functions. This includes coping mechanisms used during periods of shock. Examples of absorptive capacity include early harvest, taking children out of school, and delaying debt repayments." OECD (2014)

[70] Outcome 1 Indicators include: Quality of strategic planning capacity (information, equipment, resources, framework/ protocol) in DLG/FSSWG; number of response scenarios and options/alternatives available to stakeholders; level of alignment of plans and response strategies with the DLG; and timeframe to respond to disasters/crisis.

Household Economy Analysis. (These improvements are however at risk of receding if government does not provide resources.)

199. Much of this capacity development has been focused on DLG, which is under-resourced and makes no contingency allocation for disaster/crisis response. (The contingency funds made available by partners and government are modest.) What typically happens in a disaster/crisis is that the district requests and receives modest assistant from OPM, while the bulk of emergency funding is spent directly by the 'big' responders like WFP, with the shape of the response governed by planning that takes place at the subregion or national level, understandably when the disaster/crisis includes several or all districts. This was true for the 2015 drought response. Nevertheless DLG is at least now better able to engage with the main responders and have some influence on the shape of the response.

200. Likewise, the livestock sector. There has been a qualitative improvement in DLG livestock emergency preparedness and response capacity. FAO has contributed through the inclusion of livestock emergency and preparedness plans in district Contingency Plans, the inclusion of livestock disease warnings in DEWS Drought Bulletins and dissemination to communities, and the introduction of Livestock Emergency Guidelines and Standards (LEGS). Although not fully disseminated, there were positive testimonies of the usefulness of PET. FAO assisted the subregion to mitigate the impact of the FMD outbreak by providing substantial assistance to the FMD vaccination program including equipment and cold chain logistics. The training provided to undertake FMD vaccinations and the establishment of the FMD Technical Coordination Committee and its broader application have further increased emergency response capacity. Also relevant are the FMD social economic impact study, the national FMD risk based strategic plan, and information on future strategies for control of Tsetse infestation, AAT and HAT.

201. A response to a disease outbreak still relies on external actors and funds and there is relatively little the district can do if the disease is not classified as a public good. This is the challenge posed by tick borne disease, which should be considered a disaster given the very high mortality (far higher than FMD in fact). The challenge of tick borne disease aside, the FMD response demonstrates that the system as a whole now has more capacity to respond to a livestock related disaster/crisis.

202. Project investments have also contributed to improving the capacity of DLG, MAAIF and CAHWs to provide access to livestock health and diagnostic services by strengthening the system for disease prevention and improving veterinary services. Surveillance and diagnostic infrastructure has been improved, including serosurveillance (laboratory services) and passive surveillance (through EMA-i). Support for private sector drug shops has modestly improved access to veterinary drugs. The Project has also contributed to enabling capacity at the community level through the training provided to CAHWs (addressing weak extension services).

203. Some of the 'resilient livelihood' Project interventions contributed and/or will contribute to the ability of households to absorb or cope with periods of shock, including the VSLA which provide 'welfare' loans, and cash-for-work.

Adaptive capacity[71] to reduce climate risks

204. Adaptive capacity is reflected in the Project design as Intermediate Outcome 2: 'Strengthened adaptive capacities of agro-pastoral communities and the DLG to reduce climate risks.'[72] It is difficult to gauge the extent to which the Project has strengthened adaptive capacity in the subregion and districts from absorptive capacity. The investment in watershed management and the attention to 'hotspots' is heading in the direction of adaptation. Many of the technical personnel within District Production Offices have taken on a more conservation-based outlook. The FMD Technical Coordination Committee is evidence of adaptation in livestock disease control. National government's perspective on the role of livestock is now positive overall which should assist secure more support for disease control, rangeland management, etc. Support for private sector drug shops shows signs of adaptation in improving veterinary service delivery. These are all very encouraging developments. The challenge is turning opportunities for adaptation into action. It requires more coherence and consistency from national government, visionary leadership from District Executive Committees, and of course resources. The recently developed micro-catchment management plans for example require very considerable external investment.

205. At the community level DEWS and other social information disseminated may have helped households to adapt to conditions in 2015 (e.g. prepare early for planting) and/or to mitigate risk (e.g. preserving cereal stocks). FAO's IP believes so, but FAO has not assessed the evidence and the evaluation could not fill this gap.

206. Community and APFS action-planning processes led by APFS facilitators and IPs should have deepened peoples understanding of changing conditions and strengthened analytical skills. Whether households have applied or could have applied this understanding and analysis to adapt their livelihoods to climate related risk (not just mitigate impact) is uncertain.

207. There is strong evidence of livelihood diversification and enhancement through APFS enterprises; VSLA related income generating activities; and group market vegetable production. When completed, the micro-irrigation systems will contribute further to market vegetable production and the valley tanks will enable households to maintain livestock close to home for longer. These are amongst the most positive aspects of the Project, strongly reflecting adaptive capacity contributing to household resilience.

208. The level of adaptation in staple crop production to mitigate further climate shocks has been disappointing. In part this can be attributed to the drought in 2015, although

[71] "The ability of a system to adjust, modify or change its characteristics and actions to moderate potential future damage and to take advantage of opportunities, so that it can continue to function without major qualitative changes in function or structural identity. Examples of adaptive capacity include diversification of livelihoods, involvement of the private sector in delivering basic services, and introducing drought resistant seed." OECD (2014)

[72] Outcome 2 Indicators include: Aggregate improvement in institutional capacity to understand, manage and respond to climate risks; quality of DLG and MAAIF livestock emergency preparedness and response plans; aggregate increase in level of human adaptive capacity (skills and technologies); access to, and affordability of, livestock health and diagnostic resources by the communities; access to quality forage resources throughout the year.

drought is after all the type of circumstance that has to be addressed. Drought tolerant seeds were distributed, including for sorghum, but survival was low. APFS households were exposed to more ideal agronomic practices but not with enormous success. There is strong resistance to ending the age-old practice of broadcasting the smaller grains including sorghum, although there is evidence of some adaptation that might be attributable to APFS e.g. achieving better spacing by dropping sorghum seed in every third ox-plough furrow. A range of soil and water conservation measures were demonstrated included physical changes to control erosion and retain moisture however adoption appears to be very low due to people's unwillingness and/or inability to invest the labour required to effect and maintain these changes to their gardens.

Transformative capacity[73] to reduce climate risks

209. Poverty, food insecurity and vulnerability continue to prevail in Karamoja partly due to the low productivity of both crops and animals associated with climate variability exacerbated by extreme weather patterns, leading to reduced crop and livestock productivity. Fundamental challenges remain including establishing sustainable management technologies like de-concentration of cattle to relieve pressure on land for pasture and water; and introducing on scale resilient farming technologies to improve pasture and animal productivity.

210. FAO has invested in systemic change, which can and should be pursued further. The most notable is probably FAO's contribution to watershed management (FAO is in competition with others in this endeavour). If watershed management and conservation principles are adapted rigorously this will qualify as transformative change. It should lead to a far more holistic approach to resource management, including most obviously water. From a livestock sector perspective, access to water for animal production is critical for resilience recognising that watering points for livestock need to be de-concentrated to conserve pasture, reduce conflicts and lower the risk of disease outbreaks. There are fundamental technical and financial challenges in accomplishing this.

211. FAO is also committed to advocating for and supporting private sector veterinary service delivery. There is potential here for transformative change but it will require a strategy that goes much further than supporting private drug shops. While FAO should pursue effective means of enabling greater private sector service delivery, FAO and development partners should also promote the development of livestock owner networks to increase the accountability of all veterinary service providers (public and private) and to provide a mode of entry for promoting more of a business approach to livestock including the payment of user service fees.

212. Incremental improvements in agronomic practices confined to APFS and some neighbours do not constitute a satisfactory mitigation of climate related risk. However APFS could contribute to a transformation in agronomic practice in Karamoja if FAO can a)

[73] "The ability to create a fundamentally new system so that the shock will no longer have any impact. This can be necessary when ecological, economic or social structures make the existing system untenable. Examples of transformative capacity include the introduction of conflict resolution mechanisms, urban planning measures, and actions to stamp out corruption." OECD (2014)

determine which soil and water conservation measures are feasible (particularly given labour constraints), and b) make a convincing case to farmers for investing in these changes over several years. On FAO's part this requires more rigour, more collaboration, more learning.

213. The VSLA are a stand out success and the change for those members that have become entrepreneurs is transformative, as is the social change for those members participating in successful, cohesive groups. This is particularly so for women, who seem to have made more of the opportunities presented by VSLA than men.

Results against outcome indicators

214. The resilience of agro-pastoral communities and DLG and as a consequence the reduced impact of climate risks on livelihoods is the intended outcome of the Project.[74] FAO defined four outcome indicators[75] however results at this level have not been assessed by FAO and it was beyond the scope and means of the ET to try to gather the data required. The ET can however comment on each, from the perspective of potential impact.

i) Aggregate improvement in resilience of natural and production ecosystems[76] to hazards

Aggregate improvements are very modest overall. Pasture improvement has great theoretical potential to improve the production ecosystem and this was planned, but substituted with small demonstrations, which are yet to be established. It is hard to see much being realised from this at present but FAO and NaLIRRI should persist. Soil and water conservation generally in the production of crops specifically similarly has great theoretical potential to lead to an improvement in the production ecosystem and to resilience to hazards. Watershed management and micro-catchment management planning is underway and modest conservation measures have been piloted. APFS address this at the household level however to be effective the ET believes FAO needs to re-examine in consultation with IPs and research bodies what APFS have to offer in terms of Climate-Smart Agriculture. If APFS are making a contribution to the resilience of productive ecosystems already FAO has not presented it and needs to present the evidence for what is already being achieved so all can learn from it.

ii) % increase in the value of livelihood capital (human, physical, financial, natural) assets controlled/owned by households

APFS members have been engaged in an intensive process and presumably understand well enough what the facilitators and IPs are promoting. Some of those interviewed remarked that they appreciated the opportunity to learn in this way and the analytical skills imparted may well be useful in ways that are almost impossible to measure. The livestock to be provided to APFS groups or purchased by APFS members as part of their investments from VSLA savings will represent significant physical capital to households. Water assets

[74] Project Document, Objective Hierarchy/Theory of Change, p 18

[75] The project's outcome indicators are: i); ii) % increase in the value of livelihood capital (human, physical, financial, natural) assets controlled/owned by households; iii) % improvement in household food access; iv) % improvement in household food availability.

[76] An ecosystem being living organisms together with air, water and soil

have added physical capital that households can use for production. Financial capital is certainly being increased through APFS VSLA although as far as the ET is aware neither FAO nor its IPs has sought to quantify this. If soil and water conservation measures were to be undertaken by households it would increase natural capital.

iii) % improvement in household food access

Cash-for-work increased household food access, as have livelihood diversification including market vegetable gardening and VSLA income generating activities. FAO's economic analysis of APFS found some production increases in some crops and APFS interviews also showed that members utilised the vegetables planted and poultry and eggs, milk from goats purchased by savings and loans from VSLAs for family consumption.

iv) % improvement in household food availability.

It is unlikely that the APFS had a marked impact on the availability of staples in 2015 (crop production) although some of the vegetables produced were presumably consumed at home. Livestock vaccinations carried out under the Project have reduced animal mortality and disease morbidity to an unknown but presumably quite significant degree, although this does not improve household food availability directly because livestock owners rarely slaughter healthy animals for home consumption. They may be sold however to purchase cereals, particularly chickens (and eggs).

FAO contribution to ERKP outputs

215. The five quantifiable 'main outputs' included in DFID's 'Enhancing resilience in Karamoja program' (ERKP) include two as FAO contributions: 800,000 cattle vaccinated against epidemic diseases and 6,000 agro-pastoralists and pastoralists with access to improved animal nutrition. FAO exceeded the target for the first by a large margin, vaccinating 1,129,065 by the end of April 2016, including 253,300 cattle for FMD. FAO was unable to deliver the second. The activity was changed from direct rangeland rehabilitation to awareness raising through small demonstration sites (yet to be successfully established).

4. Conclusions and recommendations

4.1 Conclusions

Qu.1: The extent to which the project design, approach and implementation arrangements (including partnerships) were relevant and efficient

Conclusion 1.1 The Project is part of the ERKP, which DFID intended would be implemented collaboratively by FAO, WFP and UNICEF. While this was a sensible strategy on the part of the donor the ET is not aware of any assessment of the extent to which the strategy enhanced FAO-WFP-UNICEF collaboration on climate resilience. The three agencies are said to have cooperated quite closely in response to the 2015 drought, but that is normal and not indicative of a joined up effort to address resilience.

Conclusion 1.2 partnering with diverse and multiple yet relevant and capable implementing partners (IPs) at outcome level is appropriated to engage in social/institutional change and diversify the sources of results, reduced institutional risks, created incentives and expanded the channels of advocacy for change.

Qu.2: The extent to which the EWS, Preparedness and Contingency Planning and Response System have been strengthened

Conclusion 2.1 District capacity in EW, preparedness and contingency planning has been strengthened considerably. The critical test for DLG will be whether or not updated Contingency Plans (CPs) are utilised if and when they are formally endorsed. While DLG may be in a better position to influence the response, this scenario does bring into question the likely return on the investments made in EW, preparedness and contingency planning.

Conclusion 2.2 FAO's HEA makes a valuable contribution and FAO should do more to promote it to WFP, UNICEF and other stakeholders. Providing a detailed IPC assessment for Karamoja has been useful but FAO will need to attract funds to continue it. The extension of EMA to Karamoja has also been valuable but similarly requires ongoing support. All these investments need to be considered within the context of reaching a consensus amongst stakeholders on priorities and rationalisation.

Conclusion 2.3 DRR clubs and DEWS dissemination to children in schools in Karamoja are highly relevant to engage children, as active family members in reducing vulnerabilities and building resilience, and transfer of knowledge from children to their parents with low level of literacy and limited means of communications.

Qu.3: The extent to which livestock disease surveillance, diagnostic capacity, veterinary services and animal nutrition have been strengthened

Conclusion 3.1 Human resource capacity for livestock disease prevention and control has been strengthened considerably including ability to plan and systematically organise an emergency response. Cold-chain and diagnostic equipment was availed. Although not quantified, it is apparent that these investments collectively provided a good return given the contribution to the reduction of animal disease morbidity and mortality, in particular

facilitating service providers to carry out emergency interventions and vaccinations (including FMD).

Conclusion 3.2 It is risky to continue to depend on the activation of external support to incentivise staff and CAHW to maintain critical veterinary systems and undertake emergency responses.

Qu.4: The effectiveness of the Agro-Pastoral Field Schools in developing communities' capacity on climate-resilient livelihood

Conclusion 4.1 there is some evidence that APFS were at least moderately effective in developing human, financial and social capital relevant to climate-resilient livelihoods. The evidence for widespread household adoption of the agronomic practices and technologies promoted through APFS for staple crops is weak, including soil and water conservation measures that relate to natural capital.

Conclusion 4.2 At the core of the issue of low adoption of the agronomic practices and technologies promoted is the need for more research and analysis concerning the constraints that operate in Karamoja, including amongst others: people's perceptions about investing labour and cash in staple crop production and livestock; labour constraints and the role of gender in decision-making about production; the variable physical characteristics and opportunities across the six livelihoods zones.

Conclusion 4.3 There is good evidence of viable alternative livelihoods and diversification, specifically through a) an increased investment in market gardening; b) investments in enterprises like cereal banking and bee-keeping; and c) investments enabled by VSLA (which are the most remarkable amongst these). The really successful VSLAs are uncertain how to get to the 'next level' and are seeking guidance.

Qu.5: Value added by Integrated Water Management to other project components and to the communities in Karamoja

Conclusion 5.1 The watershed management approach, which FAO is now engaged in, provides a potentially unifying framework for stakeholders working in all sectors with an emphasis on conservation and good application to climate resilience.

Conclusion 5.2 The 'water for local production' investments for 'home' livestock and horticulture will support adaptation and the resilience of the households concerned. The provision of water for livestock in particular is critical for resilience as it de-concentrates animals at watering points, and contributes to reducing the number of potential land access conflicts during grazing and along migratory routes as well as the potential for increased disease outbreaks due to congestion.

Qu.6: The extent to which the project contributed to evidence based research and analysis and incorporated the results

Conclusion 6.1 FAO has generated a large body of research and analysis within a short timeframe, providing evidence in relevant areas. The research is considered to be from excellent to good quality. While the results often have fed back into the Project or will be utilised in a subsequent phase, further actions and follow-up are required in some cases to

address the issues identified. In many cases results have not been as widely communicated to IPs, DLG and development partners as they should have been to ensure utilisation.

Conclusion 6.2 Indigenous knowledge, local varieties, and livestock/species, managed by the pastoralists and women in the six different livelihoods zones in Karamoja are critically challenged in the climate change context, yet there is little attention to these issues in research to direct the future utilisation, conservation and protection by the local people, national academics and local governments in supportive of their resilience.

Qu.7: The extent to which the project responded to women needs

Conclusion 7.1 Through APFS process and project activities, gender has been mainstreamed, enhancing women's access to knowledge and advice and apparently ensuring equal access to the inputs provided and opportunities availed (finance, access to markets). Progress has been made in empowering women members of APFS to be more equal in decision making with men and their husbands, although stronger efforts are required given current barriers. The 'model men' approach and other creative means of achieving this through VSLA were found to be relevant. Some labour savings technologies and practices were promoted, but on a modest scale and not very successfully. Women's rights to control land for cultivation was not addressed.

Qu.8: The potential impact of the project on increased resilience of targeted communities to climate extremes and weather events

Conclusion 8.1 The Project has made aggregate improvements in strategic planning and to some extent preparedness for climate shocks (and livestock disease outbreaks and burdens). Apparently this has not (yet) translated into DLG led responses to assist communities to cope with disasters/crises. This is primarily due to the lack of funds. But even if some contingency funds are allocated to DDMC and these are helpful as a first response, external responders are likely to overwhelm the district and its contingency plans and response structures.

Conclusion 8.2 FAO has demonstrated that it can play a valuable role in preparing for and supporting a response to livestock disease related disasters/crises in Karamoja that mitigate negative impacts on the economy and the resilience of livestock owners (delays in mounting a response to the FMD outbreak notwithstanding). This is a key area where FAO is well placed to contribute to resilience over the longer-term.

Conclusion 8.3 Support for private sector drug shops shows signs of adaptation in improving veterinary service delivery. FAO can reasonably be expected to take this further and the ET believes that there is potential for the greater involvement of the private sector and the commercialisation of livestock to make Karamoja more resilient in the longer-term (provided the benefits of this development are shared and not too concentrated).

4.2 Recommendations

Project Design/Theory of change

Recommendation 1

To provide process dimensions to its ToC, FAO should include strategies in a second phase or follow-up intervention for a) generating and sustaining social and

institutional change, and b) improving coordination and collaboration with Government partners, WFP and UNICEF, implementing partners and stakeholders, and c) a broader partnership strategy that includes private sector.

Early warning, planning and response

Recommendation 2

To protect the investment made in DEWS to date, FAO should collaborate with a wide range of international agencies to a) ensure the Districts to mainstream DEWS into existing work-plans and budgets b) advocate for OPM to provide contingency funds to DDMC, and c) engage children and youth as active family members in reducing vulnerabilities and building resilience and reaching out to their parents and local communities, FAO should support IPs to set up and running of DRR/CC clubs in schools in all the project areas.

Livestock sector

Recommendation 3

FAO and development partners should promote the development of livestock owner networks as a mode of entry to promote a business mode and paying for services, and to increase the accountability of all veterinary service providers.

There needs to be a move away from this modality to develop a more self-reliant agricultural system. This requires designing a programme of support to local and external input suppliers including farmer-based seed multiplication models. Besides plant genetic improvement, government and the development partners should identify land races, which have stood the test of time and multiply their seed in order to avoid total extinction. FAO is supporting globally the efforts of the national gene banks in many countries including African countries. So this is in line with the global action plans of genetic resources conservation in the face of climate change.

Recommendation 4

To promote self-sufficiency in veterinary service delivery and a more commercial orientation, FAO should seek effective means of promoting and supporting private sector service delivery in a second phase or follow-up intervention, advocating that free service delivery be curtailed. Before providing further training for CAHWs, FAO should review the CAHW institution in collaboration with MAAIF and in consultation with livestock owners including women to strengthen regulation, community accountability and sustainability.

FAO now needs to balance its attention more to the demand side of livestock services e.g. by promoting a business orientation and exploring the potential for developing livestock owner networks as an entry point. To sustain resilience, free services need to be limited to emergency responses. Livestock owners need to be prepared and encouraged to gradually position themselves to pay for services rendered. Where need arises, a voucher scheme for the poor and vulnerable could be applied (learning from success stories from many countries including neighbouring Kenya and Ethiopia).

Agro-Pastoral Field Schools

Recommendation 5

To enhance the effectiveness of APFS in building resilience to climate extremes and weather events in Karamoja, FAO should conduct research and analysis on the

leading constraints to the adoption and/or adaptation of climate smart agronomic practices and technologies, including soil and water conservation measures.

Consideration should be given to people's perceptions about investing labour and cash in crop and livestock production; labour and the role of gender and decision-making in production; the variable physical settings across the six livelihoods zones. Consideration could be given to how better to build on traditional practices and indigenous knowledge. The research work should be undertaken in consultation with NARO (including NABUI-ZARD and NaLIRRI), District Production Offices and former IPs. The analysis should lead to a 'more grounded' APFS theory of change. The APFS manual and curriculum should ultimately be revised to reflect this theory.

Recommendation 6

To establish a methodical approach to learning, FAO should attach a 'season long' action research component to the next phase designed to critically evaluate the following in collaboration with NARO, District Production Offices and IPs:

- The functionality of any old groups included and the carry forward of technology adoption and social capital;
- Continuing adoption and/or adaptation constraints for any demonstrated practice or technology, including gender-based economic, social and cultural dynamics;
- The empirical evidence that is emerging for the contribution of adoption or adaptation to resilience to climate extremes and weather events;
- The extent to which the emphasis on resilience to climate extremes and weather in action planning has in practice influenced the thinking and actions of members.

Water for production

Recommendation 7

FAO should consider technical and leadership training for water users' association members, particularly for women members so that they can take up the leadership and technical positions. And to create ownership, resource efficiency, and the accountability of government agencies, future water investments should include some matching funds from the Ministry of Water and Environment and District Local Government and Sub-counties.

Research and analysis

Recommendation 8

To ensure utilisation, FAO needs to disseminate research widely and prepare policy briefs based on the research to share with relevant ministries. To inform further programming concerning EWS, water, crop production and livestock FAO should ensure research is conducted in each case on relevant indigenous knowledge, by different ethnic groups, across the six livelihoods zones in Karamoja.

Gender Mainstreaming

Recommendation 9

To fully meet the gender equality policies of FAO, gender mainstreaming should be taken up more systematically in successor programmes, including

- Ensuring gender responsive indicators including gender responsive Climate-Smart Agriculture are incorporated in the project theory of change/logical framework;
- Requiring IPs (through LoAs) to carry out gender analysis at inception as a basis for gender mainstreaming action plans, with FAO providing quality assurance and an appropriate financial allocation in the project budget;
- Including budgets for gender awareness raising and a capacity development programme for IP staff, FAO project staff and government staff including leaders, technical staff, extension workers, APFS facilitators, CBTs, and CAHWs.
- Requiring all IPs including FAO to monitor the gender equality progress in their quarterly and final report.
- Given the importance of access and control of land for cultivation particularly for female headed households FAO should seek to address the issue in consultation with government and partners and in future programming in Karamoja.

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