CROP PROTECTION PROGRAMME

Increasing the Effectiveness of Research within NARO, Uganda

R 8410 (ZA 0642)

FINAL TECHNICAL REPORT

1 April – 31 December 2005

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Executive Summary

This project arose from earlier CPP-funded work with the National Banana Research Programme of NARO, where data management weaknesses were addressed. It set out to assist the whole of the Uganda National Agricultural Research Organisation. The capacity of its staff to organise, access and effectively use data has been agreed to be a bottleneck limiting the quality and quantity of outputs, and thus a barrier to effectiveness of NARO's contribution to development.

The project focused on data management, statistical analysis and cognate activities. It looked at the training of technicians and scientists, and the recruitment and/or development of a *new* cadre of specialists in statistics and data management. At present NARO has *no* such specialists on its payroll, and – with no existing specialists on board – needs to proceed carefully to avoid ill-directed effort, or an inappropriate first set of appointments, when it begins such work.

The main report from the project to NARO also went to the "Change Implementation Team" who are consultants on the restructuring of NARO, still not complete at the time this project had to end. The report was comprised of a very brief guide followed by five stand-alone papers. These were essentially the documents promised in the project logical framework, but presented in more or less the reverse sequence.

With experience of busy managers' reluctance to wade through – and reflect on – lengthy or detailed documents, the "front" paper is a phase 2 project output, a *Briefing Document on Management Action Points* summarising very briefly what needs to be done to move forward the suggested agenda. This is followed by the other phase 2 (final) output, the much longer *Research Capacity Strengthening Strategy for NARO*, in which arguments for, and descriptions of, the recommended procedures are given to persuade the more determined reader.

Behind that are bound in the somewhat earlier outputs. The *Institutional Assessment : Developing Effective Support Services in NARO* provides a case for treating statistics and data management specialists as a profession, rather than isolated individuals in the somewhat independent public agricultural research institutions, along with arguments about how this can help to avoid the disillusion and attrition that characterised earlier, mismanaged statistical posts. The *Technical Report: A Training Needs Analysis in Statistics and Data Management* focuses mainly on the training of scientists and technicians, and brings together evidence from previous work, interviews and a questionnaire study of existing staff, and is supported by a more detailed *Survey Report*.

The FTR very briefly summarises the process by which these outputs, and the conclusions they offer, were developed in a logical order, the reverse of that described above.

Also bound in below are two interim documents subsumed in the final outputs, and a lengthy November visit report (Appendix 3) which gives almost a "blow-by-blow" account of the later, more consultative phases of the work done with NARO staff.

Contents

Background

The project follows from earlier work undertaken with the National Banana Research Programme (NBRP)[1] in Uganda, with funding from DFID and Rockefeller, to develop and adopt good practices in research data management. These initial endeavours provided a good foundation for more efficient and effective management of data within the Banana Programme. One output, namely a manual on *Guidelines and Procedures for Effective Data Management*, was disseminated to all researchers working within Uganda's National Agricultural Research Organisation (NARO), but staff have had difficulties with adoption of these guidelines because of their lack of training and skills in Research Data Management. Even within the banana programme, upgrading of staff skills in data management alone was only one step towards improving research. More needs to be done to improve research quality through an integrated approach which upgrades NARO researchers' skills in research methodology, while ensuring that institutional structures are in place to provide continuing support, sustainable in the longer term.

This project was set up at the request of, and with strong support from, the then Acting Director General of NARO, Dr. William Otim-Nape, to address the above issues and formulate a suitable strategy, acceptable by NARO senior management, to improve research and the uptake of research results. Building on the initial work with NBRP, the project looked at *other* research programmes of NARO and at their training needs in the research planning, data management and data analysis sector of research management. The project was seen by NARO senior management as a priority in improving the effectiveness of NARO's response to knowledge requirements for policy formulation, with a view to sustaining or improving agricultural productivity in Uganda.

Project Purpose

The purpose of the project and how it addressed the identified development opportunity or identified constraint to development.

The DFID 2005-7 Research Funding Framework sentence that begins para. 43, states, "The first priority, especially for Africa, is the capacity to access existing knowledge." It was argued in the project proposal that for researchers, especially those involved in field data collection, the capacity *for the researchers themselves* to easily access existing information is a *key bottleneck*. Overcoming this bottleneck enables researchers to publish and disseminate more and better papers, making more extensive and better use of the collected data. They can also move (or be moved) towards producing clear, factual, evidence-based extension and other policy-relevant messages.

This process is not instantaneous, nor painless, and the progress that has been made has been in the context of the relatively well-funded Banana Research Programme within NARO. The project aimed to ascertain whether and how progress of this type can be effectively achieved across other subject specialist areas of NARO.

The project therefore aimed

- to synthesise knowledge and lesson-learning from the work to date with NBRP;
- to look at the current status of statistical and data management knowledge and practice amongst NARO scientists and technicians, and their own perceptions of training needs in these areas;
- to apply the knowledge gained from the above assessment to the issue of capacity development for NARO researchers;
- to explore institutional structures that will allow the development and retention of statistical cadre to support NARO's research agenda;
- to develop recommendations for a NARO-wide training and capacity development strategy, rooted in the reality of current situations and programmes' readiness to move forward.

The project outputs have been discussed with NARO senior management and have been extremely well received. They were also discussed with the Change Implementation Team set up to formulate NARO's new directions following approval in Parliament of a framework of institutional reform for agricultural research in Uganda. It is expected that recommendations made in project outputs will be taken forward by CIT and the newly formulated NARO Secretariat and the National Agricultural Research Council.

[1] The National Banana Research Programme is based at Kawanda Agricultural Research Institute (KARI), Kampala, Uganda.

Research Activities and Outputs

The activities conducted should be listed. Lessons learnt from them should be provided and the outputs they have achieved. Were any intended outputs not achieved, were any additional outputs achieved. Please keep this as succinct as possible.

Phase 1 work

1.1 Discussions with Stakeholders at different levels in NARO

The first component of project activities involved a visit to NARO, Uganda in March 2005 by the project leader Savitri Abeyasekera and her co-worker Ian Wilson. A programme for the visit was arranged prior to the visit with Mr. Dickson Baguma, the project collaborator from NARO, in liaison with the Acting Director General, Dr William Otim-Nape. Mr. Baguma is the Acting Director of the NARO Secretariat's Monitoring, Evaluation and Policy Unit (MEPU), keenly interested in the work of this project and highly instrumental and effective in promoting project aims and findings with other NARO senior managers.

The initial project activities included the following:

(a) A series of discussions with stakeholders at different level of NARO with a view to acquiring an understanding of institutional processes, career development and promotion prospects and other features that may help or hinder future statistical staff members' motivation, capabilities and research outputs in the short and/or long term.

(b) An assessment of the current level of statistical and data management capabilities of NARO researchers, technicians and other relevant personnel so as to determine training needs in statistics and computing.

Full details of visit activities and findings have been previously reported to CPP in the March/April 2005 Visit Report. The findings from visit activities were also communicated to MEPU staff and senior managers who were present at a wind-up de-briefing meeting held at the end of the visit.

1.2 Preparation and circulation of an Institutional Factors Analysis

On the basis of discussions during the initial visit, and limited feedback received during the de-briefing wind-up meeting with some NARO senior managers, a *First-Phase Consultation Document on Institutional Factors* was drafted and circulated in April 2005 to Directors of NARO's nine Research Institutes and to Managers of the nine Agricultural Research Development Centres (ARDCs) for their comment[2]. A briefer version of this extensive document was later prepared in the light of discussion with NARO and others and appears as part of final Output 1.1 under the title "Institutional Assessment: Developing Effective Statistical Support Services within NARO" (see attached comb-bound set of documents).

Although comments were not forthcoming on the *Consultation Document on Institutional Factors* initially circulated, some feedback was obtained during a further visit to NARO by co-worker Ian Wilson in September 2005. This (initially unplanned) visit was regarded as being highly desirable in view of changes that had taken place in NARO, following approval of the new NARO Bill by Parliament and appointment of a new Acting Director General for NARO, namely Dr. Denis Kyetere, previously Director of the Coffee Research Institute. Two documents prepared as a result of this visit are provided in Appendices 1 and 2. The visit also allowed Ian Wilson to brief the new Acting Director General of NARO about the aims of the current project and to learn about changes taking place in the new NARO system. There were no adverse consequences resulting from the appointment of a new Acting Director General. He was fully supportive of the projects' aims and gave an assurance that he had strong interest in moving the project's agenda forward.

The visit also provided the opportunity to meet Dr. Heinz Loos, Change Management Adviser of the Change Implementation Team (CIT) and Dr Leonard Oruko (Technical Adviser to MEPU and also part of CIT) and get a better understanding of the changes being planned in the NARO re-structuring. Appendix 1 provides some notes from these discussions. The meeting with CIT personnel also allowed some initial recommendations to be made about the way in which statistics and data management could fit within the new structure. These recommendations, circulated to NARO shortly after the visit, are included in Appendix 2.

[2] The First-Phase Consultation Document on Institutional Factors has been previously forwarded to CPP.

1.3 Training Needs Analysis: Survey Implementation, Analysis and Reporting

The main component of the Training Needs Analysis took place in the March to September period in the form of a questionnaire survey. The survey instrument - a four page questionnaire – was prepared and pilot tested during a visit to the Coffee Research Institute in March 2005. Later it was updated and forwarded by MEPU to NARO Institute Directors and ARDC Managers with a request to forward copies of the questionnaire to all scientists and technicians in their organisation.

About a 50% response rate was received, but the survey findings are believed to give a reasonable reflection of the true situation concerning NARO researchers' perceptions of their current situation and future training needs. The survey data were analysed after sufficient numbers of questionnaire responses were received (by 31 July) and demonstrated clearly their awareness of the limitations faced in conducting good quality research. There was ample evidence that they would welcome training programmes aimed at enhancing their skills in modern statistical approaches and in ways of managing their research data more effectively. There was also a clearly expressed need to have the support of an Institute/ARDC based statistician. The full survey report is included in the comb-bound report to NARO together with all other project outputs. The original survey responses have been returned to each contributing NARO Institute and the computerised data file of responses is available in the CD provided with the comb-bound final report to NARO, as well as in the comb-bound (identical) reports accompanying this FTR.

The survey report, together with the Technical Report of a *Training Needs Analysis in Statistics and Data Management* (Output 1.2 – see attached comb-bound set of documents) were circulated to senior management and staff in NARO institutes/ARDCs for comment in September 2005. Both these reports were also provided as hard copies at the final workshop (see 2.1 below) with NARO senior management in mid November 2005. Following feedback from this final workshop, the Technical Report was further modified and also updated to include information about the availability of statistics and data management support to NARO researchers from local, regional and international service providers.

<u>Phase 2 work</u>

2.1 Seeking feedback from NARO on Phase 1 outputs

The project leader and co-worker made a final visit to NARO, Uganda in November 2005 to further discuss with NARO senior management, project related issues and action steps necessary to take forward recommendations. Prior to the visit, a detailed programme was also planned for a one-day workshop with senior staff from Institutes/ARDCs, MEPU and NAROSEC to discuss the recommendations and seek their feedback. Details of workshop activities, and the workshop report, are contained as Annexes to the November Visit Report, included in this FTR as Appendix 3. A couple of photographs of the workshop in progress are shown in Figure 1.

Figure 1. November Workshop in progress at the Imperial Botanic Beach Hotel

2.2 Preparation of a Research Capacity Strengthening Strategy for NARO

The survey work, numerous discussions amongst project collaborators and project co-workers have led to the preparation of an extensive *Research Capacity Strengthening Strategy for NARO*, with detailed recommendations to build a culture of good practices in data management and application of statistical methodology with a view to enhancing the quality of NARO research outputs. This is a major output (2.1) of project activities and is included in the comb-bound set of documents sent with this Fincal technical Report.

2.3 Preparation of Briefing Paper on Management Action Points

On the basis of discussions during the November visit and feedback received at the final workshop, a Briefing Paper on Management Action Points was prepared (Output 2.2 - see attached comb-bound set of documents). This provides a summary of eight action points for consideration and action by staff of NARO Secretariat and members of the Change Implementation Team. It is intended to be short enough that even busy managers will assimilate it. The appointment of a relevant senior member of staff is recommended as a route to getting the process taken forward.

2.4 Dissemination of Project Outputs

All four project outputs and the Training Need Analysis Survey Report (exactly as shown in the attached comb-bound set of documents) have already been forwarded to NARO (4 hard copies, plus CD with the same materials and others) and to Dr. Heinz Loos and Dr Leonard Oruko of the Change Implementation Team for appropriate action. We are hopeful that follow-up action will take place in the light of our recommendations.

Contribution of Outputs to developmental impact

How is the knowledge promoted benefiting the poor? What coverage has been achieved (number of farmers, institutions and production areas adopting the technology). What is the potential for wider scale impact. What follow up action/research is necessary to promote the findings of the work to achieve their development benefit?

Of itself, this project is placed at some distance from the researcher-farmer interface. Its intended effects lie in the removal of bottlenecks in the research process and thus the increased capacity of researchers (i) to extract sensible findings, (ii) to proceed systematically and quickly, avoiding time-wasting confusion, and (iii) to demonstrate their effectiveness to those who may in future fund research. The intended immediate effect of this project is to promote in the Ugandan National Agricultural Research Organisation an improved culture of caring for, organising and effectively utilising research data. This should increase the general utilisation of expensively collected information, and both ease and speed up the production of NARO outputs.

The development of higher expectations amongst technicians and scientists, as well as amongst their managers, should contribute to a more organised programme of creation of varied products, both those aimed primarily at farmers and extensionists and those directed towards research journals. A more critical understanding of good research process and its documentation should contribute to better-organised publications and clearer connections between scientific evidence and the recommendations derived therefrom.

The project outputs provide NARO with the technical constituents of a capacity-building strategy for statistics and data management, and should allow leaders of the restructured institution (i) to see the benefits of investing in statistical capacity development, (ii) quite readily to prepare bids for funding whether to international donors or to their own budget-holders in Government, including evidential support from our survey work, and coherent sets of linked activities, to take forward the development.

The immediate target of the recommendations is the entire technical and scientific staff of NARO, once its structure has been determined by the Change Implementation Team and the new National Agricultural Research Council. Assuming that funds for capacity-building in terms of statistics and data management can be sourced reasonably quickly, this will be a time of hope and new beginning for NARO and the work done stands an excellent chance of being effective. The intended developmental impact is certainly a longer-term outcome.

The recommendations made are very strongly supported in NARO, and it appears likely that unless NARO is disastrously affected by forces beyond its control, the new managers will be very sympathetic to the general tenor of the recommendations made. Of course these will need to be developed, adjusted and nuanced to have regard to the situation prevailing when the follow-on work is undertaken.

The researchers cannot claim that the same degree of enthusiasm has been proven in other NARS for developments of the same sort, but there are good general grounds for supposing that if the report's recommendations do begin to be successfully implemented in NARO, Uganda, there will be opportunity and demand in other nearby countries for similar development. The report makes specific references to the situation in NARO, Uganda, but the general tenor of the analysis and recommendations is likely to be generally similar in other parts of the region.

If there is donor support for capacity-building work in regional NARS, there is potential – once some proof of concept has begun to emerge in Uganda - (i) to replicate the type of analysis we report, and (ii) to develop some regional approaches, possibly centred on a network such as ASARECA, the Association for Strengthening Agricultural Research in Eastern and Central Africa. There is also a need, as briefly dealt with in this project's outputs, to work towards some joining up of institutional approaches across bodies equivalent to the Uganda Bureau of Statistics, ISAE - the Institute of Statistics and Applied Economics which forms the premier local training site for statistics graduates, and perhaps the national meteorological office if donors such as DFID indeed have a strategy of promoting agricultural application of climate data.

References:

Abeyasekera,S. and Wilson,I.M.(2005). *Survey Report on Assessing Statistics and Data Management Needs of NARO Researchers*. Forwarded to DFID CPP as file named *DetailedTNASurveyReport.doc* in September 2005. Also available as Output 1.2A in Comb-bound version of Project Outputs.

Wilson I.M. with Abeyasekera, S. (2005). *A First-phase Consultation Document Opening Up Discussions of Institutional Factors*. Forwarded to DFID CPP as file named *Institutional Draft Recommendations.doc* in September 2005.

Abeyasekera, S. and Wilson, I.M. (2005). *Report of Visit to Uganda, 17th March to 2nd April 2005*. Forwarded to DFID CPP in late September 2005.

Abeyasekera, S. with Wilson, I.M. (2005). *A Consultation Document Offering First-phase views and recommendations of a Training Needs Analysis in Statistics and Data Management*. Initial draft version of Output 1.1. Forwarded to DFID CPP in September 2005 as file named *Draft Training Needs Analysis Report.doc*

APPENDIX 1

Can the New NARO Develop Statistics & Data Management Effectively?

A Discussion Paper from Ian Wilson & Savitri Abeyasekera,
SSC, University of Reading — October 2005

In the light of the new barriers there will be between the NARO Apex Body and PARIs, and between one PARI ands another, there is some basis for concern that – if they act alone – many PARIs will not be very successful in recruiting, training, utilising or retaining statisticians.

Given that there are rather few experienced agricultural statisticians in Uganda, and that other employers compete for their services, efforts should be made at the planning stage to ensure that whatever statistical resources NARO manages to acquire will be well-used.

The following two sections of this discussion paper put forward suggestions as to how this might be done in a constructive way. The ideas put forward in this paper are the responsibility of the authors, and of course are meant to stimulate comment from Senior Staff in NARO and its Change Implementation Team.

All comments will be warmly welcomed by:-

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1. Developing and Funding Effective Support Services in the new NARO (with special reference to statistics)

The following observations follow from concerns arising in the course of the exercise:- "Statistics and Data Management Training Needs Analysis" for NARO. This exercise is led by Dr. Savitri Abeyasekera, who is assisted by the author of this note. Both are from the Statistical Services Centre, University of Reading, UK.

BACKGROUND

1.1 Following discussions with Dr. Heinz Loos, Change Management Adviser, CIT, it now appears to us that the new structure has one barrier (---) separating the Apex body that succeeds NARO-SEC from all the new PARIs, as well as barriers (-¨-¨-¨) between the PARIs, which will be relatively autonomous in terms of how they organise their work and their finances, so that the separately-managed, *and separately-funded* units will look roughly like the following[3].

The *areas* of cells in Figure 1 represent schematically their budgets from the NARO Institutional Account i.e. the money that pays for sites, buildings and other infrastructure, PARI core staff and overheads.

Figure 1

APEX BODY REPLACING NARO-SEC												
NARI	NARI	NARI	NARI	NARI	NARI	ZARI	ZARI	ZARI	ZARI	ZARI	ZARI	ZARI

1.2 It is our understanding that one of the NARIs, probably Kawanda, is to house laboratories of various sorts, so that there is one site supported to maintain various expensive scientific items that it would be wasteful to have at all PARIs. We imagine this includes e.g. biotech facilities, soil testing capabilities and so on.

We have been told that other PARIs, and where appropriate other RSPs, may *buy services* from Kawanda, so that as well as operating as a self-standing research centre, Kawanda will have a second function as a support service provider.

1.3 The barrier, horizontal in the above diagram, apparently means that the Apex Body is debarred from operating as a service provider or research partner, for work undertaken by PARIs or other RSPs.

[3] In the earlier document (1 April 2005) entitled "*A First-Phase Consultation Document Opening Up Discussion of Institutional Factors*", we did not foresee this degree of separation of the Institutes. Comments in sections 2.1 and 3.4 therein about how PARIs might work together seem to have been overtaken by events. Other material about types of statistical requirement remain relevant.

STATISTICAL SUPPORT

1.4 It appears that each NARI, and maybe each ZARI, may end up employing its own one statistician. These may be graduates from local universities, NARO scientists prepared to re-train as statisticians, or others.

- Unlike most other professions, these statisticians will be spread across institutions and so, unlike e.g. livestock scientists, they will not have the benefits of sharing experience and workload on a daily basis with workmates who share the same background.
- In any event most such appointees are likely to be relatively inexperienced, and to be quite inadequately prepared for the full range of scientific activities to which they may be asked to contribute.
- It is likely that they will therefore feel quite isolated and unsupported if they are required by the barrier system to operate in isolation, each in their own institute. This is unlikely to encourage them to remain in post for a long period.
- It is quite likely that the statistician in any one institute will need to be sent for quite lengthy further training during an early stage of his/her career in the PARI. This may mean substantial disruption to the service provided to the PARI's projects.

1.5 On the above grounds, it is our view that:-
(a) each institute ought to recruit its own statistician, whose main place of work would be her or his own PARI, who would develop skills in specialised areas of statistics and related disciplines needed in that institute, and whose efforts would be dedicated to that institute's projects; but also
(b) that one institute should have a further *service* function in statistics. Presumably it would be most natural for this institute to be Kawanda, which will be operating in this mode for other technical and professional services.

This could then mean that Kawanda had services available such as:-
(i) a senior, more experienced statistician who could mentor those in other PARIs when they were in difficulties,
(ii) specialised expertise such as the capacity to design, set-up and trouble-shoot Access databases, or to advise on complex features of the centrally-licensed statistical software,
(iii) spare capacity able to be hired out for instance to provide some cover when other institutes' statisticians were away being trained, or to contribute to the work of other RSPs where relevant,
(iv) perhaps taking a lead role in providing certain sorts of statistical training.

1.6 In this context, we would like to offer a view about the financial arrangement for service provision. In some instances the "statistical service" we describe may be required in relatively small "quantities", e.g. advice about software may save the recipient many hours or days of confusion and frustration, but be "delivered" by the expert in one or two hours.

For such a service to be readily accessible, and to be effectively used, the "call-down" procedure between the institutes must *not* be lengthy, bureaucratic or off-putting, or else the service will not be used to good effect. Potential users, or their bosses, will prefer to struggle on without using the service if the arrangements are too expensive, time-consuming or complex. It is not within our expertise to say whether the same would be true for the other services that Kawanda might offer, but we guess the same problem could arise for other sorts of professional and technical services.

This seems to us to suggest that the setting-up process for the new PARIs should include the setting-up of streamlined agreed procedures for calling down and cross-charging of resources which may be provided by Kawanda to other institutes, or indeed may be traded between other institutes.

PRE-PAYMENT FOR SERVICES

1.7 We have a further observation which may be more controversial. The natural inclination of any institutional manager with a limited budget is of course to hold back wherever possible on outgoing payments. When things are tight, the services, e.g. professional back-up in statistics, may well be little-used, and this could have two deleterious effects:- (1) poorer research quality will be delivered by the PARIs, because necessary inputs were not utilised; (2) the service-providing entities at Kawanda will be under-financed and will not thrive, indeed may wither away, leaving NARO ham-strung when they are later essential.

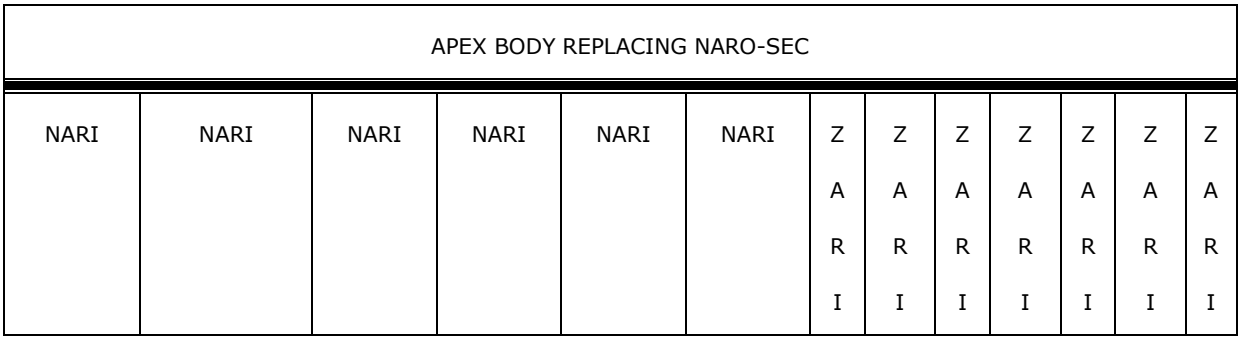
We would like to put forward the suggestion that these difficulties can be avoided. Figure 2 below is meant to convey the idea that the agreed budget for the PARIs might have a very "thin slice" taken off the top – the dark-shaded horizontal box – the remainder being divided up in the same proportions as otherwise. The NARI box representing Kawanda would still be intended to represent the funding of Kawanda for its institutional needs.

The "thin slice" would, we suggest, also be budgeted to Kawanda, for the service provision function. This would be accompanied by:-

(a) informing the other PARIs that Kawanda now "owed" them a certain amount of unspecified services, because these had been "pre-paid". This, we would like to argue, would provide an incentive to the other PARIs to utilise the NARO service, so as to get their money's worth!

(b) informing Kawanda that it now owed good-quality services to the other PARIs. In the long-term, we would argue that this would incentivise Kawanda to provide a good service so that this source of income was not threatened.

Figure 2



If this arrangement worked only for the provision of statistical inputs, the money represented by the "thin slice" might represent the salary cost and overheads associated with having one extra, senior, statistician at Kawanda. If it applied to a wider range of services, other more expert people than ourselves would need to consider the size of the slice, and whether it was taken proportionately from all other PARIs, as Figure 2 suggests.

1.8 The argument above is in terms of **incentivising** provider and user alike to make the service provision function work effectively in a climate of decentralised budgetary control. The other attribute of the same arrangement is that it encourages the setting-up of a solid, customer-oriented set of services, because there is some guarantee of a market for them.

THE CASE OF STATISTICAL SERVICES

1.9 The arguments described above seem to us particularly pressing in the case of the provision of statistical services. One reason for this is that NARO institutes have in the main had relatively little recent tradition of having access to, or effectively, using any statistician or data manager. There is as yet no real culture of turning to statisticians for assistance in research design or proper production of protocols. Making the cultural change will be hampered if access to good statistical help is limited, or complex to organise.

1.10 It might turn out to be difficult locally to recruit a senior statistician who has the attributes of technical experience and service-oriented personality to establish the data management and statistics service function in such a way that all NARO institutes benefit from it. If so, there might be a case for seeking support, possibly from an international donor or the Trust Fund, to pay for an international appointment for a limited period, say of three years.

2. Functions of a Statistical "Service" Provision at KARI

BACKGROUND

2.1 This section *assumes* that most of the NARIs will quite soon be aiming to recruit an individual to a cadre position as a statistician/data manager. Some may recruit statistics graduates e.g. from ISAE, MUK. Others may go for an existing scientist or technician who is willing to retrain to fill this role. The main function of such a post-holder would clearly be to serve her/his NARI in terms of data management and statistical support to research.

It is likely that each Institute will have only one statistical "scientist", maybe with a technician in support who specialises in data management. The exception could be if a NARI shared statistical work between two scientists, who each undertook a part of this function. If the NARIs operate purely in isolation it will be difficult for the statisticians (or the data managers) to help one another, or to secure adequate professional development, and retention will predictably be a major problem (e.g. salaries at UBOS are quite high compared to what is current in NARO). It is likely that many of the appointees will need (a) help and advice with some technical issues, (b) substantial periods of training leave, and/or (c) assistance in coping with peaks in the workload.

In the case of ZARIs, it seems quite unlikely that all will manage to make statistics/data management appointments in the short term. They will certainly benefit from having some assistance available.

2.2 It is to address considerations like these that the suggestion was made of KARI having statistical staff adequate to service KARI's own Institutional needs, and also to provide extra, or substitutional, services for staff in other PARIs. Section 1 above in this document suggests that if other PARIs were "owed" some amount of such a service, under a pre-payment arrangement, (i) the PARIs would be motivated to use this service and monitor its quality in value-for-money terms, and (ii) KARI would be assured of the resources to provide such a service, and motivated to ensure its effective delivery.

SERVICE FUNCTIONS OF CENTRAL STATISTICAL UNIT

2.3 It is assumed here that Kawanda would have a "Unit" with rather more statistical/ data management manpower than elsewhere. Some *possible* functions of such a unit, and their relevance to the PARI "family" are sketched out here, though of course this is very much a matter for internal discussion amongst NARO senior staff.

1. SUBSTITUTIONAL STAFFING

→ where another NARI needed cover during training leave of its statistician or data manager, or assistance in covering peaks in its workloads;
→ where a PARI had not afforded or succeeded in finding its own S/DM staff.

2. TECHNICAL BACKSTOPPING
→ where another PARI needed help with non-basic features of stats software;
→ where a PARI needed help designing and building a substantial relational database;
→ where the NARO Apex Body required technical inputs to quality assurance functions, such as technical reviewing of research proposals and final reports;
→ having some high-end technical skills e.g. in research design topics like sampling, e.g. in dealing with S/DM demands at programme level, say for large on-farm and uptake exercises e.g. wisdom about effective linkages between qualitative/participatory and statistical work;
→ making a technical contribution to the assessment of applicants for statistician/data manager posts in PARIs.

3. COORDINATION OF EXTERNAL LINKS
→ any necessary liaison with external providers of expertise e.g. UBOS; local University partners such as Crop Science or ISAE at MUK; IITA, ICRAF or other CGIAR centres; regional service providers such as the Biometry Unit Consultancy Services at University of Nairobi; or international bodies such as SSC, Reading.
→ possible co-ordination with the Apex Body about service standards e.g. for research service providers' data management procedures, research protocols etc
→ working partnership with the relevant parts of the new Apex Body concerned with activity-, project- and programme-level M&E, including the establishment of baselines and other information required for uptake and impact assessments.

4. TRAINING CO-ORDINATION
→ organising occasional seminars for, or meetings of, the NARO professional cadre in S/DM;
→ estimating, demonstrating and articulating demand for common training of S/DM staff;
→ co-ordinating shared or replicated training in statistics or data management of scientists and technicians from PARIs, maybe also including making training available to other RSPs.

5. RESOURCE CO-ORDINATION
→ perhaps maintain a bigger library of statistical material (e.g. journals, statistical 'grey literature') than other PARIs;
→ develop and share some awareness of training opportunities and materials (e.g. short courses, e-learning programmes, self-training material etc);
→ maintain some links to the rapidly-evolving international market in statistical and data management software.

6. PROFESSIONAL DEVELOPMENT
→ In collaboration with the Human Resources function of NARO apex, contribute to ensuring the thinly-spread professional group of S/DM staff are reasonably, and as far as possible equitably treated e.g. (i) ensuring young, newly-appointed staff in any PARI have basic resources such as adequate computer equipment; (ii) ensuring a statistician has a senior staff member in her/his PARI to act as a scientific mentor, guide on institute

procedures, and champion her/him if put upon by unreasonably demanding clients, as well as to give force to best practice requirements e.g. in data management, and avoidance of unnecessary data collection, as agreed by the PARI's management.

STAFFING REQUIREMENTS

2.4 The functions described above suggest the desirability of having several people in the Unit. How the split of responsibilities would pan out would of course be a function of the skills of those who could be recruited. This is illustrated by the following description of a "staffing scenario" that we believe *might* be practical.

2.5 Special funds are successfully sought to bring in a technically-experienced agricultural research statistician on an international contract for three years. The appointee should ideally:-

- have worked in one or more ARO in the past,
- have some work experience in the region,
- have a broad and solid statistical, and statistical computing, background,
- be prepared to work selflessly for the betterment of the NARO statistical system,
- to travel regularly amongst PARIs.

2.6 NARO/KARI appoints a respected and reliable Ph.D. scientist who has some credentials in data management [and/or statistics] and has the standing in the scientific community of NARO and other RSPs to successfully 'front' and manage the service, including:-

- Liaison with the recipients of the service, developing service policy within the context of the semi-autonomous PARI
- ensuring the effective use and management of the international appointee above, and of other statistical and data management staff,
- leading on instituting good practice standards and ensuring uptake of, and adherence to, agreed standards e.g. for data management,
- developing and establishing functioning systems in KARI and elsewhere in the PARI system for all of 1 – 6 above.

2.7 NARO/KARI appoints a statistician (or a scientist with reasonable statistical credentials) to complement the above manager, when appointed. He or she should take on more of a technical statistical function if the main technical role of the manager turns out to be more on the data management side.

2.8 If the international statistician (IS) post can be funded and filled, it is not so important that the other two post-holders above are experienced, fully-trained consulting statisticians at appointment. As long as they are appointed with genuine enthusiasm for developing data management and statistical skills, they should have opportunities to learn technical material on-the-job from the IS. The post-holder who is the 'manager' (as in 2.6) should have substantial scientific maturity and very good inter-personal skills. Of course both appointees should also be given some opportunities for part-time study, short course training or distance-learning.

APPENDIX 2

Notes of a meeting with the Change Implementation Team

The following are some notes by Ian Wilson after meeting 21 September 2005 am with Dr. Heinz Loos, Change Management Adviser, Ministry of Agriculture, Animal Industries and Fisheries [NARS-CIT], office e-mail pma-kampala@utlonline.co.ug; personal e-mail heinzloos@aol.com.
Phone 041 347977; fax 041 252262; mobile 078 346652.
Postal address: Secretariat, Floor 2, Room W-1.4, Mukwasi House, Pt. 39A Lumumba Avenue, P.O. Box 5675, Kampala.

An important diagram from Dr. Loos was "Structure of NARS Apex" which shows 2 of 3 Secretariat Departments as "Research Coordination" & "Quality Assurance". *[Finance and Administration not relevant to us.]* Roughly this might mean a distinction the authors see between "good guy, helping" and "bad guy, policing" the research service providers[4]

Research Coordination Functions

- Coordination, Planning
- Monitoring and evaluation
- Institutional development
- Research information management and dissemination

Quality Assurance Functions

- Standards for research services
- Service provider registration
- Quality of publications and information releases

Clearly the future structure and functions of MEPU may emerge from this set of perceptions – after considerable further amplification! There is scope to argue for various more substantive / discipline-based activities, including some for statisticians, e.g. (RC) in terms of offering services such as training to RSPs; e.g. (QAR) in terms of monitoring quality of stages of research process such as bids for research funding. I did not have the impression Dr Loos had given any specific thought to statistics at any level, nor that he has a particularly statistical perception of M&E or QAR.

FUNDING

The intended structure clearly separates the NARS Apex (≈ NARO-SEC, now) from the semi-autonomous Public Agricultural Research Institutes (PARIs), and also separates the funding of core staff/institutional infrastructure/operations (Core Funding) from the funding of research (National Trust Fund). It seems the public accounts will pay a sum

[4] Research service providers (RSPs) are taken to include PARIs = {NARIs & ZARDIs} plus others who win bits of money through the competitive funding element of the research-funding stream.

(say 100%) "for agricultural research". As a first stab, maybe 10% will go to NARS Apex; 30% to Core Funding of PARIs (6 NARIs and 7 ZARDIs); 60% to National Trust Fund to fund actual research. Of that last 60%, half and initially more will go without competition to PARIs as a "Targeted Research Priorities Block Grant" to carry out targeted core research programmes, strategically important to Uganda. The remaining 30% (initially less) of the money will be split roughly equally between (a) "National Competitive Research Grant" money for projects addressing agreed national priorities that can be tendered for by any qualified RSP, public or not, and (b) "Zonal Competitive Research Grant" money for projects addressing agreed zonal priorities that can be tendered for by any qualified RSP, public or not.

Example: if a Ugandan national, Dr. Cavendish Musa, resigns from NARO and starts a Ugandan-registered NGO or company, he could get his outfit registered as an RSP, and e.g. contract in others of any nationality in a one-off consortium to pitch for competitive research projects. Musa Consulting, once registered, should have the same type of access to institutional development assistance from the NARS Apex as a PARI, e.g. able to register for training course places [? free or low fee ?].

OFFICIAL "BASKET" FUNDING

I suppose the following is in keeping with the recent practice of govt-to-govt direct budgetary support, and may be OK if that continues as a fashionable mode of operation. It seems to be intended that national agencies of donor governments should be corralled so that all their inputs go through a Government of Uganda Consolidated Fund. This may be in the form of general budget support or basket support where GoU may put part of the country's inputs into GoU agricultural research funding, or sector budget support where the donor insists the money is for ag. research. This system does NOT envisage a donor such as DFID contracting directly with the National Banana Research Programme, say, or its scientists.

The argument for the change is that relatively short-term, externally-determined, prioritisation of particular themes militates against longer-term stability and government's prioritisation of what is strategically needed from research. Fair enough but, in the case of fundamental rather than adaptive research, it presumably sets up a requirement that the GoU advisers are up to date about the frontiers of research, as seen internationally, if their research is to be up to date or high-quality in any scientific sense. Of course this approach does not address any difficulty arising because of Uganda's lowly position in Transparency International's corruption tables.

Another feature also seems to me at first sight to be a non-incentive to international willingness to pay in to the GoU consolidated fund budget for ag. research. Dr Loos clearly stated that IF donors pay into this fund, the GoU will reduce its contribution so that the total available matches the amount set under the Medium Term Economic Framework (MTEF), so a government donor has no chance to put right what might be seen as GoU under-funding of ag. research -- in the unlikely event that a donor government felt so very positively about the issue!

'PRIVATE SECTOR ?'
When the budget is set, it then gets divided between (1) the NARO Institutional Account (NARS Apex costs and core staff/institutional infrastructure/operations of PARIs), and (2) the National Trust Fund. The Change Implementation Team comments that 'separation of public salaries and overheads from direct research costs will encourage Private Sector to contribute to Trust Fund'.
I'm not clear why this applies specifically to the "private sector" as the term is usually used in UK. It may relate to International Foundations like Rockefeller, Kellogg, Gatsby etc which seem to be referred to as "Private Sector International Foundations" (PSIF).

OUTSIDE THE BASKET
The diagram indicates in the left-hand box only that PSIF are outside the funding ceiling imposed by the Medium Term Economic Framework (MTEF). Presumably such funds are regarded as "extras" and are assumed to be a bonus for the RSPs, which will have extra resources to do extra work over and above what they are funded to do by GoU. It seems (according to Dr. Otim-Nape) that other funds not directly from co-operating governments will be treated in the same way. For example, if ASARECA or other network funders pay for work done for the Millet Network by a PARI (or other RSP), they will contract directly with the relevant body. If a CGIAR institute, or a DFID-funded research project, similarly involves an RSP as a partner, this will be of no concern to the GoU Consolidated Fund people.

This implies an assumption, not entirely believable, but maybe not important in the context, that GoU-funded activities will not suffer (or benefit) when add-ons like these (i) are being bid for, or (ii) are won and require the services of senior named researchers on GoU full-time salaries.

INSTITUTES
It seems to be determined that there will be a separation between the NARS Apex body and the institutes. Staff in the PARIs will be employed by them. All will have the same basic conditions of service, and a common Human Resources policy. According to Dr. Otim-Nape there will be Apex involvement in recruitment, *but I'm not sure how*.

PLACE OF STATISTICIANS
This does mean that an institute statistician will be an institute employee, unless special arrangements are made. It is not intended that the Apex body will supply services to PARIs (or other RSPs), so statisticians in the institutes will not be employees of the NARS Apex body, nor formally co-ordinated by them.

Some institutes have put down (last year sometime) an indication of their desired minimum cadre that includes a statistician: others have not. According to Dr Loos this is not set in stone, and can be restructured in the final staffing decisions.

STATISTICS IN THE NARS APEX BODY
There is pressure to keep the Apex body "lean", but it is not too clear what this will mean. The most obvious interpretation at present seems to be that MEPU will end up as

the foundation of the Research Coordination "Department". In Dr Otim-Nape's view, the most likely place for any possible statistician in the successor structure is in the Quality Assurance "Department".
This raises some concerns: (i) many "Quality Managers" are better-trained at deciding on boxes for people to tick than they are at assessing the quality of research process, or of statistical analysis in agricultural science; (ii) if there is space for a statistician, there will be no existing model for the role that the statistician should play in quality assurance of research, and it will be relatively even harder to find someone for that post than for posts in the institutes, so there is a risk it will be filled by, say, an economist who has no capacity to assess problems such as statistical omissions from research protocols. For the successor to NARO-SEC, it will be unfortunate if there is any big separation between research coordination and quality assurance functions.

INDIVIDUAL STATISTICIANS IN INSTITUTES

From the point of view of establishing any kind of "community" of statistical workers across the successor bodies to the old NARO, who can share their skills and problem-solving abilities, these arrangements look likely to prove very unfortunate. The community will have to operate in spite of the barriers created, and will therefore not work well since support to statisticians to go and meet those from separate institutions will not be a popular call on institutes' transport budgets. Since statisticians will be seen as being static helpers inside one institution, they will have low-grade access to limited transport resources. Having no senior mananager supporting "the profession" they are likely to be low down in the "me first" pecking order for getting adequate computer resourcing, training opportunities and so on. Having no senior manager to encourage sharing of problems and approaches, or to provide support, they will have limited opportunity to develop best practice professional standards, and will feel isolated when they have problems. All in all, this looks like a recipe for losing staff as fast as they are trained.

ALTERNATIVE STRUCTURES

(i) One alternative discussed with Dr. Otim-Nape was for the PARIs' statistical cadre to be a central service Department based at one institute [Kawanda?] with staff hired out to the other institutes. Possibly the Apex body could also hire services from this Department as needed. This looks a better solution only if the various institutes agree to it and agree in advance to paying for substantial amounts of statistical time as a ring-fenced part of their institutional budgets. If each day's use of a statistician's time has to be bickered over by the would-be user and his financial managers, the central service Department of statistics will have a very hard time.

(ii) If each institute had a full- or part-time statistician primarily located at its HQ, but also contributed a bit towards a small central statistics support service where senior statistician, statistical computing and database expertise were concentrated, this might work. It would need generous-spirited negotiation or active leadership to ensure this could start, and a strongly service-oriented statistics group to benefit from it.

(iii) A third, undesirable, possibility is for the entire statistical input to be contracted in from outside.

APPENDIX 3

Report of Visit to Uganda
13th to 26th November 2005

DFID CPP Project R8410/ZA0642

Improving the effectiveness of research within NARO, Uganda

by

Savitri Abeyasekera and Ian Wilson
Statistical Services Centre,
The University of Reading

November 2005

ACRONYMS

ARDC	-	Agricultural Research & Development Centre
ASARECA	-	Association for Strengthening Agricultural Research in Eastern and Central Africa
CIT	-	Change Implementation Team, working on restructuring NARO
COARD	-	Client-Oriented Agricultural Research and Dissemination Project
DFID	-	Department for International Development
DG	-	Director General
EU	-	European Union
GIS	-	Geographic Information Systems
INIBAP	-	International Institute for Banana and Plantain, a CGIAR Centre
MEPU	-	Monitoring, Evaluation and Policy Unit
MTEF	-	Medium Term Expenditure Framework
MUK	-	Makerere University
NAARI	-	Namulonge Animal and Agricultural Research Institute
NARC	-	National Agricultural Research Council
NARI	-	National Agricultural Research Institute
NARO	-	National Agricultural Research Organisation
NAROSEC	-	NARO's current Secretariat: overarching management body for currently non-autonomous Institutes
PARI	-	Public Agricultural Research Institute: generic title for the future autonomous NARIs/ZARIs developing from existing institutes
RAIN	-	Regional Agricultural Information Network of ASARECA
SAARI	-	Serere Animal and Agricultural Research Institute
SSC	-	Statistical Services Centre, University of Reading
ZARI	-	Zonal Agricultural Research Institute (future form of ARDC)

1. Introduction

This document outlines the second component of the Training Needs Analysis for the National Agricultural Organisation (NARO) in Uganda, undertaken during a visit to Uganda by Savitri Abeyasekera and Ian Wilson from 13th to 19th November 2005. Ian Wilson continued to work on finalising project outputs during the subsequent week (20th to 26th November). The main objectives of the visit were:

(a) to discuss, with MEPU and other senior staff in NARO Secretariat, possible ways forward to address statistics and data management needs identified within NARO's research system;

(b) to seek, through consultations during a one-day workshop, feedback from NARO senior management, i.e. Institute Directors and Managers of NARO's Agricultural Research Centres (ARDCs) about previously circulated drafts of (i) a consultation document concerning institutional factors that may affect proposals for upgrading statistical cadre within NARO; and (ii) first phase views and recommendations of a Training Needs Analysis in Statistics and Data Management;

(c) to explore the possibility of meetings with the DFID Natural Resources Advisor and the Deputy Director of Rockefeller Foundation based in Nairobi, so as to discuss the feasibility of funding for upgrading statistical skills of NARO staff;

(d) to meet other statistical and data management service providers and explore the possibility of local support in the future for NARO researchers;

(e) to inform, and engage, other potentially relevant bodies (i) local representatives of ASARECA, and (ii) the 'Change Implementation Team' (CIT) charged by the Government of Uganda with supporting the reform of NARO;

(f) to update our project documents in the light of discussions, to finalise these, and to prepare project final outputs 2.1 and 2.2 for consideration within NARO management.

2. Discussions with MEPU and Acting DG, NAROSEC

The first afternoon after arrival in Entebbe, Uganda, was spent planning activities for the week, and listing work that needed completion to achieve project outputs. The following morning, by arrangement, we met with Mr. Joshua Guina and Ms. Diana Akullo of the Monitoring, Evaluation and Planning Unit (MEPU) of NAROSEC for discussions on a number of different topics. The most important of these was to finalise the timetable and workshop activities for the 1-day workshop planned for Wednesday 16th November. After some discussion, the programme was agreed, as well as the set of documents that were needed for circulation during workshop activities.

We were also briefed about a recent sensitisation meeting between NAROSEC and the Change Implementation Team (CIT) regarding the new NARO structure. A final report is expected to be released within the next 2-3 months. The name 'NARO Secretariat' will remain, but the functions will largely be those of the executive arm of the National Agricultural Research Council. Institutes will largely be autonomous with respect to their day to day functions, but various questions such as who would manage the payrolls were still to be resolved. A review of the human resources structure was expected.

An earlier plan for the future had included (i) a Council Secretariat, and (ii) a central body like the existing NAROSEC. The latter would have been a 'head office' and the institutes its 'branches'. However, this plan had been scrapped, so that the institutes were now largely autonomous. The Council Secretariat would have powers to scrutinise the institutes and set broad agendas for the use of the public money that the Council will allocate to them, within the Medium Term Expenditure Framework.

Thus the new 'NAROSEC' will be the operational arm of the National Agricultural Research Council, the Council Secretariat. The DG will be the Chief Accounting Officer for all of the PARIs. PARI Directors will be sub-accounting officers. A major function of the new NAROSEC will be financial. M&E will come within the Research Coordination Unit, and the other professional unit is likely to be Quality Assurance.

We were pleased to hear informally that Dr. Cyprian Ebong (NAARI senior scientist and a strong supporter of statistics) would serve on the Council. We also learnt that Statistics and Data Management (but in the guise of IT?) had been mentioned in the hand-over report submitted by the NARO Board to the Minister.

We discussed with Joshua Guina, and later with Dickson Baguma (Head of MEPU and our main collaborator on this project from NAROSEC), and in a separate meeting with the Acting DG, Dr. Denis Kyetere, the possibilities of engaging with ASARECA (the Association for Strengthening Agricultural Research in East and Central Africa) to explore the setting up of a research support and training network in statistics and computing. Such a network could

- provide a forum for statisticians in the region to communicate on issues of common interest to exchange ideas, either via e-mail or through regularly held meetings;
- allow joint training programmes in statistics and/or data management to be set up for NARS scientists and
- allow joint training of trainers programmes to be set up for NARS statisticians;
- raise the profile of statistical and data management needs in NARS institutes;
- allow scientists in institutes which did not have their own statisticians to seek support through this network for their own research.

Both Mr. Guina and the Acting DG were cautious about starting such a network in the near future. The Acting DG felt that it would be better for NARO to progress a bit further to build its own statistics and data management capabilities before developing the ideas above with ASARECA. Mr. Baguma however was of the opinion that the idea could be explored at this stage and arranged a meeting with relevant people at ASARECA; see 7 below.

3. Workshop with NARO Senior Management

Prior to our visit, it had been arranged that a one-day workshop would take place on 16th November 2005, with Institute Directors, ARDC Managers, Thematic Leaders and staff of NAROSEC. Dr. Gadi Gumisiriza of the CIT had also been invited to the workshop, but he was not present that day. The programme for this meeting is shown in Annexure 1. The main aim of the meeting was to seek feedback from NARO senior staff about our proposals for the future and to learn about their own views of how they saw statistics and data management developing at their own institute.

We each made three presentations at the workshop, the first of these being to report on our progress to date, and then to introduce various themes for discussion. Four themes were discussed, and these are outlined in Annexure 2.

The presentations we made are shown in Annexure 3. The proposals we made were very largely accepted. Details of the implementation plans were discussed in small groups and we received good feedback to allow us to prepare a research capacity strengthening strategy for NARO (see Output 2.1). All present were very keen to see NARO researchers' skills and capabilities in statistics and research data management developed through appropriate training programmes and through the development of a cadre of professional statisticians. The workshop report (prepared by Diana Akullo of MEPU) can be seen in Annexure 4.

However, one serious concern arose during the workshop. Although we had been previously given to understand that each of the six National Agricultural Research Institute (NARI) and each of the seven Zonal Agricultural Research Institute (ZARI) would have its own statistician, it was clear from discussions with senior managers of these PARIs (Public Agricultural Research Institutes) that the Functional Analysis carried out for the CIT had not included provision for a statistical cadre at all of the institutes. This issue was followed up and somewhat clarified in a later meeting with CIT. See 6 below.

During a brief meeting at the end of the workshop with MEPU members Dickson Baguma, Joshua Guina and Diana Akullo, Dickson indicated that he would be setting up a small team of perhaps three persons, i.e. one from a NARI, one from a ZARI and one from NAROSEC, to look into the statistician/data manager cadre situation and to come up with proposals to be put to the CIT.

4. Meetings with external statistics/data management service providers

4.1 Uganda Bureau of Statistics

We visited the Uganda Bureau of Statistics and met its Deputy Executive Director, Mr. James Mubiru and Principal Statistician, Mr. Johnson Kagugube. There was a positive reaction to our suggestion of involving staff of the Directorate of Information Services (DIS) in training courses in Research Data Management for NARO scientists and technicians. Currently UBOS has no *Memorandum of Understanding* with NARO for provision of support services, but the DED was positive about collaborative links being valuable. A charge of US$100 per day was mentioned as fees for likely services.

Mr. Mubiru also expressed a great desire for improvement to current procedures for crop estimation as a key – but defective – part the national statistics mandate of UBOS. He felt that collaboration with NARO would be a way forward.

A separate discussion with the Head of GIS, Mr. Bernard Muhwezi, indicated that it would be possible to provide support to NARO researchers on GIS methodology and applications. It would require a letter of request from the Director, NARO to the Executive Director, UBOS, to set up a system of support. Such a letter could also include a request for sampling frames and related information (e.g. updated lists of all villages, parishes, sub-counties, etc., in districts) in different regions to be made available by the Directorate of Information Services to NARO staff when so requested by them for their research work.

4.2 Biometry Unit Consultancy Services

We were fortunate to have a brief meeting with Ms. Parin Kurji, the Head of the Biometry Unit Consultancy Services, who was visiting Uganda to participate in the *Africa Statistics Week*. Ms Kurji was very enthusiastic about possible collaboration with NARO to assist them in their training programmes in basic statistical methods. She could also be a potential asset to NARO in terms of her organisational abilities and overseeing a programme of cascading of training to groups within each of NARO's institutes. We confirmed that BUCS costs were £200 per day.

4.3 Department of Crop Science, Makerere University

Savitri made an appointment a couple of days ahead of time to meet the ex-NARO biometrician, Dr. Margaret Nabasirye at her office at Makerere University about her possibly supporting GenStat development through training workshops. It was very disappointing that when Savitri made her way to MUK, Dr. Nabasirye turned out to have left for Kenya the previous day, and had left no message or alternative arrangement!

Neither of her colleagues who share service course teaching in Crop Science were there at that time.

5. Communications with DFID and Rockefeller

We made attempts to meet both the DFID Natural Resources Advisor, Dr. Alan Tollervey, and the Deputy Director of the Rockefeller Foundation in Nairobi, Dr. Pat Naidoo, regarding possible future support to NARO to strengthen its statistics and data management capacity. To our disappointment, communications with Dr. Tollervey were made impossible because of an accident he had just had, with an injury to his arm that required hospital treatment in South Africa.

Communications with Dr. Pat Naidoo of the Rockefeller Foundation also turned out to be unfruitful because it appeared that Rockefeller was currently undergoing a review process and therefore not in a position to discuss possible new programmes until their new areas of work were clarified. He encouraged us to contact him again in a few months time when their objectives for future funding would be clearer.

Our e-mail communications with Pat Naidoo are shown in Annexure 5.

6. Meeting with CIT, Kampala

On 25th November, through liaison with NARO consultant, Dr. Leonard Oruko, Ian was able to meet with members of the change management group mentioned in 1 (e) above.

Change Implementation Team Secretariat (041 347977, pma-kampala@utlonline.co.ug) is led by consultant Dr. Heinz Loos (078 346652, heinzloos@aol.com), and based at Floor 2, room W-14, Mukwasi House, Plot 39a, Lumumba Avenue, P.O. Box 5675, Kampala. Dr. Leonard Oruko (077 221350, loruko@infocom.co.ug) was a technical adviser in Planning, Monitoring and Evaluation based at MEPU, but is now seconded to CIT. Dr. Gadi Gumisiriza is a Senior Principal Research Officer, NARO working for CIT. Dr. Herbert Okorut is a former senior member of the COARD project, SAARI, also working for CIT.

Ian briefed the above on the proposals for a Statistics and Data Management Resources Centre, and the very important appointment of a NARO manager – over and above the desire that as many as possible of the PARIs should have their own appointees. What statistics and data management involve, why they are different from ICT, and their importance as cross-cutting services were issues stressed, as well as the backstopping, and other roles of the Resource Centre.

It seemed that CIT had not thought recently about the issue of cross-cutting services. There were pre-existing assumptions that the National Agricultural Laboratories, to be based at Kawanda, would be equipped to do work such as soil analysis that other PARIs might require, but CIT seemed not to have thought much about payments for such services. That statistical support from a Resources Centre at KARI might be managed "in the same way" prompted some further thinking from CIT members about further possible central services e.g. report-writing, editing, and preparation of work for formal publication.

It appeared that the "Functional Analysis" on which CIT still rely was carried out before the decision to scrap the coordinating body (present NARO-SEC) and to make the PARIs somewhat autonomous, so it included cadre posts for the defunct body, but maybe insufficient for the management functions now moved elsewhere.

Some of the future PARIs had included a statistician, a biometrician a data manager or similar in their bids. Others had not. Dr. Gumisiriza pointed out the inconsistency, and need for some reshuffling, implied in the previous paragraph. Dr. Loos added that there are plans to increase the current cadre over the next few years. Through both

mechanisms there are opportunities, if interested parties strongly request this, for the statistical cadre to be broadened.

Ian pointed out the great advantages of getting funds for an internationally-appointed experienced agricultural research statistician, since NARO and its new appointees would start off with very little background in this area and would need to kick-start their capacity-building, and establish good practice and constructive approaches from the outset. Dr Loos explained that the process of Government control over public-sector funding through the Medium Term Expenditure Framework would make such an appointment very difficult through regular NARO funds (too big a chunk of NARO's MTEF budget), but that possibly the EU had a way of giving funds *not* via MTEF.

Overall this was a very positive and useful opportunity to put the case developed in the R8410 reports.

7. Meeting with ASARECA, Entebbe

Through Dickson Baguma, a relatively low-key contact was made with ASARECA. Dorothy Mukhebi is the Co-ordinator of the Regional Agricultural Information Network (RAIN) based in the Entebbe office, Plot 5, Mpigi Road, P.O. Box 765, Entebbe (041-322129, d.mukhebi@asareca.org). Ian and Dickson met her and a colleague. No suggestion was made of developing a separate network that might seem to undermine the position of RAIN.

It appeared that RAIN had had no real involvement with – or understanding of – the collection and quality control of primary information, and has been more concerned with information as a given that can be computerised or otherwise accessed and disseminated. RAIN is also involved with other issues such as computer procedures and training in support of information management, and with training of ICT professionals. Despite the acronym, there was no hint that RAIN had recognised the importance of climate data or its management and dissemination.

As well as a brief summary of the work of R8410, what statistics and data management involve, why they are different from ICT, and their importance as cross-cutting services were issues stressed. The possibilities of regional training in these issues were suggested, e.g. with reference to specialism such as fisheries statistics, where specialised training would be too expensive to organise for one or two statistics/data management staff at national level, but might be worth developing at regional level. It was stressed that the existing memberships of regional co-operative bodies e.g. those centred on Lake Victoria did *not* mean *any* of the constituent bodies had strong statistical expertise. Suggestions made were met by an open and positive interest.

There was some discussion of the merits of e-learning courses for regional training. Dr Roger stern, of SSC Reading, has led development of several e-learning modules for the (quite separate) regional association of meteorological services, and might be able to liaise with RAIN, Entebbe in a future visit.

8. Contact with Dr. Magunda, Director, KARI

The proposal for a Statistics and Data Management Resources Centre for NARO had been set in the context of other cross-cutting central services from the National Laboratories (proposed to be based at Kawanda ARI) in the version of output 1.1 presented as a background paper for the workshop on 16/11/05. See also Annexure 2, Next Steps 4 of this report. Earlier efforts to seek the opinion of Director KARI on this had failed, so telephone contact was made in this visit. Dr. Magunda agreed with the idea, so long as NARO's future senior management accept this way forward.

Prospects for tackling Mr. Mubiru's wish for co-operation on crop estimation were also discussed. Ian had suggested that UBOS and NARO establish a special-purpose

partnership, and come up with a concept note for a joint methodological research project to identify intelligent, cost-effective, quality-assured ways for measuring national production of hard-to-measure crops (banana, cassava, and to some extent legumes fall in this category, whereas annual staple grains tend to be much easier to deal with).

9. Presentation of final reports to NAROSEC

A final brief meeting was sought with NAROSEC to present to them our project outputs. However, the acting DG had had to go to a funeral, and the Director of MEPU had undertaken to facilitate an INIBAP workshop in Rwanda, so this final meeting did not materialise.

10. Acknowledgements

We are very grateful to the DFID's Crop Protection Programme for funding this work. We are also thankful to staff of MEPU, and in particular to Joshua Guina, Dickson Baguma and Diana Akullo, for the time they spent with us during our visit and for their interest in developing statistics and data management capability within NARO institutes and ARDCs.

Annexure 1

Workshop on Statistics and Data Management Needs of NARO Scientists and Technicians 16th November 2005, Imperial Botanical Beach Hotel, Entebbe

Time	Activity	Resource Persons
before 08.30	Opening of Venue	
08.30 - 08.45	Arrival of Participants	
08.45 - 09.00	Registration of Participants & Introductions	
09.00 - 09.15	Opening Remarks	DG/DB-MEPU
	Participants' Introduction and Expectations - *Interactive*	
09.15 - 09.30	Project objectives and findings so far	IW
09.30 - 09.45	Project objectives and findings so far	SA
09.45 - 10.00	**Next Steps : 1.** Data Management Introduced	SA
10.00 – 10.45	*Small group discussion*	
10.45 - 11.00	**Coffee Break**	
11.00 - 11.30	*Plenary feedback*	
11.30 - 11.45	**Next Steps : 2.** Statistical Software Introduced	IW
11.45 - 12.00	**Next Steps : 3.** Training of Scientists Introduced	SA
12.00 - 12.45	*Small group discussion*	
12.45 - 13.00	**Plenary feedback**	
13.00 - 14.00	**Lunch Break**	
14.00 **-** 14.15	**Next Steps : 4.** Structure to Sustain Statistical Cadre	IW
14.15 - 15.15	*Small group discussion*	
15.15 - 15.30	**Plenary feedback**	
15.30 - 16.00	**Summary, open discussion, conclusions and next steps**	IW/DB-MEPU
16.00 - 16.05	Closing the workshop	DG/DB-MEPU
16.05 - 16.30	**Tea Break**	
16.45 **-** 18.00	SA/IW Meeting with MEPU	SA,IW & MEPU

Resource Persons:

IW – Ian Wilson, Statistical Services Centre, The University of Reading
SA – Savitri Abeyasekera, Statistical Services Centre, The University of Reading
DB-MEPU – Dickson Baguma, Head, MEPU
JA-MEPU - Joshua Guina, Management Information Systems, MEPU
DA-MEPU - Diana Akullo, Socio-Economist, MEPU

Annexure 2

Next Steps 1 – Data Management

NARO Resources:

"*Guidelines and Procedures for Effective Data Management (with emphasis on banana research)*" by Charles Murekezi, Savitri Abeyasekera, Yusuf Mulumba, Allan Rwakatungu, Jerome Kubiriba and W.K. Tushemereirwe. May 2004, 36pp. Circulated to NARO staff.

"*Research Data Management"* training materials June 2003, available at NBRP data archive.

Proposed data management activity – primary target group technicians. 1-week joint training course for all PARIs, cascaded to each Institute.

1. Each participating PARI director nominates up to two staff, preferably keen young computer-literate technicians (must know Excel), for course in central location. Assume direct expenses (<u>not</u> attendance fees) and trainers' costs (1 international, 2 local) are met from an external grant.
2. One week training course, followed by one week of training of same participants as trainers. Assume direct costs and trainers' fees met from external grant.
3. Trained staff return home and within one month maximum participate (with local trainers from 1. above, and assistance from another PARI's trainees in some cases) in repeating the training week once for other relevant staff of own Institute. Further repeats to be scheduled and run by Institutes' own staff. PARIs own funds must meet all costs of staff time, photocopying, refreshments etc.
4. Trainers continue to have responsibility, recognition/motivation and work time allocation to lead on data management technicalities in own Institute. They receive compensation if this involves reduced access to fieldwork allowances.
5. PARI Director nominates senior staff "champion" to establish, dynamise and enforce PARI's data management norms of best practice e.g. version of above resource.
6. Grant proposal to be developed on the basis that PARI only participates/benefits if Director signs up to agreed implementation plan developed from above.

Pluses:

+ 1. Strong expression of demand met – ? motivating for many staff
+ 2. Career enhancement/recognition for technicians who take lead
+ 3. Long-term increase in research effectiveness and productivity
+ 4. Improved ability to win grants and/or co-operate effectively in international-standard project teams

Questions:

?? 1. Are appropriate staff available?
?? 2. What is a feasible time of year? Time frame for providing training to all research staff?
?? 3. Status issues if technicians receive training? Provide training?
?? 4. Motivation for scientists to participate in ensuring better data management?
?? 5. Motivation/recompense of senior staff "champion"?
?? 6. Co-operation between PARIs needed? Desirable?

Next Steps 2 – Statistical Software

NARO Resource: GenStat 8 licence for all PARIs and "*GenStat 8 for Everyday Use*" Training Manual.

Proposed statistical analysis activity A – primary target group scientists. 1-day Question & Answer session to support self-paced GenStat learning in each Institute, maybe repeated in larger PARIs.

Pluses:

+ 1. Strong expression of demand met – ? motivating for staff who already know some stats and want to be able to practise what they know
+ 2. May motivate some to want to learn more
+ 3. Local support available from Dr Margaret Nabasirye? [cascading to a few NARO users acting as trainers?]
+ 4. Could start quickly [without external funding?] Does not require much preparation by trainer(s)
+ 5. Long-term increase in research effectiveness and productivity

Limitation:

This does not substitute for ensuring scientists are properly-trained, and up-to-date, on relevant and modern statistical tools.

Questions:

?? 1. Will appropriate staff be prepared for, and available on, the "GenStat day"?

?? 2. How best to cascade or repeat this inside Institutes?

?? 3. Should this wait till statisticians are appointed to Institutes? Or will Institutes identify 'lead GenStat users' to help others?

Next Steps 3 – Statistical Training

NARO Resource: Report "A Consultation Document offering First-Phase Views and Recommendations of a Training Needs Analysis in Statistics and Data Management" dated 19 September 2005, circulated electronically to NARO Directors by MEPU: see section 6.3.

Proposed statistical analysis activity B – primary target group scientists. 1-week common training course for all PARIs "Review of Basic Statistics"

Course of one week on proper use of relatively basic statistical tools, to 'level the playing field' for people whose previous statistics training was over-theoretical, long ago, or very rusty through lack of use. Also desirable that most of the staff who imagine that they do not need this should still attend! Insofar as a course like the above has much more than a simple 'technical statistical methods' agenda, it should be carefully crafted by trainers experienced in teaching/motivating.

Potential Pluses:

+ 1. refresher even for the 'well-trained';
+ 2. translation of tasks, terminology and approaches into the new context of GENSTAT use;
+ 3. non-theoretical focus on practice and interpretation;
+ 4. institutional strengthening so that the experienced should participate so as to be able to help bring along less well-equipped colleagues.

Questions:

?? 1. Who should teach this course?

?? 2. Should it begin only after statisticians are in post? If not, how is follow-up help provided?

?? 3. If first taught centrally, should it be expected that each Institute's statistician will be able to repeat it very early after her/his appointment?

Next Steps 4 – Structure to Sustain Statistical Cadre

The document "*Can the New NARO Develop Statistics and Data Management Effectively?*", circulated in October, makes a case that:

- it would be difficult and slow for every PARI alone to develop a completely independent statistical cadre, especially since (i) NARO has a limited tradition of having employed and retained statistical professionals, and (ii) it appears to be unlikely that appropriate and successful appointments can be made 'off the shelf' – inexperienced appointees will need training and back-up whether they are statisticians or scientists.
- service provision in specialised areas seems likely to come from the NARO 'Laboratory PARI' at Kawanda; this raises a question whether - while PARIs are building towards self-sufficiency in statistics/data management – some paid-for statistical service from a 'Service Unit' could be developed at Kawanda.
- This may be similar to biotechnology and other specialist services offered by Kawanda. The document argues for some form of 'pre-payment' scheme.

Potential Pluses:

+ 1. For other PARIs and their research projects, the services could *augment* and *complement* whatever statistical staff they have recruited or trained.

+ 2. When or where there are gaps, the service unit could offer to other PARIs substitutional staffing, technical backstopping, coordination of training and of external statistical links, support to recruitment, professional development and retention of statisticians, and resource co-ordination.

Questions:

- How can such services and a pattern of their constructive use be established?
- How can Kawanda minimise the risk associated with appointing consulting staff whose services might not be funded from uptake?
- How can other PARIs ensure that a good-quality service is in place and available when they need it?

ANNEXURE 3(a)

Ian's first presentation at workshop on 16th Nov. 2005

Consultation on Institutional Factors

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The Split Brief : 1. TNA

- Training needs analysis : training the scientists and technicians –
  - What is needed most?
  - What is needed first?

See Savitri Presentation

The Split Brief : 2. RNA [Next Steps 4]

- Recruitment needs analysis : acquiring some statistics & data management professional staff (SDM)
  - What skills are needed & where?
  - Where will SDM come from?
  - How can they be inducted & developed?

The Split Brief : 3. How SDM staff fit in new institution

- "Institutional analysis": managing & retaining stat.s & data management professional staff (SDM)
  - Will individuals be isolated in autonomous PARIs?
  - What happens if the 1 SDM person goes for 1-year training?
  - How can they be persuaded to stay in NARO?

Recruitment?

- Level 4 – graduate statisticians recruited = new personnel
- Level 3 – scientists (maybe existing NARO staff) re-trained to be fully-fledged SDMs
- Level 2 – NARO staff trained to be part-time resource persons in some technical areas
- Level 1 – NARO staff trained to carry out specific functions in their teams

Common Functions of SDM professionals - 1

Refers to Levels 3 and 4 mainly →

- All should act as technical ***advisers*** & ***consultants*** & trainers to scientists/ teams on :-
- Commonly-used standard SDM tools
- Their implementation on a couple of good stats software packages (GenStat and Stata) + Excel

Common Functions of SDM - 2

- ***NOT*** **there to be data slaves : lead scientists & teams retain responsibility for *doing* data collection, quality checking, data entry, "routine" analysis**
- **SDM person may *do* complex analyses, → scientists understanding & replicating**
- **(S)he should be able to interact & consult with other SDM people when facing difficulties – isolation a recipe for losing staff**

Roles of *promoted* SDMs

If barriers between autonomous PARIs allow

- **Seniors could train/advise younger statisticians & keen scientists on more modern & specialised techniques, & train them as trainers**
- **Statistical reviewing/quality control (QC)**
- **ToRs/QC of outside experts contracted in or provide services to external clients**
- **Liaison with other methodologists, management work, appraisal**

SDM Priority Specialisms?

- **Biometrician – experiments**
- **Quant. geneticist**
- **Systems modeller**
- **Ecological stat.^{n}**
- **Product QC stat.^{n}**
- **Economic stat.^{n}**
- **Market researcher**
- **Survey & sampling statistician able to integrate qualitative & quant. material**
- **M&E/impact assessment SDM**

SDM Priority Specialisms?

- **Computer package support person**
- **NARO software strategist/licence manager**
- **Database programmer**
- **Expert data manager/archivist/ trainer**
- **Management info. systems technical support**
- **GIS advisor/consultant**

ANNEXURE 3(b)

Savitri's 1st & 2nd presentation at workshop on 16/11/2005

Project Objectives, Findings from Training Needs Analysis, and Next Steps

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1

Project Objectives

- **Training Needs Analysis undertaken, reported and circulated**
  (see Background Documents 1 and 2);
- **Research Capacity strengthening strategy discussed and developed in collaboration with NARO senior managers.**

2

Key statistical issues emerging from discussions with scientists

- Lack of availability of statistical software.
- Lack of a statistician to assist in study design and analysis (except for a few scientists at KARI).
- Very few with training beyond university courses in statistical ideas.
- Lack of understanding about modern methods of analysis – most seem to use basic approaches.
- There is a general concern about scientists' inability to deal with survey methods and farmer participatory approaches.

3

Data quality and data management

- Most data entry was on Excel. Practices concerning data quality issues were weak.
- Most data sets did not include the meta-data
- Little evidence of systematic procedures for maintaining data sets over time to ensure longer-term traceability and interpretability.
- Lessons can be drawn from NBRP regarding procedures for good data management and good practices in research management.
  (see Background document 1: section 2)

4

Researchers' and technicians' perceptions of training needs (one of top 3 priorities)

Researchers (n=94)	**Technicians (n=105)**
Standard methods of stats using appropriate software (81%)	Research Data Mgt (77%)
Research Data Mgt (48%)	Standard methods of statistics using appropriate software (76%)
Integrating qualitative & quantitative methods (47%)	Interpreting results and reporting (59%)
Interpreting results and reporting (42%)	Design of on-station & on-farm trials (46%)

5

Constraints to research effectiveness (% giving item as one of top 3 priorities)

Researchers (n=85)	**Technicians (n=95)**
Software, training and support in stats & data mgt (97%). **(1st priority of 70.6%)**	*Software, training and support in stats & data mgt (93%)* **(1st priority of 69.5%)**
More professional upgrading in own discipline (78%)	More professional upgrading in own discipline (80%)
Training in technical writing, time mgt and others (25%)	Lack of computer access (44%)
Lack of computer access (20%)	Training in technical writing, time mgt and others (35%)

6

Research Capacity Strengthening in Statistics and Data Management?

Technicians:

Training in Research Data Management, and simple methods of analysis.

Scientists:

Initially, training in standard statistical methods using appropriate software. Later training done by PARI statisticians?

Statisticians:

Training of trainers, and other advanced courses.

Software strategy: See later

7

Next Steps: Addressing Training Needs

Where can we start?

What is feasible in the short term?

How can we cascade the training to reach everyone?

8

Next Steps 1: for discussion

A workshop on "Research Data Management " for scientists and technicians

Why start here?

(a) Material is available, so easy to replicate; some have had this training, accessible to all

(b) Simplest training to replicate if resource persons can be identified within each institute

(c) Immediate application of training to current projects and past projects with unanalysed data

(d) One of top two priorities identified by researchers

(e) Good data is key to good research

9

Issues: What system for data entry

Several accessible systems :

- **EXCEL very easy, does provide some facilities for data validation, but not on data entry quality – should also have rigorous "manual" checks**
- **ACCESS – harder to set up, provides excellent checking capacity incl. double data entry for "serious" data**
- **EPI-DATA downloadable**

10

Data Management

- **EXCEL → ACCESS → LOGBOOK**
- **EXCEL is easy to get going with but very few people "know it all" !**
- **EXCEL does not manage relational structures or multiple levels of data**

  but best practice with EXCEL means you CAN & SHOULD have full records of data & metadata

11

Databases

- **ACCESS [or VERY expensive & complex systems] for relational databases e.g. linked tables for individual, household, community, school, farmer group, multi-visits**
- **ICRAF/WAC Logbook sophisticated research programme data linkage – work of genius but can be difficult to learn and manage!**

12

An initial proposal – for discussion

Week 1: Two persons identified from each PARI to attend the training – conducted by (say) one international, two local trainers.

Week 2: Same persons attend a training of trainers programme to learn about training others in their institute using same materials.

Week 3: Weeks 1&2 recipients will then become resource persons who then conduct the training in their own institute, helped by one or both local resource person(s) participating in week 1.

Subsequent repetitions expected. PARI's fund training within the institute.

13

An initial proposal – for discussion

- Trainers continue to be responsible for data management at their PARI. Reduced field allowances to be compensated?
- PARI Director nominates senior staff "champion" to enforce data management best practice.
- Grant proposal developed on basis PARI benefits if Director signs up to an agreed implementation plan.

14

Some questions for discussion

- Are appropriate staff available, e.g. keen young computer-literate technicians who know Excel
- Time of year for training? Time to complete training? Six months?
- Status issue if technicians receive training? Provide training?
- Motivation for scientists to participate and adopt good practices in data management?
- Motivation/recompense for senior staff 'champion'
- Co-operation between PARIs needed? Desirable?

15

ANNEXURE 3(c)

Ian's 2nd presentation at workshop on 16/11/2005

Statistical Software for NARO

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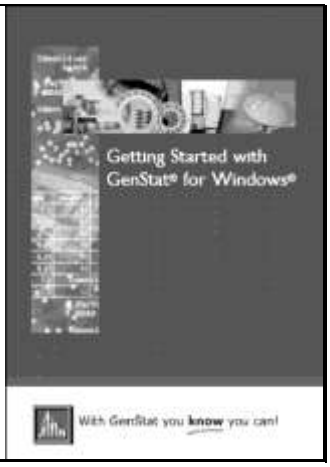
Common Strategy: 1. GenStat

- NARO trying to purchase GenStat 8 (latest version) & 2 years' support
- Very good for general stats, and experimental data
- Perpetual licence – access to upgrades for a fee – NARO-wide site licence
- Much more friendly & accessible than old versions

Very good on-screen Help & easy Introductory Guides like this one →



Free access to this 114-page→ self-teaching Introductory Guide from ICRAF, SSC, & BUCS, Nairobi

Practical Pluses … & limits

- Staff who know some statistics quite well will have powerful tool
- Can do some learning in own time, and maybe call in some local support even before statisticians recruited
- Not a substitute for ensuring scientists are properly trained & up-to-date on stat. approaches.

Common Strategy: Other Stats

- GenStat has limited commands for complex survey structure
- Can NARO get another central licence? Survey data handling options – large structured datasets
- SPSS *VERY* expensive annually, good for tabulations, not for taking structure into account properly

Common Strategy: Other Stats

- Survey data handling options – large structured datasets
- Stata 9 fairly cheap perpetual licence, OK for basic stats & tabulations, tops for using structure correctly
- Stata taught in ISAE, Makerere & now being used by UBOS ~ user community/local advice

Specialist Needs

- Software for forest mensuration, fish stocks, crop growth modelling & other specialist needs must be one PARI's own problem to buy and support
- Climate data analysis – SSC's INSTAT+ is leading package, free to NARO ~ if ever of interest

Getting Going with GenStat

- This poses demands on each PARI
- Immediate/low-cost suggestion is of self-paced self-motivated GenStat learning
- interested staff to read through above-mentioned guides, practise & raise problems with visiting helper

Will this work?

- Staff need the motivation and the reading/learning habit: not being spoon-fed in a training set-up … ?
- Staff need to have time (& pressure on them?) to put into this … ?
- Staff need quite long spells of uninterrupted computer access to work through material … ?

Will this work?

- Is this only a "solution" for a small number of really dedicated staff …?
- Might it serve to stimulate some interest in others … ?
- Do you have any suitably dedicated souls and could these people be exploited to motivate/help others in a more "institutionalised" in-house training days … ?

Research Management Frameworks

- Software useless unless you have proper motivation, training, and management systems
- See Background Document 3, Appendix 5 (last page) for reference to international-standard best-practice guidance on this from NARO Banana Research Programme

ANNEXURE 3(d)

Savitri's 3rd presentation at workshop on 16/11/2005

Next Steps 3

- Statistical Training -

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1

Statistics Training, primarily for scientists - for discussion -

One-week common training course on "Review of Basic Statistics" using Excel or (preferably) Genstat software.

Learning objectives:

- Proper understanding of relatively basic statistical tools
- Application of tools to own research data

2

Why a 'Review of Basic Statistics' ?

Survey results showed knowledge of basic statistical techniques was weak amongst many

Areas of statistics	None	Little	Some or lots
Tables of counts & %'s	11	12	78
Means & summaries	6	5	88
Standard errors	13	22	65
Simple linear regression	13	27	61
Chi-square tests	18	31	51
T-tests for comparing means	16	27	57

3

Potential Benefits

- Serves to 'level the playing field', and allows entry to more advanced training courses
- Is a refresher even for those who imagine they don't need it!
- Helps to understand use of statistical ideas within Genstat's terminology and approaches
- Non-theoretical focus on practice and interpretation
- Institutional strengthening with experienced staff helping along less well-equipped colleagues.

4

Is this course really basic?

Challenges to those who feel they know it all ...

- Can you compare and contrast the meaning and use of standard deviation and standard error?
- When would you use a paired t-test as opposed to a two-sample t-test?
- What do error-bars in graphs really tell you?
- Correlation or regression to study relationships?
- Under what circumstances would a chi-square test be useful?
- How would you interpret significance probability levels of 0.001, 0.048 and 0.055?

5

Points for discussion

- Need a training programme well-designed to motivate and interest scientists. It should also have a non-theoretical focus – unlikely newly recruited statisticians could do this effectively!

  So how can such training be provided?

- Training alone is inadequate. How can follow-up help be provided? How soon will there be an institute statistician?

- Will there be scope for sharing of statistical support across institutes?

6

Points for discussion – continued…

- How will scientists be chosen for the initial round of training? (Maximum limited usually to about 24)
- Can the training be cascaded to reach all? Or can initial trainees provide support to fellow-scientists in the medium term? Incentives to do this?
- Can each Institute's statistician (if available) be expected to be able to repeat an initial round of training soon after appointment?
- Will the institute support/promote such training ventures?

7

Further courses for PARI scientists

- ***'Ecological Methods' e.g.*** **for natural resources monitoring;**
- ***'Social Survey Methods'*****, extending into qualitative and participatory approaches, and effective combinations of both;**
- ***'Experimental Design and Analysis'*** **approaches for efficient conduct of crop and livestock farmer-field experiments.**

Development of training courses as above need to be decided in the light of recruitment of statisticians.

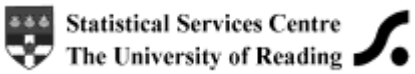
8

ANNEXURE 3(e)

Ian's 3rd presentation at workshop on 16/11/2005

Structure to Sustain a Statistical Cadre

Ian Wilson



1

PARI's Solitary SDM person?

- See *Background Document 3*
- Barriers between autonomous PARIs, and between PARIs & NARO Secretariat, suggest a single statistician at a PARI is "alone" in professional terms
- Bad for professional development, and retention in NARO c.f. history
- UBOS salaries higher for statisticians

2

One SDM person's effect?

- Bad for the PARI as the one SDM professional leaves a gap when ill or under training, & is relatively expensive to maintain
- Hard if an inexperienced SDM person has to struggle with an institutional culture where involving the statistician is not usual practice.

3

Involving the SDM recruit

- Good to have someone dedicated to, and familiar with, type of SDM work the institute generates
- Recruit from outside needs to be inducted into PARI's mission and practices
- & managed/championed by a senior member of staff : consulting room, decent computer, drive to ensure good data management

4

Additional SDM Service

- I & S hypothesise the Nat Agric Lab at KARI would be "selling" Lab services … so maybe they could have *both* their own SDM staff, *and* one or two "service" posts
- ?? Funding – maybe pre-payment as in 1.7

5

International Appointee?

- NARO starts now from near zero trying to build a useful professional cadre
- Should NARO seek donor funding .. for one international appointee?

6

Job Specification?

- One fixed-term (3 year) post for an experienced and enthusiastic technical agricultural statistical expert with "people skills", to train, motivate, & support new recruits and set a good example in stats consulting practice?
- Assumes local appointees there early on in the 3 years: deadline!

7

Service functions of KARI

- Substitutional staffing
- Technical backstopping
- Coordination of external links
- Stat. training and stat. resource coordination
- Professional stat. development

[jointly with MEPU, HR as required]

8

Internal Questions

- Would such a service be worth trying to establish in your institute?
- What are barriers to establishing it?
- How to establish patterns of constructive use of SDM staff?
- How do managers need to support them?

9

Cross-PARI Questions

- IF KARI had an SDM service centre …
- How can KARI minimise risk of appointing staff whose services might not be bought by other PARIs?
- How can other PARIs ensure good service is in place and available when needed?

10

Other questions

- Do socio-economists need the same attention as above?
- Does MEPU need statisticians?
- Can NARO-SEC buy consulting services from KARI?
- Can NARO be a model for other countries in the region?

11

THANK YOU FOR COMING!

12

Annexure 4

STATISTICS AND DATA MANAGEMENT WORKSHOP

Ian Wilson, Dr. Savitri Abeyasekera and MEPU – NAROSEC

Botanical Beach Hotel, Entebbe: 16th November 2005

Meeting notes taken by Ms. Diana Akullo

The meeting was opened by Mr. Dickson Baguma (Head, MEPU) giving the background to the workshop, i.e. it is the last component of the training needs assessment in statistics and data management for NARO, as carried out by the team from the Statistical Services Centre, The University of Reading.

As the first component of the workshop, participants (see final page for a list of persons attending) were asked to note down their expectations for the workshop, and their expectations for the future. The participants then introduced themselves in turn and said what their expectations were.

Workshop Expectations	Future Expectations
• To see new approaches to improve statistics among NARO scientists • Clarification of what the problem was in the past • Training programme for NARO staff developed • A strong team of young scientists with excellent skills in data analysis and in using data tools and software including analysis of S/E data • Overview of statistical needs in NARO • Means of enhancing statistical skills in NARO • A well thought out plan for improving statistics and data management in the new NARO • Sound recommendation for inclusion in the plan (above) • Concise needs of statistical issues presented • Introduction of statistics in research • Introduction to data management in research • Survey results conducted by the Statistical Services Centre presented • Way forward for statistics in NARO outlined, including training • Skills acquisition in data	• NARO scientists well equipped in statistics and data management and reporting • Institutionalization of statistics in the NARO systems • Established unit to handle statistical requirement in PARIs • Data management institutionalized at PARIs • All data collected in experiments analyzed and interpreted for quality research • Integration of statistics in research for better results • Practical application of statistics in informing decision making • Statisticians and biometricians recruited in PARIs • Improved data management • Involvement of more staff in data management • Improved knowledge and skills in using statistics in research and data management • Capacity for statistical use in research enhanced in NARO/NARS • An efficient integrated and linked data management system in PARIs • Quick and accessible data to facilitate decision making

Workshop Expectations	Future Expectations
management • Update on software for data management • Learn about data analysis and impact on data management • Update on recent packages and strategies in managing data in research results • Feedback from facilitators • Clear position of statistics and data management in NARO/NARS discussed • Recommendations on how to have an efficient statistical and data management services in research • Feedback on consultants' input • Support for realistic SDM development.	• Coordinated statistical analysis for NARS • All scientists and technicians trained in statistical data analysis and management • A research system well supported by evidence i.e. evidence based research results • Adequate funding put into recruitment and training of scientist and technicians as statisticians.

Dr. Ian Wilson presented the institutional factors that emerged during the consultation phase (power point presentation handed out to participants).

Dr. Savitri then discussed statistical issues that emerged from the discussion with scientists and from the postal survey conducted earlier in the year (power point presentation handed out to participants).

Dr. Savitri continued to present a proposal for developing data management skills of all NARO staff through an initial programme of training, a programme for training of the trainers, and several repeats of the training at each PARI by those trained as trainers.

Some Comments:
How do we effectively use statisticians bearing in mind that the new NARO outlines autonomy of institutes? There have been cases of redundancy of statisticians in NARO in the past. How do we make sure it really works this time?

Dr. Savitri also presented six questions for discussion in three groups as follows:

Group 1
- Are appropriate staff available, e.g. keen young computer-literate technicians who know Excel
- Time of year for training? Time to complete training? Six months?

Group 2
- Status issue if technicians receive training? Provide training?
- Motivation for scientists to participate and adopt good practices in data management?

Group 3 Motivation/recompense for senior staff 'champion'
- Co-operation between PARIs needed? Desirable?

A tea break followed, after which the participants divided into their groups to discuss the above issues. Reporting back from the three groups began at noon. Comments made are presented below.

Group 1

1. *Are appropriate staff available e.g. keen, young computer-literate technicians who know excel.*

Yes, but on the assumption that
-Recruitment of staff include statisticians as well as technicians
-Senior scientist would champion the training while young scientists and technicians would be invited for training..

2. *What is the feasible time of the year? Time frame for providing training to all research staff. Six months?*

July to September was regarded as an appropriate time because:
(a) It is when the budget is read
(b)That is also the harvesting period for farmers, so less field research happens at this time.
It was suggested that the training of trainers (TOT) be in the first week of July.
Trainers would then undertake the first round of training at PARI level in the first week of August and the second round in the second week of August. More runs would happen if the institute was large.

Comments from this presentation included a suggestion that the timing was for just the crop based institutes (and the ARDCs) but may have to be different for other groups such as those working in Food Science or Fisheries.

Group 2

3. Status issues in receiving and providing training technicians in data management
(a) Both scientists and technicians should be involved in the initial training. Scientists should facilitate training assisted by technicians
(b) Technicians should manage data assisted by scientists
(c) Both scientists and technicians must be trained
(d) Both scientists and technicians should have unlimited access to facilities

4. Motivation of scientist in ensuring effective data management
Both scientists and technicians need motivation.
Types of motivation:

(a) Training and refresher training
(b) Access to facilities and resources
(c) Active involvement in both field and office activities so that opportunities for field allowances remained the same.

Comments:
We should look at question no. 4 as contribution of concerns for institutionalization in NARO eg. When buying computer, we should cater for all cadres of staff.
If it is paper presentation by NARO, it should reflect statistical input. We need to institutionalize and make it a culture.

Group 3

5. Motivation/recompense of senior staff 'champion' for statistics/data management

(a) Champion should be fully integrated within projects at the institute
(b) Within these projects, champion should be assigned specific tasks
(c) Incentive allowance should be established and put in place in all projects
(d) Establish a unit (fully fledged) to operate at institute
(e) Opportunities for capacity building created.

Comments
We should refer to him or her as Champion or championess.
Q. What do we mean by unit fully integrated?
A. Roving ambassador with a point of referral
A. A unit that can solicit for resources
A. A methodological unit – perhaps also integrating sociological components.
It was suggested that the champion decides or proposes how the data is handled or used.

There was some discussion on the incentive allowance. One ARDC manager commented that all staff work 100%, so why should there be a separate allowance. Another said that usually people think of material recognition as incentives, but having one's work appreciated would also form a type of compensation. Researcher using the data could also consider acknowledging the contribution of the data manager in terms of writing a joint paper.

Need to move beyond field activities and collecting data and use allowance more for development oriented activities e.g. other units can incorporate management of data. Evaluation of research should incorporate outcomes. Human resources should include this so NARO can be seen as a performance group. Being a 'champion' of statistics must be a recognized function within the institute.

6. Cooperation between PARIs needed? Desirable?

Yes, because:
(a) Thematic areas cut across PARIs hence the need for such cooperation
(b) Share experiences
(c) Exchange of information and ideas
(d) Optimize use of resources
(e) Joint planning
(f) Analysis of data and management.

Comments
If the will is there, even with autonomy, people can still work together. So consultants' worries about PARIs being autonomous may be unfounded.
Q. Would there be monetary contribution if a particular PARI has different statistical speciality and is called upon by another PARI?
A. The directors can work that out. If a 'champion' is there, he/she will encourage cooperation for institutes to help one another.
The institutes should also specify what sort of statistician they require.

Next presentation by Ian Wilson began at 12.40 pm. Ian introduced a proposal for Genstat training. This was followed by Savitri's presentation with a proposal for statistics training.

Comments:
Q. The presentation mainly concentrated on Genstat. How about SAS. Several (at KARI and NAARI) have received training in use of SAS.
A. SAS is a huge statistical package more appropriate for industrial use. Although a good package, it was very expensive and every year, the license had to be upgraded with payment. This would cost NARO much more than the purchase of Genstat.
A. Both Genstat and Stata are both being promoted since Genstat has been offered at a greatly reduced price to NARO for installing on all their pcs.
A. Genstat can also be used for social sciences even if slightly inefficiently.
A. Initially in NARO, scientists requested for Genstat. It was an early package bought by NARO. Seemed appropriate to return to same package. Now awaiting installation and distribution.
A. Instat is another piece of software that can be downloaded for those working on climatic data.

A. All packages are good but it now depends on the need of a scientist/institutes.
Comment: Some NARO scientists have been trained by international collaborators.

Q. Will the trainers be trained on genstat?
A. For data management, the initial training will use Excel.

At the end of the presentation, various questions were again posed for discussion within small groups. The questions were:

Group 1

- Need a training programme well-designed to motivate and interest scientists. It should also have a non-theoretical focus – unlikely newly recruited statisticians could do this effectively! So how can such training be provided?
- Training alone is inadequate. How can follow-up help be provided? How soon will there be an institute statistician?
- Can each Institute's statistician (if available) be expected to be able to repeat an initial round of training soon after appointment?

Group 2 Will there be scope for sharing of statistical support across institutes?How will scientists be chosen for the initial round of training? (Maximum limited usually to about 24)Can the training be cascaded to reach all? Or can initial trainees provide support to fellow-scientists in the medium term? Incentives to do this?

- Will the institute support/promote such training ventures?

Group 3

- Will appropriate staff be prepared for, and available on, the "GenStat day"?
- How best to cascade or repeat this inside Institutes?
- Should this wait till statisticians are appointed to Institutes? Or will Institutes identify 'lead GenStat users' to help others?

After agreeing on questions to be discussed by each group after lunch, all agreed to reconvene at 14.10 hours to begin the group discussions.

- LUNCH BREAK -

Group Presentations

Group 1

Need for a training programme well designed to motivate and interest scientists. It should also have a non-theoretical focus – unlikely newly recruited statisticians could do this effectively.

1. *How can such training be provided?*

-There is need for relevancy to PARI
-Need for user friendly software
-Need for permanently available hardware
-Emphasis on hands-on
-Training by external consultants (Reading) and local experts

2. *Training alone is inadequate. How can follow-up help be provided? How soon will there be an institute statistician*

-Consultants to go around institutes to backstop trainers' trained
-Easy access to resources to replenish computers
-DG to make provision for statistician at every PARI

Comment: Should be the work of the 'champion' to sort out some of the above issues and pursue some of the needs at higher level e.g. with the DG. Technicians tend to fear to approach management, so 'champion' should see to this.

3. *Can each institute's statistician (if available) be expected to be able to repeat an initial round of training soon after appointment?*

Yes, but after realignment.

Group 2

1. *Will there be scope for sharing statistical support across institutes?*

Yes.
-Themes and projects cut across institutes and lays foundation for sharing statistical support
-Budgets are tagged to activities not individuals (statisticians) and would enhance relevant statistical services from other institutes.

2. *How will scientists be chosen for the initial round of training (maximum usually limited to 24)?*

Each institute will nominate three people i.e. 1 senior scientists based on experience, 1 young scientist and one technician.

Senor scientist:
-Should have interest in statistics
-Should have some background in statistics

Young scientists:
-Should have interest
-Should have statistical background
-Should be assessed for stability i.e. those not working in NARO as a stepping stone for greener pastures.

Technician:
-Should have interest in statistics
-Should be active, ready able to learn. Should be trainable.

3. *Can the training be cascaded to reach all?*

Yes but this may only be possible
-Over a period of time
-Availability of incentives (make it part of the appraisal system, e.g. 80% on scientific work, 20% for statistical work)
- Refresher Training/update needed.

4. *Will the institutes support/provide such training?*

Yes.
-Funds allowing/Budget
-There is need for the training.

Comments
There should be a budget for trainers' incentives.
Most times staff are trained as trainers but they are not facilitated to train.
They should be able to get a "trainer's allowance".

Group 3

1. *Will appropriate staff be prepared for and available on the Genstat day?*

Yes.
-But there will be urgent need to crate awareness amongst the current cadre of scientific staff on the soft ware
-Need for adequate and appropriate computers.

2. *How best to cascade or repeat this inside institutes*

-Enthusiastic pioneers (EPs) be identified and trained
-The EPs to train others
-Need for monitoring the process and providing feedback.

3. *Should this wait until statisticians are appointed*

-No

4. *Will institutes identify lead Genstat users to help others*

Yes;
-statisticians, when appointed, should find cadre of staff with Genstat knowledge (EPs)
-statisticians appointment might delay…

Comment:
Will there be no need for external sourcing?
Scientists would want to give it a go first.

Next Steps 4: Presentation and Discussion

Ian Wilson made his third presentation on "Structure to sustain a statistical cadre".

Comments:
Since the beginning of the presentations, there are fears around the area of autonomy of institutes in the new NARO. However, most NARO managers are here and

- The autonomy should not be mean a "wall" around institutes and should not happen
- Inter-PARI interaction will be vital for efficient operation
- With the new NARS, competition will be even more stiff and statisticians will add to the quality of research in the competitive environment (proposals)
- Autonomy should not isolate a statistician - borrow from example in the Planning Authority
- A unit composed of cross-cutting disciplines – methodological
- Management should review the provision of statisticians in the recruitment
- The thematic approach with enhance the utilization of statisticians.

How to support statisticians:
Previously, to be a real and true scientist, statistics had to be part of your discipline. We have now recognized the need for a functional statistical support.
But creating a unit might create redundancy especially after good training "dose" for the scientists and technicians.
Answer. However, once scientists make use of statisticians, they begin to appreciate their input.

There is a tendency for scientists to focus on their discipline and only after they have had enough insight will they begin to explore and venture into other areas.

Can we identify a PARI to host such cross cutting discipline e.g. National Labs Institute – specialized? A small group can look at the issues
-what successes and failures?
-Reasons for successes; reasons for failures
-Lessons learnt?

Concluding remarks from the DG

The DG closed the meeting by thanking all for coming to attend the meeting and commented that he appreciated the level of attendance. He also thanked the University of Reading for availing resources for undertaking the activities on statistical services support that they have initiated. He also observed that there is need to improve the quality of research by applying statistics and good data management practices. The DG suggested that one of the managers should present the recommendations to the core functional analysis team to include in their staff needs recommendations for NARS statisticians. In addition, he observed the need to establish appropriate institutional infrastructure for statistics and data management.

The DG specifically thanked Dr. Savitri and Dr. Ian Wilson for their commitment to the need to enhance statistical services in research. The DG, NARO suggested that a proposal be developed with Dr. Savitri and Dr Ian's input.

The Dg called upon all present to be committed in working together as a team to improve statistics.

List of participants attending the SDM workshop on 16/11/2005

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Annexure 5

Communications with Deputy Director, Rockefeller Foundation

Response to e-mail sent on 18 November 2005

Hi Ian,

Thanks for your email.

Unfortunately our offices are closed on Nov 21/22 and possibly 23, and I am way from the office on the 24th and 25th. I'll be back in Nairobi the week of Nov 28th.

Regarding our future program areas of concentration, as you may have gathered, we are (still) in the midst of an extended program review process that is likely to go on till at least the first quarter of next year. In the interim, we are under instructions from our senior management not to engage in any new grants until this review process is over and when our new areas of work are clarified. The review is all encompassing and may affect our geographic focus as well as our broader program focus. The current thematic approach is also under review and going forward there may indeed be new configurations of how our work will be conceptualized, which may be different from our current approach.

Given these various uncertainties at this stage, I am not in a position to give you any indication of the level of interest within the Foundation regarding any future and likely areas of concentration. We are hopeful however, that these areas of work will be more apparent after the first quarter of next year.

We continue to be interested in the progress being made with our existing grants and programs and ask that you kindly continue to keep us posted on developments. Regarding the possibilities for future grants, please do get back to us after April/May next year when we will be in a better position to explore options.

Thanks for your kind understanding.

Best regards,

pat

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Original message sent to Dr. Pat Naidoo on 18 November 2005

From: I.M.Wilson [mailto:i.m.wilson@reading.ac.uk]
Sent: Friday, November 18, 2005 9:00 AM
To: Naidoo, Pat
Cc: i.m.wilson@reading.ac.uk; s.abeyasekera@reading.ac.uk; sdbaguma@naro.go.ug
Subject: Stats & Data Management TNA in NARO, Uganda

Dear Mr Naidoo

I and my colleague Dr. Savitri Abeyasekera are from the Statistical Services Centre at the University of Reading. We have been carrying out a Statistics and Data Management Training Needs Analysis (TNA) with and for the National Agricultural Research Organisation in Uganda.

Precursor activities include Savitri's involvement in the Rockefeller-funded project "Developing a Data Management System for the National Banana Research Programme", and the earlier project "Archiving Data from IPM Projects in the National Banana Research Programme in Uganda" that Savitri led. That project, and the current TNA, have been funded by the Crop Protection Programme of DFID which of course is now coming to an end.

Knowing that Rockefeller Foundation has participated by funding related activities in NARO, we would like to request a short briefing meeting if you could fit one into your schedule.

Of course we would be glad to know Rockefeller's latest thinking on supporting statistics and data management in NARS. If there is some community of interest, it is possible NARO may approach Rockefeller with a request for some assistance. So that you are aware of the work done in NARO, we could summarise the TNA process for you, including specifically the survey and workshop findings that indicate the interest and perceived needs of NARO staff. We can share with you the current ideas as to how statistics and data management capacity can be developed in the context of a restructured NARO. Hopefully 2006 will see a constructive and productive "interim phase", by the end of which the restructured NARO will be fully functional and recruitment of statistics and data management professionals will be well under way.

We are in Entebbe/Kampala up to 25th November, and at least one of us could be free at any time up to then. If you were in Uganda around the weekend or for other work, it should of course be possible to involve one or two of our senior NARO colleagues. If you suggest a meeting in Nairobi, we would try to fit in with that, subject to flight availability.

Yours,

Ian Wilson

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