



## Evaluation of the ILRI InfoCentre

### Report of a Center-Commissioned External Review

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## ***Executive Summary***

The Internet revolution, the enormous speed with which knowledge goes online, the existence of powerful mainstream services like Google, the ease with which we can gain access to online materials: These all challenge the traditional role of libraries and other IKM activities. They are losing their 'monopoly' positions as central access and communication points for researchers; they are gaining new enabling and connecting roles that support research and development work.

This report contains the observations and findings of a team contracted to evaluate and assess the effectiveness of the services provided by the ILRI InfoCentre (see Annex 1 for full TOR).

The review was carried out from 5 – 13 December 2008. The review team spent 5 days each in Addis Ababa and Nairobi, examined existing processes and speaking to staff of ILRI, some hosted CGIAR centers, and from the Ethiopian NARS. We did not directly examine the relationship between the InfoCentre services and ILRI staff located in other CGIAR Centers or in regional offices.

Our overall conclusion is that the ILRI InfoCentre has made major progress towards becoming a point of excellence for information and knowledge exchange in ILRI and with other institutions on the campuses. Bold actions are now necessary to build on this progress, extending it to become part of an integrated information and knowledge management (IKM) strategy for ILRI.

We draw six main conclusions from our review:

**Key conclusion 1: Knowledge sharing catalyst.** Continue to develop the InfoCentre as a catalyst for knowledge exchange across ILRI and its partners. Excellent progress has been made to transform the two library services into an ILRI-wide InfoCentre. Much more internal and external content is available – across a range of systems – than ever before. Teams have been built. The libraries have become attractive physical spaces. New collections of knowledge objects have been developed. Outreach to local scientific communities in Ethiopia and Kenya is valued. It is essential however that the various knowledge repositories and collections 'come together' and offer a complete record of the research output. Attention is also needed to boost the 'connecting' of people and information, through virtual platforms and greater use of the physical spaces as meeting areas.

**Key conclusion 2: Information and knowledge oversight.** Explore ways to extend the reach and influence of the InfoCentre beyond its own systems and services: To be an enabler of other information handlers ILRI as well as an independent actor. There is much innovation and action in these areas happening across the Center, much that is not 'controlled' or even influenced by the InfoCentre. Letting many flowers bloom encourages innovation and creativity; ILRI would benefit from more integrated/holistic views and 'joined up' thinking that leverages opportunities ILRI-wide. A stronger integration is necessary not only within the "information area" but also with research projects, which are already setting up their own workflows and systems in this area. Applying some knowledge management approaches like communities of practice could produce positive results.

**Key conclusion 3: Open and accessible.** The hard work of the past years has made more and more of the Center's research outputs available. They are more visible than before. Many, especially those published by third parties, are not as accessible as they could be. In line with a commitment to produce IPGs, the Center needs to move quickly to make its outputs openly accessible. Policies are needed to license ILRI's own outputs to encourage re-use, to require scientists to retain licenses so they can re-use and make accessible their published outputs, and to transform some of the document collections into state of the art open archive repositories that help the content to 'travel.' Some further actions in this area are listed in Annex 3 where the CGIAR ICT-KM Program is developing a 'Triple A' framework to guide Centers and programs.

**Key conclusion 4: Integrate for re-use.** There are many collections of knowledge, information and data at ILRI, in various states of accessibility. Most have been developed independently of one another and it is difficult to exploit the synergies, or even to combine the various services in unified ways. Gaining a better oversight is highlighted in conclusion 2. Here we recommend that ILRI create an integrated platform for its knowledge production. This should include the collection and production of scientific data, the discussion of scientific results, the communication of scientific results, documentation and formal publication. Emerging 'social' tools on the web are built around platforms that 'mash up' different types of content, allowing individual users to create their own products from various streams of knowledge. ILRI needs to optimize its various content streams so it, and its partners, can similarly benefit from such approaches to information and knowledge management. Beyond aggregation and re-presentation, we are talking of repurposing, targeting, synthesizing, and re-using. Each knowledge product should be capable of re-use.

**Key conclusion 5: Anchor services in the science** The InfoCentre is sometimes perceived to provide a range of rather general services to staff and partners (though people with very specific requests do get very specific support). It is important to strengthen the link between scientists and information specialists so that targeted services can be established. Research projects need to themselves embed communication and information into their plans and activities. InfoCentre staff should be directly involved to better embed/integrate information activities into science activities. This implies a different mix of targeted services, with fewer general services. There needs to be a judicious mix of 'just in time' connecting and alerting services as well as 'just in case' collecting efforts. This has major implications for skills mixes, and mixing of teams virtually.

**Key conclusion 6: Communicate along the continuum.** We are seeing a revolution in science communication and scholarly publishing. Beyond the whole open access paradigm discussions, there is increasing recognition of the various kinds of knowledge that need to be connected with and put to use (viz 'innovation works' initiative at ILRI) and the emergence of a new science communication toolset. The InfoCentre has mainly focused on the 'validated' formal outputs of research (publications, reports, articles etc). As more 'social' media (blogs, etc) infiltrate the community, it will be important to also enable and document and add value from information and knowledge generated along the whole continuum from 'validated' outputs thru 'social' semi-structured communications to face to face interactions. Similarly, tools and approaches may need to be developed to support the perhaps more chaotic and informal knowledge co-creation with partners in innovation systems. This is perhaps not an immediate issue, but will grow over time.

*In general, the InfoCentre needs to increase the speed of its transformation from units that mainly gave access to local holdings (collections) for resident users (a partly 'physical' service) to a mainly 'virtual' service that links, integrates and connects global resources on a targeted set of livestock-related issues worldwide.*

*It needs both virtual and physical 'footprints' and to be able to help mobilize all the available knowledge of ILRI, its partners and networks, on different priority issues.*

*It needs to better engage all along the science-information-communication continuum so this knowledge is put to use through science, policy advocacy, and capacity strengthening. It needs to be both collector and connector, with perhaps greater emphasis on connecting.*

Emerging from these conclusions, we suggest 20 concrete actions that can be considered (see page 15).

## ***Wider and Institutional Context***

Since ILRI is not an island, we here identify some key contextual issues that frame the review and which we expect will shape future demands put on the InfoCentre.

- CGIAR reform process. The principles in various change proposals have been accepted and are likely to be worked out in 2009 and 2010. One aspect is that various 'common services' in areas like information and knowledge may emerge. In terms of this review, this provides some uncertainties, but also opportunities for ILRI information and knowledge sharing functions. In the short term, actions are needed at the Center level, with a close eye to system developments and emerging areas for synergies and efficiencies.
- International Public Goods. The overall CGIAR vision sees the Centers carrying out high quality IPG research whose benefits spillover across international boundaries. The key notion for this review is that research outputs 'need to be able to travel'. They do not do this on their own, attention is needed to their availability, accessibility and ultimately their applicability. These notions are being worked on at CGIAR system level by the ICT-KM Program (see annex 3); they are closely linked to ideas from ILRI's own 'innovation works' initiative.
- Research to development continuum. Doing high quality science and generating outputs is not sufficient to have development impacts, on the ground, in labs, over negotiating tables and in offices. A center like ILRI needs to work with other actors or agents of change. The implication for this review is that the institute's processes and outputs must, at the least, be widely and easily accessible for others to apply them.
- Innovation systems approaches. In recent years, ILRI and others have given great priority to research based on more system perspectives in which development impacts are seen to result from the actions of many different actors, in networks and value chains. For this review, such approaches are important as they explicitly recognize that multiple actors, perspectives and knowledge sources need to be drawn on, engaged and catalyzed. ILRI operates in systems comprising others.
- e-Science. Globally, there is a growing trend for scientists and teams to take on roles in which they themselves manage information, share knowledge, and communicate with peers and other audiences. The implication for this review is that 'central' information facilities are not the only actors in this area. Information and knowledge management improvements need to call on institute-wide actions and capabilities – and formal structures like an InfoCentre need to be strong enablers and connectors as well as strong do-ers and collectors.
- ILRI Strategic Vision. In its 2009-2011 Medium Term Plan, ILRI sets out its work "at the crossroads of livestock and poverty." It works globally - Africa and Asia. It partners strategically "to generate and synthesize knowledge and approaches that can help poor people"; it "seeks to influence changes in culture and process as well as technologies which support innovation at all levels"; it "provides leadership in the global research community" in its mandated areas. For this review, it is important that information management helps to achieve this global reach, that it supports partnerships, that it enables both generation and synthesis activities, and that investments maximize opportunities from virtual, human, and physical 'infostructures.'
- ILRI Ambitions. According to the Director General, ILRI focuses on 7 overall 'development challenges.' It seeks to be a global one-stop shop on these as well as on the themes on which it works. In addressing these, it needs to be able to 'pick' and synthesize relevant science from around the world, be able to influence others, transcend borders, tap into and leverage wider networks, connect location specific realities with international public goods, and generally become a 'knowledge platform' (or enabler of these). For this review, the implications are that knowledge and information from many sources, also the institute, need to be catalyzed and mobilized, synthesized and organized, and channeled and targeted to best effect (internally and externally). Integrating knowledge types and sources and ensuring re-use is important. It is also important to attain global visibility and footprints in some areas.

## **InfoCentre Origins and Current Work**

The current InfoCentre at ILRI emerged in 2003-2004, partly from a review of the Institute's communication activities (July 2003) that recommended that ILRI transform "the Library into an Information Center." The 2003 report provides a good assessment of information management challenges and opportunities in ILRI, as well as some of the strengths and weaknesses of the then library services.

The 2003 team recommended that *"the information center currently being developed to provide online access to information resources in the ILRI library in Addis Ababa is commendable and should be pursued to completion. Remote access to books, journals, and other resources by users within and outside of ILRI will greatly enhance the utility and benefits of these resources. Furthermore, the Online Information Center should (virtually) integrate the services of the Nairobi and Addis libraries that have up to now been de-linked to a great extent."*

Furthermore, it anticipated that the 'ILRI library and information center' should: work closely with the institute's publications department; have an historic collection of ILRI's intellectual products and be prepared to provide physical or electronic access [to this]; have a role in building the ILRI web site [particularly to increase accessibility and visibility of outputs]; and provide *customized*, user-oriented services to assist researchers and staff get information quickly, accurately, and comprehensively.

In October 2006, the 2<sup>nd</sup> ILRI External Program and Management Review stated that "the underlying value of the Information Center [for research staff] is to provide easy and adequate access to publications, reference materials and a wide-range of scientific and professional journals, with much of the material available online... The Information Center in Addis Ababa plays an important role in capacity strengthening by its easy access to students and others. The Panel commends the openness and accessibility in Addis Ababa and encourages similar developments in Nairobi."

The stated mission of the InfoCentre is to "use updated information and communication technologies to make available the wealth of information accumulated over the last thirty years by ILRI and create a hub of information exchange on livestock research and development in tropical developing countries."

The InfoCentre maintains two branches, in Nairobi and Addis Ababa. In principle, both campuses provide a single service, with some division of tasks and areas of focus differentiating the precise activities carried out. Its objectives are:

- Meet the needs of ILRI scientists and partners for information and help them make the most time- and cost-effective use of internal and external information resources.
- Repackage ILRI's research results and technologies in collaboration with the Publications Unit, Web Team and ILRI scientists for dissemination to external clients, partners and stakeholders.
- Deliver the best possible information services to extramural users, using net-based technologies.
- Contribute to the development of CGIAR-wide information management activities.
- Develop better integration of information activities within research projects.
- Provide information support to global research on livestock, food and environment.
- Collaborate with relevant national, regional and international organizations to facilitate global dissemination of information and share resources and knowledge.
- Provide training in information management and the use of Information and Communication Technologies (ICT) to enhance information handling capability of NARS information workers.
- Establish policies and procedures to maintain, use and distribute the digitized/printed information sources.

Services and Activities are described in detail in Annex 2

## Issues and Challenges

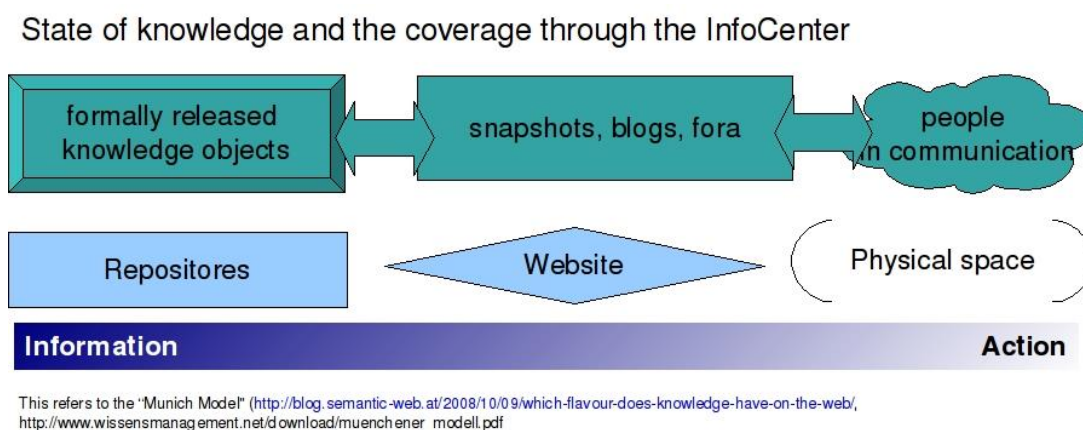
### Positioning the InfoCentre

The InfoCentre is one of several tools or services that ILRI and its staff use to engage with information and knowledge. Looking at the overall positioning of these services, also in relation to what others are doing and will be doing, can help to set priorities.

In general, organizations and individuals employ different strategies to acquire and manage information. Some employ a **'just in case'** approach where all kinds of information is collected, stored, and made available for the day it will be used (hopefully). Others employ a **'just in time'** strategy where systems are put in place to quickly find what's needed, when it's needed. The former approach tends to have some redundancy built in; the latter could mean that essential information is missed, ie it is not picked up, or can't be obtained in time. It may be more risky.

ILRI probably requires a mix of both approaches. It needs to regularly scan, assess and monitor key information and knowledge sources – just in case something useful comes by. It also needs access to tools and systems and capacities that allow staff to quickly find high quality and relevant information when needed. It needs to work out where best to locate these capacities; combining actions that empower individuals with mechanisms that enable and deliver services.

Another approach is to consider the forms in which knowledge materializes in the process of scientific research (see figure below). Libraries were traditionally mainly involved in the left part of this diagram and only in the limited way of collection management. The ILRI InfoCentre has gone further in also supporting the right part by offering physical spaces for discussions and meetings. The work of the InfoCentre is already linked to the website and the Intranet. Further integration of these different areas can enhance efficiency and effectiveness of the work of the InfoCentre.



Another helpful approach identifies two main strategies to 'manage' knowledge<sup>1</sup> :

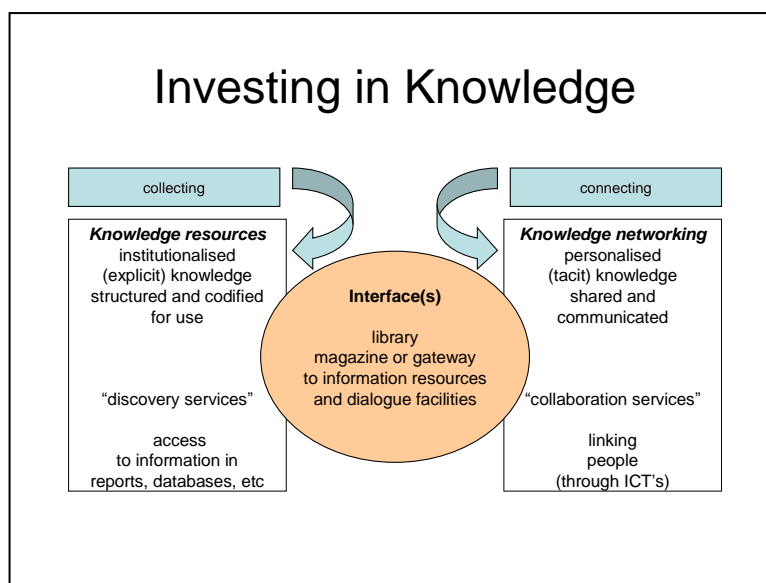
- 'Codification', in which knowledge is described and warehoused ready for re-use, with a main focus on technologies.
- 'Personalization', in which knowledge in people is shared and communicated, with a main focus on processes.

<sup>1</sup> Hansen, M.T. et al. 1999. What's your strategy for managing knowledge? Harvard Business Review, March-April: 106-118

These are often referred to as 'collecting' and 'connecting' approaches.

Both are usually necessary. However, the emphasis of a particular service may vary from being totally about collecting (an archive for instance) to one that is totally about connecting (Skype for instance), with all variations in between.

Depending on demands and ambitions, the trick is to position the service most appropriately: In the center, to the right or to the left. The outputs, activities and skills needed to carry them out will vary accordingly.



The impression at both campuses is that the integration of the InfoCentre into the broader context of publishing and Information management is ongoing. However, library services are not fully integrated with publishing workflows, database management and the web activities.

The InfoCentre needs to increase the speed of its transformation *from units that mainly give access to local holdings for resident users (a partly 'physical' service) to a mainly 'virtual' service that links and integrates global resources on a targeted set of livestock-related issues worldwide.*

## The ILRI IKM landscape

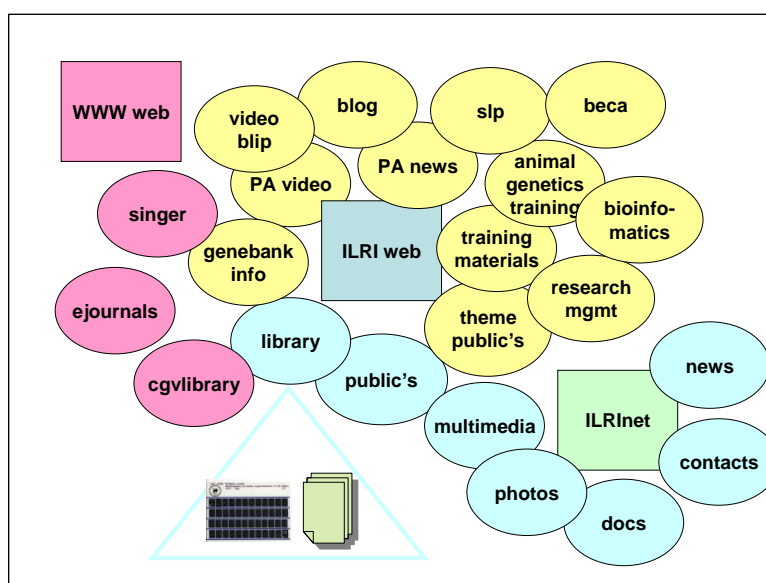
Part of positioning is to map and be aware of other similar services and activities. The overall picture at ILRI is complex. Content collections and databases are everywhere.

The picture on the right shows an incomplete snapshot from December 2008.

It shows many collections, some organized some not, each searchable in parallel, relatively little integration between and among them.

This shows that the InfoCentre has no monopoly in managing the organization access and dissemination of knowledge at ILRI.

What is needed are guidelines and principles that help to glue all these resources and systems together, and to make a seamless access to all of them possible.





We will explore 3 examples in a little more detail.

### **Beca Hub**

The informatics group at the Beca Hub is creating an integrated system to manage knowledge repositories and knowledge exchange within the Beca facility. At the moment they are creating a separate infrastructure (separate network) to be able to store and move large data amounts, i.e. from gene sequencing. They are speaking about terabytes of data.

The envisaged system (collaborative/community/creative e-Research) contains components for lab management, project management, repository management, high power computing, training, virtual server delivery and server management. The focus of the systems currently has an internal focus, within the Nairobi campus. The learning system should deliver the possibility to do courses wherever you are in the campus. They are evaluating Moodle and some other learning platforms. Accessibility from outside is a connectivity problem and could be resolved as soon as the new fiber cables are available.

The overarching "leitmotif" is collaboration and sharing. The system aims to have all working procedures and also preliminary results shared within the researcher community.

They are testing open source tools for the single components, using a commercial software called "ClearSpace" as the core application. Clearspace is a kind of professional facebook with a rudimentary document management system. It contains microblogging, facebook-like elements, and the possibility to follow the work of researchers. For project management, they are evaluating the Concourse suite. Laboratory management software from labkey and bikalabs.com has been chosen.

The ClearSpace platform is already running in test. They are interested in further expanding this to datamining and prediction systems in collaboration with Google.

### **AGTR**

The AGTR System wants to be a one stop access to animal genetics and breeding information. It was initially developed as a CD product, and then ported to a website. The system links to a world of outside resources, but is not integrated with the resources of the InfoCentre.

### **ILRI Gene banks**

The gene banks hold passport information on different resources. Data are kept in FoxPro databases. Also factsheets are produced, but the factsheets are produced manually not by the database system. The Specimen data are mirrored in Singer. The biggest problem for the use of the databases and the factsheets is the internet connection.

They also collaborate in tropical forages ([www.tropicalforages.info](http://www.tropicalforages.info)) where much more extended information is produced. The focus is also to have best practices published how to set up gene banks.

## Making ILRI's knowledge available and accessible

Conversations with staff suggest that the 'full' content of many ILRI research outputs are not available (within ILRI), nor easily accessible to wider audiences. The primary reason is that permission to make outputs - like articles in journals – accessible has not been obtained from publishers.

A concrete example is the Systemwide Livestock Program where Bruno Gerard provided the review team with a list of 51 publications produced between 1997 and 2008. Sixteen of these (some 31%) could then (December 2008) be identified as openly online accessible on the web – on the SLP or other collaborator website. The rest (69%!) could not (yet) be found online or were in limited-access journals.

We expect this situation to be representative across most of ILRI (it is similar in other CGIAR Centers).

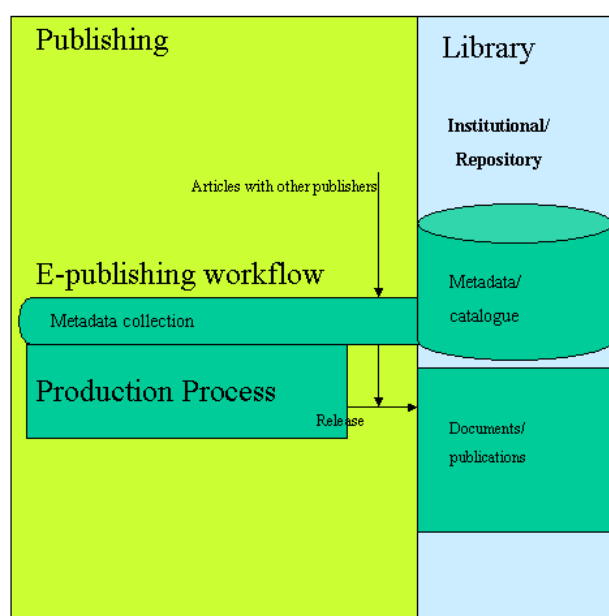
Setting up complete, and publicly accessible, institutional repositories would be a good step in addressing these problems. In principle, all published ILRI outputs of technical or scientific importance should be collected and made available in full electronic form within the Center. We recommend setting up an institutional repository, that follows international standards, for this purpose. It is especially important to capture completely the production of articles by ILRI researchers in scholarly journals. Permissions should be negotiated with publishers, using widely-accepted models, to be able to make these outputs openly accessible to ILRI audiences and partners. Beyond ILRI's own staff, influence should be exerted on ILRI partners and co-authors to follow the same approach.

The repositories should contain metadata and the full text/material of the information/knowledge objects. They should expose these objects using agreed standards (openURL, OAI-MHP, CG-Application profile) to facilitate access and dissemination.

The publishing process of the institute itself should feed the institutional repositories. The publishing process will have its own repositories for the production process of the documents. This process will also start adding metadata to the publications using a CGIAR Application profile/ILRI KM-Ontology for documents/publications. With the release of the publication it should go into the centre repository under the custodianship of the library. The metadata production should be organized in such a way that the metadata produced during the production process will arrive seamlessly in the repository. The publishing and the library units need to jointly coordinate the management and production of these metadata.

It is very important to feed articles published in collaboration with others into this workflow. No article should be cleared for publication before a record in the catalogue has been created, and a copy of the original version of the article has been submitted to the institutional repository.

The schema on the right shows how the process of publishing and institutional repository building could be managed.



Beyond institutional repositories, it is important that information on ILRI outputs is available through other services and web spaces frequented by important ILRI target audiences. The time when all people come to a central web site is over; the content of a publisher like ILRI needs to 'travel' and be easily found.

ILRI outputs are already contributed to AGRIS, the global database maintained by FAO. No data on usage of these materials is available so we cannot ascertain how useful this is. ILRI outputs are also indexed by CABI, again, we are not sure if this is complete and whether it results in good visibility of ILRI outputs. It would be a useful exercise to identify which services should be targeted to receive – and index – ILRI outputs, and how well they do this.

A well-designed institutional repository should be able to facilitate the production of the necessary data other services need to harvest ILRI information. Until, and if, a new repository is created, it is vital that existing databases of publications are configured to produce the necessary outputs for others to re-use.

There is also a whole new world of 'social' applications emerging on the Internet – blogs, wikis, RSS feeds, youtube, etc. When used alongside current public awareness efforts, these seem particularly well-suited to broaden the footprint of ILRI research activities, right along the research process. They encourage more frequent communication, in a wider range of channels, and have the potential to reach out with partners in different ways. We recommend that ILRI investigate the potential uses of these tools across the institute, providing awareness and training to staff, and introducing more agile and interactive communication tools to the portfolio.

### **Accessing global livestock knowledge**

Making ILRI's knowledge widely and properly accessible is an important role of the InfoCentre. It also provides access services to ILRI staff, Campus users, and other partners so they can keep on top of the information they need in their work.

It does this by subscribing to journals, identifying and acquiring information materials, organizing and indexing these, providing alerting services, and answering questions posed. Maintaining physical access to some types of information is also part of the service. Much is done electronically. There is also a small number of 'walk in' customers who make use of the physical materials and/or the online search facilities (to both ILRI content and to the wider Internet).

Research staff generally expressed a high satisfaction with the availability of this scholarly content. The InfoCentre currently gives its staff online access to 115 Journals. Of these, 84 are also accessible in print form in Addis and a further 14 in Nairobi. InfoCentre data shows that the electronic versions of these journals were used about 125,000 times in 2008 (derived from web statistics). In 2008, this cost USD 171,530 - nearly 30% of the overall budget of the InfoCentre. This number is high compared to the subscription budget in other CG centers, but it is low compared to the reported 125,000 accesses. If the average price of downloading a journal article on a page/view basis is 40 USD, the expenditure would have been 5 Million USD. But it has to be remarked that the number of 125,000 accesses would need further investigation. Do they correspond to 125,000 Journal articles downloaded? It is highly improbable that ILRI researchers will have read this number of articles in one year (more than 600 per researcher). The 125,000 accesses also includes guest access in the InfoCentre (from the more than 2200 registered users in Addis alone) and perhaps some access from other campus users.

This is an area where the CGIAR information managers and libraries have worked together to negotiate consortium access to core journals, across the CGIAR. Some Centers however seek additional resources, such as web of science, that are not available to a consortium. Continuing with the consortium seems to be sensible, so long as the needs of ILRI are covered at a good price. Other options also need to be monitored – in Kenya and Ethiopia, there are national consortia of academic institutions that could provide some opportunities; there may be some specific livestock-oriented information services that could be accessed through a global alliance of actors in this area; other opportunities may emerge at CGIAR level.

## **Open spaces for knowledge exchange**

Walking into a library was once the only way to be sure of accessing information. Nowadays, nearly everyone expects to find information at the click of a mouse. Nevertheless most libraries and also the ILRI InfoCentre have remained open to the public, with their books and journals regularly displayed on the shelves.

It is evident that most researchers at the campuses do not make heavy use of the physical information collections (but they appreciate the space). Both library spaces are used heavily by outside users – in Addis Ababa there are some 2,500 registered users. Conversations with some Ethiopian NARS visitors suggest that access to the 'libraries' – the physical and virtual collections, the study space, and the telecentre possibilities - is highly valued.

The question is whether the libraries should be reorganized to provide a totally virtual service without any open spaces or facilities for visitors. This change could enhance efficiency, allowing library staff to concentrate on preparing and delivering better virtual services.

This approach would however lead to the loss of one of the few spaces where people willingly meet directly and informally. Face to face communication is still essential, and institutes like ILRI should encourage this as part of its strategy for 'knowledge management.' The potential of the libraries as open spaces is large. They should become places where users do not just go to retrieve a journal or a book, but to hold discussions with colleagues, look at exhibitions, hold meetings or simply drink coffee together. It is not reasonable to see crowded, ugly coffee bars and beautiful, empty libraries. In this direction, the ILRI InfoCentre has gone very far. The libraries are being turned into places of meeting, and exchange of ideas and resources. The physical spaces have become connection centers as well as collections of information resources.

Recognizing that ILRI – and indeed co-located CGIAR staff – increasingly rely on virtual collections and services, we recommend to continue to provide attractive physical spaces for people to meet. Indeed, even more could be done to make more use of the spaces, and perhaps to reduce even further the physical collections. The 'old' ISNAR collection in Addis seems to be hardly used and indeed may no longer fit the work done by the 'new' ISNAR program of IFPRI. There may be opportunities to discard physical collections from the Nairobi campus.

Through this approach, the campuses are already to some extent opened up to the national science and development communities. We recommend to continue to provide access services to visitors, providing access to computers, good Internet access, and access to information collections. This seems more pressing, and more used, in Addis than in Nairobi and perhaps reflects the different national situation in terms of connectivity and ICT policies. But on both campuses, there is a strong argument to reinforce the connections between ILRI and its hosted institutions, and between ILRI and the local NARS. This reduces the perception of ILRI as being isolated ivory towers, builds goodwill, and has the potential to enrich dialogue and learning among ILRI and other communities. In terms of resource allocation and costs, it will be important to ensure that the InfoCentre service is not pulled too far away from its other core tasks (serving ILRI and its partners worldwide).

## **Platforms, infrastructure, standards, technology**

The InfoCentre uses the InMagic Library Management software to run its library and publications databases. The software is used to manage the catalogue, other library databases, and also, in part, databases outside the library. The functionality of the built-in Inmagic Webserver is used to query the catalogues and to render information from the catalogues.

We have noted in ILRI and in other CGIAR Centers that it is difficult to integrate Inmagic databases with other systems and that it can be difficult to adapt Inmagic forms and web pages to the specific needs of an application.

As a consequence, the full capabilities of Inmagic are not exploited, and workarounds are often applied to integrate the Inmagic DBs into the web environment. From the evaluator point of view, there are no advantages in the use of Inmagic for the management of the catalogues and library databases, for the library or for the web developers at any of the three centres.

This conclusion, however, does not imply that the software should be immediately abandoned. Managing bibliographic (text) databases with MSSQL is often appealing at first sight because of its easier data management, but it is not efficient for extended and scalable information retrieval. The built-in authority control feature that Inmagic has would need to be restored with another system.

The software platforms for other services and systems are partly Microsoft-centred, or in the case of the website and the intranet they are based on an openSource product from the LAMP family (Joomla). Completely different platforms have been chosen in the development of an IKM infrastructure for the Beca Hub.

There is a danger at the moment that ILRI develops a multitude of platforms that are not interconnected with each other. It can be said that there is no principal need for a common technical platform to achieve interoperability. This can be achieved through a set of common standards (ontologies, metadataschemas, vocabularies) But a serious discussion about the efficiency of investing into too many different systems should take place very soon.

## **Catalyzing IKM at ILRI**

Research institutions like ILRI increasingly recognize that information and knowledge are core assets that need to be nurtured and managed. As has been mentioned earlier, this requires a careful mix of approaches and skills and tools blended to achieve optimal results in terms of knowledge creation, preservation, access, sharing and dissemination.

It is increasingly a set of tasks that should engage everyone who does or supports research and development.

Attitudes and skills of staff and management are critical to ensure that the various tasks are done as planned and that desired behaviours are encouraged and rewarded. Thus, innovation systems thinking of the type encouraged at ILRI requires that multiple sources of knowledge are recognized as having value, hence staff need to be open to these multiple sources and have access to tools and skills to find and apply it. Similarly, while traditional peer reviewed articles are widely recognized as an indicator of quality, it is important for ILRI's developmental aims that research results are also communicated in other ways that increase the accessibility of the messages, and ultimately the chance they will be taken up. Staff need to be aware that an article alone is not sufficient (though it may achieve peer recognition); they also need guidance and support and perhaps new skills to become better research communicators.

What does this imply?

First, all ILRI staff engaged in research have important information and knowledge 'management' roles. These need to be recognized and reinforced.

Second, information and communication 'systems' are needed, and already exist, all across the institute. These benefit from proximity to the science; they suffer from fragmentation. To avoid problems, they need to be created and supported under the umbrella of ILRI-wide policies and guidelines and standards that support and enable the systems to be mobilized to serve the whole of ILRI.

Third, closer collaboration and synergies are needed between people working with information, data, knowledge and communication. One of the tremendous potential added values of ILRI is that the various knowledge bases can be brought together and made accessible in many

innovative and creative ways (many that we do not know about yet!). This could lead, for example, to co-locating InfoCentre, public awareness/communication, and other related staff.

Fourth, the InfoCentre will need core staff that take on certain IKM tasks for the institute AND are able to catalyze, support and coordinate efforts of other ILRI staff. This implies a more strategic, networking and foresight role, introducing innovations, connecting ILRI with others, and providing spaces for discussion and learning.

Fifth, the current staff of the InfoCentre will require some additional skills. The existing “traditional” library knowledge should be extended in at least three main directions:

- Mobilize greater subject knowledge about ILRI work and activities. This necessary for the information services to better serve the precise needs of different parts of ILRI, as opposed to providing a general service. This could be through new recruitment or through greater collaboration with colleagues in other IKM functions (see above).
- Knowledge of web applications, especially at the interface of content and technologies. The InfoCentre staff support and manage a range of databases that serve collecting purposes; they need to be expert in some emerging social connecting applications and how they can be used by ILRI. It is important that they be able to work with different types of multi-media content on the web (images, video, text, data...), integrating and re-publishing it. These skills are typically today referred to as social media and/or web 2.0.
- Working with electronic ‘publications’. It is essential that the existing outputs as ‘publications’ are deposited in institutional repositories, that article copyrights, licenses and permissions are managed, that authors are aware of possibilities, and that the full range of opportunities for this content to travel is grasped.
- Each of these requires a lot of enabling and facilitating as well as staying abreast of developments in several areas.

## ***The InfoCentre of the Future***

We identify 5 main services that the InfoCentre plays:

1. A 'content' service. First, to ensure that the knowledge ('products') created and co-created by ILRI – along the research cycle – are documented, archived and made permanently available; second, that this knowledge is made widely and easily accessible to ILRI stakeholders and partners, providing for its wide visibility and optimizing it for re-use; and third, that relevant 'third party' knowledge from partners and others is brought together for easy use by ILRI, its partners and the wider communities with interests in the issues of concern to ILRI. Two main challenges are: first, to integrate and influence the various knowledge 'collections' across ILRI so they add value; second, to guarantee a much higher level of open access to the various collections.
2. A 'connectivity' service. The InfoCentre provides valuable opportunities for researchers and students in its host countries to make use of its advanced facilities and services to connect to the Internet and knowledge. This is a very low cost service that makes ILRI facilities and resources accessible to local stakeholders, generating goodwill and building bridges.
3. A 'dialogue' service. The InfoCentre facilities in both campuses, particularly Addis Ababa, are increasingly used to host small meetings and discussions and to facilitate informal knowledge sharing among CGIAR staff and other development actors. There seems to be much potential to expand and build on this.
4. A 'public awareness' service. While ILRI has staff dedicated to communication, the InfoCentre, particularly through its spaces to interact, provides opportunities for ILRI and other CGIAR centers to showcase and promote their activities. These can serve to reinforce partnerships and relationships important for ILRI staff and partners. Closer collaboration with other services doing these tasks in ILRI is essential.
5. An 'Innovation and enabling' service. Information, knowledge and learning are becoming critical assets in institutional innovation systems and networks. They are less and less the responsibility of central groups to take action, they are more and more embedded in activities of people doing science, science coordination and management. People need help in this emerging area – help to understand and take advantage of emerging possibilities associated with, for example, e-science, e-collaboration, and the social web. The InfoCentre already supports different groups to build web collections and databases; there is likely to be a growing demand for strategic enabling advice where the InfoCentre brings and tests new ideas and approaches, helping others connect with new ideas and taking advantage of new toolsets.

These 'services' bring different benefits to the organization and are likely to provide most benefits when 'bundled' together, also with other related activities in ILRI.

We draw six main conclusions from our review:

**Key conclusion 1: Knowledge sharing catalyst.** Continue to develop the InfoCentre as a catalyst for knowledge exchange across ILRI and its partners. Excellent progress has been made to transform the two library services into an ILRI-wide InfoCentre. Much more internal and external content is available – across a range of systems – than ever before. Teams have been built. The libraries have become attractive physical spaces. New collections of knowledge objects have been developed. Outreach to local scientific communities in Ethiopia and Kenya is valued. It is essential however that the various knowledge repositories and collections 'come together' and offer a complete record of the research output. Attention is also needed to boost the 'connecting' of people and information, through virtual platforms and greater use of the physical spaces as meeting areas.

**Key conclusion 2: Information and knowledge oversight.** Explore ways to extend the reach and influence of the InfoCentre beyond its own systems and services: To be an enabler of other information handlers ILRI as well as an independent actor. There is much innovation and action in these areas happening across the Center, much that is not 'controlled' or even influenced by the InfoCentre. Letting many flowers bloom encourages innovation and creativity; ILRI would benefit from more integrated/holistic views and 'joined up' thinking that leverages opportunities ILRI-wide. A stronger integration is necessary not only within the "information area" but also with research projects, which are already setting up their own workflows and systems in this area. Applying some knowledge management approaches like communities of practice could produce positive results.

**Key conclusion 3: Open and accessible.** The hard work of the past years has made more and more of the Center's research outputs available. They are more visible than before. Many, especially those published by third parties, are not as accessible as they could be. In line with a commitment to produce IPGs, the Center needs to move quickly to make its outputs openly accessible. Policies are needed to license ILRI's own outputs to encourage re-use, to require scientists to retain licenses so they can re-use and make accessible their published outputs, and to transform some of the document collections into state of the art open archive repositories that help the content to 'travel.' Some further actions in this area are listed in Annex 3 where the CGIAR ICT-KM Program is developing a 'Triple A' framework to guide Centers and programs.

**Key conclusion 4: Integrate for re-use.** There are many collections of knowledge, information and data at ILRI, in various states of accessibility. Most have been developed independently of one another and it is difficult to exploit the synergies, or even to combine the various services in unified ways. Gaining a better oversight is highlighted in conclusion 2. Here we recommend that ILRI create an integrated platform for its knowledge production. This should include the collection and production of scientific data, the discussion of scientific results, the communication of scientific results, documentation and formal publication. Emerging 'social' tools on the web are built around platforms that 'mash up' different types of content, allowing individual users to create their own products from various streams of knowledge. ILRI needs to optimize its various content streams so it, and its partners, can similarly benefit from such approaches to information and knowledge management. Beyond aggregation and re-presentation, we are talking of repurposing, targeting, synthesizing, and re-using. Each knowledge product should be capable of re-use.

**Key conclusion 5: Anchor services in the science** The InfoCentre is sometimes perceived to provide a range of rather general services to staff and partners (though people with very specific requests do get very specific support). It is important to strengthen the link between scientists and information specialists so that targeted services can be established. Research projects need to themselves embed communication and information into their plans and activities. InfoCentre staff should be directly involved to better embed/integrate information activities into science activities. This implies a different mix of targeted services, with fewer general services. There needs to be a judicious mix of 'just in time' connecting and alerting services as well as 'just in case' collecting efforts. This has major implications for skills mixes, and mixing of teams virtually.

**Key conclusion 6: Communicate along the continuum.** We are seeing a revolution in science communication and scholarly publishing. Beyond the whole open access paradigm discussions, there is increasing recognition of the various kinds of knowledge that need to be connected with and put to use (viz 'innovation works' initiative at ILRI) and the emergence of a new science communication toolset. The InfoCentre has mainly focused on the 'validated' formal outputs of research (publications, reports, articles etc). As more 'social' media (blogs, etc) infiltrate the community, it will be important to also enable and document and add value from information and knowledge generated along the whole continuum from 'validated' outputs thru 'social' semi-structured communications to face to face interactions. Similarly, tools and approaches may need to be developed to support the perhaps more chaotic and informal knowledge co-creation with partners in innovation systems. This is perhaps not an immediate issue, but will grow over time.



We recommend 20 specific actions:

1. Develop guidelines and policies for information systems so they integrate different knowledge bases and allow this knowledge to be re-combined to create new services and products.
2. Ensure that ALL formal outputs are captured in a state of the art institutional repository or repositories that can be used to generate content and services across the ILRI web and beyond. This could include an online 'e-store' of all outputs, as permanent archive. Using as open formats as possible. Migrate all documents/outputs on the website (at least 1500 now) into this repository with other publications and outputs; use these repositories to populate parts of web sites. Encourage or enforce the deposit of outputs by authors. Aim for a 'central' complete repository of knowledge objects / until then, work on the guidelines and procedures and policies to increase quality of existing collections.
3. Improve 'findability' of content on websites so search results give 'all' types of outputs and from all collections.
4. Support development and 'smart' web 2 enabled value-adding knowledge aggregation and synthesis products (like AGTR); Ensure that content in databases and on the websites can be accessed and subscribed to via RSS feeds (so they can travel).
5. Use a single content management system as engine for corporate intranet and web sites. Manage permissions and assure interoperability of the website and Intranet CMS with other systems used by researchers to store and evaluate data or for communication. Guide users so they know the level of validation of different content on the web sites (none, light, heavy...)
6. Develop a light weight Ontology (themes, scientists, projects, topics, uses.....) that will be the glue to bind different ILRI knowledge objects on website and repositories together. Ensure that content in different collections is 'tagged' consistently to allow different 'reports' of outputs to be produced: EG: by theme, by scientist, by year; for science council performance reporting system, by project, by donor, by development challenge, etc.
7. Work with staff and publishers to negotiate open access to as many formal peer-reviewed outputs of ILRI staff and partners as possible. Need to define scope for this – outputs of staff versus outputs paid for by ILRI...
8. Ensure that ILRI publishing policies, at the least, license all ILRI's own electronic and other outputs to travel as far as possible while retaining recognition of ILRI's (or its staff's) creative contribution (creative commons, open access, public domain?)
9. Push for an effective high-level CGIAR-wide strategy to rationalize and improve access to scholarly journals and other sources of knowledge and information. A collaborative action with FAO or other major actors on this should be considered.
10. Introduce 'social' web 2 applications as part of the research communications mix. Run awareness and training workshops for staff on new web2 and social applications; then encourage and reward experimentation.
11. Examine personnel and other policies to adapt them to recognize and encourage and reward other forms of research outputs than journal articles (intermediate as well as final).

12. Use the physical spaces as part of 'open ILRI' initiative with local scientific communities, help nourish and catalyze campus and national 'innovation systems approaches.' Continue to provide info-access facilities for registered users in Addis and Nairobi, as no/low extra cost public good with important corporate social responsibility, public awareness and local benefits.
13. Increase multiple knowledge sharing uses of the physical spaces. Informal face to face; more formal meetings; series of knowledge sharing events/seminars and PA events.
14. Explore with other Centers if and how the InfoCentre locations could be part of a network of CGAR-wide information/knowledge delivery points at physical locations, with other Center doing the same for ILRI.
15. Extend skills mix of InfoCentre staff, see page 12.
16. Review the physical journal and book collections. Much of 'old' ISNAR to be weeded and discarded and space re-used; perhaps same for old ILRAD and old ILCA. Need to ensure there is electronic archive of key corporate outputs.
17. Digitize the microfiche collection to ensure permanent electronic access to this unique collection.
18. Where ILRI contributes content or services to a joint initiative, such as AGRIS, CABI or the CGVlibrary, demand reports on usage and benefits, especially of the ILRI contribution.
19. Consider extending the 'InfoCentre' to be a virtual ILRI-wide (at least) 'InfoNetwork' (or 'CommsNetwork') of people working across the organization on a bundle of related tasks (across internal and perhaps external boundaries). This could include co-locating different information, communications, and knowledge people to encourage even more synergies and collaboration and joint activities.
20. Contribute to the CGIAR ICT-KM and CIARD initiatives to document different promising and proven research accessibility pathways.

## **Annex 1: Terms of Reference**

*The ILRI InfoCentre is a reference and information support arm of the International Livestock Research Institute (ILRI), a non-profit and non-governmental research organization with headquarters in Nairobi, Kenya, and a second principal site in Addis Ababa, Ethiopia, as well as offices in other parts of Africa, Asia and Latin America. By meeting the information needs of researchers and all users, the InfoCentre facilitates the activities of ILRI which works at the crossroads of livestock and poverty, bringing high-quality science and capacity building to bear on poverty reduction and sustainable development for poor livestock keepers and their communities. Through its information supply services, it also assists ILRI in realising its vision of 'a world made better for poor people in developing countries by improving agricultural systems in which livestock are important.'*

Information plays a vital role for ILRI and the way it conducts its research.

The Information services division and its InfoCentre team is the unit in ILRI that created and maintains the InfoCentre with its two locations in Nairobi, Kenya and Addis Ababa, Ethiopia. They cover all information provision and archiving services in ILRI.

ILRI conducted a Centre Commissioned External Review (CCER) of its information and communication services in 2003. One of the main recommendations of the review was to transform the former Libraries into an InfoCentre. This was successfully implemented in 2004. We now believe that is time to assess the performance and strategy to be able to define the future direction of the InfoCentre. Our aim is to provide state of the art information and knowledge systems for our external and internal users about Livestock in the developing world and ILRI's work as whole.

We therefore suggest conducting an external review by specialists in the area to help us come up with a concept that fits our future needs and suggests possible improvements in this important area.

We propose that the consultants visit both locations together with colleagues of the respective unit to evaluate the existing environment. Main purpose of the review is to evaluate and assess the effectiveness of the services provided by the InfoCentre.

Therefore the following aspects should be evaluated in detail and recommendations should be given for:

- General concept, organizational structure, locations and services provided
- Future structure and services including a cost analysis of current and future setup
- Identify future needs to achieve the above mentioned goals
- Resulting implications for the future

Process and Outputs from the review:

The consultancy will be conducted at the ILRI InfoCentre locations in Ethiopia as well as in Kenya. Focus will be on working together with the Information Manager and partly with the InfoCentre team to evaluate and discuss the existing setup and future plans.

The consultants are expected to deliver a report on their findings that will be shared with the Information Manager before being published and presented to ILRI Management committee and other interested entities.

## ***Annex 2: InfoCentre Profile***

The stated mission of the InfoCentre is to “use updated information and communication technologies to make available the wealth of information accumulated over the last thirty years by ILRI and create a hub of information exchange on livestock research and development in tropical developing countries.”

The InfoCentre maintains two branches, in Nairobi and Addis Ababa. In principle, both campuses provide a single service, with some division of tasks and areas of focus differentiating the precise activities carried out. On both campuses, users may access the institute's in-house databases via ILRI's intranet (ILRINET) and external databases on CD-ROM or via the internet. Both InfoCentre locations are staffed with experienced information specialists who offer full reference support services to users, helping them perform their own searches or performing the searches and delivering the retrieved documents.

The InfoCentre offers full text online access to ILRI publications, international scientific journals and online databases on livestock research and related subjects.

Its objectives are:

- Meet the needs of ILRI scientists and partners for information and help them make the most time- and cost-effective use of internal and external information resources.
- Repackage ILRI's research results and technologies in collaboration with the Publications Unit, Web Team and ILRI scientists for dissemination to external clients, partners and stakeholders.
- Deliver the best possible information services to extramural users, using net-based technologies.
- Contribute to the development of CGIAR-wide information management activities.
- Develop better integration of information activities within research projects.
- Provide information support to global research on livestock, food and environment.
- Collaborate with relevant national, regional and international organizations to facilitate global dissemination of information and share resources and knowledge.
- Provide training in information management and the use of Information and Communication Technologies (ICT) to enhance information handling capability of NARS information workers.
- Establish policies and procedures to maintain, use and distribute the digitised/printed information sources.

What does it do?

### **i) Collection management and development**

For over 30 years, the InfoCentre at ILRI-Kenya and ILRI-Ethiopia has amassed large collections of monographs, periodicals and other documents on animal production and diseases, with disciplines ranging from agricultural economics to molecular biology. These information resources are supplemented with documents (grey literature microfiches) from ILRI's unique collection of non-conventional literature on animal agriculture from research centres in 27 sub-Saharan African countries. In addition to these in-house information resources, users are provided with electronic access to external sources of information, either through CD-ROMs, DVDs and the Internet.

Registered users (physical or virtual) can access ScienceDirect - containing the full text of all journals published by Elsevier. ILRI's subscription to ScienceDirect provides its staff at ILRI-Ethiopia, ILRI-Kenya and ILRI's zonal sites in Latin America, Asia and Africa access to Elsevier journals in electronic format. Articles from these journals to which ILRI subscribes can be downloaded for free. Articles from other journals can be downloaded on a pay-per-article basis. We also have other on-line journals acquired through consortiums.

### **Grey literature in microfiche**

The collection was designed to identify and conserve documents on livestock production from all parts of tropical Africa (sub-Saharan African countries) mainly of non-conventional nature, that might otherwise go unnoticed or become lost, and to make these available from a central point for interested researchers.

The microfiche collection includes university theses, internal working papers, workshop proceedings, journal articles and unpublished reports that have been collected from 25 sub-Saharan Africa countries from 1975 to the end of 1997. The collection has 19,325 microfiche documents attached separately, related to on-farm livestock productivity, marketing of animal products, policy issues, gender and social issues, and environmental effects of livestock of sub-Saharan Africa. One third of the collection, which comprises 6,442 microfiche documents, can be categorised as non-conventional or grey-literature. Where as the rest could fall into other categories (like theses, copyrighted documents and some could be classified as blurred and illegible copies).

The indexes and descriptions for the entire collection of microfiches are entered in ILRI's computerised database and are thus accessible online. However, this index does not provide the full-text of the document. Users must visit the ILRI library in Addis Ababa to use the full-text information. This presents a problem for many researchers around the world.

### **ii) Information processing (cataloguing and indexing)**

1. Bibliographic description, indexing and abstracting of documents supplement the collection and ILRI's official & internal publications as well as that of its scientists published elsewhere, such as in refereed & non-refereed journals, books and chapters in books, presentations at conferences, workshops, symposia, etc.
2. Bibliographic description of ILRI Images and multi-media files.
3. Integrating the additions to the InfoCentre at the two campuses, taking care that duplicates are eliminated and that information pertaining to the location where each publication is available is accurately maintained
4. Creation and maintenance of in-house bibliographic databases, including links to full-text versions of publications, whenever these are available, as well as that of the images-cum-multimedia files on the intranets at both campuses and on the Internet.
5. Contribute to the CGIAR-wide virtual library collection CGVLibrary.
6. Operation and management of the automated SDI service entitled ILRIALERTS.
7. Provision of on-demand search services and provision of subsets of its bibliographic databases on demand.
8. Provision of input to the AGRIS database of ILRI generated conventional and non-conventional literature.

**iii) Reference Services:** These help to provide assistance to users in searching the in-house databases, CD-ROMs, DVDs and other external databases on the Internet and guide users to the InfoCentre's resources.

**iv) Document delivery:** This involves the following two activities.

- **Circulation services:** These are services to users by processing circulation transactions, claims, reservations, inter-library loans and document transfer to Kenya, Ethiopia and other site programs and with libraries on inter-library agreement.
- **Photocopying and scanning:** The provision of demand-based services to internal and external users by e-mail in PDF, wherever possible, in hard copy and rarely diazo-copy.

### **v) ILRIALERTS service**

ILRI's SDI service called ILRIALERTS is an automated current-awareness service. The objectives of ILRIALERTS are to:

1. alert users to those items of recent literature that have a high probability of usefulness to their expressed needs and interests.
2. enable regular feedback on usefulness of items disseminated so that the service may be made dynamically responsive to changing needs and services.
3. avoid information overload by attempting to minimise the extent to which irrelevant information is disseminated.

ILRIALERTS achieves its objectives by first ascertaining with users their on-going interests and needs. This is usually done through the provision of ILRIALERTS Service Request Form to users and also through interpersonal discussions if required. Once users provide information on their needs, a user profile is built for each of them. This is a series of search statements representing users' interests. User profiles are stored as a disc file to be matched by a computer program against monthly updates of records from ILRI's in-house bibliographic database, ILRIBIB which includes information on books and other conventional and non-conventional literature that the InfoCentre adds to its collection and other sources, too.

The user is expected to provide regular feedback so that the required adjustments to his/her profile may be made in case his/her outputs are found lacking. Following the provision of feedback and its analysis, the service also provides, on request, copies of those items available in ILRI's InfoCentre. Where items are not available in the InfoCentre they are obtained from other sources like CG Libraries. ILRIALERTS is a monthly service to ILRI staff.

#### **vi) Literature search services**

Literature search services are provided on demand. They are designed to retrieve information that may be required or considered useful in research project planning, problem solving or decision making. The service is availed by filling in an ILRI Search Request Form that enables the requester to clearly articulate his/her information needs. Depending on the nature of the request, a search of one or more databases at ILRI is then made to retrieve information in the form of a list of references with abstracts wherever possible.

Occasionally, other databases outside ILRI may also be accessed to answer search requests. Such access is resorted to when the databases at ILRI do not adequately cover the topic(s) of the search request.

The literature search service is provided free of charge to ILRI staff and NARS. At other times, we give annotated bibliographies on specific topics of interest to ILRI and its mandate on demand. These are compiled in collaboration with researchers.

#### **vii) AGRIS input**

ILRI has been one of the International input centres to AGRIS since 1976. Conventional and non-conventional literature being produced in ILRI is regularly provided as input to AGRIS. The chief strength of AGRIS lies in the input that it receives from developing and developed countries of the world. AGRIS is thus an important source of both conventional and non-conventional agricultural literature of the world. AGRIS methodologies, and guidelines in indexing, are used in creating the input.

### **viii) ILRI publications distribution**

The InfoCentre distributes publications produced by ILRI. New publications are regularly sent to selected partners and the public from our mailing list. Publications may also be requested individually by mail or email.

### **ix) Training on information management**

For a number of years, ILRI has been organizing training courses on information management aimed at supporting information specialists in national agricultural research systems. But due to funding problems, we have now stopped this, providing only in-service training on request.

### **x) Databases**

#### **Bibliographic database**

The in-house database called ILRIBIB is structured to enable entering and accessing of data from both locations. Since several sources contribute to the creation of the database and since several types of documents are described in the database, it has been divided into the following two subsets.

- **ILRIB**. This subset holds records for the Library's holdings; in effect this is the Library's online catalogue.
- **ILRI Publications Database: ILRIP**. This subset holds records published by ILRI or its scientists with full text.

#### **Multimedia gallery**

ILRI's Multimedia Gallery collection is a repository of pictures, audio, video and PowerPoint presentations that show different activities at ILRI and also serve as a corporate memory instrument.

On the homepage the contents are available in the following categories:

- By collection type
- By media types
- By subject directory

Therefore, users can browse the contents by collection type, i.e. scientific, events & development; by media types, i.e. image, presentations, audio & video; and by subject directory, i.e. subjects based on the institute's mandate — Livestock Feed Production, Livestock Production, Livestock Markets, Livestock Production Systems, etc.

Interested users can contribute images, PDF and PowerPoint presentations to the collection online. While browsing through the files in the categories above, you will get an Upload button. By clicking on the button you will get a form that allows you to make online contributions.

If users are interested on a certain item while browsing into the gallery, they can download the item online or send a request via email to get the high resolution version.

#### **Contacts database**

Contains information for contact and mailing purposes. The institute's mailing database has been redesigned and reorganized using Contact management system (CMS). It is a web-based system for the institution managers to track strategic information that concerns the institution donors and other institutions and organizations that the institution associates with. Thus, the application system manages contacts, store valuable details, set automatic reminders and keeps all contact information private with individual accounts. It is possible to

store private as well as institutional contacts in the system. The system is developed in such a way that each contact owner can have access to his/her contact only.

ILRI Contact management systems manage contacts centrally and have the concept of master list. Contacts can be shared among owners. There is a possibility of a contact to belong to more than one owner. The management of these contacts such as edition and deletion is handled in such a way that when one owner make some changes on the contact details the system sends reminders to all owners that the contact under change belongs to. The system has duplicate control module that controls duplicate entry to the system centrally. The search module is designed for easy and fast search of the contact based on the contacts detail.

The application has various functions, and reports to make the interaction of the user and the system easy. Once a contact is added to the system, you can send information, publications and reminders to the contacts as a whole or to selected ones based on certain criteria. Using the system, contacts can also be registered and unregistered for a publication or set of publications. You can also print a reference list. The system allows grouping of contacts based on contact category e.g. donors, partners, publishers, etc. Such grouping of contact is important to make contact for a certain group of people.

Generally the system is working on the basis of a centrally administered contact information (master list), groups and owners of each contact. The system has around 6178 records as of today. Among these, half of the records belong to the InfoCentre.

**Future plans include:**

- Extend our services globally (if funding permits).
- Strengthen InfoCentre–research linkage by assigning a staff from the unit to liaise with the different themes. He/she will assist in identifying information needs and opportunities for dissemination of results/technologies.
- Upgrade and strengthen collaboration with CGIAR centres, FAO, CABI and other international and national agricultural institutes.
- Digitisation of the microfiche collections by looking for partners or external funding agencies.
- Upgrade all the services that we are providing and continue with the current contents Service of journals.
- Weed out materials with less usage and deposit the weeded out materials in agricultural universities.



### **Annex 3: Research ‘Triple A’ Checklists**

To ensure that public domain research outputs – in the form of information, data and knowledge – form part of a global ‘knowledge commons’ for agriculture, each output should be assembled, created, handled and disseminated in certain ways that make it a public good.

Each output – and each research information system – needs to be optimised to reach certain availability, accessibility and applicability objectives. These ‘Three A’s’ can be tailored to different types and domains of research and the specifics of each organization.

The first checklist provides a set of steps and actions that will help make information more accessible<sup>2</sup>. The second checklist tackles the area of research applicability, setting out some approaches likely to ensure that research knowledge is applied, that it is put into action<sup>3</sup>.

#### **Three A’s**

**Availability:** Research outputs are stored in appropriate open digital formats and described using public metadata standards so they can be found through structured search and access systems. They may not always be publicly available in full. Availability means assembling and storing content so it will be permanently accessible, and describing it in systems so others know, and can find, what outputs have been produced.

**Accessibility:** Research outputs are publicly available online using accepted public formats and appropriate licenses so they can be queried, viewed, and obtained in full. Outputs are optimised so metadata and full content can be harvested and shared across different platforms and applications, and they can be incorporated into other systems and services. Accessibility means making outputs as easy to find and share and as open as possible, in the sense that others are free to use, reuse, and redistribute them, with appropriate acknowledgement and without restrictive legal, technological or financial barriers.

**Applicability:** Research processes are open and inclusive so that all perspectives and knowledge are taken into account during research design, planning, implementation and communication. Research outputs are customised and/or adapted for easy uptake and use by other actors in agricultural innovation systems, increasing the public benefits derived from the data, information and knowledge produced through research. Applicability means research and innovation processes that are open to different sources of knowledge, and outputs that are easy to adapt, transform, apply and re-use.

<sup>2</sup> This ICT-KM checklist from December 2008 derives from drafts developed alongside ongoing discussions in CIARD – [www.ciard.net](http://www.ciard.net) [it is currently being revised]

<sup>3</sup> This checklist is largely derived from work by ILRI and the Harvard University Center for International Development. See: Kristjanson P. et al. 2008. *Linking International Agricultural Research Knowledge with Action for Sustainable Development*. CID Faculty Working Paper 08-173. Cambridge, USA: Harvard University CID. [www.cid.harvard.edu](http://www.cid.harvard.edu)

## **1. Increase accessibility of research outputs**

1. Store and publish outputs, and their metadata, in appropriate digital formats that both preserve and safeguard their future use and ensure widest current access.
2. Publish and archive outputs using open formats that do not discriminate against some users.
3. Make research outputs accessible on the Internet.
4. License outputs so others are 'free to use, reuse, and redistribute' them with appropriate acknowledgement.
5. Employ the full range of output formats – audio, video, informal – as well as peer-reviewed articles and books.
6. Encourage and assist authors to publish outputs as open access.
7. With publishers and aggregators, negotiate or pay for open access to otherwise limited access outputs. Push publishers to make journals available through AGORA.
8. Adopt metadata standards and widely accepted vocabularies to create, collect and describe outputs, making them easy to find, harvest, and use across different services and platforms.
9. Expose metadata from document collections using the Open Archive Initiative Protocol for Metadata Harvesting.
10. Share the metadata and full content of outputs through international systems that maximise access (e.g. Google, AGRIS, CAB Abstracts, Consortium for Spatial Information); and through standard feed formats (e.g. RSS or Atom).
11. Adopt international accessibility standards for web-based systems and outputs, optimising them for low and high bandwidth environments.
1. Optimise web sites and content for global and specialised search services.
2. Use 'social' media applications to help content travel and more accessible.
12. Ensure outputs will be accessible across different platforms – web, email, phone, ...

## **2. Enhance applicability of research**

1. Adopt empowering strategies that 'level the playing field' and generate hybrid, co-created knowledge and deal with large (and largely hidden) asymmetries of power.
2. Adopt systems-oriented approaches that recognise that scientific research is just one 'piece of the puzzle.'
3. Use processes and tools that enhance efficient dialogue and cooperation between those who have or produce knowledge and decision-makers.
4. Define research problems in collaborative, user-driven ways, including 'boundary organizations' or 'boundary-spanning actions' that help to bridge gaps between research and user communities.
5. Construct informal new arenas, with joint 'rules of engagement' to encourage mutual respect, co-creation and innovation, in which different actors can engage in user-producer dialogues, joint product definition, and a systems approach.
6. Devise appropriate reward and funding systems that encourage risk-taking, learning, knowledge co-creation with partners, and communication via multiple channels.
7. Facilitate processes that create strong networks and build innovation capacity of the system. Co-create communication strategies and boundary products that are key to the longevity and sustainability of outcomes and impacts.
8. Partner with other 'intermediary' organizations who can help turn co-created knowledge into action (new strategies, policies, interventions, technologies).
9. Reinforce the knowledge sharing, communication and information dissemination capacities of intermediary partner organizations who are more likely to reach research 'end' users.