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BecA-ILRI Hub

Business Plan 2013 - 2018

May 2013

mobilizing biosciences for Africa's development
kujumuisha sayansi ya bayolojia kwa maendeleo ya Afrika
mobilisation des sciences biologiques pour le développement de l'Afrique

biosciences
eastern and central africa



ILRI
INTERNATIONAL
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Table of Contents

Executive Summary	3
I Introduction	7
1.1 Rationale for refreshing the Business Plan	7
2 Vision and Mission	8
3 Demand Side Analysis	9
3.1 Alignment with African priorities in food and agriculture, science, technology (S&T) and capacity development	9
3.2 Priority themes emerging from demand-side analysis	10
3.3 Evolving biosciences environment in Africa	12
3.4 Alignment with the CGIAR Consortium and the new CGIAR research programs (CRPs)	12
4 Delivery of Biosciences-based Innovations	15
4.1 Innovation systems	15
4.2 Increasing role of the private sector in agricultural innovation in Africa	15
4.3 2013-18: the biosciences innovation phase	16
5 The Business Model	17
5.1 Principles	17
5.2 Evolution of the business model	17
5.3 Primary clients and partners	18
5.4 The Business Model 2013-18	18
5.5 BecA/ILRI joint research opportunities with African and international partners	20
6 Financial management and cost models	21
6.1 Balance sheet summary: income and expenditure trends 2007-2015	21
6.2 Trends in BecA-ILRI Hub use (Figure 6.3)	24
6.3 Resource mobilization strategy for expanding BecA-ILRI Hub use	25
6.4 Cost models: future options	25
7 Governance and institutional arrangements	
7.1 Overview	28
7.2 Governance arrangements	28
7.3 Institutional/management arrangements	30
7.4 BecA-ILRI Hub Annual Report and Annual Financial Report	31
8 Implementation of the Business Plan	32
8.1 Communications and publications	32
8.2 Human resources and skills	32
8.3 Monitoring and evaluation and learning	33
8.4 Risk analysis and mitigation strategy	33
9 Critical Success Factors	36
Conclusion	
Annex A BecA-ILRI Hub Logic Model	38
Annex B 'Top 10' of emerging biosciences-based innovations for African agriculture	39
Annex C BecA-ILRI Hub Income and Expenditure 2012-2013	43

Executive Summary

Biosciences eastern and central Africa (BecA), with its Hub at the International Livestock Research Institute (ILRI) in Nairobi, Kenya (the BecA-ILRI Hub), is a co-creation of the African Union's New Partnership for Africa's Development (AU/NEPAD) and ILRI. This shared research platform enables African science leaders to solve some of Africa's key agricultural challenges through the applications of modern biotechnology. Substantial financial support was provided in the period 2004–2010 by the Government of Canada and ILRI to upgrade the research facilities for the BecA-ILRI Hub.

The refreshed Business Plan for 2013–2018 considers the achievements and lessons learned over the first decade (2002–2012); outlines the future strategy, including the response to changes in the external environment; identifies a demand-driven research agenda that responds to the high priority themes identified through the new AU/NEPAD Science and Technology strategy and the Comprehensive Africa Agriculture Development Programme (CAADP) agenda for increasing the productivity of the food and agricultural systems in Africa; and considers how the BecA-ILRI Hub positions itself in relation to the CGIAR Consortium and aligns with the new CGIAR Consortium Research Programs (CRPs).

The Business Plan also refines the financial management plan and cost models, so as to achieve the twin aims of ensuring both financial sustainability and affordability of the BecA-ILRI Hub. This will enhance access for clients and partners coming from the African scientific community and for international partners. The Business Plan outlines ways to improve operational efficiency, and increase transparency and understanding of the costs of conducting high-end biosciences research in Africa. The BecA-ILRI Hub is treated as a cost centre within ILRI for financial management and accountability.

The Business Plan updates the governance and institutional arrangements so as to strengthen the links with AU/NEPAD and other stakeholders in Africa and internationally. To this end, a new BecA advisory panel is planned, comprising leaders in biosciences in Africa and internationally. Its task will be to provide strategic advice to AU/NEPAD, the ILRI Board and management and the BecA-ILRI Hub team on future research


directions, new technology developments, potential science and development partners and resource mobilization opportunities. The panel will also provide a forum for greater interaction amongst African stakeholders, international science and development partners and investors.

The governance and management arrangements are based on an analogy with the current CGIAR CRP model, whereby the BecA-ILRI Hub is a multi-stakeholder, multi-centre programme with ILRI as the lead centre, acting on behalf of all stakeholders. These arrangements give clarity to the governance and oversight role of the ILRI Board; the overall management responsibility of the ILRI Director General (DG) on behalf of the ILRI Board, AU/NEPAD and other stakeholders; and the management responsibilities delegated by the ILRI Director General to the BecA-ILRI Hub Director. The Hub Director is responsible and accountable to the DG for the successful implementation of the new Business Plan.

Encouraging innovations: The Business Plan reflects on the research results and the likely economic benefits of the research conducted at the BecA-ILRI Hub by a wide range of African and international scientists over the past decade. These include scientists from ILRI and other CGIAR centres and their African partners who use the shared research platform. A potential 'top 10 innovations', emerging from the research conducted by these multiple partners, marks the first decade of research at the BecA-ILRI Hub from 2002–2012 (Annex B).

From 2013 to 2018, there will be additional emphasis on building partnerships with science and development partners (including non-science partners) to translate research results into innovations of benefit to farmers and other private enterprises in Africa. These will focus on increasing the impact of biosciences on African communities. Interaction with and support of biosciences networks and 'communities of practice', including those formed amongst BecA alumni and regional programmes such as the Bio-resources Innovations Network for Eastern Africa Development (Bio-Innovate), will also be strengthened.

The biosciences-based innovation approach will complement continued emphasis on the BecA-ILRI



Hub's comparative advantages of bringing high-end biosciences to bear on: (1) strengthening the research capacity within the African scientific community; (2) enabling and hosting research on priority themes as identified by African partners; and (3) providing technology platforms and research-related services to facilitate research by African scientists and their international partners.

CRITICAL SUCCESS FACTORS

The Business Plan identifies several key factors as being critical for the future success of the BecA-ILRI Hub. These are:

1 Demonstrate responsiveness to demand-led African research agenda for food and agriculture

The development of an African-led research and development (R&D) agenda that responds to market drivers and supports the transformation of agriculture as a driver of economic growth in the countries of Africa is being articulated by the African Union and its partners, including AU/NEPAD and the Forum for Agricultural Research in Africa (FARA) and by other Pan African, regional and national bodies in the public and private sectors. Being aware of and responding to new priorities and new opportunities will keep the BecA-ILRI Hub relevant as well as responsive to the emergence of agriculture as a profitable enterprise in growing African economies.

2 Focus on comparative advantage: facilitating applications of high-end biosciences in and for Africa

The BecA-ILRI Hub is a magnet to facilitate the conduct and use of high-end biosciences research in Africa. More attention will be given to ensuring not only high quality research but also facilitating the design of impact pathways and forming new partnerships for delivery, so that the high-end research leads to biosciences-based innovations that have economic impact and benefit African farmers.

3 Build a broader BecA faculty of experts, complementing the core staff of the Hub

The BecA faculty will be expanded to include, as adjunct appointees, more of the senior bioscientists working with African national agricultural

research systems (NARS) and universities as well as those with advanced research institutes and international research institutes. This expanded BecA faculty will enable a broader and deeper range of research and capacity strengthening programmes to be conducted at the BecA-ILRI Hub and a much larger number of younger African scientists to be mentored in their research by more experienced African and international scientists.

4 Create, strengthen and sustain the range of technology platforms available through the BecA-ILRI Hub

Ensuring the availability of state-of-the-art technology platforms across a wide range of modern biotechnologies is an important part of the BecA-ILRI Hub's role as a shared research platform that is a centre of excellence for biosciences in Africa. These technology platforms serve multiple partners and research consortia that are addressing African agricultural issues. As bioscience is a rapidly evolving field, these technology platforms will need to be continually updated to stay relevant.

5 Increase access to the BecA-ILRI Hub, with more scientists and postgraduates coming from African research institutes and universities

Enable more of Africa's leading scientists and students to use the BecA-ILRI Hub to conduct their research, thus also ensuring optimal use of the available research facilities by the African scientific community.

6 Affordability: Continue resource mobilization to ensure the BecA-ILRI Hub is both accessible and affordable to the African scientific community

The BecA-ILRI Hub is accessible but not always affordable for scientists working in national research institutes and universities across Africa. Mobilizing additional financial resources will be required to fund more fellowships to provide supplementary support for African scientists through the African Biosciences Challenge Fund (ABCF). Affordability can also be increased by forming new partnerships with African governments and regional bodies, such as the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA), Conseil Ouest et Centre Africain pour la Recherche et le Développement Agricoles/West and Central

African Council for Agricultural Research and Development (CORAF/WECARD), and the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM), to support tailored capacity strengthening programmes for particular countries, regions and thematic areas.

7 *Financial sustainability: manage operations with a balanced budget*

The BecA-ILRI Hub requires a financial plan whereby its full costs are covered, with income generated from several sources, including Hub user fees, flow of partner research projects, public-private partnerships, and investments by African governments, the Organisation for Economic Co-operation and Development (OECD) governments and philanthropic foundations into ABCF for capacity strengthening and Hub operations.

The BecA-ILRI Hub needs to be able to cover all its annual fixed costs on a full cost recovery basis, as well as have a capital fund to invest in the continual upgrading of equipment and technology platforms, so as to remain a centre of excellence in biosciences in Africa. The funds to ensure financial sustainability will come through a 'mixed model' of: (1) Hub user fees paid per client (currently USD 12,500 per full-time equivalent (fte) per year; (2) fees paid by clients for specific research services; (3) a new modality, whereby large new programmes and new technology platforms are allocated designated space for their research and charged at full cost recovery rates per laboratory (rather than on a fee per person); and (4) restricted core support provided by international investors to underwrite some of the fixed and capital costs of the BecA-ILRI Hub, thus improving both its affordability and sustainability for the African scientific community. Continued core support for the BecA-ILRI Hub operations, currently provided by a small group of public and philanthropic investors, is a critical component of the financial plan, as this support links affordability with financial sustainability. The current core investors are the governments of Australia and Sweden, the Bill & Melinda Gates Foundation (BMGF) and the Syngenta Foundation for Sustainable Agriculture (SFSA).

8 *Enable new CGIAR engagement with African partners on biosciences*

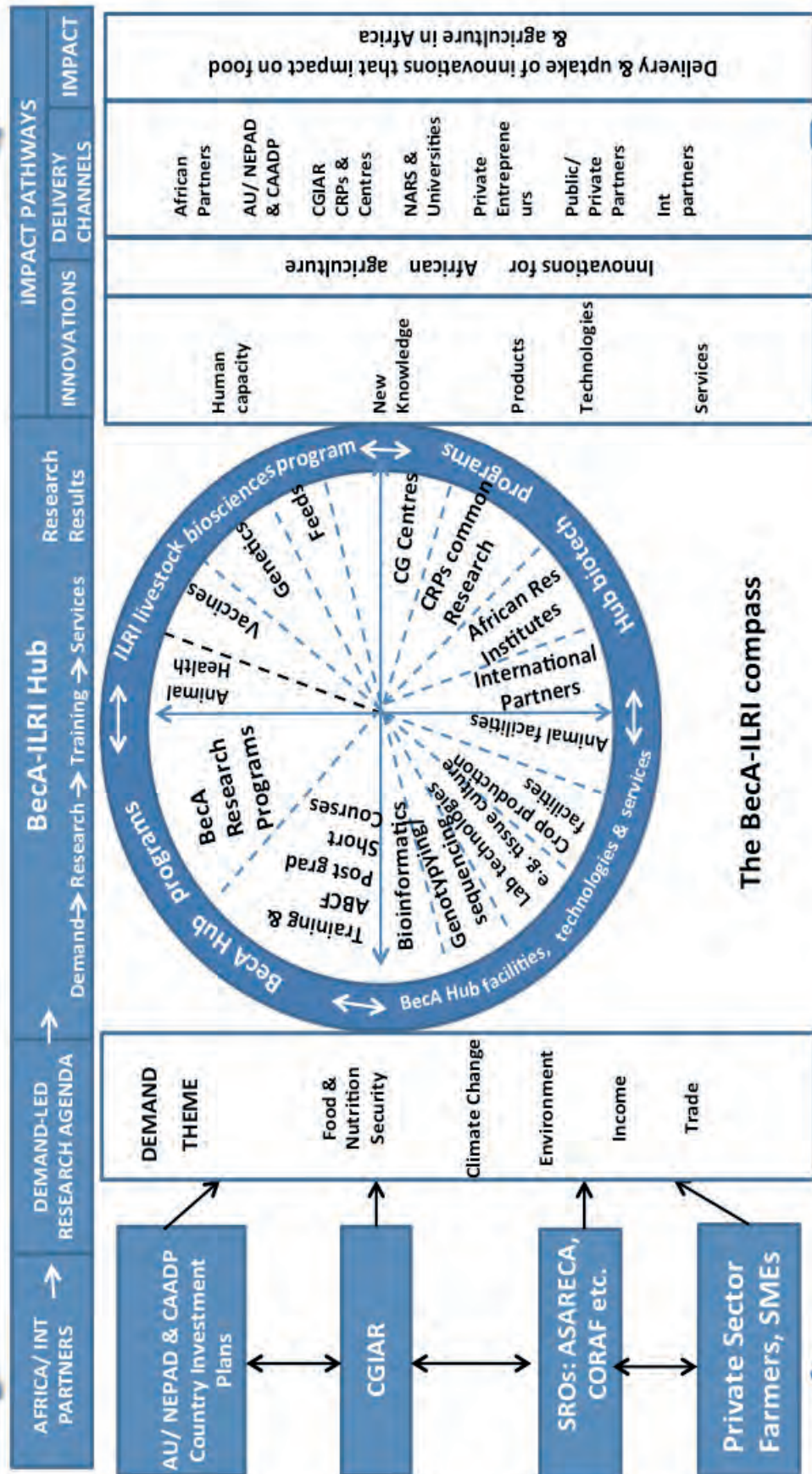
The BecA-ILRI Hub has the potential to become a focal point and preferred service provider for the CGIAR Consortium's future biosciences research in Africa, aligned with AU/NEPAD and the CAADP agenda and with countries' demand led priorities; and to be seen as an example of practical implementation of the AU/CGIAR Memorandum of Understanding (MOU), signed in January 2013.

For example, the BecA-ILRI Hub provides African and international scientists access to a modern plant breeding platform with the tools and technologies available for use in developing marker assisted selection for a wide range of crops. The BecA-ILRI Hub will participate actively in the design of new CRPs and the utilization of other CGIAR-led platforms for science capacity building and support of African national research institutes and universities.

CONCLUSION

New scientific opportunities have emerged that can address the priority themes identified in conjunction with African partners. There are also new investment opportunities for African and international partners that will help deliver innovations to increase the productivity and economic development of African agriculture. The BecA-ILRI Hub offers its science, education, development and investment partners a first class, shared research platform in Africa, with a track record of high quality research and delivery of biosciences innovations in Africa. The future of biosciences in Africa will be constrained only by the limits of our imagination.

Demand, supply and delivery of biosciences based innovations for African agriculture



1 Introduction

1.1 RATIONALE FOR REFRESHING THE BUSINESS PLAN

This document is an update of the Biosciences eastern and central Africa (BecA) Business Plan 2011–2015 as approved by the International Livestock Research Institute (ILRI) Board of Trustees in April 2011. It also builds on the original BecA Business Plan 2005–2010, which was developed as a result of an extensive consultative process in the region. This set the foundation of the BecA initiative as a joint venture co-created by the African Union's New Partnership for Africa's Development (AU/NEPAD) and ILRI, in conjunction with several other African stakeholders.

Substantial financial support for the implementation of the original Business Plan, including upgrading the research facilities at ILRI to provide the basis of a centre of excellence in biosciences in Africa, was provided by the Government of Canada and ILRI in the period 2004–2010. Several other government agencies and philanthropic foundations are now substantial investors in the BecA initiative (see Chapter 6 on financial management).

The purpose of refreshing the Business Plan is to address some additional areas arising from the rapidly changing external environment in Africa and internationally, and to respond to the extensive reform process undertaken by the CGIAR. It is also an opportunity to reflect on the lessons learned over the past decade (2002–2012) and envisage how these experiences will guide future strategy and directions. In refreshing the Business Plan, particular attention is being focused on the following areas:

DEMAND SIDE

- Stronger 'demand-side analysis' with links to AU/NEPAD priority setting and strategic planning for agricultural development, food security and science and technology.
- Implications of the CGIAR reform: New linkages and potential for alignment with Consortium Research Programs (CRPs) and the CGIAR system more broadly.
- Implications of signing an AU/CGIAR Memorandum of Understanding (January 2013).
- Increasing opportunities for African research organizations and universities.

Delivery of biosciences-based innovations

- Interface of the BecA–ILRI Hub with new partners for delivery of innovations in both the public and private sectors.
- Joint design with partners for pathways to impact for selected innovations, with particular reference to the CRPs and their pathways to impact; and regional programmes, especially the Bio-resources Innovations Network for Eastern Africa Development (Bio-Innovate) programme.
- Engagement with the private sector, both commercial and not-for-profit entities, through farming communities, civil society and local small and medium enterprises (SMEs); many of these will be non-science partners for delivery of innovations.

Supply side: The business model

- Current use and future development of biosciences facilities, equipment and technologies, including responsibility and accountability for the technical and scientific management of the shared research facilities and technology platforms available through the BecA–ILRI Hub.
- Financial resource management: Update of financial implications and options to increase access and affordability of the BecA–ILRI Hub to the African scientific community.
- Increased financial transparency of income and expenditure and basis of costs;
- Facilitate affordable access to the research facilities by scientists coming from the national agricultural research systems (NARS) and universities within Africa.
- Increasing operational efficiencies to reduce costs.

Governance, institutional and management arrangements

- Strengthened governance, institutional and management arrangements.
- Role of a new BecA advisory panel.
- Oversight responsibilities of the ILRI Board of Trustees on fiscal and legal matters.
- Clarity in responsibilities and accountability for the successful implementation of the Business Plan.

2 Vision and mission

VISION **To contribute towards improving the livelihoods of millions of resource-poor people in Africa**

using biosciences-based technologies to improve agricultural productivity, increase incomes and improve food and nutritional security. The BecA-ILRI Hub contributes to this vision by providing affordable access to the enabling tools and international expertise of modern bioscience to African scientists, students, research and development institutions and universities to facilitate their evolution into major players at the forefront of solving the priority challenges of food and nutritional security in Africa and in so doing, to become globally significant technological innovators and contributors to science and technology worldwide.

This vision encompasses a new enabling environment for agricultural research in Africa that includes strong NARS, strong universities, a competitive private sector and empowered farmers, all contributing to food security and income generation in the countries of Africa.

MISSION **Mobilizing bioscience for Africa's development**

by providing a centre of excellence in agricultural biosciences, which enables research, capacity building and product incubation, conducted by scientists in Africa and for Africa, and empowers African institutions to harness innovations for regional impact. This mission will be achieved by the BecA-ILRI Hub's contributions to:

- Enabling research to harness the potential of the biosciences to contribute to increasing agricultural productivity and to improving food and nutritional safety and security.
- Education: contributing to the education and training of the next generation of African agricultural research leaders and scientists.
- Innovation: promoting the development, delivery and adoption of new technologies to address key agricultural productivity constraints.

3 Demand-side analysis

3.1 ALIGNMENT WITH AFRICAN PRIORITIES IN FOOD AND AGRICULTURE, SCIENCE AND TECHNOLOGY (S&T) AND CAPACITY DEVELOPMENT

African institutional environment: Priority setting

Several Pan African, regional and sub-regional organizations and commissions have policy and priority-setting responsibilities in economic development, including agricultural development. These African-led institutions facilitate high level discussions amongst countries and development partners to identify issues and enable setting of broad priority areas and principles for international engagement in research and development programmes in Africa. They also intersect with government agencies in individual countries, including NARS and universities, and increasingly with private sector companies and community organizations, to provide the enabling environment for a thriving food and agriculture sector across sub-Saharan Africa.

African Union and the New Partnership for Africa's Development: S&T Comprehensive Plan of Action (CPA) www.nepadst.org

AU/NEPAD recognizes its important role in S&T policy on the continent. This includes advocacy with African governments on the significance of investing national resources in science and technology, encompassing the applications of biosciences.

AU/NEPAD has published a Comprehensive Plan of Action for Science and Technology (2008; 2013). Within this overall framework lies the new AU/NEPAD strategy for the African Biosciences Initiative (ABI). This has three strategic directions in support of biosciences across Africa, namely:

- capacity development
- infrastructure development
- entrepreneurship

In relation to the African Biosciences Initiative, AU/NEPAD intends to focus on its advocacy and oversight roles and delegate the implementation of specific programmes to its implementing partners, including ILRI in Kenya and Council for Scientific

and Industrial Research (CSIR) in South Africa. There are opportunities to increase cooperation and build synergies amongst the various biosciences networks operating in the sub-regions (Eastern and Central, Southern, West and North Africa) and the high-end facilities such as those at the BecA-ILRI Hub, which are available to serve all the biosciences networks and regional programmes across Africa.

Comprehensive Africa Agriculture Development Programme

AU and its NEPAD Planning and Coordinating Agency (NPCA) have developed a Coordinated Framework for Action on economic development. From this framework flows the Comprehensive Africa Agriculture Development Programme (CAADP; www.nepad-caadp.net), with its four pillars:

- 1 Extending the area under sustainable land management and reliable water control systems.
- 2 Improving rural infrastructure and trade-related capacities for improved market access.
- 3 **Increasing food supply and reducing hunger.**
- 4 **Agricultural research, technology dissemination and adoption.**

CAADP national compacts

CAADP has set a target of African countries averaging 6% agricultural growth per annum over the next decade. Under the CAADP compacts and investment plans being entered into by national governments, individual governments agree to invest 10% of their national budget into developing their agriculture sector, including increasing national support for agricultural research. The governments also agree to independent peer review of their agriculture sector plans and investments. A national CAADP compact signed with AU/NEPAD is a prerequisite for some multilateral and bilateral official development assistance (ODA) investments (e.g. the Global Agricultural and Food Security Program (GAFSP) managed by the World Bank). So far, 39 countries have initiated CAADP processes and 29 of 39 countries had signed CAADP compacts with AU/NEPAD as at 31 December 2012.

Forum for Agricultural Research in Africa

The Forum for Agricultural Research in Africa (FARA; www.fara-africa.org) is responsible for implementing CAADP Pillar 4 on agricultural research. FARA has developed a 'Framework for African Agricultural Productivity (FAAP): an integrated approach to research to lead to impact on the ground'. FARA is developing a science strategy for agriculture in Africa as a means to guide the research agenda emerging from the CAADP country investment plans.

AU/NEPAD CAADP and CGIAR/CRP alignment

The AU and the CGIAR Consortium signed a Memorandum of Understanding in January 2013. The intention is to ensure that the constraints to increasing agricultural productivity and food and nutritional security, as identified through the CAADP processes, will be addressed through the new CRPs and through national and regional research programmes.

African sub-regional organizations for agricultural research and development

Africa has several sub-regional organizations that identify priorities amongst a subset of countries; support regional research and development programmes to address these priorities; and develop solutions applicable across countries. The sub-regional organizations are Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA), serving Eastern and Central Africa; Conseil Ouest et Centre Africain pour la Recherche et le Développement Agricoles/ West and Central African Council for Agricultural Research and Development (CORAF/WECARD) (CORAF/WECARD) in West and Central Africa; and the Centre for Agricultural Research and Development for Southern Africa (CARDESA) in Southern Africa.

ASARECA and the International Food Policy Research Institute (IFPRI) have undertaken a study titled 'Strategic priorities for agricultural development in eastern and central Africa'. The regional priorities identified were staple food crops (cereals, banana and root crops), livestock products, fruits and vegetables, and oilseeds. Milk was identified as the single most important commodity for growth-inducing investments in agriculture to stimulate gross domestic product (GDP) growth in East and Central Africa. The study

noted that regional and national priorities coincide for some countries (Kenya, Tanzania and Uganda) but not for others (e.g. Ethiopia, Sudan and Rwanda), whose agro-ecologies are more distinct from those of neighbouring countries.

Significant variations also exist in poverty levels and food insecurity within countries, which need to be taken into account in developing targeted strategies to reduce poverty and improve food security in each country.

ASARECA has developed programme strategies and priorities for the regional research programmes it supports, including for biotechnology and biodiversity, staple crops, non-staple crops and livestock. ASARECA priorities on biotechnology applications in agriculture have informed priorities since the preparation of the original BecA Business Plan (2005–2009) and continue to do so. There are opportunities for expanding joint programmes development by ASARECA and the BecA-ILRI Hub for both capacity strengthening and research aligned with the regional priorities and programmes of ASARECA.

Similar regional and sub-regional priority setting processes have been undertaken by CORAF/WECARD for West Africa, and by a new sub-regional agricultural research organization, CARDESA, in southern Africa. These can also guide future joint programme development similar to that being undertaken with ASARECA, to support scientists from these regions accessing the Hub.

3.2 PRIORITY THEMES EMERGING FROM DEMAND-SIDE ANALYSIS

There is no simple set of priorities for the role of biosciences in advancing African agriculture. Rather, several priority themes are emerging from the various Pan African and regional organizations and national governments and demand-side analysis. These themes include:

- food and nutritional safety and security
- income generation for small-scale producers
- climate change adaptation
- environmental sustainability, including the conservation and utilization of biodiversity
- increasing regional and international trade

These themes are amenable to the applications of modern biosciences. The BecA-ILRI Hub, through its multiple African and international partners, including several CGIAR centres and CRPs, has the scientific and technical capabilities to host strategic research programmes that will contribute towards outcomes and impact on these themes. Some examples of challenges in these themes that can be addressed through biosciences research are discussed in the following sections.

Food and nutritional safety and security

Food security depends on improving productivity, for both crops and livestock; enabling access to food; and better use of food, including reducing post-harvest losses and improving the nutritional quality of food.

Examples where biosciences can contribute towards **food security** include:

- Improving crop productivity through accelerated plant breeding, based on marker assisted selection to develop new varieties that meet market demand.
- Improving livestock productivity through developing better breeds, better health and better feeds for priority livestock species.
- Reducing food wastage after harvest: At least 50% of food is lost after harvest due to post-harvest contamination that makes it unfit for human or animal consumption. Better diagnostics can reduce these losses.

Nutritional security

There is an increasing demand for better quality food and more diverse diets as people move out of poverty. This is illustrated by the rising demand for meat and livestock products, especially in China and Southeast Asia. A similar trend is likely to emerge in Africa in the coming decades as incomes increase. The rising demand for more diverse and better quality food in people's diets, coupled with a rising world population, leads to the need to increase total global food production by 70% by 2050.

Some examples of the applications of biosciences towards improving nutritional security include the genetic improvement of nutritious foods such as African vegetables (e.g. amaranth). Some of these traditional crops have been subject to little genetic improvement and are in short supply in the market, so rapid gains in productivity can be made.

Increasing incomes of small-scale producers

In Africa, the linkages between sectorial and overall economic growth are stronger for agriculture than for other sectors. About 65% of the continent's total labour force is employed in the agriculture sector, which contributes about 32% of the continent's GDP (IFPRI 2012¹). When food security is improved, nutrition and health improve, which in turn promotes labour productivity. Therefore, efforts to reduce poverty must focus on the agriculture sector (IFPRI 2012).

Some examples of the applications of biosciences towards income generation include increasing the productivity of underutilized crop and livestock species, especially where these are important in poor communities or post-conflict situations. For example, domestic cavies (guinea pigs) are a protein-rich source of food that is widely consumed throughout central Africa. A current project run jointly by the BecA-ILRI Hub and Australia's national science agency, the Commonwealth Scientific and Industrial Research Organisation (CSIRO), is investigating the genetics of domestic cavies populations in Cameroon with a view to identifying more productive and disease-resistant breeds and distributing these through partners in Cameroon and the Democratic Republic of Congo, where they are a source of protein and of income in very poor communities.

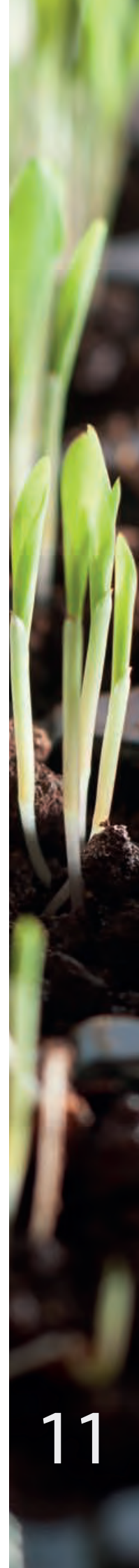
Climate change adaptation


Adapting to climate change is an increasingly important external driver of change for African agriculture. Biosciences-based research can help develop adaptation strategies, including the development of more resilient crop varieties and animal breeds able to withstand higher temperatures and less rainfall. Developing effective means to control plant and animal diseases as they spread into new areas as a result of climate change is another challenge for biosciences.

Environmental sustainability

There is increasing competition for land and water use within the agriculture sector between food, feed and fuel, as well as competition for land and water use between agricultural, mining and energy interests. Some examples of the applications of

¹ IFPRI (International Food Policy Research Institute). 2012. Global Food Policy Report. IFPRI, Washington, DC, USA.





biosciences towards environmental sustainability include the use of modern genotyping techniques to characterize crop, microbial and animal diversity. This is linked with the use of sophisticated 'bio-banking' techniques to conserve biodiversity within food and feed crops and their wild relatives as well as for livestock and microbial species.

Increasing regional and international trade
One of the constraints to increasing the participation of African farmers in markets through intraregional and international trade of agricultural products is the risk of transferring pests and diseases from country to country. Rapid diagnostics that facilitate the certification of the safety of agricultural exports are an example of a valuable biosciences application.

3.3 EVOLVING BIOSCIENCE ENVIRONMENT IN AFRICA

There is increasing recognition of the need for biosciences-based, technological innovations for sustainable development in Africa. This recognition is linked with substantial changes in the external biosciences environment over the past decade, including:

- Increasing numbers of well-trained scientists with research and teaching appointments in African NARS and universities
- Increasing demand for undergraduate and postgraduate training in biosciences in Africa and for Africa
- Increasing interest and investments in modern biotechnology as a potential contributor to food security and a driver of income generation (e.g. Juma and Serageldin 2007²).
- Increasing progress in developing the enabling environment, with supportive policies in intellectual property (IP) management and biosafety regulations in Ghana, Nigeria, Malawi and Uganda (e.g. FARA 2011³)

² Juma, C. and Serageldin, I.(2007). *'Freedom to Innovate -Biotechnology in Africa's Development': A report of the High Level African Panel on Modern Biotechnology.* African Union (AU) and New Partnership for Africa's Development (NEPAD). Addis Ababa and Pretoria

³ Forum for Agricultural Research in Africa (FARA). 2011. *Status of Biotechnology and Biosafety in sub-Saharan Africa: A FARA 2009 Study Report.* FARA Secretariat, Accra, Ghana

3.4 ALIGNMENT WITH THE CGIAR CONSORTIUM AND THE NEW CGIAR RESEARCH PROGRAMS (CRPS)

The CGIAR Consortium and the new CRPs are potential new partners or clients of the BecA-ILRI Hub, who may interact with and avail the services of the Hub in several different ways.

CGIAR system level outcomes (SLOs)

The CGIAR system has undertaken a major reform of its strategy and operations. The CGIAR Fund Council of donors and developing country members and the Consortium of 15 international agricultural research institutes have agreed on four areas of development outcomes towards which the CGIAR will direct its future research agenda and investments. The new CGIAR research agenda is reflected in the CGIAR Strategy and Results Framework (SRF) available at www.cgiar.org. The four areas where the CGIAR will deliver its system level outcomes are in:

- Food security
- Poverty reduction and improving livelihoods
- Agriculture for human health and nutrition
- Environment and natural resources management

CGIAR research programmes and international agricultural research centres

The CGIAR reform is essentially a matrix arrangement whereby 15 new, crosscutting international research for development programmes, termed the CGIAR Consortium Research Programs (CRPs), intersect with the 15 international agricultural research centres. On one side of the matrix are the new CRPs, focused on major development issues and commissioning research that contributes towards achieving the four system-level outcomes of the CGIAR. The other side of the matrix comprises the 15 international agricultural research centres that are leaders or participants in one or more of the CRPs. The 15 centres have established a new legal entity, the CGIAR Consortium, under the governance of a Consortium Board. The Consortium has entered into contractual arrangements with the CGIAR Fund Council to deliver towards the system-level outcomes through the implementation of the 15 CRPs, in return for an agreed level of investment in the CRPs by the CGIAR Fund Council members. The CRPs and the CGIAR centres are funded through the CGIAR Fund,

which support three windows: Window 1 constitutes CGIAR institutional support; Window 2 constitutes CRPs; and Window 3, bilateral projects funded directly through CGIAR centres or CRPs.

Beca-ILRI Hub and the CGIAR Consortium

The immediate strategic opportunity is to position the Beca-ILRI Hub as a ***shared research platform for the new CGIAR Consortium*** in Africa. This would include new efforts by the Beca-ILRI Hub to support the CGIAR reform process by enabling the conduct of targeted new research programmes aligned with the new CGIAR research programmes and to promote new opportunities whereby CRPs, the centres and their partners in Africa make optimum use of the expanded biosciences facilities and thus contribute towards achieving the new CGIAR Strategy and Results Framework for the benefit of Africa's development.

In January 2013, AU and the CGIAR Consortium signed a MOU on developing a joint research agenda in Africa to support CAADP. The Beca-ILRI Hub is where this MOU has reality in the implementation of research aligned with the CAADP. The subsequent visit by the Consortium Chief Executive Officer (CEO) to the Beca-ILRI Hub in January 2013 highlighted these opportunities, which should be pursued as a matter of urgency by the Beca-ILRI Hub Director and ILRI senior management with AU/NEPAD and the Consortium CEO (http://www.cgiar.org/consortium-news/the-beca-ilri-hub-an-african-life-science-center-of-excellence/#.UQy_DY1MQbk.email)

Alignment with the CGIAR Research Programs

The CRPs are important partners with the Beca-ILRI Hub in four ways. First, on the demand side, by identifying priority constraints to African agriculture in the commodities, systems and/or value chains on which they work; second, on the delivery side, by designing pathways to impact for biosciences-based innovations; third, as a source of potential new clients coming to use the new research facilities and technology platforms; and fourth, as potential co-investors in research that shares common outcomes with a CRP.

As co-investors in research, an individual CRP will build synergies between the CRP research agenda and the research being conducted by African scientists and their international partners at the

Beca-ILRI Hub. It will increase the scientific, human and financial resources to be directed at a high priority problem in Africa. It will also provide mutual incentives for the sharing of research results with all parties to achieve the common outcome.

Several projects are being conducted by African and international scientists and students at the Beca-ILRI Hub where the research results are of interest to one or more CRPs. Such projects may share a common outcome with a CRP, although the research project itself is not directly commissioned by a CRP nor have a CRP as a co-investor. Some of these projects pre-date the establishment of the CRPs.

Co-sharing of research results with the CRPs

The principles that will guide the co-sharing of results of research projects conducted at the Beca-ILRI Hub with (and, reciprocally, by) the CRPs are summarized below. The intent of the principles is to facilitate the sharing of research results directed towards a common outcome with the relevant CRPs and other partners as soon as practicable, to accelerate achievement of the development outcome. This is also consistent with the principles of encouraging publication of results and open data sharing by scientists using the Beca-ILRI Hub.

Four possible options are available for engagement between a CRP and a research project conducted at the Beca-ILRI Hub:

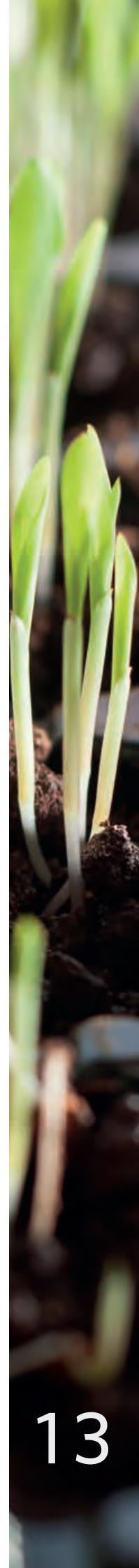
Option 1: CRP-commissioned research: Where the research project is fully commissioned and funded by a CRP;

Option 2: CRP co-investment with other investors on a research project of mutual interest and shared outcomes;

Option 3: Common outcomes: In which a research project having a common intended outcome with a CRP is fully funded from other sources;

Option 4: Research not aligned with a CRP agenda: Whereby research that responds to an African-led demand goes beyond the research agendas of the current CRPs.

The level of detail and timing of the sharing of results will be determined case by case depending on the level of engagement between a CRP and a research project being conducted





at the BecA-ILRI Hub, as outlined in the four options; and by the contractual arrangements for the specific research project.

In the case of options 1 and 2, where a CRP is directly involved in the conducting or co-funding of the research, the research results will be shared by the principal investigators in accordance with the regular reporting requirements of the CRP.

In the case of option 3, where a research project at the BecA-ILRI Hub shares common outcomes with a CRP but the project is fully funded by other investors, the research results will be shared by the project's principal investigator with the CRP in a manner consistent with the contractual arrangements made between the principal investigator and his/her home institution and the project investor. For example, the ILRI legal advisor has developed a set of principles to guide the sharing of results between research projects funded through the BecA/CSIRO/ILRI Partnership, where such projects are fully funded by the Australia Government Department for

Foreign Affairs and Trade (DFAT) (option 3). These principles may be helpful as a guide for similar research projects undertaken at BecA-ILRI in the future. It is envisaged that as the CRPs evolve, more of the research projects undertaken at the BecA-ILRI Hub will be either commissioned by the CRPs (option 1) or with the CRPs as co-investors (option 2).

Alignment with African agricultural priorities beyond the CGIAR CRPs (Option 4)

The BecA-ILRI Hub's primary clients and partners are scientists within African national research institutes and universities. These partnerships extend beyond the CGIAR. In some instances, the BecA-ILRI Hub will be responding to the priorities of African partners by facilitating research that addresses priority issues for African agriculture in one or more countries, which are beyond the current scope of the CGIAR research agenda and the CRPs. These projects will be aligned increasingly with the AU/NEPAD CAADP agenda and country investment strategies (see Section 3.1).



4 Delivery of biosciences-based innovations

4.1 INNOVATION SYSTEMS

There is increasing demand in Africa for innovation systems and new partnerships to ensure that research results move into use. This opens new opportunities for public-private partnerships to develop pathways to impact for innovations arising from research conducted by the wide range of African and international scientists from various institutions working at the BecA-ILRI Hub.

More attention will be paid to the design of product incubation and innovation pathways, thereby bringing an extra dimension of synergy to contribute more directly to impact. This will provide a multiplying effect for the efforts of African scientists to play a major role in helping countries in Africa to achieve their Millennium Development Goals (MDGs). A more productive and profitable agriculture sector is a critical component in the successful attainment of the MDGs in Africa. This Business Plan lays out how the BecA-ILRI Hub will enhance the efforts of African nations towards achieving these goals.

4.2 INCREASING ROLE OF THE PRIVATE SECTOR IN AGRICULTURAL INNOVATION IN AFRICA

The institutional arrangements for the supply of R&D services, including the division of labour between the public and private sector providers, will be increasingly influenced by private sector investments in food and agriculture. The commercial private sector includes local small and medium-size enterprises and international businesses. Furthermore, many civil society organizations, farmer cooperatives and philanthropic organizations are also active in agricultural development. Consumer organizations and supermarkets also reflect the growing

influence of supermarkets in food supply in the cities and towns. These trends towards more commercial and market-led food and agriculture will identify potential new partners for research and new opportunities for public-private partnerships. Private sector partners will also be essential when developing specific impact pathways for new products to accelerate the delivery of biosciences-based innovations in Africa.

The Alliance for a Green Revolution in Africa (AGRA) is strengthening the role of the private sector in African agriculture. AGRA has a strong capacity building programme in areas such as plant breeding, where there is potential for linkages with the BecA-ILRI Hub.

The Bio-Innovate Program

AU/NEPAD indicated in 2010 that the Bio-Innovate programme would be one of the key networks for promoting and delivering agricultural innovations in support of food security and income generation. Bio-Innovate and the BecA-ILRI Hub are co-located on the ILRI campus in Nairobi. In looking to the future, the relative roles, interactions and synergies of these two important biosciences programmes in Africa are being considered, including opportunities for joint initiatives that build on the comparative advantages of each in the development of new partnerships. Specifically, the BecA-ILRI Hub will leverage the Bio-Innovate grantees' networks in the region and their engagement with the private sector to develop impact pathways as appropriate, in relation to crop improvement and environmental biosciences, areas where Bio-Innovate is developing functional regional networks. The forthcoming Bio-Innovate business plan will identify other potential opportunities for closer interactions and synergy with the BecA-ILRI Hub as a priority.

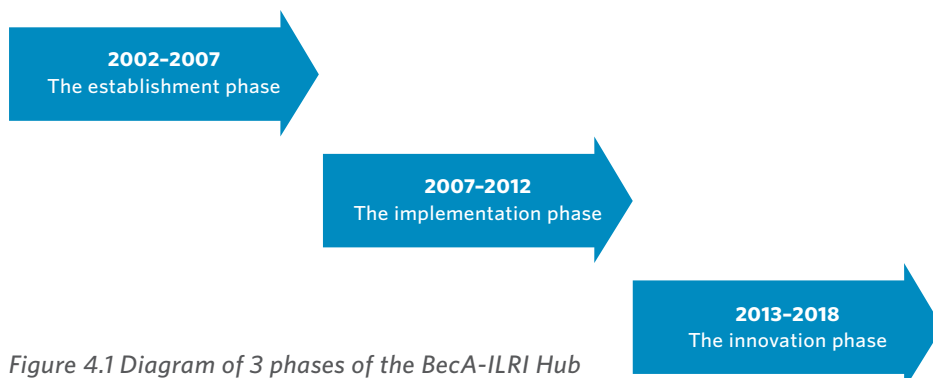


Figure 4.1 Diagram of 3 phases of the BecA-ILRI Hub

4.3 THE BIOSCIENCES INNOVATION

PHASE: 2013-2018

The Business Plan for 2013-2018 describes how in its innovation phase the BecA-ILRI Hub will respond to demand from African partners for biosciences-based innovations and the agricultural challenges in the region. It will also facilitate research and associated capacity strengthening through research with a range of African and international partners, including those coming through the CGIAR research programmes and their networks of partners across Africa. The Hub will nurture new partnerships with public and private partners to

move promising research results along a 'pathway to impact', accessible to small-scale producers in Africa. In seeking partners to facilitate delivery of innovations, the Hub will work closely with the CRPs as they develop impact pathways, with innovation programmes, particularly Bio-Innovate (<http://BioInnovate-africa.org>) and other private and public partners along the value chains, to deliver specific innovations. The Hub is committed to enabling biosciences-based innovations that will have an impact on improving productivity of the food and agriculture sectors and deliver socio-economic benefits to the people and countries of Africa.



5 The Business Model

5.1 PRINCIPLES

Accessibility: Enabling access to the Hub as a shared research platform, particularly to the African scientific community and to the CGIAR system scientists and their partners working in Africa.

Affordability: Reflecting sound cost management while recognizing and responding to the resource constraints faced by scientists at African national research institutions and universities; also recognizing that the primary driver for ensuring affordability is maximizing utilization of the first-class biosciences laboratories and other research facilities.

Financial sustainability: Based on recovery of all direct and indirect costs for staff and operations on an annual basis. Financial sustainability will also require ensuring that there is a BecA Capital Reserve Fund to ensure that equipment is replaced, new technologies acquired and research facilities remain up to date and reflective of clients' evolving needs. There ought to be a continued strong funding base from a broad range of investors in the BecA-ILRI Hub.

Generosity in sharing credit and attributing success: The research conducted by a wide range of scientists using the BecA-ILRI Hub with the many national and international research and development partners, as well as investors who support the research, should be generously acknowledged.

5.2 EVOLUTION OF THE BUSINESS MODEL

The key lessons learned over the past decade that are guiding the design of the business model are summarized below:

(1) Variable mentoring and supervision needs of African visiting scientists and students

What makes the BecA-ILRI Hub attractive to the African scientific community and to key investors is the first-class scientific and technical expertise available through the Hub to mentor visiting scientists and postgraduate students coming from African national research institutes and universities. These mentors come from an extended faculty of scientists working with the BecA-ILRI Hub team, including senior African scientists, ILRI livestock bioscientists, scientists from other CGIAR centres, and increasingly from BecA-ILRI Hub alumni.

(2) Matching affordable access for African scientists and students with financial sustainability

In moving to full cost recovery as required under CGIAR reform, some financial provisions will continue to be required to ensure affordable access by the African scientific community. The creation of the Africa Biosciences Challenge Fund (ABCF) partially addresses this need by availing fellowships on a competitive basis to offset the real costs of using the BecA-ILRI Hub (<http://hub.africabiosciences.org/activities/capacity-building/africa-biosciences-challenge-fund>). There are emerging opportunities through the CGIAR Consortium to support the BecA-ILRI Hub to leverage the skills provided by the extended faculty so as to better engage and build capacity at African NARS.

(3) Need for certainty and transparency in costs for clients and partners

Certainty in forward financial planning is critical for all Hub users. The decision to set an access fee of USD 12,500 per full-time equivalent (fte) per year (2012 dollars) for all clients provided some certainty to the hosted institutions and other clients for planning purposes. Greater transparency with regard to the costs covered by the access fee and other charges to clients for direct and indirect costs will be essential in future negotiations with clients and investors. As the range of programmes, projects and technology platforms increase in size and scope, the business model will need to address a fair allocation of costs amongst individual Hub clients (mainly ABCF fellows and self-funded African scientists and students) and externally funded hosted programmes and projects, including CGIAR centres and CRPs. (This issue is addressed in Chapter 6 on the cost models.)

(4) Core business areas of research, capacity strengthening and technology platforms within BecA need to be well integrated and lead to the delivery of innovations with an impact on African agriculture

Strengthening the research capacity of individuals and institutions, the conduct of demand-led research, ensuring the continuing availability of an up-to-date suite of biosciences technologies in Africa, and product development are closely linked activities.

With regard to expanding capacity strengthening, it is proposed that the BecA-ILRI Hub will play a role in curriculum development, teaching and learning, focusing on strong integration of the biosciences



in agricultural training. Ongoing relationships with higher education institutions, such as the Nelson Mandela African Institute for Science and Technology and the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM), will be extended and formalized through memoranda of understanding and the development of joint capacity-building programmes.

5.3 PRIMARY CLIENTS AND PARTNERS

The primary clients of the BecA-ILRI Hub are the African scientists and students coming from national agricultural research institutes and universities, many of whom are supported through the Africa Biosciences Challenge Fund. Another important group of clients and also partners are the scientists and students coming from ILRI livestock bioscience teams in health, genetics and feeds, as well as from other CGIAR crop research centres (International Maize and Wheat Improvement Center [CIMMYT], International Potato Center [CIP], International Institute of Tropical Agriculture [IITA], and International Rice Research Institute [IRRI]) and the new CGIAR research programmes and their partners in Africa. These international partners are important members of the science faculty at the Hub, leading research programmes as principal investigators on research projects and as co-supervisors of ABCF fellows and postgraduate students conducting research at the Hub.

5.4 THE BUSINESS MODEL 2013-18

The BecA-ILRI Hub has five core operational areas. In delivering its mission under these core operational areas, the BecA-ILRI Hub will strive to retain its role as a 'biosciences magnet' focusing on the high-end biosciences that are complementary to capabilities already available in various national institutes and universities within the region.

The five core operational areas are described below:

i) Capacity strengthening through research:

The essential driver of the BecA-ILRI Hub is to mentor African scientists and students in the application of biosciences in food and agriculture to address priority constraints. It is implemented through mentoring and hosting of African scientists to enable them to conduct their own research projects, making use of the research facilities and technology platforms. Many of these scientists are supported through ABCF fellowships; the mentoring also covers postgraduate students undertaking masters and PhD studies, with co-supervisors coming from the Hub's extended faculty, and includes a programme of short-term training and specialized workshops.

ii) Facilitating the conduct of demand-driven research:

By addressing priority constraints consistent with AU/NEPAD Comprehensive Plan of Action (CPA) and the priorities identified in the CAADP and country investment plans for the food and agriculture sector, and linking these with the CGIAR research agenda and its CRPs wherever possible (see Section 3.4 on alignment options).

Priority research areas

In light of the priority thematic areas identified at the national and regional levels within Africa, the research being conducted at the BecA-ILRI Hub by a wide variety of African and international scientists is organized around five priority themes that respond to a demand-led research agenda for African agriculture.

These themes are:

- **Crop improvement** to increase the productivity of staple crops of Africa

- **Food safety and improved nutrition** through research to mitigate aflatoxin contamination in food and feeds, and other activities supported by the nutritional analysis platform
- **Livestock productivity** through better health, genetics and feeds for small-scale livestock keepers in Africa
- **Climate change mitigation** for better agricultural productivity and sustainable environmental use
- **Exploiting the potential of underutilized species of crops and livestock** to include projects undertaken by ABCF fellows on country-specific priorities.

iii) **Technology platforms and research service units:**

The BecA-ILRI Hub facilitates affordable access for African scientists and students and international partners to a **shared research platform** allowing them access to first-class research facilities and research services so as to apply these to solving Africa's agricultural problems.

The technology platforms and research service units established by the BecA-ILRI Hub, ILRI and other research partners are in the areas of:

- Bioinformatics
- Genomics
- Genotyping and sequencing unit
- Central core research services
- Nutritional analysis and aflatoxin detection platform
- Tissue culture and plant transformation
- Diagnostics for animal and plant diseases

iv) **Networking and institution strengthening:**

working with individuals and institutions in Africa, this expanded effort will be based around collaboration with BecA alumni who return to their home institutions and who continue to work with the BecA-ILRI Hub in joint research programmes and in the delivery of innovations. The BecA-ILRI Hub will proactively track its alumni and seek their continual engagement as part of a BecA extended faculty in support of biosciences within Africa.

As the BecA alumni expand, this synergy will extend to the biosciences networks across the region, such as those sponsored by ASARECA and the NEPAD Planning and Coordination Agency (NPCA), and to national research institutes and universities participating in such networks.

v) **Product development and pathways to impact:**

To enable African scientists and their partners to design their research in such a way as to respond to demand and optimize the chances of successful delivery.

Delivering biosciences innovations: working with distributed networks of partners

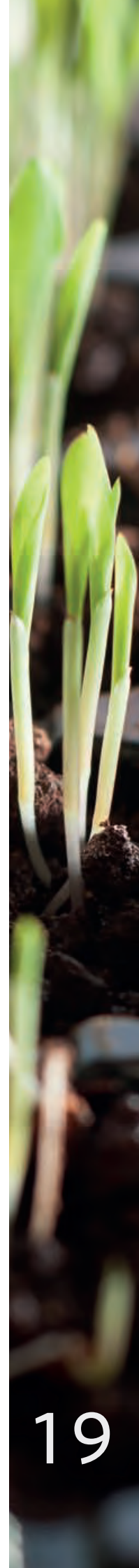
For effective delivery of innovations for improving African agricultural productivity, the ideal design of research projects at the BecA-ILRI Hub will continue to engage various partners with complementary focus. Furthermore, in establishing a continuum of activities for effective and efficient delivery of the biosciences innovations, the BecA-ILRI Hub will continue to leverage existing partnerships and develop new ones with established regional networks. Some of these networks are reasonably well established, focusing on crop improvement (development and distribution of new crop varieties) and tools for improving animal health and productivity.


Emerging innovations 2007-2012

The aim of the research conducted at the BecA-ILRI Hub is to develop new biosciences-based knowledge, products and technologies that are applicable for small-scale farmers and livestock keepers in the countries of Africa. The successful delivery of research results that lead to products and technology will require the BecA-ILRI Hub to establish new partnerships to ensure the successful scale-up and scale-out of research results for the delivery of new products and technologies by private enterprises or public agencies.

Illustrative 'top 10' innovations are described in Annex B as examples of a wide range of research results achieved at the Hub by African and international scientists working in partnership. These have the potential to be carried through to successful innovations.

The research underpinning these innovations was conducted mainly by African scientists and students working at the BecA-ILRI Hub, under a variety of sources of support and institutional arrangements. Some projects were led by African scientists from African research institutes and universities (often through ABCF fellowships); others were led by scientists from ILRI and other CGIAR centres and by international partners; and others by scientists within the BecA-ILRI Hub





team itself. The BecA-ILRI Hub acknowledges the definitive scientific contributions and financial support from these sources that has led to this promising list of biosciences-based technologies for African agriculture.

5.5 BECA/ILRI JOINT RESEARCH OPPORTUNITIES WITH AFRICAN AND INTERNATIONAL PARTNERS

Livestock biosciences

Livestock constitute 40% of total agricultural GDP. Four out of the world's top five agricultural commodities, in terms of value, are animal-sourced foods (milk and beef, pork and chicken meat). Nevertheless, national and international research investments in livestock lag behind crop research. The new ILRI Strategy 2013-2022 pays particular attention to increasing research and development investments in this sector and presents an ideal opportunity to partner with the BecA-ILRI Hub in this area.

There are many new opportunities for the BecA-ILRI Hub to partner with ILRI Biosciences in developing joint programmes with African scientists to improve livestock productivity through better health, better breeds and better feeds. These are priority research themes for Africa and areas in which ILRI has substantial expertise. The livestock bioscientists at ILRI constitute an important part of the BecA-ILRI Hub faculty, and participate in the mentoring and co-supervision of visiting African scientists and students coming to the Hub.

For example, during 2010-2013 there were more than 50 ABCF fellows at the Hub, for periods of about 6 months each. Approximately half of the ABCF fellows were working on a variety of livestock projects, some of which linked with on-going ILRI projects. The plan is to progressively increase the number of ABCF fellows each year from 2013-2018. A substantial proportion of these will be African livestock scientists coming from NARS and universities, who share common interests with the livestock bioscientists at ILRI.

Joint planning of new opportunities in livestock biosciences could emulate the successful joint projects on animal health developed between the Hub and ILRI scientists as part of the BecA-ILRI Hub/CSIRO partnership. These projects addressed improved control of African swine fever (ASF) and peste des petits ruminants (PPR). The research

results so far include the development of more rapid, pen-side diagnostics for ASF and a thermostable vaccine for the progressive control of PPR in sheep and goats. Both projects are developing pathways to impact for these innovations in their next phase. There are also other examples of cooperation such as in genomics, leading to the discovery of new viruses, through the AVID project led by the International Centre of Insect Physiology and Ecology (ICIPE) and ILRI. These examples of livestock biosciences-based innovations are part of the illustrative 'top 10' innovations issuing from research conducted at the Hub by African and international scientists (Annex B).

Delivering biosciences innovations: the interface of biosciences and social sciences

The other area of synergy between the BecA-ILRI Hub and ILRI research programmes is on moving research results towards innovations that will have an impact on agricultural systems in Africa. The other intersections of social sciences with biosciences relate to understanding the factors affecting the adoption of new technologies and assessing the likely economic impacts of successful innovations. The area of moving results to innovations will become increasingly important during the innovation phase of the Hub (2013-2018).

Increased social sciences input into the biosciences agenda will be mobilized through the social science expertise of ILRI in integrated systems (for example, the livestock futures and markets group) as well as through other African and international research institutes and private sector organizations. The new CRPs have an important role to play due to their understanding of systems, value chains and market demands for African agriculture (e.g. CRP 3.7 on livestock and fish). to innovations will become increasingly important during the innovation phase of the Hub (2013-18).

Increased social sciences input into the biosciences agenda will be mobilized through ILRI's social science expertise, in Integrated Systems (e.g. the livestock futures and markets group); as well as through other African and international research institutes and private sector organizations. The new CRPs have an important role to play, due to their understanding of systems, value chains and market demands for African agriculture (e.g. CRP 3.7 on livestock and fish).

6 Financial management and cost models

6.1 BALANCE SHEET SUMMARY: INCOME AND EXPENDITURE TRENDS 2007-2015

BecA-ILRI Hub operational budgets 2007-2015

The operational budgets from 2007-2015 are shown in Figure 6.1a, b (income) and Figure 6.2 (expenditure) as actual income and expenditure for 2007-2012 and estimated operational budgets for 2013-2015.

Income: sources of income definitions

Income to the Hub comes through several sources. The different types of income are defined here as:

Core funds: Contributions untied to the Hub's operational budget.

ABCF: Contributions to ABCF to provide fellowships that allow African scientists more affordable access to the Hub.

Research projects: Funds to support research projects managed by the Hub team on priority themes, with participation of African and international scientists.

Income from clients: Funds received from clients for Hub access fees and payment for research services.

The other distinction shown in the graphs below is between two types of funds:

Secured funds: Funds for which contracts have been signed between ILRI and the contributor to the BecA-ILRI Hub with agreed, multi-year budgets.

Pipeline funds: Proposals under negotiation for implementation in 2013 and later years.

Income trends (Figures 6.1a, 1b)

The Hub's growth during its initial implementation years (2008-2011) was dependent upon unrestricted budget allocations by ILRI towards the Hub's operations (Figure 6.1). However, from 2011, the proportion of the Hub's income from ILRI core funds has decreased, while income from external funds has increased. In 2012, the Hub received no direct core contribution from ILRI and is not expected to require any direct core funds from ILRI in future years. However, ILRI continues to provide indirect material support through capital purchases in the form of laboratory equipment.

The breakdown in sources of income from 2010-2015 amongst core funds, capacity-building funds (ABCF), research projects and income from clients is shown in Figure 6.1b.

In terms of moving towards financial sustainability, 2012 was significant as it marked the first year in which the Hub achieved a balanced budget without requiring a contribution from ILRI core resources. In previous years, ILRI has contributed towards the costs of running the Hub by making a contribution from its core funds towards the total Hub operational, capital and other costs. In 2010 and 2011, ILRI contributed approximately USD 800,000 each year towards operational costs at year end

Expenditure trends (Figure 6.2)

From 2011 onwards, total operating costs for the BecA-ILRI Hub increased substantially as a direct result of the necessity to implement full cost recovery on the Hub's operations. This is in response to the donor-driven CGIAR reform which resulted in the removal of core funding to CGIAR institutes at the end of 2010.

2012 budget outcome

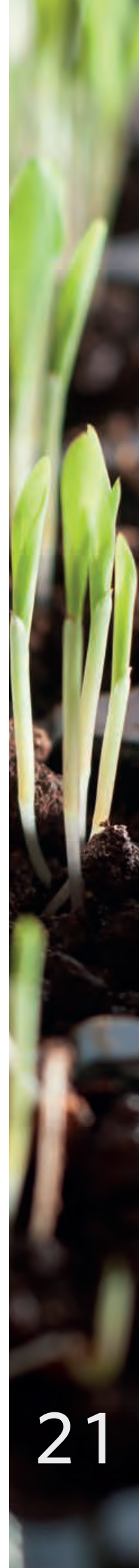
The BecA-ILRI Hub expenditure in 2012 was approximately USD 8 million. For 2012, the Hub paid all costs associated with staff, operations, travel, equipment maintenance, space charges to ILRI for laboratory maintenance and capital depreciation, including setting aside funds for equipment replacement, and indirect costs (17.5%) for administrative and management functions provided to the Hub by ILRI (Figure 6.2). This, however, does not include the cost of new equipment purchases by ILRI or current and future costs associated with their depreciation.

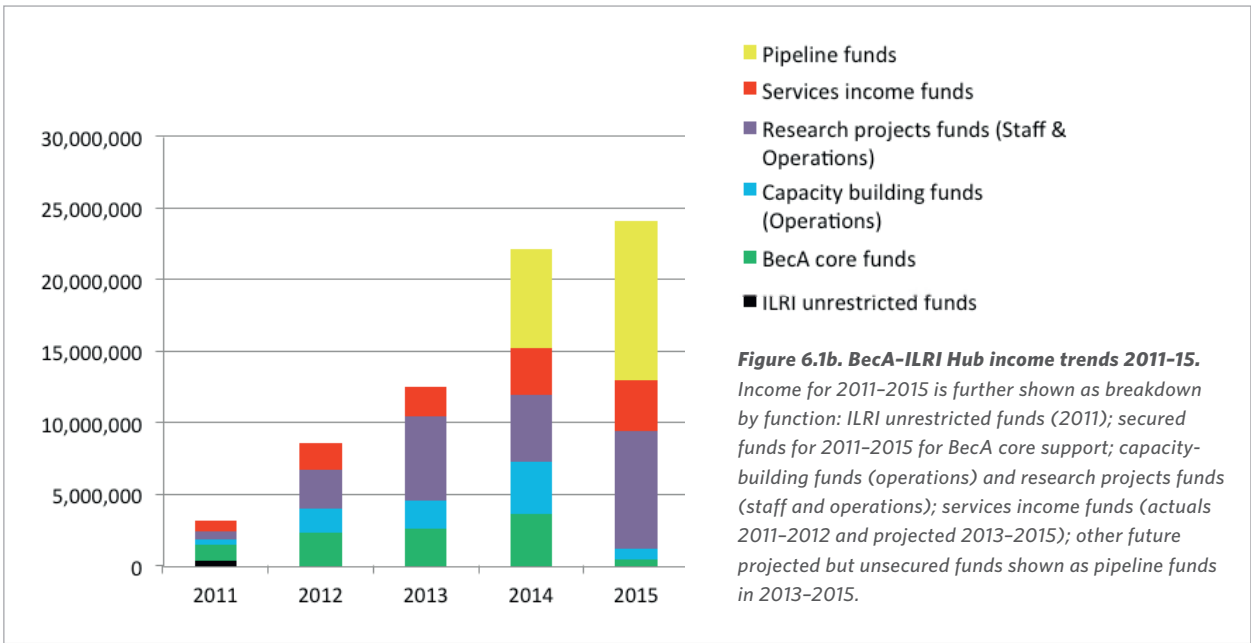
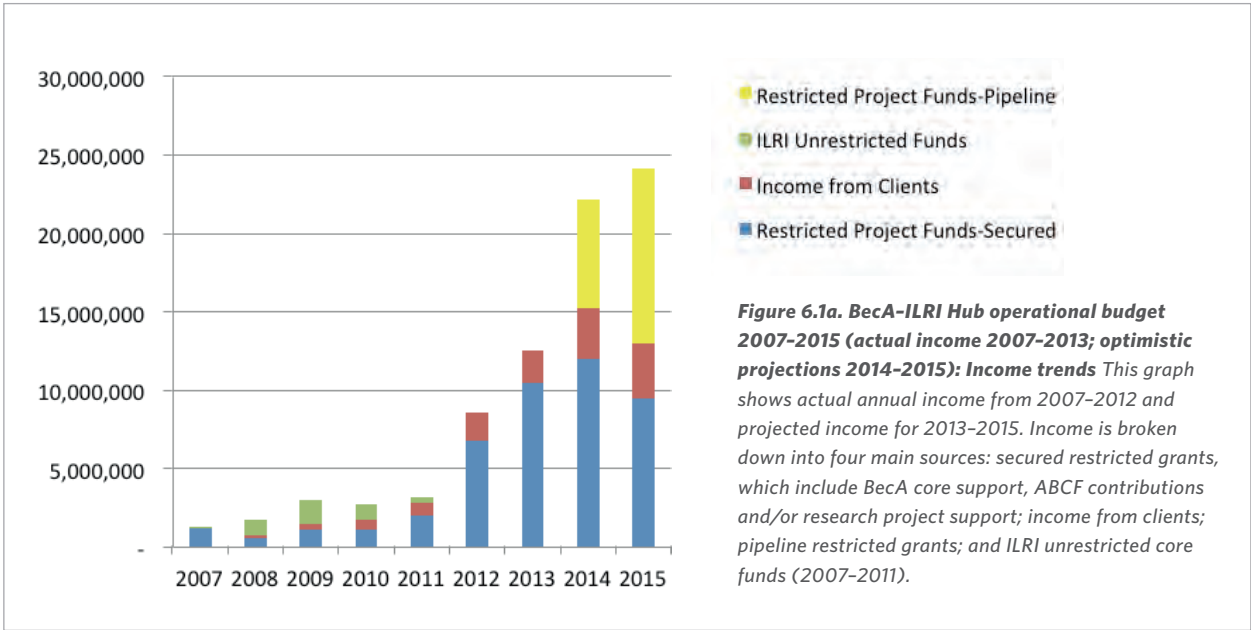
2013-15 budgets - secured and pipeline funds

The initially approved 2013 BecA-ILRI Hub budget was USD 12.5 million (as secured income, November 2012). In terms of 2014-2015 income predictions as well as the continuation of currently contracted income streams, the Hub is negotiating a new four-year phase of the BecA/CSIRO/ILRI partnership.

Institutional investors in the BecA-ILRI Hub

The experience in operating publicly-funded, shared biosciences platforms in several OECD countries (Australia, UK, USA and Switzerland) and in the European Union has shown that these shared research platforms offer operational efficiencies and advanced research facilities beyond the scope of any one state/country. However, all successful platforms require and receive a baseline of public financial





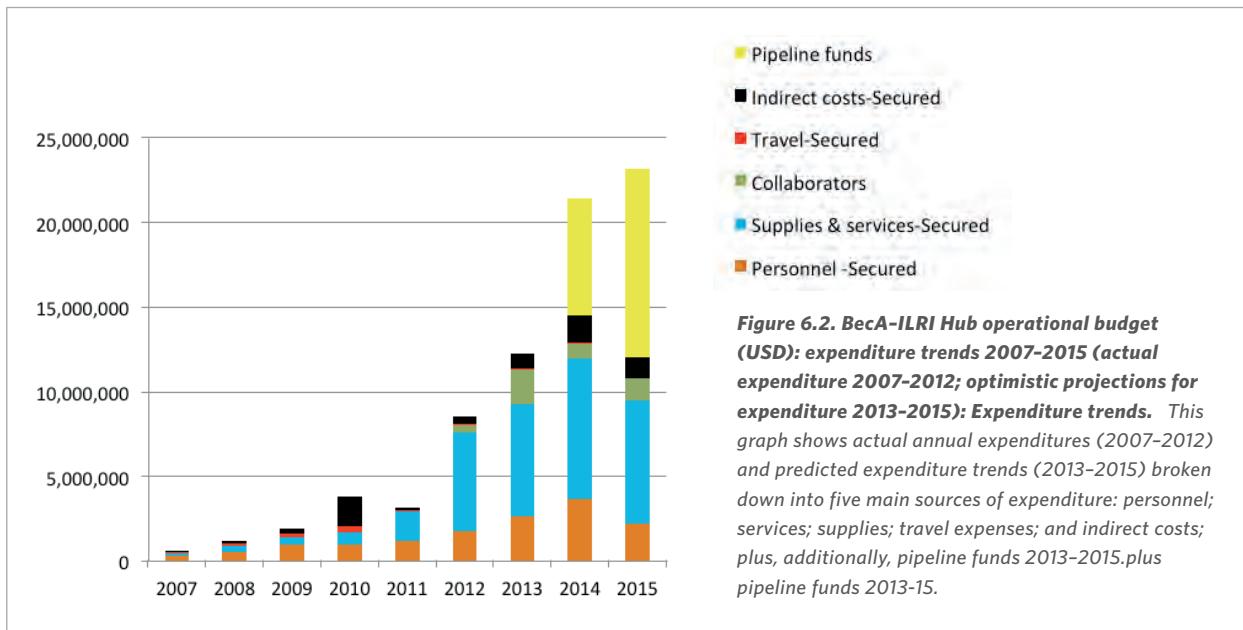


Figure 6.2. BecA-ILRI Hub operational budget (USD): expenditure trends 2007-2015 (actual expenditure 2007-2012; optimistic projections for expenditure 2013-2015): Expenditure trends. This graph shows actual annual expenditures (2007-2012) and predicted expenditure trends (2013-2015) broken down into five main sources of expenditure: personnel; services; supplies; travel expenses; and indirect costs; plus, additionally, pipeline funds 2013-2015. plus pipeline funds 2013-15.

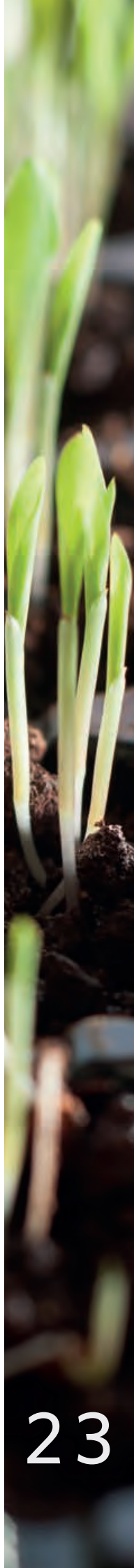
Services include consultants' expenses, visiting scientists/temporary employees, trainees and associates, research fellows, graduate fellows, associates, conference/workshop/training, office supplies, publication services, partner transfers, space costs, research and coordination costs and other expenses; **Supplies** include laboratory reagents and field supplies; **ILRI indirect costs** is calculated at 17.5%.

support in order to achieve financial stability. This core support covers the costs of essential scientific and technical staff and operations around which specific projects can operate.

The BecA-ILRI Hub is fortunate to have been supported over several years by a small group of committed investors who provide core funds that underpin the Hub's operations (as well as support capacity strengthening through the ABCF and research projects). The core funding has and will continue to support the main mission of BecA, i.e. facilitating access to the state-of-the-art laboratories and technology platforms by the African scientific community.

This core support has also been important in enabling the Hub to successfully transition the CGIAR reform and emerge ready to serve its dual constituency of the African scientific community and the CGIAR CRPs and international research centres.

The current core investors in the BecA-ILRI Hub are the Syngenta Foundation for Sustainable Agriculture (SFSA), the Bill & Melinda Gates Foundation (BMGF) and the governments of Australia and Sweden. It is intended to expand this group of core supporters over the course of this Business Plan through the advocacy of AU/NEPAD with African partners.



6.2 TRENDS IN BecA-ILRI HUB USE (Figure 6.3)

There was an impressive doubling of client numbers from 2007 to 2010. This upward trend levelled off in 2011, at around 120 clients per year (expressed as ftes). This was partially due to a change in the financial model whereby most Hub users were charged a Hub access fee (USD 12,500 per annum) as well as the direct costs of their research. When ABCF came into operation, the Hub was able to offer fellowships to African scientists and students to partially offset the costs and make the Hub more affordable to African scientists. Previously, the Hub access fee was waived for African clients coming from African NARS and universities, who paid only the direct costs of their research.

Since the establishment of ABCF, the number of ABCF fellows accessing the Hub has been steadily increasing with 11 ftes in 2011 and 18 ftes in 2012. The other client groups that have been steadily increasing in 2011-2012 are CGIAR crop centres, with increases in both the number of CGIAR scientists and African students linked to CGIAR programmes being implemented at the Hub; and increases in the number of hosted research programmes which include collaborating NARS scientists and students.

The Hub client numbers, when expressed as full-time Hub users (ftes) do not fully reflect the extent of the BecA-ILRI Hub convened regional research partnerships. Many of the research partners in

these programmes remain based at their home institutions and send samples for analysis, visiting the Hub only for short periods of time (e.g. the BecA/CSIRO partnership on aflatoxins, which has 12 NARS collaborating scientists, and the ASF project with 16 collaborators in 3 countries). The current suite of 6 BecA/CSIRO partnership projects has a total of 69 collaborators across several African countries, while the newly established Swedish-funded partnership on climate change adaptation has 16 collaborators in 3 countries.

An upward trend in total Hub clients is predicted in 2013 onwards, with a substantial planned increase in the number of ABCF fellowships and other sources of regional research programme support available to scientists coming from African NARS and universities. Increasing Hub clients from all sources must be a priority for ensuring both financial sustainability and affordability by the African scientific community. The 'carrying capacity' of the laboratories, in terms of the optimum use of the available space, is at least 300 ftes per year. The challenge is to reach this level of optimal use within the life of this Business Plan, by expansion in all categories of clients (Figure 6.3) and by expanding the hosting of new programmes with African and international partners and new technology platforms (e.g. vaccines, diagnostics and nutritional analysis to serve the region). These options are discussed further in the following sections.

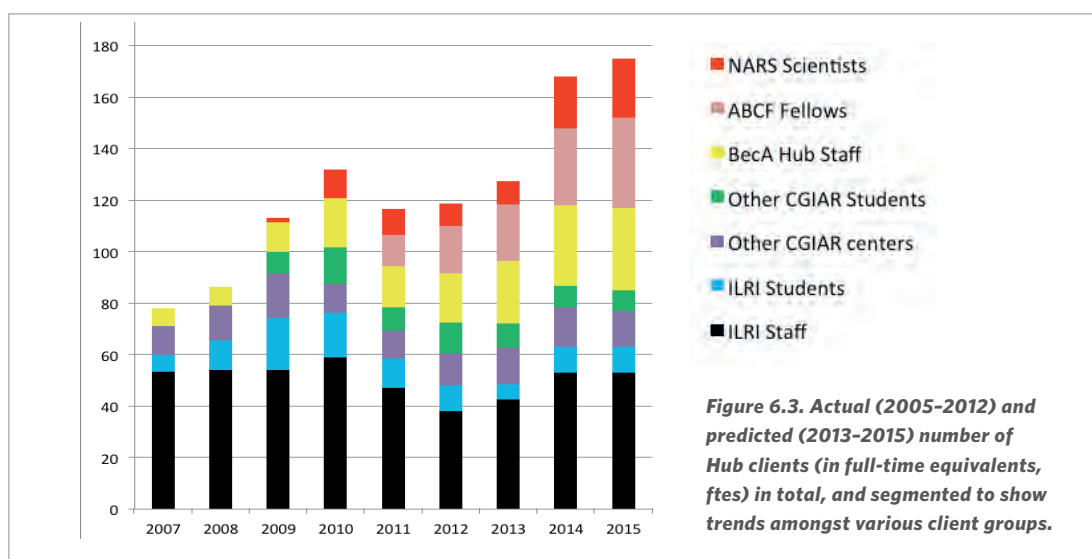


Figure 6.3. Actual (2005-2012) and predicted (2013-2015) number of Hub clients (in full-time equivalents, ftes) in total, and segmented to show trends amongst various client groups.

6.3 RESOURCE MOBILIZATION STRATEGY FOR EXPANDING BECA-ILRI HUB USE

Achieving the proposed growth targets will ensure the optimal use of the laboratories and other research facilities at the Hub. The imperative is to reach a level of economies of scale in the laboratories so as to ensure a sustainable financial model, while also reducing the cost per person.

The proposed rate of growth will require new emphasis on establishing inter-institutional arrangements for hosting larger programmes, including through expanded partnerships with ASARECA, CORAF/WECARD and SANBio; mobilizing additional resources to support new research programmes that reflect the demand-led African agricultural agenda (aligned with the CAADP agenda and the new CGIAR agenda, as described in Chapter 3) and include a strong capacity strengthening component; and to continue increasing the number of African clients who access the Hub on an individual basis, including an increasing number of ABCF fellows.

More emphasis on Hub hosting of larger research programmes, including CRP-supported programmes, and encouraging more hosted institutions will bring to the Hub a critical mass of scientific and financial resources focused on a particular thematic area of research or product incubation and innovation delivery. They will also provide additional faculty, able to mentor ABCF fellows and other visiting scientists and African students at the Hub.

This growth strategy will also necessitate a significant year-on-year increase in fundraising initiatives to provide more ABCF fellowships and regional programme support to ensure affordable access by target beneficiaries to the BecA-ILRI Hub.

Management implications of substantial increases in client numbers

The proposed substantial increases in client numbers should be accompanied by the following progressive steps in Hub management:

- An enhancement of the scientific resources available to clients (e.g. scientists to mentor the increasing number of affiliated African scientists and students).


- Upgrading and refreshing the profile of equipment and services available at and through the Hub; these are factored into the projected BecA-ILRI Hub expenditure for 2013–2015 (Figure 6.2).
- Creating a new BecA-ILRI Hub Capital Fund and seeking contributions from the current BecA-ILRI Hub investors and other public and private investors and philanthropic foundations to ensure continued affordable access to the Hub by African partners, and to enable long-term, stable investments in new technologies so that the Hub remains a state-of-the-art biosciences platform in Africa.
- An adjustment of client profiles to better reflect the mission, by continually increasing the proportion of Hub clients coming from the African scientific community. .

More hosted research projects, programmes and institutions and an increasing number of scientists and students at the Hub will also create a cycle of attracting more affiliated scientists (from Africa and globally) to fund and mentor the scale-up of target beneficiaries in addition to attracting and motivating cutting-edge scientists to join the Hub either as staff, affiliated scientists or while on sabbatical leave. Similarly, regional 'community of practice' umbrella projects will increase integration across the biosciences community in the region and enhance direct line impact from BecA-ILRI Hub-hosted research to agricultural development in Africa.

6.4 COST MODELS: FUTURE OPTIONS AFFORDABLE ACCESS AND FINANCIAL SUSTAINABILITY

To achieve the twin demands of financial sustainability and affordable access, the Hub business must increase from the equivalent of 125 clients (ftes) in 2010 to at least 200 clients per year by 2014 and 300 ftes by 2015, while maintaining the access fee at the current level of USD 12,500/person per year.

Achieving this target of 300 ftes by 2015 would provide an income of USD 3.75 million from clients by 2015. Income from clients and services in 2012 was USD 1.8 million. The balance of support for Hub operations currently comes from BecA institutional investors, thus allowing the Hub to offer access to its clients at subsidized rates. Achieving the target



of 300 ftes by 2015 implies that the Hub would then no longer require institutional support grants after 2015, but that these grants are essential for 2013–2015 as the Hub accelerates its rate of growth and continues to increase the numbers of African scientists and students accessing the Hub each year.

Current cost model

The current cost model is based on charging all users a Hub access fee (to cover Hub operations and indirect costs) plus direct costs of their research projects. The Hub user fee is currently USD 12,500 per fte per year. The principle is that all users will be charged the same fee. However, African students who do not have access to external funds are charged a lower bench fee of USD 200/month.

Currently, all users contribute to the fixed costs of running the Hub. However, to ensure affordable access by its target beneficiaries, the Hub will prioritize fundraising for fellowships through ABCF to enable affordable access by African scientists and students.

Not all potential users have the same access to resources, and they vary in their ability to pay the equivalent of full costs. Thus, ABCF fellowships must cover the access fees for a substantial number of its primary beneficiaries (African scientists and students). Many of the Hub's institutional costs are covered by international development investors.

Conversely, other Hub clients with direct access to substantial international resources, including restricted project grants, should cover their full pro-rata share of direct and indirect costs in the future. By modifying its cost model as described below, the Hub's institutional investors will appreciate that they are not being asked to subsidize any hidden operational inefficiencies. The investors can also easily see the substantial number of African scientists and students their funds are supporting at the Hub through their BecA-ILRI Hub institutional support grants and ABCF contributions.

Rationale for modifying the cost model

As the range of Hub-hosted programmes, hosted institutions and new technology platforms increases in size and scope, the business models will need to address a fairer allocation of costs between the individual Hub clients (mainly ABCF fellows and an increasing number of other African scientists and students funded from various sources) and the larger, internationally-funded programmes hosted at the Hub. The new programmes may be large ones led by scientists from hosted institutions (other CGIAR centres and CRPs) or from the BecA-ILRI Hub team, in partnership with African and international scientists).

Mixed model for recovery of Hub costs

It is proposed that the future cost models should be more differentiated, so as to better address the Hub's twin challenges of enabling affordable access for African scientists and students while also ensuring the long-term financial sustainability of a centre of excellence in biosciences in Africa. A mixed model would better reflect the range of Hub clients and avoid cross-subsidization between the different categories of clients, particularly individual African clients and internationally-funded programmes.

Over time, this mixed cost model will reduce the need for institutional support to the Hub by its core investors. It will enable external support to be directed towards the research and capacity strengthening programmes, for individuals through the ABCF, and for institutions in Africa through continuing research partnerships with BecA-ILRI Hub alumni on their return to their home institutions.

New Cost model options: A Mixed model

The new cost models would be driven by the purposes of enabling more African scientists and students affordable access to the Hub at subsidized rates and ensuring that new regional and international research programmes hosted by the Hub, which have access to international resources, contribute more towards the full costs of Hub operations and indirect costs.

Category 1 International rate for individual Hub users

Individual Hub users would continue to be charged the Hub user fee of USD 12,500 per fte per year. This would apply to ABCF fellows and other individual clients coming from African NARS and universities who have access to international support. The current Hub user fee would continue to apply to scientists and students coming from currently contracted hosted institutions and hosted programmes (mainly CGIAR institutes, including ILRI Hub users) for 2013. This is so as not to renege on previous agreements with hosted CGIAR institutions and to allow substantive consultation and advance notice on any changes in the cost model that may apply to these hosted institutions depending on the nature of their use of the Hub and whether it fits better into category 2, covering allocated space. This would need to be determined on a case by case basis by consultation between the Hub and the existing hosted institution/programme.

Category 2 New Hosted programs and technology platforms

This category of new hosted programmes includes some large programmes (in excess of USD 1 million) that are currently under development and that will require specifically allocated space and, in some cases, isolation areas to prevent cross-contamination from one research group to another. Examples include the BecA/CSIRO aflatoxin programme and its nutritional analysis platform.

Another example is animal vaccine research, where ILRI is developing a new vaccine discovery platform with multiple partners and emphasis on the development of new generation vaccines. BMGF is interested in supporting two vaccine initiatives that will form the nucleus of a wider vaccine discovery platform.

The new cost model proposed here is that a hosted programme or platform will be allocated a specific area of the laboratories as their home space, suited to the research needs of their programme, including the necessary biosafety requirements so as to avoid biological cross-contamination with other programmes and projects at the Hub. The

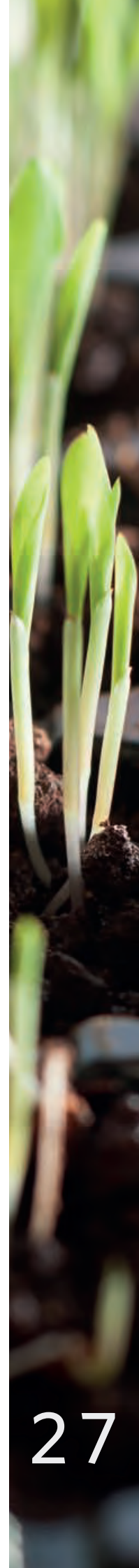
hosted programme (platform) leader, the BecA-ILRI Hub and ILRI management would agree on a specific allocation of space and services and their associated costs for the programme/platform. This agreement would be reached for the term of the programme so as to provide certainty during the design and budget planning.

In terms of costs, the hosted programme (platform) would pay the full cost recovery rates for their allocated laboratory and office space based on a fee per square metre, irrespective of the number of Hub users in the programme or users of the specialized technology platform. The programme will also be able to access the shared research services at the Hub, on the same terms as all other Hub users (paying direct costs for genotyping and sequencing, for example). The new programme would not be required to pay the Hub user fee per person and could have as many people as required for the research in the laboratory. This may be an attractive model for specialized programmes such as the one on aflatoxins, which has many African collaborators and several postgraduate students.

Category 3 National rate for African scientists and students funded from national resources

A national bench fee of USD 200 per month would apply to this category of Hub user to encourage more African scientists and students from NARS and universities to access the Hub for their own research projects. Such projects may be funded from national resources such as the national councils of science and technology. It is expected that this category will be phased out over time as more funds are mobilized from African public and private sources among others, to cover the real costs of conducting high-end biosciences research to drive innovation in Africa.

In moving to the mixed model, some flexibility in negotiations will be required so as to keep the current African and international clients satisfied that they are being treated fairly, while providing incentives to increase the number of Hub users coming from the African scientific community and meeting the twin goals of affordable access and long-term financial sustainability for the BecA-ILRI Hub.



7 Governance and management arrangements

7.1 OVERVIEW

The BecA-ILRI Hub is a shared research platform whereby ILRI has agreed to share its upgraded and expanded research facilities with a broader African and international scientific community. The Hub now has a wide range of clients and multiple partners. They include African scientists and students coming from national research institutes and universities as well as several CGIAR centres and CRPs, including ILRI on livestock, CGIAR crops centres (CIMMYT, CIP, IITA and IRRI) and new CRPs (Agriculture for Nutrition and Health (A4NH), Climate Change, Livestock and Fish).

This business plan proposes refreshing the governance and management arrangements for the BecA-ILRI Hub. The intent is to provide greater clarity regarding the responsibilities and accountabilities of the various parties involved. This clarity will enable the BecA-ILRI Hub to meet the expectations of its various constituencies within Africa and internationally as it moves into its next stage of growth and delivery of innovations to benefit African agriculture.

The BecA-ILRI Hub serves three main constituencies: the African scientific and development communities as represented by AU/NEPAD and other African partners in agriculture, education, and science and technology; the international scientific communities as represented by the CGIAR Consortium (international centres and CRPs) and the advanced research institutes which partner with African scientists through the Hub; and the international development community as investors in the BecA-ILRI Hub and its African partners. These varied constituencies need to participate in or be satisfied that the new governance and management arrangements will enable the Hub to operate efficiently and effectively as a centre of excellence in biosciences in Africa.

Analogy with CGIAR Research Programs in governance and management

In considering the current profile of the BecA-ILRI Hub in terms of its range of hosted programmes, partners, clients and scope of activities, there is an analogy with the new CRPs. This analogy will clarify the future accountabilities and responsibilities of the various parties and allow enhanced participation for stakeholders.

Under the CRP governance model as recommended by the CGIAR Consortium, the Board of the lead centre takes fiduciary and legal responsibility for the implementation of the CRP programme. The programme itself is agreed upon by multiple stakeholders who are represented in the governance arrangements through an advisory panel which reviews the overall programme strategy and endorses the strategic planning documents to the Board of the lead centre for approval. The advisory panel also advises the Board on the likely development impact of the CRP and any issues in delivery, and on any relationships issues amongst the parties. The CRP Director is appointed by and reports to the Director General of the lead centre.

A governance and management model similar to that recommended by the Consortium for the new CRPs is proposed here for the BecA-ILRI Hub.

7.2 GOVERNANCE ARRANGEMENTS

ILRI: ILRI is the lead centre for the BecA-ILRI Hub.

ILRI Board of Trustees: The ILRI Board has accepted the fiduciary and legal responsibility for the BecA-ILRI Hub over the past decade (2002-2012). In 2004 ILRI signed an MOU with AU/NEPAD in the context of upgrading and expanding the existing research facilities at ILRI and sharing these with the African scientific community, with the financial support of the Government of Canada and ILRI core resources. AU/NEPAD and ILRI worked closely together on the design and implementation of the Africa Biosciences Initiative, of which the BecA-ILRI Hub was a critical component, from 2002-2010. These combined efforts led to the official launch of the BecA-ILRI Hub by the President of Kenya on 5 November 2010 (<http://hub.africabiosciences.org>).

The ILRI Board of Trustees continues to take fiduciary and legal responsibility for the BecA-ILRI Hub. The Hub operates under the auspices of the ILRI host country agreement with the Government of Kenya. The ILRI Board formally accepted the legal responsibilities for the environmental impact of all research conducted at the Hub. ILRI is subject to an annual environmental audit to ensure its

compliance with the environmental management requirements of the Government of Kenya. The ILRI Board also approved financial contributions towards the establishment and operations of the Hub, including a capital contribution to the facilities upgrade in 2007–2010. The total financial contributions of ILRI to the Hub from core resources were in the order of USD 8 million from 2002–2012, of which USD 5 million was for capital expenditure.

New BecA-ILRI Hub Advisory Panel

A new BecA-ILRI Hub advisory panel will be constituted in 2013 to engage more directly with the various constituencies of the BecA-ILRI Hub. The terms of reference are:

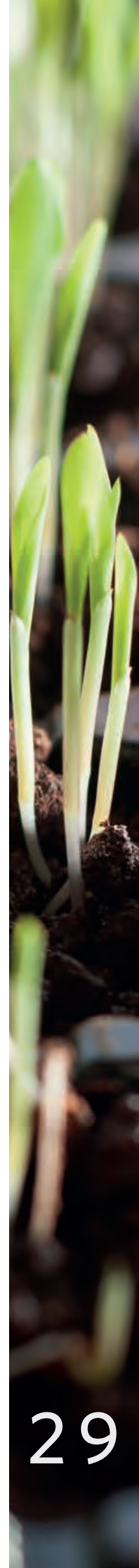
- To advise on the strategic directions of the BecA-ILRI Hub as expressed through the Business Plan 2013–2018 and its implementation and updates.
- To advise on the strategic positioning of the Hub and the evolution of its comparative advantages in high-end biosciences over time.
- To advise on the measurable deliverables, indicators and measures of success derived from the implementation of the Business Plan;
- To advise on the potential economic impact of the research conducted at the Hub by the multiple users, and how the delivery of promising innovations can be accelerated in Africa.
- To advise on the quality of partnerships within Africa and internationally.
- To advise on future opportunities, including new scientific opportunities, new partnerships and resource mobilization opportunities.
- To advocate the value of the BecA-ILRI Hub with stakeholders in Africa and internationally, who include potential new investors, among them African governments.
- To interact with the BecA-ILRI Hub investors to seek their views of the Hub's continuing contributions towards biosciences applications in Africa (e.g. by inviting investors as observers in advisory panel meetings).

The panel would meet with the BecA-ILRI Hub investors' group on a biannual basis, linked with the panel meetings.

The BecA-ILRI Hub advisory panel will have about 10 members, drawn from the following spectrum of expertise and interests:

- **Independent Chair:** An eminent African scientist, knowledgeable on biosciences and its applications to food and agriculture in Africa
- **AU/NEPAD** representative, to reflect the key partnership of AU/NEPAD with ILRI in establishing the Hub
- **ILRI representative** - Deputy Director General (DDG) Biosciences
- **ASARECA, CORAF/WECARD and FARA** as the Pan African and sub-regional agricultural research organizations, representing the African NARS
- **RUFORUM** representative of **universities** in East Africa;
- **CGIAR Consortium** to reflect the interface of the Hub with multiple users from the CGIAR centres/CRPs
- **Bio-Innovate** technical advisory committee chair
- **International biosciences expert(s):** One or two independent experts, knowledgeable about biosciences internationally and in Africa
- **End user perspective** from farmer cooperative and/or civil society
- **Private sector representative**, preferably with financial skills.

The BecA-ILRI Hub Advisory Panel will meet at least once per year. The panel will prepare a written report for AU/NEPAD and ILRI addressing the above terms of reference. The panel will advise the AU/NEPAD CEO and the ILRI Board on its findings through the ILRI DG. The panel Chair will meet with the ILRI Board at least annually to present the findings of the panel and participate in the discussions relating to the ILRI Board's oversight, legal and fiscal responsibilities for the BecA-ILRI Hub. The BecA-ILRI Hub Director will be the secretary to the Advisory Panel and will be responsible for preparing the necessary documentation to facilitate the deliberations of the panel.



7.3 INSTITUTIONAL /MANAGEMENT ARRANGEMENTS

The BecA-ILRI Hub has multiple African and international participants and partners in research and capacity strengthening programmes conducted at the Hub and in the region. It also has other clients of its technology platforms and research-related services, and hosts several CGIAR centres and CRPs that are members of the CGIAR Consortium. ILRI will leverage its membership in the CGIAR Consortium to facilitate a larger role for the BecA-ILRI Hub in hosting scientific teams from several CRPs working in Africa, as part of the growing alignment between AU/NEPAD and the CGIAR in implementing the CAADP agenda in Africa.

The BecA-ILRI Hub is managed by ILRI on behalf of all stakeholders. ILRI has accepted accountability for the scientific and financial management and administrative operations of the Hub. ILRI has recruited a specialized team led by a senior African bio-scientist as the BecA-ILRI Hub Director. The BecA-ILRI Hub Director has the delegated responsibility from the ILRI Director General to manage the BecA-ILRI Hub and implement the ILRI Board- approved Business Plan, and is accountable to the Director General for the successful implementation of the Business Plan. The BecA-ILRI Hub Director is appointed by and reports to the ILRI Director General.

The BecA-ILRI Hub Director will develop many functional relationships with the ILRI DDGs for Biosciences and Integrated Systems, and with the directors of Corporate Services and Human Resources to ensure the efficient operations of the Hub and enable it to serve its internal and external clients and deliver its intended outcomes.

The Hub Director will partner with ILRI Biosciences in developing more joint programmes and projects to expand the applications of biosciences so as to increase livestock productivity in Africa (see Section 5.4). This approach will strengthen the mutual synergies between the BecA-ILRI Hub and ILRI Biosciences. It will enable an expansion in joint resource mobilization efforts to increase the resources available for livestock biosciences research with African partners.

The BecA-ILRI Hub Director is responsible managing the designated Hub laboratories and research services that constitute the shared research platform, and for hosting technology platforms that are managed either internally or by various specialized partners under the overall direction of the BecA-ILRI Hub Director.

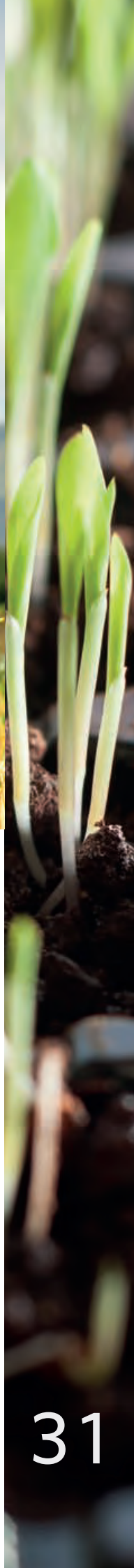
Ensuring that the laboratories are efficiently managed and reducing costs to internal and external users is an important role for the BecA-ILRI Hub Director and his/her team. There are two ways to reduce the costs for using the Hub facilities. One is by increasing the number of users so that the unit costs go down. The second is to increase operational efficiency by reducing overhead costs. Pursuing both approaches will make the BecA-ILRI Hub more affordable to African clients in particular, while maintaining its international reputation for quality and excellence in biosciences.

Setting Performance Standards

With regard to increasing operational efficiencies, the BecA-ILRI Hub provides services to ILRI scientists and students who use the Hub (48 ftes in 2012), as well as to external clients. Other business units within ILRI provide services to the Hub in areas such as corporate services, financial management, human resources, occupational health and environmental safety.

To increase operational efficiencies across all its activities, the ILRI Director General plans to introduce performance standards for the services provided by all business units during 2013. In the case of the BecA-ILRI Hub, these new performance standards will cover the cost, timeliness and quality of the services provided by the Hub to all clients, and will include services provided to the Hub in areas such as HR, finance, capacity development and procurement. The details of these performance standards will be developed during 2013 by the respective business units after consultation with their clients.

The purpose of these performance standards is to increase the efficiency of operations across ILRI. In the case of the BecA-ILRI Hub, this should reduce the costs of Hub operations and overheads to all



clients, internal and external, and thus contribute towards making the Hub more affordable, especially to African clients.

By setting agreed performance standards of quality, costs and timeliness for the provision of services by the Hub and to the Hub, these standards can be monitored and adjustments made in those areas where the mutually agreed standards of quality, costs or timeliness are not being met, either by the BecA-ILRI Hub or by other ILRI business units.

7.4 BECA-ILRI HUB ANNUAL REPORT AND ANNUAL FINANCIAL REPORT

The BecA-ILRI Hub Director will prepare an annual report on all the Hub's operations, outputs and outcomes; and ILRI will prepare an annual financial statement, with a balance sheet showing all income and expenditure by the BecA-ILRI Hub as a cost centre. These documents will also constitute part of the ILRI annual report. A separate financial statement on the BecA-ILRI Hub's income and

expenditure will be included as part of the ILRI annual audited financial statement. (This is a similar arrangement to the way CRP funds are to be treated by the lead centre in the annual audited accounts for the CGIAR).

The BecA-ILRI Hub annual report and annual financial statement will be put in the public domain. They will also be shared with the BecA advisory panel and with all BecA stakeholders and investors. This is part of the effort to enhance the transparency of the BecA-ILRI Hub's operations and financial management.

It will also increase efficiency and reduce transaction costs if the BecA institutional investors are able to accept a common annual report and an audited financial statement and balance sheet rather than require separate reporting on their investments. This is a matter of ongoing discussion with the key investors to reach a common understanding on reporting requirements to investors.

8 Implementation of the Business Plan

8.1 COMMUNICATIONS AND PUBLICATIONS

The BecA-ILRI Hub has developed and is implementing a communication strategy that aims at increasing the visibility, awareness and understanding of the research facilities, research activities and capacity-building opportunities across Africa and internationally.

A second aspect of the communication strategy will focus on ensuring that research outputs are also disseminated in the form of peer-reviewed publications in relevant scientific journals. The communication of research outputs at the Hub will also take into account the intellectual property (IP) issues. The use of open source journals and early sharing of data will be encouraged.

Awareness is critical for clients to be able to harness available opportunities. Specifically, communication activities will be targeted towards:

- Increasing the promotion and impact of research to enable uptake of technologies across the production chain (from the African farmer through to the public sector)
- Attracting more scientists, researchers and institutes to utilize the BecA-ILRI Hub facilities and bring multidisciplinary skills to the research projects undertaken at the Hub.
- Ensuring governments, research institutes, the donor community and Pan-African organizations understand the contributions that the BecA-ILRI Hub enabling functions are making to science advancements and economic development in and for Africa.
- Increasing the awareness of capacity-building opportunities available to African scientists and researchers.
- Promoting the scientific breakthroughs being generated by African scientists and students undertaking their research at the BecA-ILRI Hub, including those receiving ABCF fellowships.

8.2 HUMAN RESOURCES AND SKILLS

Focusing on the 'biosciences magnet' and on the five core areas of operation, staffing at the BecA-ILRI Hub will ensure the availability of critical sets of skills in the high-end biosciences for cutting-edge research, and for new technologies acquisition, incubation and use for delivery of new and more efficient research and capacity-building activities and services. Figure 8.1 outlines the areas of key skills sets necessary for core operations of BecA. A brief description of the skills required within each of these core business areas are given below.

The **capacity building and training** component of BecA operations has been successful as it has largely addressed challenges that prevent individuals and institutions from conducting high quality research to effectively contribute to food security and improve agricultural productivity. This team must be equipped with various skills to teach and mentor a wide range of visiting scientists and students.

The **technology platforms and services** component is tasked with the responsibility of managing the BecA-ILRI laboratories infrastructure, providing specialized services and developing new platforms in response to needs expressed by users. In addition, this team is tasked with the responsibility of establishing and providing access to the latest technologies as key contributors to accelerate agricultural research and innovation in Africa.

The development of a demand-led **research** agenda at the BecA-ILRI Hub requires expertise in a wide range of areas within the biosciences. The BecA team must therefore have members who are known experts leading cutting-edge research activities for continuous engagement with the international research community.

The **programme coordination and support** component provides essential skills for partnerships coordination, project management, accounting, technical report development, budgets and grants management, communication and contributions to resource mobilization.

Skills in **monitoring, evaluation and learning** will be critical for the BecA team to effectively conduct ex ante and real-time analyses of research, capacity building, technologies and services. It is expected that this addition of complementary skills will increase the Hub's ability to design projects with integrated paths to impact.

The BecA team is relatively small compared to its mission, especially for combined responsibilities for delivering on sub-regional and even continental research, capacity building, technology and research services agenda. It is therefore strategic that the BecA-ILRI Hub faculty be extended to include ILRI biosciences and integrated sciences scientists, CGIAR centres scientists hosted at the BecA-ILRI Hub and other scientists within NARS. This faculty provides a much stronger scientific community that contributes towards delivering high standards of biosciences results to be translated into innovations.

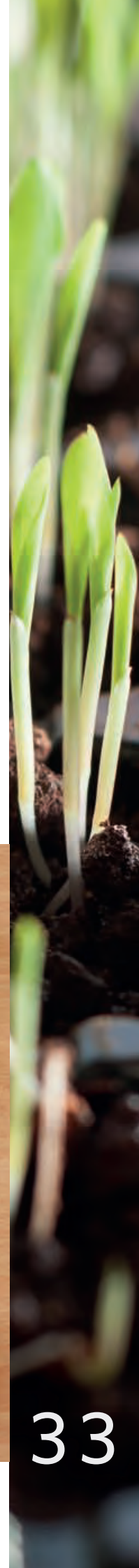
Effective delivery of the BecA mission will rely on progressive and innovative strategies to attract and retain high-calibre skills.

8.3 MONITORING AND EVALUATION AND LEARNING

A logic model is shown in Annex A. The logic model will provide the basis for developing a monitoring and evaluation plan, including a manageable set of key indicators of success that can be tracked over time. The monitoring and evaluation (M&E) plan and progress on indicators will be tracked by a dedicated BecA-ILRI Hub staff member. Results will be shared with the BecA stakeholders and investors, the ILRI Board, AU/NEPAD and others as required. The lessons learned from M&E during the implementation of the Business Plan will provide continuous feedback to inform future programme development.

8.4 RISK ANALYSIS AND MITIGATION STRATEGY

A summary of the risks associated with establishing and operating the BecA-ILRI Hub is attached, together with the proposed risk mitigation strategy for each identified area of risk (Figure 8.2).





Diagrammatic Representation of the BecA-ILRI Hub Operation and Relationships

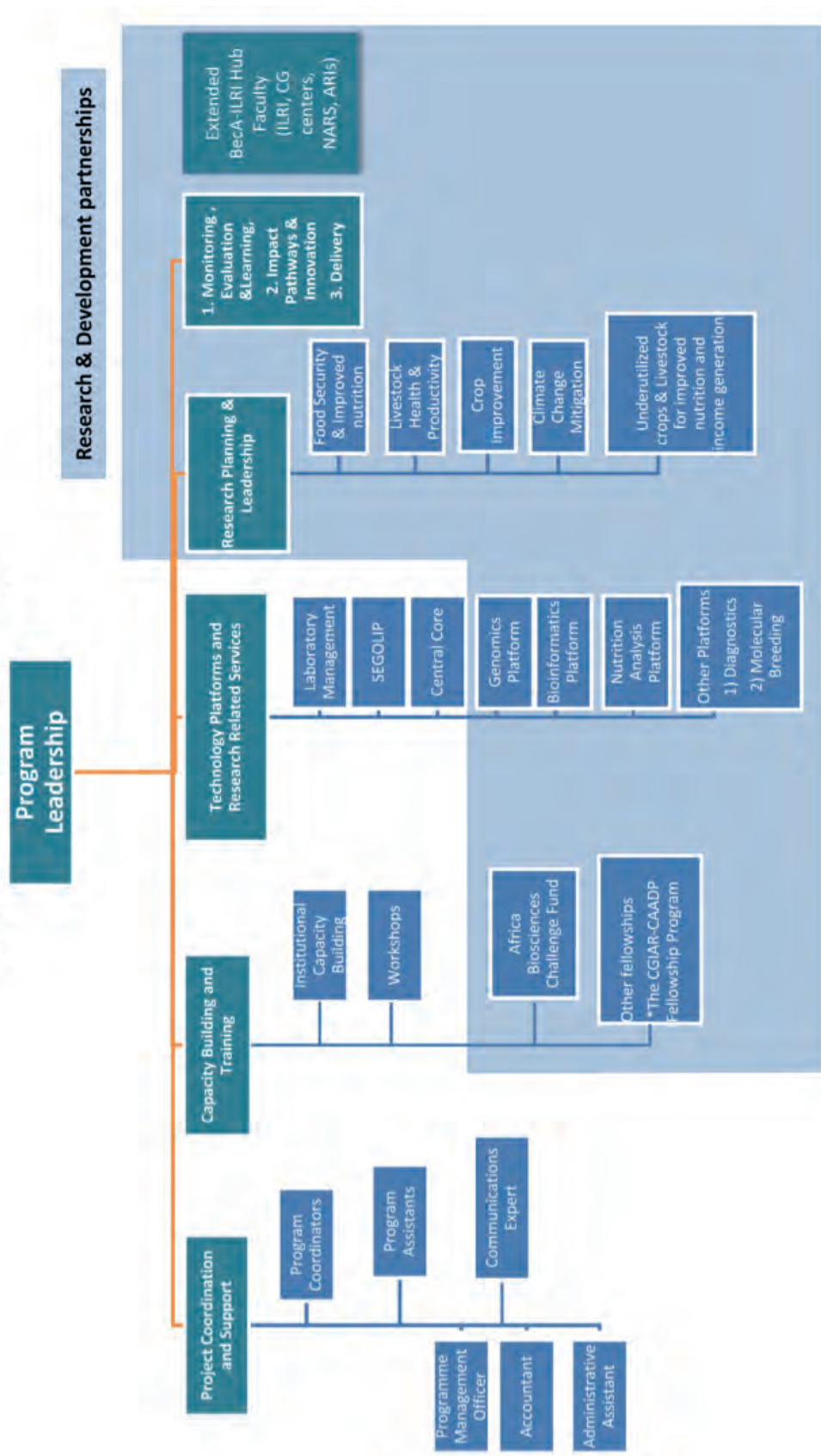
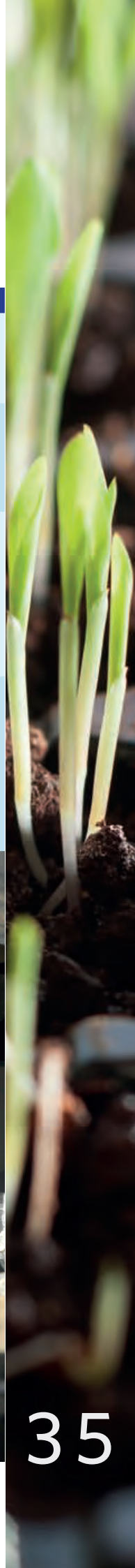


Figure 8.2. BecA-ILRI Hub Business Plan: Overview of risks and risk mitigation strategy

The following table provides a summary of the analysis of the risks considered to have the most serious consequences or the highest probability of occurrence, and proposed mitigation strategies for each of these risks.

Threat & Consequence	Level & Description of Risk	Planned Mitigation Strategy
TARGET CLIENT NUMBERS: Inability to achieve target increases in client numbers that would enable the BecA-ILRI Hub to reach a break-even point.	High probability and high impact, especially in the short term. The consequence of several other risks described below also impact on target client numbers.	Greater emphasis on raising institutional support funds will help in reaching break-even point at a lower total number of clients.
FUND RAISING: Inability to raise sufficient funds to drive new business model, particularly raising funds for institutional support and for fellowships for ABCF African scientists and students.	Moderate probability but high impact.	Specific fundraising tasks will be assigned responsibility within the BecA-ILRI Hub team. ILRI Director General and BecA-ILRI Hub Director to play crucial role in resource mobilization.
OPERATIONAL EFFICIENCY: Inability to achieve a level of operational efficiency that ensures financial sustainability. Greater client numbers providing greater critical mass to share fixed operational costs. Transparency regarding costs is as important to some clients as actual level of those costs.	High probability but low impact in the short term while low probability but high impact in the long term. Donor-funded fellowships will partially offset such inefficiencies in the short term for target beneficiaries, but the scale of these will be jeopardized if operational cost efficiency issues are not advertised.	The new business model offers opportunities for increasing client numbers. A proactive marketing campaign will be implemented to counter perceptions that access to the BecA-ILRI Hub is too expensive for African scientists by publicizing the fellowship scheme. Other operational costs must also be optimized.
ATTRACTING AND RETAINING HIGH QUALITY MENTORS: Inability to create an enabling institutional environment and position structure that attracts and retains high calibre scientists as BecA staff or affiliate scientists.	Medium probability and medium impact. Both high staff turnover and low attractiveness of working at BecA will reduce efficiency and constrain the ability of BecA to deliver on the aspirations of this new business plan.	The new business plan establishes management and governance structures that will be attractive to high calibre scientists. Staff ToRs will be structured in ways that provide space for scientific innovation and professional development. A staffing plan will be developed to help equip the Hub with emerging needs for specific expertise.



9 Critical Success Factors

1 Demonstrate responsiveness to demand led African research agenda for food and agriculture.

The development of an African-led R&D agenda that responds to market drivers and supports the transformation of agriculture as a driver of economic growth in the countries of Africa is being articulated by the African Union and its partners, including AU/NEPAD and FARA, and by other Pan African, regional and national bodies in the public and private sectors. Being aware of and responding to new priorities and new opportunities will keep the BecA-ILRI Hub relevant as well as responsive to the emergence of agriculture as a profitable enterprise in growing African economies.

2 Focus on comparative advantage: Facilitating applications of high end biosciences in and for Africa

The BecA-ILRI Hub is a magnet to enable the conduct and use of high-end biosciences research in Africa. More attention will be given to ensuring not only high quality research but also facilitating the design of impact pathways and forming new partnerships for delivery, so that the high-end research leads to biosciences-based innovations that have economic impact and benefit African farmers.

3 Build a broader BecA faculty of experts, complementing the core staff of the Hub

The BecA faculty will be expanded to include as adjunct appointees more of the senior bioscientists working with African NARS and universities as well as those with advanced research institutes and international research institutes. This expanded BecA faculty will enable a broader and deeper range of research and capacity strengthening programmes to be conducted at the BecA-ILRI Hub and a much larger number of young African scientists to be mentored in their research by more experienced African and international scientists.

4 Create, strengthen and sustain the range of technology platforms available through the BecA-ILRI Hub

Ensuring the availability of state-of-the-art technology platforms across a wide range of modern biotechnologies is an important part of the BecA-ILRI Hub's role as a shared research platform that is a centre of excellence for biosciences in Africa. These technology platforms serve multiple partners and research consortia that are addressing

African agricultural issues. As bioscience is a rapidly evolving field, these technology platforms will need to be continually updated to stay relevant.

5 Increase access to the BecA-ILRI Hub, with more scientists and postgraduates coming from African research institutes and universities

Enable more of Africa's leading scientists and students to use the BecA-ILRI Hub to conduct their research, thus also ensuring optimal use of the available research facilities by the African scientific community.

6 Affordability: continue resource mobilization to ensure that the BecA-ILRI Hub is both accessible and affordable to the African scientific community

The BecA-ILRI Hub is accessible but not always affordable for some scientists working in national research institutes and universities across Africa. Mobilizing additional financial resources will be required to fund more fellowships to provide supplementary support for African scientists through ABCF. Affordability can also be increased by forming new partnerships with African governments and regional bodies such as ASARECA, CORAF/WECARD and RUFORUM, to support tailored capacity strengthening programmes for particular countries, regions and thematic areas.

7 Financial sustainability: Manage operations with a balanced budget

The BecA-ILRI Hub will cover its full costs, with income generated from several sources including Hub user fees, flow of partner research projects, public-private partnerships and investments by African governments, OECD governments and philanthropic foundations into ABCF for capacity strengthening and Hub operations.

The BecA-ILRI Hub needs to be able to cover all its annual fixed costs on a full cost recovery basis, as well as having a capital fund to invest in the continual upgrading of equipment and technology platforms, so as to remain a centre of excellence in biosciences in Africa. The funds to ensure financial sustainability will come through a mixed model of: (1) Hub user fees paid per client (currently USD 12,500 per full time equivalent per year); (2) fees paid by clients for specific research services; (3) a new modality, whereby large new programmes and new technology platforms are allocated designated space for their research and charged at full cost

recovery rates per laboratory (rather than on a fee per person); and (4) restricted core support provided by international investors to underwrite some of the fixed and capital costs of the BecA-ILRI Hub, thus improving both its affordability and sustainability for the African scientific community.

Continued core support for the BecA-ILRI Hub's operations, currently provided by a small group of public and philanthropic investors, is a critical component of the financial plan, as this support links affordability with financial sustainability. The current core investors are the governments of Australia and Sweden, BMGF and the SFSA.

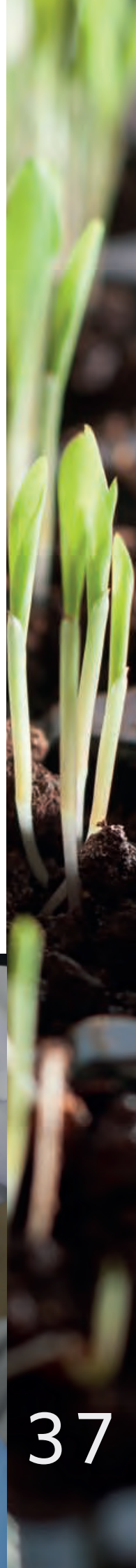
8 *Enable new CGIAR engagement with African partners on biosciences*

The BecA-ILRI Hub has the potential to become a focal point and preferred service provider for the CGIAR Consortium's future biosciences research in Africa, aligned with AU/NEPAD and the CAADP agenda and with countries' demand-led priorities; and seen as an example of practical implementation of the AU/CGIAR MOU signed in January 2013.

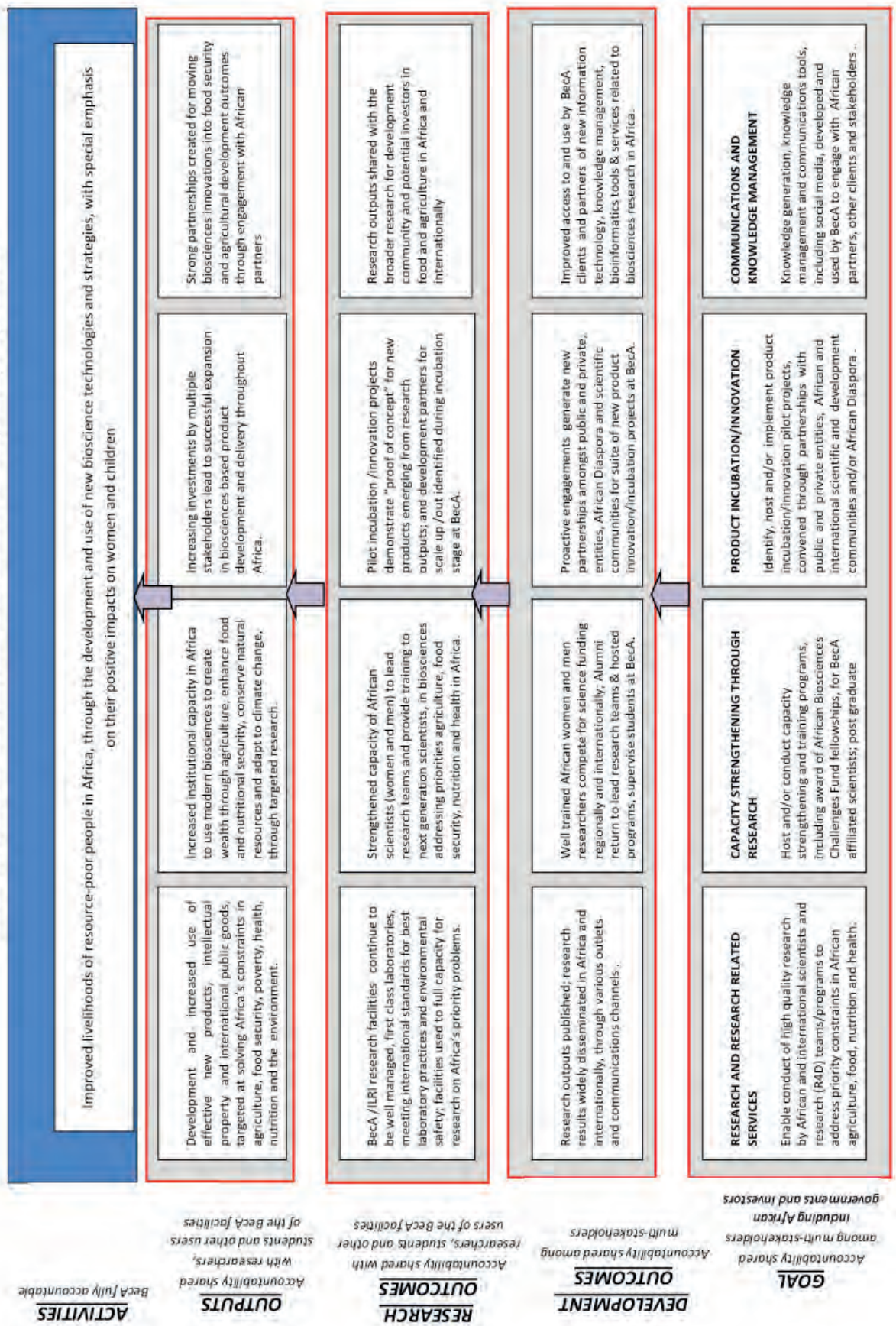
For example, the BecA-ILRI Hub provides African and international scientists access to a modern plant breeding platform with the tools and technologies available for use in developing marker assisted selection for a wide range of crops. The BecA-ILRI Hub will participate actively in the design of new CRPs and the utilization of other CGIAR-led platforms for science capacity building and support of African national research institutes and universities.

CONCLUSION

There are new scientific opportunities to address the priority themes identified in conjunction with African partners. There are also new investment opportunities by African and international partners that will help deliver innovations to increase the productivity and economic development of African agriculture. The BecA-ILRI Hub offers its science, education, development and investment partners a first class, shared research platform in Africa, with a track record of high quality research and delivery of biosciences innovations in Africa. The future of biosciences in Africa will be constrained only by the limits to our imagination.



Annex A: Biosciences eastern and central Africa (BeCA) Logic Model



Annex B

'Top 10' of emerging biosciences-based innovations for African agriculture

The year 2013 marks the beginning of the second decade in the adventure in 'mobilizing biosciences for Africa's development' by means of establishing and operating a shared biosciences research platform in Africa, open to the African and international scientific communities. *The Biosciences eastern and central Africa (BecA)* initiative was co-created by the African Union's New Partnership for Africa's Development (AU/NEPAD) and the International Livestock Research Institute (ILRI) with its Hub located on the ILRI campus in Nairobi (the BecA-ILRI Hub).

Thus it is timely to consider the achievements of the African and international scientists who have benefited from the existence of the BecA-ILRI Hub as a first-class, shared research platform in Africa and reflect on how they have used this platform to generate new knowledge with the potential to impact African agriculture. One lens through which to assess the success of the 'Biosciences Africa' concept is to identify an illustrative 'top ten' of biosciences-based innovations emerging from research conducted at the BecA-ILRI Hub, largely driven by African scientists in Africa, which are likely to lead to economic or social benefits for food and nutritional security and income generation for small-scale producers in African agriculture.

In identifying the potential for innovation, the selection criteria considered included:

- Demand, in terms of the priority of the African agricultural constraint being addressed. Substantial participation by African scientists and post graduate students in the research;
- Substantial participation by African scientists and postgraduate students in the research. Scientific excellence
- Scientific excellence. .
- Willingness to make research results available to potential end users and development partners as early as practicable, including through publishing and sharing data online.

In some instances, the work on an African priority issue started in the scientists' home research institute (an African national research institute or university) and then continued collaboratively at the BecA-ILRI Hub, where the scientists have access to a broader science base of knowledge and mentors as well as new technologies, research services and state-of-the-art equipment and technology platforms for the conduct of high-end biosciences research. The further development and delivery of these and other innovations will require the active engagement of the collaborating African national institutions and universities as well as the identification of new partners in the private sector, including farmer groups, small and medium enterprises, and civil society organizations.

The examples given below illustrate the wide range of research conducted at the BecA-ILRI Hub by African scientists and their international partners, aimed at addressing issues of agricultural productivity and food and nutritional security and with potential for economic impact and benefits to African farmers. Further details on these and other projects are available at: <http://hub.africabiosciences.org>.

Crop improvement innovations emanating from biosciences research in Africa

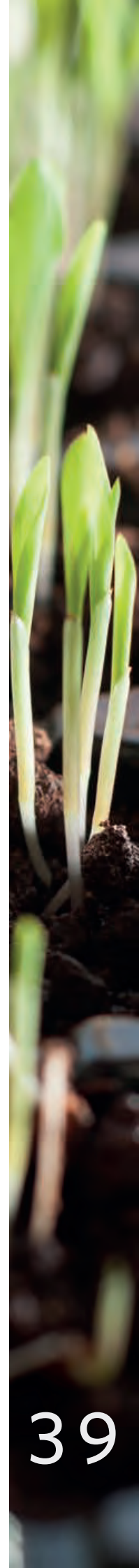
Banana: genetically modified banana with bacterial blight resistance, especially for highland bananas around Lake Victoria


African science partners: National Agricultural Research Organization (NARO), Uganda

Lead research team at the BecA-ILRI Hub: IITA

International science partners: Cornell University USA

Innovation summary: Highland bananas are the staple food for millions of people living around Lake Victoria and in the surrounding highlands of Eastern and Central Africa. These bananas are threatened by an outbreak of a new bacterial disease which has spread from enset (an indigenous wild plant botanically related to banana). There is no resistance within the





banana genome. This research project originated at NARO in Uganda and moved to the BecA-ILRI Hub in 2010, to make optimal use of the plant transformation laboratory and the biosafety level 2 greenhouse. The researchers have now transferred a plant gene from sweet pepper into banana, and this gene conveys resistance to bacterial blight. The transgenic banana lines are now under field trial in Uganda, where they are showing a high level of resistance under disease pressure.

Cassava with resistance to brown streak disease and cassava mosaic diseases

African science partners: Tanzanian and Ugandan national cassava breeding programmes

Lead research team at the BecA-ILRI Hub: IITA

International science partners: Danforth Centre USA

Innovation summary: Throughout Eastern and Central Africa, cassava is subject to substantial losses due to brown streak disease (BSD) and cassava mosaic virus (CMV). The cassava breeding teams in Tanzania and Uganda are developing new disease-resistant cassava lines for both of these diseases. The research includes developing molecular markers for these two diseases to enable the more rapid selection of cassava lines. Molecular markers have been identified for CMV in the first instance. New cassava varieties are being evaluated in the field in Tanzania and Uganda and some are showing tolerance to these two diseases.

Maize x sorghum interspecific wide cross

African science partners: Makerere University, Uganda

Lead research team at the BecA-ILRI Hub: BecA-ILRI Hub team as science mentor

Innovation summary: A Ugandan scientist has successfully crossed maize with sorghum at Makerere University. The BecA-ILRI Hub facilities have been used to genetically characterize the wide cross, before further investigations to see if this wide cross could be developed into a new crop, which combines the grain quality of maize as a preferred staple food in Eastern Africa, with the drought tolerance of sorghum which has a less desirable eating quality.

Passion fruit woodiness virus diagnostic test

African science partners: Kenyan Agricultural Research Institute (KARI)

Lead research team at the BecA-ILRI Hub: BecA-ILRI Hub team as science mentor

Innovation summary: Passion fruit is an important horticultural crop for Kenya, grown largely by small-scale farmers as a source of income through exports. The vines are affected by passion fruit woodiness virus, which limits the amount of clean planting material available for replanting for the next crop. The development of a rapid diagnostic test enables a clean seed scheme to be developed, to provide high quality planting material to growers and thus increase annual yields and ensure sustainable production of export quality fruit by small-scale producers.

Livestock related innovations coming from biosciences research in Africa

African swine fever: A rapid diagnostic test suitable for field use to improve disease management

African science partners: Departments of Veterinary Services (DVS) in Kenya, Rwanda, Tanzania and Uganda

Lead research team at the Hub: ILRI animal health team

International science partners: Australia (CSIRO); Spain; Sweden and FAO

Innovation summary: ASF is an endemic disease of pigs in Africa where regular outbreak occur within small to medium-scale pig production units, with high mortality rates (100% mortality in a severe outbreak). ASF is also a biosecurity threat to more intensive pig production systems in Europe, North America and Australia. This project has evaluated a pen-side diagnostic kit which allows more rapid and accurate diagnosis of ASF outbreaks, thus enabling livestock keepers and veterinary officers to make decisions on the best management options to contain an ASF outbreak before the disease can spread throughout the district. The time taken for accurate diagnosis of ASF has been reduced from 2 weeks to 15 minutes. The diagnostic is being scaled-up for routine use across the countries of eastern Africa where ASF is the main threat to smallholder pig production.

Peste des petits ruminants (PPR) in sheep and goats: thermo-tolerant vaccine

African science partners: Kenya (KARI), Ethiopia, Sudan and AU/IBAR

Lead research team at the Hub: ILRI animal health team

International science partners: Australia (CSIRO), International PPR research consortium

Innovation summary: This project has developed a thermo-tolerant PPR vaccine that can be kept at ambient temperature and above for at least 60 days at 37°C. The next phase of the project will evaluate the effectiveness of use of the PPR vaccine at some pilot sites which include Ethiopia and Sudan, as part of developing a progressive control strategy for PPR in sheep and goats, as recommended by AU/IBAR. An effective vaccine against PPR has been identified by the World Bank in a new Ag Results programme as one of the top five 'demand-led technological innovations' with potential for impact on agricultural development.

Establishment of a bio-repository for livestock-related genetic resources, using ultra-cold storage

African science partners: ICIPE, DVS-Kenya, Kenya Wildlife Services (KWS), Kenya Medical Research Institute (KEMRI)

Lead research team at the BecA-ILRI Hub: ILRI genomics team

Innovation summary: Efficient collection, management, use and re-use of expensive biological material and associated data allows for strong synergies between partners and projects by ensuring that material collected for any given purpose becomes a resource for collaborators who might use it for completely different purposes. In this way the costs of the expensive collection phase are shared and additional data becomes associated with each sample as it is re-used, enhancing its value for all. The genomics team has established a state-of-the-art, ultra-cold storage system at the BecA-ILRI Hub, incorporating innovative data management and monitoring systems, that has become critical to a wide range of research activities. Some 350,000 samples are currently stored, representing many projects both current and historical. The system is already being mined by collaborating scientists and has the potential to act as the core of a new ex situ livestock conservation programme.

Veterinary pathogen genome sequencing in Southern Africa to detect emerging and re-emerging zoonotic diseases

African science partners: Agricultural Research Council—Onderstepoort Veterinary Institute (ARC-OVI) South Africa

Lead research team at the BecA-ILRI Hub: ILRI genomics team

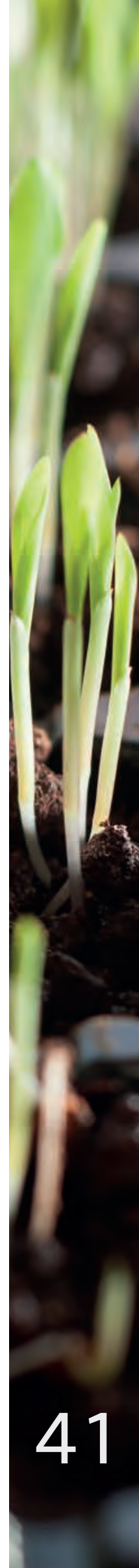
Innovation summary: The ARC-OVI of South Africa has obligations both to the regional and international community to develop and provide reagents for management of a number of key arthropod-borne viruses of importance to livestock. A decision was taken to obtain more genome sequence of viruses held as reference strains, as well as those obtained from disease outbreaks to refine both diagnostics and vaccines. Rift Valley fever virus was of particular interest because of its unpredictability. South Africa had outbreaks of Rift Valley fever between 2008 and 2010. The 2010 outbreak resulted in 63 human cases, 2 confirmed deaths and mass abortions in sheep. There is a threat of future outbreaks of this disease in South Africa. Viruses were grown at ARC-OVI and nucleic acid sent to ILRI for sequencing using the 2nd generation sequencing and bioinformatics capacity associated with the AVID project. Up to 105 viral genomes, including isolates of bluetongue, equine encephalosis, Rift Valley fever and a number of unknown viruses, were sequenced. The data is currently being annotated and put in biological context prior to publication.

Bushmeat detection test to identify meat from African wildlife in urban markets

African science partners: University of Nairobi and the Born Free Foundation

Lead research team at the BecA-ILRI Hub: BecA-ILRI Hub team as science mentor

Innovation summary: In one of the early projects conducted at the BecA-ILRI Hub, a senior scientist at the University of Nairobi and his postgraduate student successfully developed a rapid diagnostic test that could distinguish between bushmeat, which is meat from wildlife, and other meat that is suitable for human consumption. Using this diagnostic test, a hotspot of bushmeat sales was identified in Kenya, adjacent to a national park.



The project was sponsored by the Born Free Foundation as part of its efforts to conserve wildlife in Africa. The detection of bushmeat on sale in urban markets also has food safety implications, as wildlife in Africa can carry unknown and potentially dangerous zoonotic diseases.

Food safety innovations emanating from biosciences research in Africa

Aflatoxin detection and reduction of contamination in maize and other crops

African science partners: Maize breeding programmes in Kenya and Tanzania, AU/NEPAD/CAADP

Lead research team at the BecA-ILRI Hub: BecA-ILRI Hub scientists

International science partners: Australia (CSIRO/ University of Queensland), CRP4 - A4NH

Innovation summary: Many cereals, nuts, fruits and other important food crops are susceptible to infection by fungi that produce toxic secondary metabolites (mycotoxins). Given that the technologies required for detection are expensive and technically challenging, these toxins are under-recognized threats to the health of African

communities and barriers to development and trade. Across East Africa, approximately 132 million people depend on maize as a staple food. Maize crops are extremely susceptible to accumulation of mycotoxins.

CAADP recently set aflatoxins as a high-priority research area, establishing the Partnership for Aflatoxin Control in Africa (PACA). A mycotoxin and nutritional analysis platform has been established at the BecA-ILRI Hub. It is being used for the development of novel diagnostics to detect mycotoxins. This platform is unique in sub-Saharan Africa and is attracting a great deal of interest. It includes analytical technologies such as ultra-performance liquid chromatography (UPLC), atomic absorption spectrometry (AAS), gas chromatography mass spectroscopy (GC-MS), near infrared spectroscopy (NIR) and ultraviolet-visible spectroscopy (UV-VIS). The technologies will assist millers to screen cereals for aflatoxin contamination, and plant breeding and livestock improvement programmes in sub-Saharan Africa to screen materials for improved crop nutrition and overall food safety. Maize genotypes less susceptible to aflatoxin accumulation have been identified and will undergo field tests for their yield and nutritional quality and safety in Kenya and Tanzania.



Annex C

BECA-ILRI HUB INCOME AND EXPENDITURE 2012-2013

Income and expenditure items

Income (Figure 6.1)

Income Item 1: Institutional support from investors	2012 Actual	2013 Estimated
Institutional investors		
Australia (AusAID/CSIRO)	629,000.00	874,000.00
Bill & Melinda Gates Foundation (BMGF)	139,000.00	304,000.00
Syngenta Foundation (SFSA)	1,057,000.00	907,000.00
Sweden (Sida)	518,000.00	546,000.00
Sub-total 1: Institutional support	2,343,000.00	2,631,000.00
Income Item 2: Capacity Building		
Capacity building including African Biosciences Challenge Fund (ABCF) contributions		
Australia (AusAID/CSIRO)	476,000.00	673,000.00
Bill & Melinda Gates Foundation (BMGF)	254,000.00	350,000.00
Syngenta Foundation (SFSA)	-	-
Sweden (Sida)	725,000.00	752,000.00
Other contributors to capacity strengthening (e.g. ASARECA et al. (add to list))	139,000.00	105,000.00
Sub-total 2: Capacity strengthening through ABCF and related capacity programs	1,594,000.00	1,880,000.00
Income Item 3: Income from Hub user fees		
Number of ftes x USD 12.5k per fte per year	1,289,000.00	1,500,000.00
Sub-total 3: Income from Hub user fees	1,289,000.00	1,500,000.00
Income Item 4: Income from research related services		
Segolip services: fees for services	320,000.00	325,000.00
Central core	85,000.00	214,000.00
Greenhouse/screen house/liquid nitrogen income	149,000.00	19,000.00
Sub-total 4: Income from fees for services	554,000.00	558,000.00
Income Item 5: Research projects implemented through the Hub with African partners		
Beca-ILRI Hub Income (continued)	2012	2013
	Actual	Estimated
DFAT/CSIRO supported research projects		
Nutrition theme:		
Aflatoxins project	879,000.00	913,000.00
Amaranth	135,000.00	293,000.00
Mushroom	170,000.00	364,000.00
Cavies	186,000.00	521,000.00

BecA-ILRI HUB INCOME AND EXPENDITURE 2012-2013 *(continued)*

Income and expenditure items

BecA-ILRI Hub Income *(continued)*

	2012	2013
	Actual	Estimated
<i>Animal health theme</i>		
African swine fever	491,000.00	320,000.00
CBPP pilot stage	52,000.00	23,000.00
PPR vaccine and epidemiology	222,000.00	502,000.00
	2,135,000.00	2,936,000.00
Sida supported research projects		
Livestock: Goat genomics	212,000.00	587,000.00
Diagnostics for crops and livestock diseases	229,000.00	424,000.00
Tissue culture and plant transformation	214,000.00	426,000.00
Bioinformatics	-	46,000.00
Climate change adaptation	3,000.00	933,000.00
McKnight Foundation research project	31,000.00	
BBSRC bean	-	114,000.00
University of Exeter		2,000.00
BMGF: Exploring wide crosses in crop improvement		36,000.00
BMGF: PEARL gestation grant		479,000.00
	689,000.00	3,047,000.00
Sub-total 5: Research projects implemented through the Hub	2,824,000.00	5,983,000.00
TOTAL BecA-ILRI HUB INCOME = (Items 1+2+3+4+5) (USD)	8,604,000.00	12,552,000.00

Income and Expenditure items

Expenditure (Figure 6.2)

	2012	2013
	Actual	Estimated
Expenditure Item 1: Personnel	1,780,000.00	2,675,000.00
Expenditure item 2: Supplies and services*	5,848,000.00	6,598,000.00
(List of expenses included here is shown below)		
Expenditure Item 3: Travel expenses	64,000.00	107,000.00
Expenditure Item 4: Collaborators	391,000.00	2,037,000.00
(Funds passed onto collaborators for research)		
Expenditure Item 5: Indirect costs*	501,000.00	882,000.00
TOTAL BecA-ILRI Hub Expenditure = (Items 1+2+3+4+5)	8,584,000.00	12,299,000.00

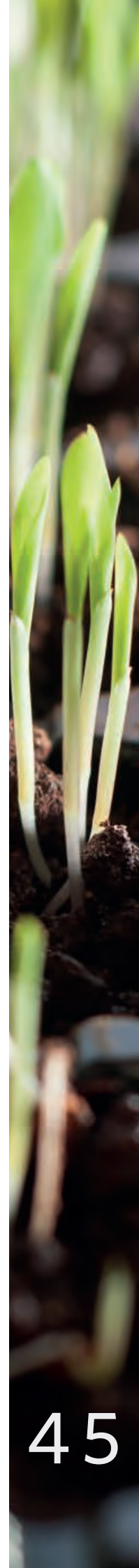
**Footnote: Services include Consultants Expenses, Visiting Scientist/ Temporary Employees, Trainees & Associates Research Fellows, Graduate fellows, Associates, Conference/Workshop/Training, Office supplies, Publication services, Partner Transfers, Space costs, Research & Coordination costs, and other expenses; Supplies include laboratory reagents and field supplies; ILRI indirect costs is calculated at 17.5% of direct costs, excluding space charges covered under services.*

BECA-ILRI HUB INCOME AND EXPENDITURE 2012-2013 *(continued)*
Income and expenditure items

Beca-ILRI Hub Capital Fund

(for capital expenses, equipment replacement, technology upgrades)

Income	2012 Actual	2013 Estimated
ILRI Capex contributions	381,000.00	525,000.00
Syngenta Foundation	200,000.00	154,300.00
Total: Income for Capital Fund	581,000.00	679,300.00
Capital expenditure	381,000.00	525,000.00
Balance brought forward in Capital Fund	545,700.00	745,700.00
Balance carried forward in Capital Fund	745,700.00	900,000.00





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