



Arid and Semi-Arid Land Agricultural Productivity Research Project (ASAL-APRP)



**A Strategy for ASAL
Knowledge and Information
Hub, October, 2016**

Compiled and reviewed by: George Keya, Boniface Akuku, Jack Ouda, Irene Kimani, Jackline Langat, Salim Kinyimu, Simon Mulwa,

Typesetting: Elizabeth Simwa ; Design and Layout: Nogrecia N. Mnene

Data, or factual information that has been created or collected in a structured database or compilation of information are particularly valuable to share (i.e., make openly available) on digital networks. However, data and information strategies, policies and management have not kept pace with scientific and technological changes. The practice of data sharing has not kept pace with the technological ability to do so. *“The Nairobi Data Sharing Principles”* (2014).

A Strategy for ASAL Knowledge and Information Hub A Strategy for ASAL Knowledge and Information Hub
©Kenya Agricultural and Livestock Research Organization

Published by Kenya Agricultural and Livestock Research Organisation
KALRO Secretariat
P.O Box 57811-00200, Nairobi, Kenya
Email: directorgeneral@kalro.org
Cell: 0722 206 986, 0722 206 988, 0709 104 000

Compiled and Edited by: George Keya
Boniface Akuku
Jack Ouda
Irene Kimani
Jackline Langat
Salim Kinyimu
Simon Mulwa

Typesetting: Elizabeth Simwa

Design and Layout: Nogrecia N. Mnene

Citation: ASAL APRP 2016: A Strategy for ASAL Knowledge and Information Hub

ISBN:

Table of Contents

LIST OF TABLES	ii
LIST OF FIGURES	ii
EXECUTIVE SUMMARY	iii
ACKNOWLEDGEMENT	iv
ACRONYMS AND ABBREVIATIONS	iv
1. INTRODUCTION	1
1.1 Background	1
1.2 Strategic Context	2
1.2.1 Country Context	2
1.2.2 Sectoral and Institutional Context	2
1.3 Rationale: The Need For An Asal Knowledge Hub (K-Hub)	3
1.4 Why The K-Hub Strategy?	5
1.5 Vision And Mission	6
1.6 Principles Of Asal K-Hub	6
2 THE BASELINE	6
2.1 Context, Challenges And Opportunities	6
2.2 An Inventory Of Existing Structures And Hubs	6
3 FRAMEWORK FOR ASAL K-HUB IMPLEMENTATION	7
4 K-HUB RESULTS FRAMEWORK	13
4.1 Implementation Strategies	13
4.2 The Results Framework	13
5 OTHER IMPLEMENTATION MODALITIES	18
5.1 Who Will Do What?	18
5.2 Content Uploading Roles And Workflow	18
5.3 Hub Coordination And Maintenance	19
5.4 Monitoring, Evaluation And Learning	19
5.5 The K-Hub Scenarios	19
6 WHAT ARE THE EXPECTED COSTS	21
6.1 Risks And Risk Management	21
ANNEX B: K-HUB RESULTS FRAMEWORK	23
ANNEX C: INDICATIVE K-HUB BUDGET ESTIMATES	32

LIST OF TABLES

Table 1: ASAL K-Hub future scenarios	20
Table 2: Summary Indicative budget estimates	21
Table 3: K-Hub risk profile	21

LIST OF FIGURES

Figure 1: Collaborative learning model	3
Figure 2: Conceptual framework of ASAL K-Hub	21
Figure 3: The ASAL K-Hub impact pathway	21

xecutive Summary

The ASAL-APRP is a five-year research project funded by the European Union (EU) and Government of Kenya (GOK) and implemented by KALRO. The overall goal of the project is poverty reduction in the ASAL through substantial and sustainable improvements in rural livelihoods (income and food security). Without this development the country will be underutilizing about 80% of its landmass and thereby directly deny nearly 20% of the population secure livelihood. The objective of this project is to increase agricultural productivity of the ASAL areas in the long term with the intermediate objective of increased agricultural production and productivity in ASAL through development, distribution and application of appropriate technologies.

The changing realities in Kenya with respect to agricultural research for development (AR4D) demands new approaches to knowledge and information management. To achieve the desired transformation goals, careful selection and deployment of systems, tools, techniques, processes and platforms for sourcing, storage, sharing and dissemination of information and knowledge is essential. The ASAL-APRP has taken note of this and planned to implement a Knowledge and Information Hub (K-Hub) with the aim of facilitating equitable access to information and knowledge by different actors in the agricultural sector in the ASAL areas. The project handles different forms of information and knowledge and engages with a variety of stakeholders in delivering its overall goal “to sustainably increase the contribution of the ASAL to the national economy”. Thus K-Hub has to be agile, dynamic but simple enough to mount, use and monitor its progress and performance.

In preparing this K-Hub strategy, there were wide consultations and benchmarking with stakeholders and other relevant organizations. As a result, the design of the hub and strategies in this document are based on proven experiences, evidence and “lessons learned” while maintaining focus and alignment to the overall goal and objectives. The K-Hub strategy therefore:

- Identifies knowledge and information management themes, derived from ASAL-APRP project document (2012-2016) on which specific outputs and deliverables will be pursued;
- Identifies ASAL-APRP’s existing knowledge and information management assets, processes and practices upon which the K-Hub will build incrementally to create the desired transformative platform, network, tools, and actions to enhance research knowledge information sharing, learning and practice-oriented collaboration;
- Pin-points the specific approaches, systems, tools and methods needed to improve research, information, collaboration, sharing and learning and at all levels
- Describes the individual and organizational cultural and behavioural changes needed for the implementation of the K-Hub to be meaningful and the necessary capacity development actions to be undertaken
- Presents an assessment of options to ensure cost-effective implementation, resources and gains under different implementation modalities and future scenarios, as well as develop a k-hub platform.

The strategy presents the new spirit important for rebranding ASAL-APRP as a hub or access point for equitable sharing of information and knowledge generated and adapted from agricultural research by ASAL Community of practice.

Acknowledgement

Completing this strategy required dedication and this has been made possible through the support received from a number of people.

The Director General, KALRO through the Coordinator of ASAL Dr George Keya, supported this initiative of developing the Hub by funding all the activities both on the ground and also holding a workshop at KALRO Naivasha to work on the strategy. Mr Boniface Akuku initiated and almost single handedly shepherded preparation of this Strategy document.

The team of Dr Jack Ouda, Head, Knowledge Management, Irene Kimani, Project Monitoring Unit, Salim Kinyimu, Information Management and Communication Unit, Jackie Langat, Finance Manager, ASAL-APRP and Elizabeth Simwa, logistics made enormous contribution during the deliberations at KALRO Naivasha.

Special thanks go to the field facilitators who readily supported and availed the information needed during data collection and all the respondents who participated in the study, and of course the many enumerators who assisted in collecting data.

Acronyms and Abbreviations

Acronym	Definition
ABI	African Biosciences Initiative
AR&D	Agricultural Research and Development
AR4D	Agricultural Research For Development
ASAL APRP	Arid and Semi-Arid Lands
ASAL APRP	Arid and Semi-arid lands Agricultural Productivity Research Project
AU	African Union
BeCA-ILRI	Biosciences Eastern and Central Africa
CAADP	Comprehensive African Agricultural Development Programme
CABI	Centre for Agriculture and Biosciences International
CTA	Technical Centre for Agricultural and Rural Cooperation (CTA)
FANPRAN	Food, Agriculture and Natural Resources Policy Analysis Network
FAO	Food and Agriculture Organization
FAOSTAT	FAO Statistics
GDP	Gross Domestic Product
GNI	Gross National Income
ICT	Information Communication Technology
IFAD	Centre for Agriculture and Biosciences International
IFPRI	International Food Policy Research Institute
ILRI	International Livestock Research Institute
ISAAA	International Service for the Acquisition of Agri-biotech Applications
KAINet	Kenya Agricultural Information Network
KALRO	Kenya Agricultural Livestock Research Organization
KAP	Knowledge, Attitudes and Practices
KASH	Knowledge, Attitudes, Skills and Habits
K-HUB	Knowledge Hub
KIPPRA	Kenya Institute for Public Policy Research and Analysis
KM	Knowledge Management
M&E	Monitoring and Evaluation
MOU	Memorandum of Understanding
NEPADNew	Partnership for Africa's Development
NGO	Non-Governmental Organization
PME	Planning, Monitoring and Evaluation
PMU	Project Management Unit
SOPs	Standard Operating Procedures
TIMPs	Technologies, Innovations and Management Practices
WARDA	West Africa Rice Development Association

1. Introduction

1.1 Background

Agricultural sector could grow and develop in the knowledge era due to its ability to leverage on research knowledge needed to produce creative insights, develop new products and innovations. The knowledge era requires different users of knowledge to better understand the role and meaning of knowledge as a form of human capital in organizations and as a factor of production. The competitive advantage of Kenya agriculture lies in exploiting the agriculture research knowledge asset for transformation yet timely, accurate and access to relevant agricultural knowledge and information from research systems is a major challenge to date. Transformation of agriculture in Kenya and also in the region, will continue to require generation, dissemination and use of appropriately packaged technologies, innovations and management practices (TIMPs) beyond research and piloting localities. The use of evidence already accumulated by myriad local, national and international agricultural research organizations and those yet to be generated will also require access to related knowledge and information. Projects such as ASAL-APRP are better positioned to generate, process, store and share knowledge to different users in forms and through channels that ensure effective application in farm practice, policy making and along entire value chains.

The overall goal of ASAL-APRP is to “sustainably increase the contribution of the ASAL to the national economy”. The project handles different forms of information and knowledge and engages with a variety of stakeholders. This demands the deployment of systems, procedures, tools, platforms and other structures to ensure knowledge and information required for up-scaling and out-scaling of appropriate ASAL knowledge, information and technologies are accessed by individuals and organizations that need it, when they need and in forms that best satisfies their respective role.

Under the ASAL-APRP logical framework, the project works to improve the welfare of households in the ASALs by increasing productivity, marketed produce and income levels of pastoralists/farmers. The logical framework document (ASAL-APRP, 2012) stipulates four result areas that define project deliverables. The outputs are:

1. Up-scaling/out-scaling of appropriate ASAL knowledge, information and technologies promoted.
2. Livestock productivity improved.
3. Food and nutrition improved.
4. KALRO capacity for ASAL research strengthened.

The project will deliver these outputs through development and testing of new technologies and up-scaling/ out-scaling of the successful components targeting the improvement of productivity in the ASAL areas. The overall goal of this project is to reduce poverty in ASAL through substantial and sustainable improvements in rural livelihoods (income and food security) in line with the national policies. This level of change will be possible if agricultural value chain actors are able to learn from, adapt and innovate from existing and new TIMPs, policies and standards. Knowledge about these TIMPs, polices and standards is available but not easily accessible to all people who need it. This knowledge is scattered all over and in different locations. Yet, knowledge has become the substantial capital of any organization. Currently the sharing of information and knowledge by people and organizations within the project is sub-optimal, and this may jeopardize the objective of the project of increasing agricultural productivity of the ASAL areas in the long term with the immediate objective of increased agricultural production and productivity in ASAL through development, distribution and application of appropriate technologies. There may also be duplication of efforts (*or re-inventing the wheel*), inefficiencies and limited outcomes. There is need for ASAL K-Hub to organize this information, make it accessible to ASAL stakeholders, and facilitate interactions. The demand for such a hub has been motivated by the *A Strategy for ASAL Knowledge and Information Hub*

need to establish and operationalize Research, Information and Training (RIT) virtual facility to serve both internal and external stakeholders. The ASAL-APRP stakeholders, project management unit, development partners and other partners have recently echoed the need for relevant structures that would serve to coordinate the ASAL-APRP role and contribution to the national economy through agricultural transformation process.

This strategy provides ASAL-APRP with the plan and broad framework for implementing a desirable knowledge hub in the context of changes happening in the nation and even globally. The tools and procedures to be embedded in the hub are requirements for effectiveness of ASAL-APRP partners and stakeholders in propelling knowledge management in agricultural research for development to the next level of competitiveness, productivity and overall contribution to socio-economic and livelihood sustainability. It is anticipated that the Hub will complement and link with other knowledge centres involved in ASAL research and development.

1.2 Strategic Context

1.2.1 Country Context

Kenya's economy is larger and growing faster than previously estimated. Rebasement of its Gross Domestic Product (GDP) reveals that Kenya's economy is the ninth largest in Africa and fifth largest in Sub-Saharan Africa (after Nigeria, South Africa, Angola, and Sudan). Kenya is now a lower-middle-income country, according to the World Bank classification, with Gross National Income (GNI) per capita of US\$1,160 in 2013. The World Bank projects that Kenya's GDP will grow 6.6 percent in 2016, and 7.0 percent in 2017. Although poverty rates in Kenya seem to have fallen, formidable challenges at reducing poverty and increasing shared prosperity, in particular in rural areas, remain. According to the World Bank Group Kenya Country Partnership Strategy (CPS 2014-2018), Kenya's poverty rate has been falling—from 47 percent in 2005/06 to about 39 percent based on best estimates in 2012/13. But in the remote, arid, sparsely populated parts of the country, poverty rates are above 80 percent. The scale of consumption poverty in Kenya is staggering, and is concentrated in rural areas. Based on the last national household budget survey, close to half of the population (nearly 17 million Kenyans) was poor in 2005. The vast majority of the poor lived in rural areas and were more likely to depend on income and consumption from crops and livestock, as their main source of livelihood. Revised poverty estimates indicate that in 2013 nearly 4 in 10 Kenyans continue to live in extreme poverty.

1.2.2 Sectoral and Institutional Context

In Kenya, agriculture remains one of the most important sectors of the economy. But about 83% percent of Kenya's land area is in the Arid and Semi-Arid Lands (ASALs), which are mainly pastoral areas and the remaining 17% (where 80% the of population lives) is classified as medium to high agricultural potential zone. In 2013, the sector contributed almost 27% to the national GDP. The crops, livestock and fisheries sub-sectors contributed approximately 78%, 20% and 2% to agricultural GDP respectively. The sector employs more than 75% of the workforce (also accounts for more than one-fifth of formal employment), generates most of the country's food requirements, and plays a key role in poverty reduction. It also generates nearly two-thirds (65%) of merchandise exports and roughly 60% of foreign exchange earnings. Overall, Kenya's agricultural sector performance has been highly volatile with growth rates dipping into negative territory in nine years between 1980 and 2012. Kenya's agricultural growth rate has averaged between 3.4% during 1995-2003 and decreased to an average of 2.1% in 2003-2011 period. Recent years have witnessed increased volatility in agricultural growth rates with debilitating impacts on rural households incomes and employment; urban and rural food security, poverty reduction and the country's overall economic growth. The sector's growth in real gross value-added decelerated in 2013 to 2.9% from a revised growth of 4.2% in 2012.

Being the premier agricultural and livestock research organization in Kenya, KALRO focuses not only on addressing the national challenges through cutting-edge research but has also positioned itself to lead globally through partnerships, collaboration and networking. The KALRO Strategic Plan (2016-2020) recognizes the critical role that knowledge, information and communication systems play in the success of its vision and mission. Research generates various

knowledge, information, technologies and innovations, which can be valueless unless they are managed, analyzed, appropriately collated, packaged and shared with the targeted end-users including scientific community, farmers and other value chain actors. This is because different actors have different needs. The desired improvement of agricultural productivity can only be realized through adoption of appropriate knowledge, information, technologies, innovations and practices. This means that the most important success factor in the Organization is technology and innovation uptake, information sharing and up-scaling. Thus KALRO recognized that there should be initiatives, processes, strategies, and systems that sustain and enhance the collation, storage, assessment, refinement and sharing of knowledge, information and products arising from KALRO research to be placed at the disposal of all actors in the value chains The ASAL K- Hub strategy and its operationalization will in part, be a realization of this vision and will inform and feed into the establishment of KALRO-wide knowledge management strategy.

1.3 Rationale: The need for an ASAL knowledge hub (K-Hub)

There is a growing demand for centralized but standardized knowledge and information to support agricultural research and development in Africa. Farmers, scientists, policy and decision makers, extension service providers and all kinds of organizations increasingly need specialized information and knowledge to perform their respective roles as actors in the agricultural transformation process. ASAL K-Hub is poised to play a leading role as the central facilitator of access to and flow of agricultural research information and knowledge in the project areas and beyond. Following the goals, objective and purpose stated in the ASAL APRP logical framework, the establishment of RIT facility should be given increased priority. There is need for a system with mechanisms, processes, tools, platforms, protocols and standards to ensure that ASAL Hub:

- Platform effectively performs its role as facilitator of access to and flow of AR4D knowledge;
- Contributes to knowledge sharing and learning; policy dialogues and agricultural practices aimed at raising agricultural competitiveness and productivity;
- Contributes to improvement in the welfare of households in the ASALs by increasing productivity, marketed produce and income levels of pastoralists/farmers

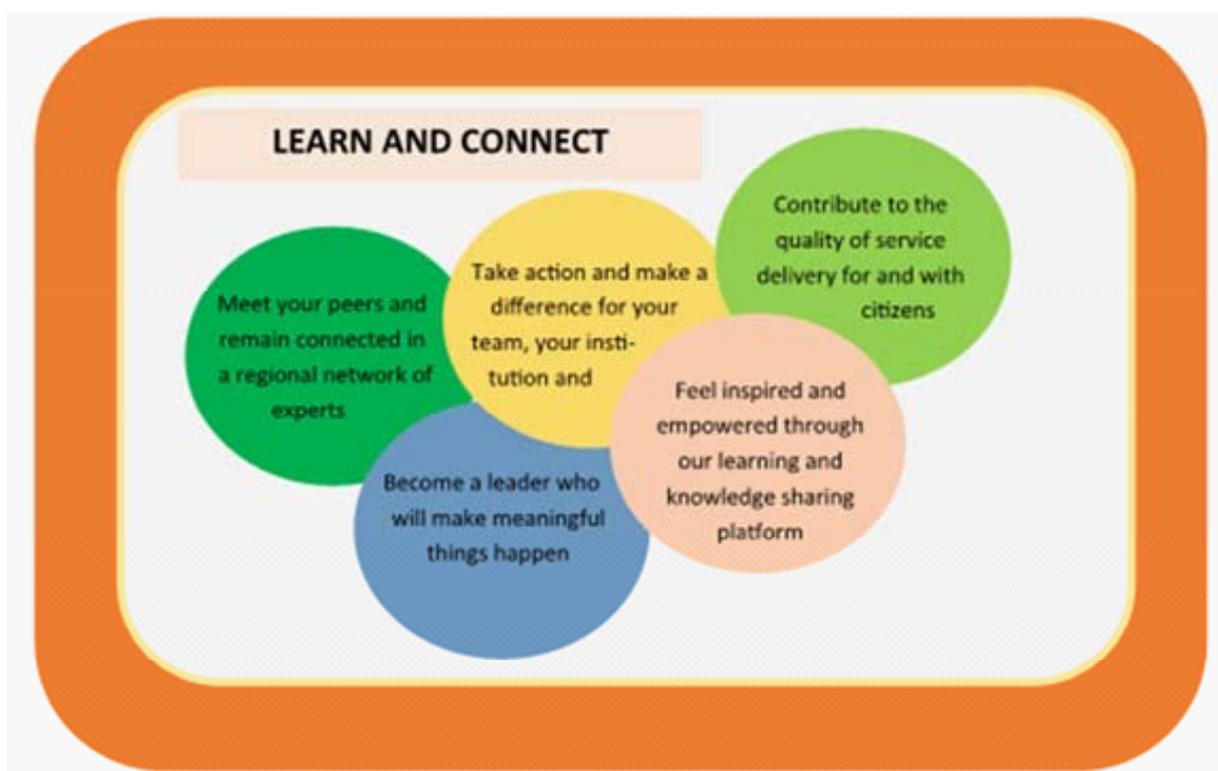


Figure 1: Collaborative Learning Model

Thus, the ASAL Knowledge and Information Hub (K-Hub) will improve delivery and impact of scientific knowledge, policy options and technologies. Improved delivery and impact of scientific knowledge, policy options and technologies is seen as a powerful instrument to drive increased adoption of new production technologies among the pastoralists/farmers in ASAL areas. The Hub will use collaborative learning mode as depicted in Figure 1. The vision of the K-Hub is “an equitable access and utilization of agricultural knowledge and information within and beyond project areas”.

The K-Hub will be a focal point for the generation and exchange of knowledge, networking and development of new ideas. Among other things, it will mainstream new scientific concepts in technology innovation, management practices and policies in the region. It will serve to facilitate learning and increase the capabilities of ASAL stakeholders which include farmers, policy makers, national agricultural extension, research and academic institutions, relevant government institutions, development partners, private sector and NGOs amongst others.

1.4 Why the K-Hub strategy?

Knowledge era demands that the individuals and society develop knowledge in an innovative and sustainable manner at individual, organizational, national and regional levels. The knowledge era has borderless characteristic and intensified how knowledge is to be managed. The impact of macro-level changes on the micro-level situation is best exemplified by the “*knowledge loss phenomenon*” That is, knowledge lost when scientists and technical experts move from one organization to another. It is therefore imperative to cultivate a pragmatic collaboration between, researchers, partners and other stakeholders. To ASAL-APRP and the wide spectrum of partners, this strategy serves multiple purposes, notably to:

- Translate knowledge into tangible product or service which is the economic benefit of knowledge or technology generation
- Create a training or learning system that can produce more knowledge workers
- Create a learning state – the ability to create, acquire and share knowledge among different project members
- Gain project management and partner commitment;
- Establish knowledge innovation management to promote use of information effectively, and with a vast network
- Communicate good knowledge and information management practice relevant for effective collection, collation, processing, storage, sharing, networking, learning and use of agricultural knowledge and effectiveness of the project;
- Present as clear, communicable plan about available knowledge and information management situation, the desired future targets and how to plan to achieve them

This ASAL strategy document answers the following questions with respect to implementation of the hub: where ASAL-APRP research, information, training and knowledge management is now, where ASAL-APRP research, information, training and knowledge management wants to be, and how do we get there? In answering these questions, the strategy document articulates:

1. *Where ASAL-APRP research, information, training and knowledge management is now* by assessing the existing knowledge and information management practices (or lack of it) that affects the project’s ability to facilitate sharing, learning, collaboration, networking and use within AR4D processes in relation to prevailing organizational culture, processes and systems.

2. *Where ASAL-APRP wants to be* by outlining what the hub will do for ASAL-APRP and overall sustainable increase to the contribution of the ASAL areas to the national economy including an assessment to measure the progress and value of K-Hub efforts.
3. *How does ASAL-APRP get there* by describing the specific actions that ASAL-APRP and partners will take to actualize the desired future using an action plan covering people, processes and technology including associated details of protocols and standards required, necessary individual and organizational changes, deliverables, timescales and associated responsibilities.

1.5 Vision and Mission

Vision

ASAL K-Hub is envisioned to be a vibrant platform offering access, sharing and utilization of information and knowledge for improved agricultural productivity.

Mission

To avail Information and knowledge of Innovations and Management Practices for enhancement of Agricultural productivity in the ASALs.

1.6 Principles of ASAL K-Hub

The ASAL K-Hub is guided by the following key principles that have been designed to support and contextualize the strategic implementation of the hub activities in line with the project logical framework and project document.

Principle 1: Thematic and RIT interface: The K-Hub will perform an important role in interfacing research, information and training into network of stakeholders. Implementation will be done in line with ASAL-APRP aspirations. The K-hub will play a key facilitation role in ensuring equitable access and use project research output through appropriate channels and forums.

Principle 2: Empowering, enabling and connecting people, partners and organizations. The K-Hub strategy recognizes the pivotal role that people (staff, researchers, pastoralists, farmers, youth, women, policy makers, academicians, and other agricultural value chain actors) – within ASAL-APRP, in partner organizations, and stakeholders – play in generating, disseminating, sharing and acting on knowledge in pursuit of ASAL-APRP's objectives. Their information needs, concerns and capacity to participate in the hub is paramount to ensure success of the platform.

Principle 3: Effective management of K-Hub implementation: In order to ensure acceptance and smooth transition, ASAL K-Hub will build upon successful techniques already in use and encourage innovation.

Principle 4: ICT technology role: The K-Hub will rely on innovative deployment of ICT technologies in implementing its sharing, learning and collaboration role. Tools, systems, approaches, platform and content will be based on standards, protocols and appropriate technologies.

Principle 5: Results - centered orientation: The K-Hub strategy is conceptualized as rigorous but practical and results - based phased process, in which activities have been carefully chosen to yield priority results that are in line with ASAL-APRP overall goals and objectives. Implementation will be phased to promote continuous improvement and encourage learning from both successes and failures.

2. The Baseline

2.1 Context, Challenges and Opportunities

Kenya has a wide spectrum of policies, strategies and plans that would help secure higher agricultural productivity. In the region, the agricultural sector accounts for about 81% of the total labour force, 47% of the total exports and 43% of the GDP and provide livelihoods to large proportion of the population most of whom are smallholder farmers (ASAL-APRP/IFPRI, 2006; FAOSTAT, 2013).

Agricultural operations such as production, processing, marketing including agricultural-research and extension activities can be supported by the development and exploitation of ICT innovative systems such as K-Hub. Currently within ASAL areas researchers are using mostly conventional channels as knowledge and information dissemination pathways, notably field visits, agricultural shows, plot demos and very minimal online sharing platform is in use. The situation is worsened by poor market infrastructure, inadequate marketing experience, and agricultural inputs. Pastoralists, farmers and other actors need to access information about new technologies, innovations and management practices before they can consider using them. Access to appropriate information and knowledge is an overriding factor for successful agricultural production and overall transformation. Currently the knowledge about the TIMPs, policies and standards is available but not easily accessible to all people who need it. This knowledge is scattered all over in different locations not for ASAL-APRP but in the sector.

Over the years research has generated technologies, information and knowledge as well as bringing together several multi-institutional, multi-disciplinary partners and actors. This makes it easier to engage them and access multiple stakeholders and their knowledge. The link between research and technology dissemination remains weak in practice. There is a need for increased focus on needs based, participatory and multi-disciplinary research approaches to reach out to wide communities. Further the increasing levels of literacy, advances in technology and enhance use of ICT in the region offer an opportunity to expand knowledge and information sharing and learning with hitherto uncovered segments of the population such as the youth, women and pastoralists/farmers.

2.2 An Inventory of Existing Structures and Hubs

Although some aspects of knowledge management exist to different degrees within different projects in Kenya their impact has been limited. This is due to the associated complexities, difficulties and pitfalls of information and knowledge for agricultural research knowledge. By and large, the existing systems are “unsystematic and inadequate especially to deal with the diverse needs of actors in the sector. Some of the existing knowledge hub in the region include ILRI-BeCA, FANRPAN, KIPPRA, CTA, CABI, IFAD, FAO, Krishisewa Agriculture information Hub India, World Bank, Kenya Agricultural and Information Network (KAINET), Rice Hub (WARDA) and BioVision in preparing this strategy. While a number of K-Hubs exist, the hubs are operating at different scales and with different thematic areas. Only one, Biosciences Eastern and Central Africa hosted at ILRI (BeCA-ILRI) is perhaps the only one that operates directly on AR4D but with a special focus on biosciences.

3. Framework for ASAL K-Hub Implementation

The implementation of the ASAL K-Hub will be guided by the principles that govern current knowledge management programme including purposeful delivery of ASAL-APRP’s research outputs, partner organisation and stakeholders; sharing, collaboration and learning based on ASAL-APRP log frame and the monitoring, evaluation and learning system. Transparency is based on open communication; nurturing and maintaining broad partnerships to leverage on, research information and training network including; capacities and knowledge bases.

The ASAL K-Hub will put in place organized systems; -structures, strategies, policies and guidelines that support generation, documentation, sharing, learning and promotion of knowledge and new ideas generated within and as a result of ASAL-APRP projects, present and past. A detailed implementation plan is presented in Annex A. The implementation plan articulates the K-Hub approaches, tools, techniques and designs, people support and organizational change and management support needs, capacity building efforts, networking and operations, communication plans as well as means of measurement of progress and performance towards the K-hub outputs and related results.

To facilitate the successful realization of the ASAL-K Hub a conceptual framework is shown below in figure 2.

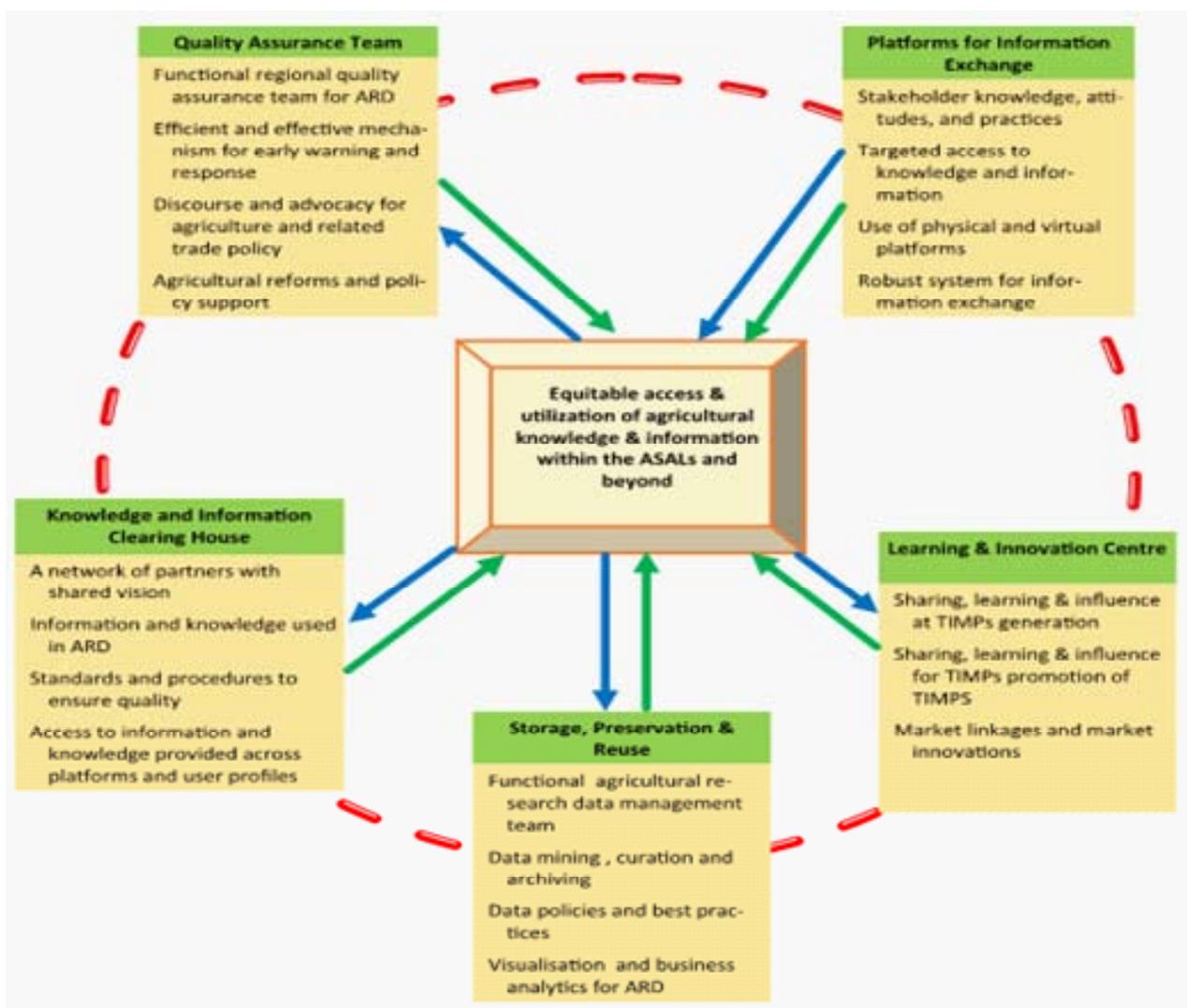


Figure 2: Conceptual Framework of ASAL K-Hub

Output 1: Platform for information exchange, sharing, learning and collaboration established and operationalized

Rationale

The ASAL-APRP aims for agricultural transformation, this requires the availability of processed, and synthesized research knowledge in a platform and in manners that are responsive to the needs of specific stakeholders. These include technologies, learning material, reports, technical and training manuals, geospatial data, research data, journal articles, video documentaries and other farmer targeted products. Targeted products will result from the Learning and Innovation centre for AR&D activities. Through its activities, ASAL-APRP generates data, knowledge and information that is important to a wide range of stakeholders across all the ASAL-APRP communities and beyond. The ASAL-APRP K-Hub will establish a robust platform for research information exchange, training and networks that enable access to ASAL-APRP data, information and knowledge. The platform will be designed to provide socially and technically friendly systems that facilitate effective processing, storage and retrieval, promotion and sharing of data, information and knowledge with ASAL-APRP stakeholders. It will support effective feedback and demand articulation mechanisms.

Implementation

The key elements of the platform will be collaboration, learning and knowledge and information management; a web-based portal; a virtual information resource centre; youth and gender responsive feedback and demand articulation mechanisms; and stakeholder's capacity development. The data, information and knowledge generated by ASAL-APRP programme, projects and activities will be captured, organized, and packaged into targeted and usable knowledge products. Input from other stakeholders will also be captured and included into the system. The web-based portal will be the major channel of access to the ASAL-APRP knowledge products. The web-based portal (k-hub) will host: Databases (TIMPs inventory), e-repositories, mobile application tools and platforms, learning resources/materials and collaboration tools. The web-portal will be supported by a user-friendly, cutting edge ICT environment. The virtual information resource centre will be setup to provide access to various knowledge products. The virtual resource centre will serve the needs of different stakeholders. It will also virtually post materials and act as a library and request for material.

The K-Hub will institute youth and gender responsive mechanisms for feedback and demand articulation from different categories of stakeholders paying particular attention to women and youth. These will through electronic mechanisms will comprising of social networks e.g. you-tube, video-conferencing, online meetings, and big data, this will ensure active participation by youth in particular.

Specific activities will be:

- Information needs assessment to characterize target audience and assess their knowledge and information needs for understanding of relevance and responsiveness of information and knowledge products of the K-Hub. To be done through feasibility assessment study, unstructured interviews with stakeholders, social economic and gender analysis tools, literature review, benchmarking, knowledge management strategies reviews, knowledge, attitudes and practices (KAP), knowledge, attitudes, skills and habits (KASH) tools.
- Capturing, organizing, processing, analysing and packaging targeted information and knowledge products for different users in order to make available knowledge and information in appropriate formats for target users. To be coordinated by KALRO KM unit.
- Establishing K-hub platform for research, information and training network, a virtual platform using systems analysis, design, programming, ICT tools, collaboration principles and social media tools. To build capacity specialized skills in use of virtual or e-platforms and social networks as well as sensitization of key stakeholders, strengthening of ICT infrastructure for less ICT-resourced ASAL centres and partners will be necessary. To be led by ASAL-APRP project management unit and KALRO ICT department.
- Establishing responsive feedback mechanisms to provide users of the platform ability to assess efficiency, relevance and gaps of the K-hub platform.

- Development of Application Programming Interfaces (APIs).

Output 2: Learning, Collaboration and Innovation Centre Established and Operationalized

Rationale

There is need to develop and promote practical knowledge and enhance learning, collaboration and innovations for AR4D. This knowledge will come from ASAL-APRPs own past and ongoing work in conducting research, generating and scaling up and out-scaling of TIMPs, and its experience with agricultural innovation systems, youth and gender mainstreaming. ASAL-APRP is aware that different stakeholders have different capacities and contexts that dictate their participation in the K-Hub that will call for differential engagement with the learning and innovation centre.

Implementation

ASAL-APRP will enhance the management of its research knowledge, whereby stakeholders (e.g. farmers, extension, the youth, women, scientists and other partners within the project, and in agricultural value chains) are involved throughout the project life-cycle - from problem identification, planning, implementation, monitoring and evaluation. Mechanisms that support learning and collaboration will be enforced as part of the K-Hub. This will be done through strategic multi-stakeholder engagement with farmers, scientists, agricultural extension systems, research and academic institutions and private sector, amongst others. These intermediaries will have specified roles in ensuring the K-Hub ultimately reaches users. The approaches will be propelled through engagement and promotion of effective use of research knowledge by stakeholders with comparative advantage and mandate as knowledge and information holders.

ASAL-APRP will carry out formal stakeholder capacity development such as training, sensitization, policies development and K-hub platform development to support the role of ensuring the K-Hub reaches its ultimate goal.

Specific activities will include:

- Continued generation, out-scaling and up-scaling of TIMPS via PLAR (problem identification, planning, implementation, evaluation) including youth and gender mainstreaming. This will be done via research management databases with all programs, collaborators and partners providing the required information to be uploaded in K-hub. To facilitate change there will be clarity on what information is needed, in what format and who will provide the required information. Capacity building will include training on the K-hub, learning, networking and K-hub infrastructural support. The strategy will ensure scientists and partner organisations are made aware of and performing their unique role in the functioning of the K-Hub for collaboration, learning and information sharing and exchange.
- Promotion of knowledge exchange and sharing will be done through peer-to-peer learning, project student involvement, scientist-to-scientist learning, farmer-to-farmer learning, networking, community of practice establishment, adherence to protocols, and use of mobile platform and tools.
- Facilitation of research, information and training networks will be achieved through modelling research findings, policy analysis and continuous improvement of the K-hub platform. This will be led by project management unit (PMU)

Output 3: Storage, Preservation & Reuse of Research Information and Data Enhanced and Maintained

Rationale

The tradition and culture of information custodians in the scientific research communities has been to keep data private by default. The ASAL APRP project has not been exempted from this phenomenon nor the stakeholders within the ASALs. To mitigate knowledge loss in the ASALs a deliberate strategy needs to be put in place to change this mindset, provide innovative and simpler ways to store, preserve and promote use and reuse scientific data and information through the ASAL K-Hub platform. Further the ASAL APRP project recognizes that explicit knowledge is documented in various media; print, databases, web sites and information repositories while tacit knowledge is not documented and

exists in people's heads, more so in the ASALs. By supporting communication and effective knowledge management through the K-Hub platform the tacit knowledge will be tapped and stored and preserved for future generations.

Implementation

ASAL-APRP will put in place an agricultural research data management team using the existing structures to conduct data mining and harvesting, curation and archiving and come up with the policies and best practices for data. The data management team should recommend user friendly application programming interfaces (APIs) and deploy the same in K-Hub and monitor utilization. As a risk management strategy the ASAL K-Hub will be maintained centrally at the PMU while mirror sites will be maintained within ASAL centres and partner sites. As data ages, it should be archived in ways that enable long term access. The PMU will define modalities for data archiving and the terms for data preservation. The ASAL communities are the primary custodians for tacit knowledge. PMU will seek to document and preserve the same as a key element of effective knowledge management.

The Specific Activities

- Secure data storage and management
- Maintain a location –independent sites
- Scalability, sustainability and provide full time support
- Deploy an agile virtualized and dynamic ecosystem for the K-Hub
- High level computing resourcing
- Development of the ASAL K-Hub will facilitate access to and use of ASAL information and data to transform, improve decision making and promote food security. The successful implementation of the K-Hub will contribute to innovative ways in which scientists can produce, disseminate, use/ reuse of information and data.

Output 4: Knowledge and Information “Clearing House” Established and Operationalized

Rationale

The existing knowledge databases are largely identical and work at higher levels with translation of knowledge to the farmer levels. There have also been very minimal impact assessments done to track the transformation that existing knowledge databases are causing. There is need to create synergies between different levels of these databases. ASAL-APRP PMU will establish a clearing house for knowledge and information from the project. The clearing house will be a central place for coordination, collection, maintenance and approval to data, knowledge and information, including an inventory of TIMPs, produced from the project. Through establishment of protocols, standards and guidelines, ASAL-APRP PMU will seek to sensitize scientists, partners and other stakeholders to understand and agree to provide data, knowledge and information required. The established clearing house will review the content and approve for use in the platform. The users of the K-hub platform will be given access rights for uploading and accessing information relevant to their needs.

Implementation

ASAL-APRP PMU will enter into formal agreements (MoUs, contract agreements), institute conditions for projects support and include as mandatory deliverables with the partner organizations, scientists and other stakeholders supported by the project for mandatory information resources and provision. Through the K-hub platform and clearing house, ASAL-APRP PMU will collect, collate and avail relevant data, knowledge and information for the project. It will ensure that data and information pass through established quality assurance systems and abide by the Intellectual Property Right (IPR) policy which the project should ensure is developed and operationalized. The clearing house will also link with existing online knowledge databases if any.

The specific activities will include:

- Establishing a network of partners who adhere and agree to the primary goals and aspirations of the clearing house.
- Collecting and collating relevant available data, information and knowledge used in the project through modelling, analysis, and metadata databases development. To be spearheaded by all project programs, PMU, KALRO KM unit, KALRO ICT department and project partners.
- Encouraging the use of protocols, standards and procedures to ensure quality of data, information and knowledge in the project. Support in quality assurance systems (for validation, evaluation, assessments and curation and preservation).
- Providing access to information and knowledge by facilitating interoperability between information systems linkages to existing knowledge bases. Will require specifications in IPR policy review, open access policy, data analysis databases, portals, data warehouses, reports, virtual resources (e-libraries), mobile platform and tools.

ASAL-APRP will seek to incrementally build its capacity to be a knowledge clearing house and establish a niche as a facilitator of knowledge and information sharing for the project. Appropriate financial and human resources will be provided by the project to realize this unique role of the K-Hub is achieved. This will systematically be realized as other components of the K-Hub, policies documents and frameworks, stakeholder's capacity building and sensitization mechanisms are put in place in future days.

Output 5: Quality Assurance Systems Established & Operationalized

Rationale

ASAL APRP project recognizes the lack of knowledge management policies, standards and strategies making access to research data difficult. A strategy will be put in place to ensure quality assurance system is established and maintained through acquisition and development of necessary standards, policies and licenses. The quality of the information and data will be assured through checks and inspections. All the research information and data on the K-Hub will be described accurately and thoroughly using the appropriate metadata standards approved by the PMU. The ASAL K-Hub will maintain security protocols with description of technical and procedural protections for information, including confidential information, and how permissions, restrictions, and embargoes will be enforced. ASAL APRP K-Hub implementers will take into account the intellectual property rights (IPR) of entities or persons who hold the intellectual property rights to the TMIPS, Information and Data, and how IPR will be protected if necessary.

Implementation

- It will be in the best interest and best practice for the ASAL APRP project to designate a person to respond to the comments, questions and complaints about the information and data on ASAL K-Hub.
- While some data or information on K-Hub may be copyrightable, the ASAL K-Hub will be copy right protected as a whole.
- K-Hub will put in place a mechanism that will facilitate the process of authorization in cases that information/ data re-use requires the reproduction of copyright protected parts, then authorization of the copyright holder will be required and facilitated.
- Timely information and data will be made available as rapidly as possible in order to maximize its value within the ASAL communities and beyond.
- There is no time period that is appropriate for all types of data, but in many cases, a well-designed system will enable data to be published in real-time, or nearly so. Thus, information should be published as soon as possible.

The Specific activities will include:

- Develop Knowledge management policies and adopt required standards
- Provide a contact person with email address on the K-Hub to address emerging issues and concerns, post and publish data and information at real time
- Acquire a copyright licences for the ASAL K-Hub

4. K-Hub Results Framework

4.1 Implementation Strategies

From the implementation of the ASAL K-Hub a number of results are expected. All the results contribute to research, information and training network and collaboration that enables access to agricultural information and knowledge within ASAL-APRP project areas. The realization of the results will be in accordance with the impact pathway depicted in figure 3.

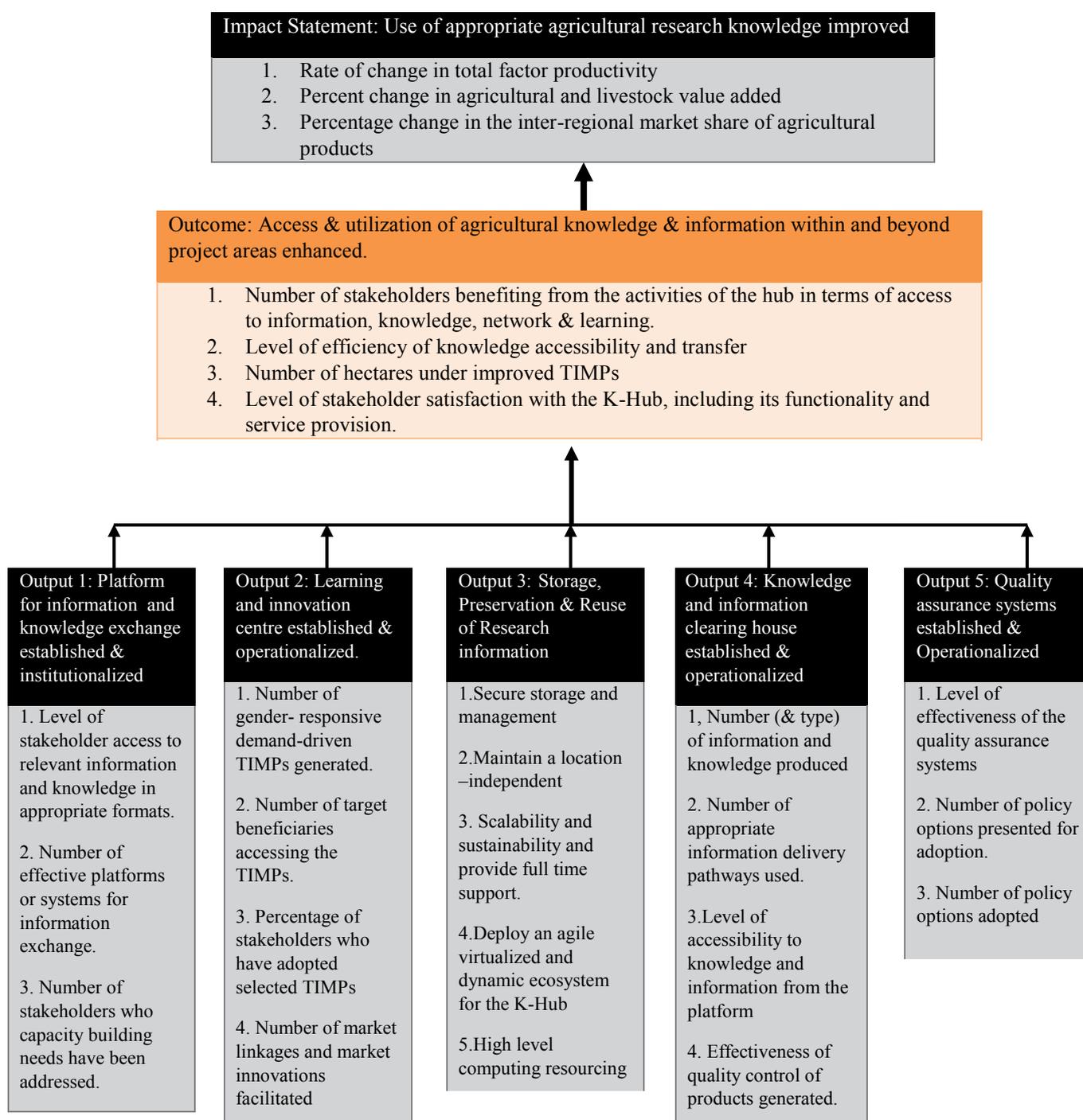


Figure 3: The ASAL K-Hub impact pathway

4.2 The Results Framework

Annex B provides complete details of the expected results. These results take cognizance of the fact that information and knowledge management through such a hub is but a “means to an end and not an end in itself”. Along the way there are critical assumptions, uncertainties and pre-requisites that should be understood or addressed for the results to be achieved. A broad and direct result of implementation of the hub will be broadened and use of better systems, instruments and tools to spur collaboration, learning, networking and sharing of existing and future agricultural knowledge, information, technologies and innovations. Specifically the following results are anticipated.

Output 1: Platform for information exchange, sharing, learning and collaboration established and operationalized

1.1 Stakeholder knowledge, attitudes, and practices characterized

- Profile target users for the K-Hub and their knowledge and information needs and appropriate delivery pathways
- Benchmark the ASAL K-Hub with other K-Hubs in the region and globally

1.2 Enhanced access to knowledge and information in appropriate formats for target users

- Produce targeted knowledge and information products that are responsive to the needs of specific K-Hub users/stakeholders
- Build capacity for generating, uploading, analysing and packaging appropriate data, knowledge and information products
- Mechanisms developed for sourcing and repackaging knowledge, information from the research outputs to be put in the hub

1.3 Enhanced use of virtual platform for data, knowledge and information management and exchange

- Set up a virtual knowledge hub platform including Databases, E-repositories, online Library
- Strengthen ICT infrastructure for less ICT-resourced ASAL-APRP centres
- Increases the capacity of key stakeholders to use the tools for data, knowledge and information management and exchange
- Develop stakeholders’ skills in use of e-platforms, social networks, Big Data and ICT emerging ICT tools such crowdsourcing, mobile applications

1.4 A robust system for data, knowledge and information exchange in place and in use

- Mechanisms for feedback and demand articulation established
- K-Hub users trained and are actively providing feedback
- Enhance efficiency and effectiveness of the K-hub
- Enhance the ability to assess efficiency and relevance of the platforms

Output 2: Learning and Innovation Centre for Agricultural Research and Development (AR&D) Established and Operationalized

2.1 Knowledge and information from the newly generated data, knowledge and information captured and shared

- At least 100 knowledge and information products uploaded packaged in the inventory by 2017
- Sharing enhanced through scientific knowledge products, conference papers, learning and other sharing workshops and published materials

2.2 Existing and newly generated data, knowledge and information uploaded

- At least 200 TIMPS (knowledge and information products) out-scaled and up-scaled (uploaded) by 2017

- Collaboration pathways developed for stakeholders
- Protocols, standards and guidelines for knowledge and information access, sharing and exchange developed
- Mobile tools and other emerging technologies in use in the platform

2.3 Processes, monitoring for collaboration, networking and learning established and documented

- Monitoring and evaluations conducted and used for learning and improvement of K-hub performance
- Reports and other process documentation
- Appropriate following studies conducted
- K-hub Impact success stories, best practices, lessons learnt and case studies documented and shared

Output 3: Storage, Preservation & Reuse of Research Information and Data Enhanced and Maintained

3.1 Secure information and data storage management maintained

- Mitigate knowledge loss in the ASAL by providing innovative and simpler ways to store, preserve and promote use and reuse scientific data
- Support communication and effective knowledge management of both explicit and tacit knowledge for future generations in the ASAL
- Conduct data mining, harvesting, curation and archiving of ASAL information and data over the years
- Policies and best practices for research data developed and promoted

3.2 Maintain a location –independent sites

- Primary and secondary sites maintained
- Promote visualization servers and cloud computing application studies

3.3 Scalability, sustainability and provide full time support

- No downtime for stakeholders using the ASAL K-Hub maintained
- Innovative ways scientists can produce, disseminate, use and reuse of information and data promoted

3.4 Deploy an agile virtualized and dynamic ecosystem for the K-Hub

- User friendly application programming interfaces (APIs) promoted and maintained
- Access to and use of ASAL information and data to transform, improve decision making and promote food security facilitated

3.5 High level computing resourcing

- Open source and released software will be utilized maintained and updated
- Current hardware systems for storage and computing tools maintained and acquired where necessary
- File systems maintained through file management, file transfer and file sharing approved standards

Output 4: Data, Knowledge and Information “Clearing House” Established and Operationalized

4.1 A network of partners who adhere and agree to the primary goals and aspirations of the clearing house established

- Partners engaged to take part in the network
- Appropriate communication channels in use to engage network of partners
- MoU and other formal agreements made to institutionalise the agreements
- Clear IPR Policy, standards and protocols developed to govern use of data, knowledge and information within the network
- Succinct collaboration and networking practices developed

4.2 Relevant available data, information and knowledge collected, collated and shared

- K-hub portal developed and in use
- Relevant data, knowledge and information resources acquired and deployed in K-hub platform for sharing information and knowledge
- Tools for collaboration, networking and analysis developed and deployed
- An inventory of project research knowledge developed
- Repository of data, knowledge and information developed and made use of

4.3 Use of protocols, standards and procedures to ensure quality of data, information and knowledge in the project facilitated

- Quality assurance systems, teams and procedures in place
- Standards and protocols for data, knowledge and information content agreed up and used
- Procedures for improving quality of data, knowledge and information content in use in the hub
- Operating procedure for data, information and knowledge access, use, standards in place and user facilitated to use them

4.4 Data Information and knowledge across platforms accessible

- Platform created and embedded in the hub for use by internal and external users in line with established policies, protocols and standards
- Databases, data warehouses developed for use in the platform
- Websites and other platforms and portals interfaced for specific hub functions

4.5 Sensitization and awareness of available data, information and knowledge increased and sharing of good practice undertaken

- Appropriate sensitization and awareness forums organized and results realized
- Relevant promotional pathways used to increase the use of the platforms for sharing good practices
- Mechanisms for obtaining required data, knowledge and information established

Output 5: Quality Assurance System Established and Operationalized

5.1 A functional quality assurance systems and teams to influence KM related policies, practices and protocols

- Appoint a pool of quality assurance team to ensure controls are put in place
- Different experts, scientists and data analysts team established to ensure policies and best practices on information and knowledge management for the hub
- Formal structures and systems in place for engagement by the different groups
- Standard operating procedures and guidelines for working of teams initiated

5.2 An efficient and effective mechanism for highlighting and monitoring emerging ICT technologies, standards and policy trends established

- Models that for perform predictions on future data, knowledge and information developed e.g Big Data concepts
- Identify critical emerging issues affecting AR4D and knowledge management
- Implement appropriate feedback mechanisms
- Evidence-based policies implemented at project and organizational levels
- Harmonized policies that embed evidence and options from the different teams in place in response to the observed trends

5.3 Discourse and sensitization for agricultural research and related KM issues facilitated

- Data on priority agricultural development themes, emerging ICT issues and research collected, analysed, synthesized and produced
- A fully functional database for trend analysis established
- Sensitization strategies for KM and data management developed and in use

5.4 Protocols, standards and policies supported at project and organizational levels

- At least KM and data management related policies, standards and protocols implemented

5. Other Implementation Modalities

5.1 Who will do what?

Implementation of this strategy will obviously require strong and visible leadership from the ASAL-APRP and the entire the senior management team. There will be need to offer advice, leadership and support in taking the strategy forward and offering appropriate guidance to the project secretariat. The PMU management team will also be required to offer commitment and ensure others also commit to delivering the hub as planned. The management support will ensure resource availability, strategic internal and external collaboration across the region and beyond.

The activities proposed for the Hub are designed to strengthen partnerships and collaboration while supporting individuals and organizations through the necessary change processes. A team already exists at ASAL-APRP to coordinate the scoping and implementation of the hub specific activities.

5.2 Content Uploading Roles and Workflow

The Content authors are mainly the source of the information that needs to be published. In the case of KALRO, the researchers are the main source of the content, the content varies based on the media of publishing. The role of the content author is to provide the content in form of: -

- Adding text, photos, video, twitter feeds, sidebar content, forms
- Creating new pages
- Deleting pages and digital assets
- Adding or updating metadata
- Publishing content to a test server
- Returning new or edited content with comments for revisions
- Scheduling content for publication
- Properly formatting headers, tables, captions, links

The content is then uploaded and accessed by the Content editors who fall under the Knowledge Management Unit. Whose main role is to: -

- Review and approve the accuracy and validity of the content
- The flow of the literature provided and to
- Edit the content and forward to the Content manager

The content is then forwarded to the Knowledge Management Head who is the Content manager for approval to be published by the different media including

- Web based platforms (website, K-Hub, online journal and Datasets Portal)
- Brochures, leaflets and training manuals
- Newspapers, newsletters and Magazines

From the Content Manager, the content moves to the K-Hub Administrator, Librarians and various publishing media for collection, storing and sharing.

The online workflow gives rights at different levels to enable each group to publish to different stages on an online platform. Generally, the Content Author will have posting rights, the Content Editor would then have editing rights

while the Content Manager will have approval rights. The Web Administrator and Librarian will then have full rights to the platforms.

However, there may be variations in the work flow e.g. in situations whereby authors first need permission to publish to a test server on their own before the process is accomplished.

5.3 Hub Coordination and Maintenance

The hub will be coordinated and maintained from the ICT unit working in close collaboration with PMU. Specific knowledge and information generation and promotion will be part and parcel of ongoing implementation. The coordination and maintenance role of the central K-Hub will include:

- Leadership and backstopping and organizations in the collection, collating and structuring of data, information and knowledge themes for validation and use in the K-Hub.
- To provide internet connectivity, maintenance of dynamic portals, K-Hub support and advisory service including facilitating virtual communication processes like teleconferencing and knowledge production processes services to users and contributors
- Development and maintenance of relevant databases on K-Hub functions and knowledge products, learning and sharing activities and services.
- Development and maintenance of appropriate models and knowledge sharing models and platforms for facilitating K-Hub functions
- Capacity building and backstopping of individuals, units and partner organizations to fully perform their roles in the K-Hub
- Design, implementation and monitoring of specialized K-Hub projects including research on modernization and continued relevance of K-Hub

5.4 Monitoring, Evaluation and Learning

In line with project logical framework, the K-Hub implementation process will be aligned to the ASAL-APRP Planning, Monitoring and Evaluation (PME) System. The system has already set measurable targets with stakeholders including those for the K-Hub and will be continuously developing and using relevant M&E tools, e.g. for data collection, collation, analysis, reporting and sharing.

5.5 The K-Hub Scenarios

A set of future plausible scenarios have been explored in the process of developing this strategy to anchor alternative actions to be taken if signals of new future directions are noted. The two critical uncertainties that will guide the future pathways are (1) demands from changes in research environment and context; and (2) KM paradigm swift including availability and use of ICT tools, techniques and scenarios. On the basis of these two drivers, ASAL K-Hub implementation may unfold into any one of the following four scenarios.

Table 1: ASAL K-Hub future scenarios

Scenario 1: Effective K-Hub. Adequate resources (Knowledge Management and ICT Dynamics)		
Key features	Challenges and Opportunities	Implementation Strategy
<ul style="list-style-type: none"> • An effective and efficient learning centre delivered through implementation of identified activities and a learning, leading to improved adoption of data, knowledge and information • A functional clearing house and quality assurance teams will be operational and influential in setting the agenda for the K-hub, KM and data management • Dynamic and responsive platform for data, information and knowledge exchange in will be established leading to increased collaboration, learning, networking and further knowledge and data management • There will be a respected credible and effective data, knowledge and information clearing house in the project 	<ul style="list-style-type: none"> • Lack of dedicated focus as ASAL-APRP may not have capacity to do everything • Problems with obtaining adequate financial resources • Project timeline constraint and resource availability • A good and stable virtual platform (K-Hub) that span space and time, and promotes practice-oriented collaboration, research and information network will create demand for K-Hub knowledge products and services beyond project life 	<ul style="list-style-type: none"> • Rely on strong agreements, policies and strategies, in addition and conducive research environment to promote wider use and support of K-Hub activities. • Seek stronger commitment from PMU, partners, scientists and donor buy-in and support to be able to coordinate data, information and knowledge exchange and management for effective delivery by the K- hub
Scenario 2: Limited funding for K-hub implementation. Limited Resources in a Dynamic and Conducive ICT and KM environment		
Key features	Challenges and Opportunities	Implementation Strategy
<ul style="list-style-type: none"> • The collaboration, networking and learning may not meet the full requirements of the hub • Lack of understanding to attract and obtain data, information and knowledge could also lead to lack of content • Credibility and mandate of the a clearing house 	<ul style="list-style-type: none"> • Heavy demand to provide data, information and knowledge products and services on lean resource base 	<ul style="list-style-type: none"> • Resource mobilization, • Phased implementation of the hub, by starting with a small number
Scenario 3: Negative context :Conflicting interest for the demands/targets for the hub		
Key features	Challenges and Opportunities	Implementation Strategy
<ul style="list-style-type: none"> • Inability to bring together the various stakeholders to collaborate, share, learn, influence, and exchange data, knowledge and information • The platform will operate though under very harsh research environments and project continuation uncertainties • Inferior and poor quality K-hub outputs, knowledge and information products and services due to data paucity and poor collaboration 	<ul style="list-style-type: none"> • Despite the project having availed resources, the implementation of the K-Hub will be difficult due to the uncertainty and resistant from the research community 	<ul style="list-style-type: none"> • ASAL-APRP falls back is to consolidates the data, knowledge and information for the K-Hub • Use strong project logical framework to deploy a virtual RIT platform for sharing knowledge

The strategic actions under different scenarios are inbuilt in the overall K-hub strategic implementation modality as part of the activities, monitoring and evaluation plans, change management options and risk management procedures.

6. What are the expected costs

Estimated budget

The hub may require additional funds to mobilize content and undertake further sensitization and awareness campaigns. Under the optimistic funding scenario, the indicative costs of the K-Hub implementation are summarized below.

Table 2: Summary Indicative budget estimates

OUTPUT	TOTAL (KSHS)	2016	2017
Output 1	3,318,000	3,318,000	0
Output 2	542,000	542,000	
Output 3	1,460,000	1,460,000	0
Output 4	214,000	214,000	0
Output 5	790,000	670,000	120,000
Coordination and Maintenance			
TOTAL COST	6,324,000	6,204,00	120,000

Important

6.1 Risks and risk management

ASAL-APRP recognizes, that although the hub presents a strategic option there are other unique risks associated with the implementation of the hub itself. The identification, analysis and mitigation of risks will be important aspects of the implementation strategy.

Table 3: K-Hub Risk Profile

Risk	Risk Qualification	Risk mitigation measures
The K-Hub loses focus of data, knowledge and information sharing, learning and collaboration	<ul style="list-style-type: none"> Activities of the K-Hub are carried out for its own sake and not for improved effectiveness, efficiency and achievement of the project outputs 	<ul style="list-style-type: none"> Intentionally embedding activities of K-Hub within the ASAL-APRP programmes in the logical framework are carefully aligned with strategic activities, thrusts, processes, result-based framework and monitoring and evaluation
Appearance of new information and knowledge sharing tools, approaches and methods	<ul style="list-style-type: none"> Appearance of systems, tools and technologies leading to redundancies, incompatibilities and need for updates, new capacities and processes. New systems may also not be available to users in good time 	<ul style="list-style-type: none"> Continued but careful prioritization of technologies, knowledge, tools and selection of well-proven and generic toolsets to remedies uncertainties in new development Proper training and awareness on new and emerging processes, tools and approaches
Quality, authenticity and credibility of content	<ul style="list-style-type: none"> Poor quality information and knowledge as content for the hub despite effective processes and tools 	<ul style="list-style-type: none"> The quality assurance systems and standards to be invoked. Part of the role of the K-Hub clearing house and quality assurance team will be to vet and support quality checks and improvement
Stakeholder disintegration	<ul style="list-style-type: none"> Risks associated with stakeholders losing interest in the joint knowledge management efforts, having different schedules or posing other collaboration related risks (credibility of hub and content, different knowledge management regimes and goals, etc) 	<ul style="list-style-type: none"> Addressing partnership and collaboration challenges through mutual agreement under clear MoUs Synchronizing hub activities with partner capacities, schedules, technology generation and use strategies

Some of the activities and implementation modalities already identified are part of the overall risk management efforts. Capacity building, awareness raising, change management and support, protocols and standards specification are largely meant to reduce the hub's exposure to different kinds of risks.

Important Assumptions (Entrenching culture change)

The implementation of the K-Hub will require, as a prerequisite, changes in individual and organizational culture in terms of norms, behaviour, structures, habits and general work environment. This will affect the delivery of knowledge and information to support within and outside the project areas. The specific changes will support the implementation of the K-Hub in many ways and include collective responsiveness and harmonised way of thinking by harnessing activities in various project programmes and project logical framework outputs towards one common goal. Other specific culture change areas include:

- Embracing advances in ICT technology including web-based tools and platform for sharing data, information and knowledge by a wide range of people and organizations.
- Generation, dissemination and use of agricultural TIMPs as national public good and based on systems and institutional processes and not focused on individual ownership.
- Break away from the previously dominant “silo mentality” by enhancing team work and collaboration.
- Strategic change in overall perception of the K-Hub goal, objective and purpose including responsibility of stakeholders and scientists as well as control and management of processes, information and knowledge products.
- Improvement and support of better feedback mechanism needs considered as positive criticism for improvement and paradigm shift in the way knowledge and information are management between project programs, partners, PMU, and partner organizations.
- To adopt culture of ownership with an expanded and inclusive Knowledge and information generation and use. Knowledge and information generators should not be for a few individual scientists and organizations but all stakeholders
- Improved transparency on how knowledge and information is generated, shared and used to influence learning, collaboration, networking and decision making
- Promotion of standards and guidelines in knowledge and information sourcing, collating and sharing through the Hub while entrenching culture of quality assurance of knowledge and information accessed from the K-Hub

The Strategy processes specific ways of supporting change processes during implementation of specific activities under each output area involving clear flows of information, roles and support mechanisms to incentivise the project teams and create enabling environment for delivery of results, budgetary issues for the key critical areas. The change process will also require redress to resource mobilization weaknesses by generating interest from the key stakeholders while appreciating the strengths, weaknesses, opportunities and threats (SWOT) to effective delivery of the K-Hub.

Annex A: Implementation Plan

Output 1: Platforms for Information Exchange, Sharing, Learning and Collaboration Established and Institutionalized

Activity	Description	KM Tools/Techniques	People/Org Change issues (internal)	People/Org Change issues (external)	Capacity building	Leadership/Governance	Communications (how will the K-Hub be promoted and rolled out)	Measurement
Information needs assessment to characterize target audience and assess their knowledge and information needs	Relevance Responsive to information needs/gaps identified	Surveys, Social Economic and Gender Analysis Tools, Literature Review, Benchmarking, Knowledge, attitudes and practices (KAP), knowledge, attitudes, skills and habits (KASH)		Socio-economic differences (e.g. language, culture, norms, etc)	Address any gaps identified in the information needs assessment	PMU	Needs Assessment reports	Targeted information that addresses the needs of key stakeholders
Capture, organize and package targeted information and communication products for different users	Making available knowledge and information in appropriate formats for target users	Writing, Editing, peer reviews, graphic designs, illustrations, social translations, social media skills, communication plans, repackaging.	KM to provide the packaged information	Partnerships and engagements with media	Exchange visits, training in Development Communications	KM	Information and Communication Packages including research papers, journal articles, position papers, video documentaries	information tailored for the end users available
Establish platforms for information exchange	These will include both physical and virtual platforms	Systems analysis, design, programming, ICT Tools, Gender analysis, Social Media Tools,	Develop skills in use of E-platforms and Social Media	Sensitize key stakeholders, strengthen ICT infrastructure	Increase ICT resources	ICT	Web-based portals, mobile platforms, Databases, E-repositories, Physical Library, Mass Media	Capacity of key stakeholders to use the tools for information exchange -Increased use of the platforms
Establish responsive feedback mechanisms	This is to provide user of the platforms ability to assess efficiency and relevance of the platforms	Perception Surveys (survey monkey, KI Interviews, Questionnaires, etc), Web stats,	Data analysis skills and systems		Train people on how to provide feedback - Training on Gender Analysis	ICT	Perception study reports	Level of satisfaction

Output 2: Learning, Collaboration and Innovation Centre Established and Operationalized

Activity	Description	KM Tools/Techniques	People/Org Change issues (internal)	People/Org Change issues (external)	Capacity building	Leadership/Governance	Communications (how will the K-Hub be promoted and rolled out)	Measurement
Generation of TIMPS	Technologies	PLAR (Problem identification, planning, implementation, evaluation, Research management databases,	ICT, PMU and KM realise their role in K-Hub Clarity on communication products and services on thematic priorities	Partners Pastoral community	Training (short and long), adaptive learning, mentoring and coaching, Infrastructure	PMU ICT KM	Scientific papers, research documents, articles, documentaries, proceedings, training manuals, lesson learnt, success stories, standards and procedures	Tools and techniques in use for effective learning, sharing and influence during generation of TIMPS Themes and supporting units and partner organisations aware and performing their role in the functioning of the K-Hub for learning and sharing
Promotion of TIMPS		Business and Technology Incubators (BTIs), uptake pathways (Field days, electronic and print media, on-field peer-to-peer learning, study tours, farmer-to-farmer learning, networking etc), protocols, mobile platform	ICT, PMU and KM realize their role in K-Hub	Partners Pastoral community	Training (short and long), adaptive learning, mentoring and coaching, infrastructure	PMU ICT KM	Scientific papers (adoption, promotion approaches/studies), policy briefs, newspaper articles, documentaries (audio and videos), proceedings, training manuals, lesson learnt, success stories, brochures, protocols/standards	
Facilitate Market linkages and market innovations,		Market research focus models, business models, policy analysis	All programs, units and implementing partners realize their role in KM Clarity on communication products and services on thematic priorities	Partners, Producer organizations	Training (short and long), Value addition, Business development, infrastructure, institutional set up and strengthening	KM	Scientific papers (Policy processes), MIS, policy briefs, training manuals, success stories, brochures, protocols,	

Output 3: Storage, Preservation & Reuse of Research Information and Data Enhanced and Maintained

Activity	Description	KM Tools/ Techniques	People/Org Change issues (internal)	People/ Org Change issues (external)	Capacity building	Leadership/ Governance	Communications (how will the K-Hub be promoted and rolled out)	Measurement
Secure storage and management	Acquire adequate storage capacity	Virtualization	ICT to acquire the storage capacity		ICT capacity to manage and distribute acquired storage	ICT	Protocols and sensitization	Certificate of the acquired Storage
Maintain a location – independent	sites to have capacity to operate virtual independent of the primary sites	Virtualization and cloud computing	ICT to provide the required services and platforms for location-independent		ICT capacity to manage cloud computing services	ICT	Protocols and standards	Inventory of the Recovery sites
Scalability and sustainability and provide full time support.	Meet the stakeholder's demand and expectations Availability of services throughout without failure	Open Access	ICT Support		ICT capacities	ICT	Sensitization on new products	Stakeholders satisfaction Open Access policies
Deploy an agile virtualized and dynamic ecosystem for the K-Hub	User friendly APIs and informed decision making for all stakeholders	File systems management	ICT Support		ICT capacities	ICT	Sensitization on new products	Stakeholders satisfaction Open Access policies Best practices
High level computing and development of Application Programming Interfaces APIs	Current hardware systems Open sour and released software	Software and computing tools	ICT Support		ICT capacities	ICT	Sensitization on new products	Stakeholders satisfaction Open Access policies

Output 4: Data, Knowledge and Information Clearing House established and operationalized

Activity	Description	KM Tools/ Techniques	People/Org. Change issues (internal)	People/Org. Change issues (external)	Capacity building	Leadership/ Governance	Communications (how will the KI-Hub be promoted and rolled out)	Measurement
Establishing a network of partners who adhere and agree to the primary goals and aspirations of the clearing house		Communication Channels (Electronic, face to face), negotiations, MoU and other formal agreements	All programs, units and implementing partners realize their role in K-Hub Clarity on communication products and services on thematic priorities	Partners	Needs assessment	PMU	Bulletin, fliers	
Collecting & collating relevant available information and knowledge used in AR&D in ASAL		Modelling, GIS and remote sensing, metadata databases,	ICT PMU	ASAL – APRP partners	Data management and support	ICT	AR4D portal (reports, physical resources (library), GIS Maps, Inventory of TIMPS, Inventory of AR4D information	
Encouraging the use of standards and procedures to ensure quality of information and knowledge in ASAL regions		Quality assurance systems (for validation, evaluation, assessments)	PMU KM ICT		Training, infrastructural support		Standards and procedures,	
Providing access to information and knowledge across platforms	Facilitate interoperability between information systems Linkages to existing knowledge bases,	IPR Policy, open access policy, Geo-spatial data analysis databases, portals, data warehouses, reports, physical resources (library), mobile platform	All programs, units and implementing partners realize their role in KH Clarity on communication products and services on thematic priorities	KM Partners	Training and infrastructure support, institutional support	ICT	K-Hub reports, physical resources (library), GIS Maps, Inventory of TIMPS, Inventory of AR4D information	

Output 5: Quality Assurance team established operationalized

Activity	Description	KM Tools/ Techniques	People/Org. Change issues (internal)	People/Org. Change issues (external)	Capacity building	Leadership/ Governance	Communications (how will the K-Hub be promoted and rolled out)	Measurement
Establish a regional professional and scholars for AR4D		Convene, Regional Forums			Orientation to ASAL K-Hub strategy	Theme Leader	MoUs, and convening reports	A functional platform for AR4D think tank
Establish mechanisms for early warning and response on emerging regional issues and policy trends in AR4D	Scan the region and identify critical emerging issues affecting AR4D	Policy monitors, liaise with national and regional centres for early warning	consultancy recruitments	Partnerships and engagements with media		Theme Leader	Outlook reports, and briefs on emerging priorities	Efficiency and effectiveness of the early warning mechanism
Collect, analyse, synthesize and produce data and information that supports discourse and advocacy for agriculture and related trade policy issues	This analysis will cover trends and build scenarios into the future	Regional databases, analytical frameworks, literature review	Database established		Increase ICT resources	Theme Leader	Info packages	A fully functional database for trend analysis
Implement initiatives to influence Agricultural related reforms and policies at regional level	Through advocacy, capacity building and raising awareness	Regional targeted forums, media engagement		Monitoring at National level		Theme Leader	More information packages	Extent to which the regions are able to domesticate the policies

Annex B: K-Hub Results Framework

Output 1: Learning & Innovation Centre for Agricultural Research Established and Operationalized

Expected Results	Baseline	One-year objective
Knowledge and information from the newly generated captured and shared	– 0	<ul style="list-style-type: none"> – 200 data, knowledge and information will be uploaded in the K-hub by 2017 – Sharing will be through scientific and conference papers learning, networking, collaboration and sharing.
Existing and newly generated data, knowledge and information uploaded	– 0	<ul style="list-style-type: none"> – Advanced use of modern/innovative uptake pathways, Protocols and Mobile platforms
Process monitoring for collaboration, networking learning and sharing documented	<ul style="list-style-type: none"> – Feasibility study – Quarterly performance reports – Following studies – Lessons learnt 	<ul style="list-style-type: none"> – Improved process indicated by evaluation reports, quarterly performance reports, Process documentation reports, Following studies and lesson learnt

Output 2: Learning, Collaboration and Innovation Centre Established and Operationalized

Expected Results	Baseline	One-year objective
A functional quality assurance team for AR ₄ D established to influence Ag related policies	None	<ul style="list-style-type: none"> • Appoint a team quality assurance experts • Establish formal structures and systems for engagement • Initiate SOPs
An efficient and effective mechanism for emerging KM and ICT issues and policy trends established	None	<ul style="list-style-type: none"> • Develop models that can be used to perform predictions • Identify critical emerging ICT and KM issues affecting research • Implement appropriate response mechanisms • Evidence-based policies implemented at project and organizational levels • Harmonize policies in response to observed trends
Discourse and sensitization	None	<ul style="list-style-type: none"> • Collect, analyze, synthesize and produce data, knowledge and information • A fully functional database for trend analysis established • Documentation of evidence based policy options

Output 3: Platform for information exchange established and institutionalized

Expected Results	Baseline	One-year objective
Stakeholder knowledge, attitudes, and practices characterized	Project needs assessment reports and feasibility study report for the ASAL-APRP	<ul style="list-style-type: none"> • Profile target audience for the K-Hub and their information needs and appropriate delivery pathways • Benchmark the ASAL K-Hub with other K-Hubs
Enhanced access to knowledge and information in appropriate formats for target users	None	<ul style="list-style-type: none"> • Produce targeted knowledge and information products that are responsive to the needs of specific K-Hub users/stakeholders • Build capacity for generating and packaging appropriate data, knowledge and information products • Mechanisms developed for sourcing and repackaging information
Enhanced use of physical and virtual platforms for information exchange	None	<ul style="list-style-type: none"> • Set up virtual platforms e.g. Databases, E-repositories, virtual Library and K-hub • Strengthen ICT infrastructure • Increases the capacity of key stakeholders to use the tools for information exchange • Develop skills in use of E-platforms and Social networks
A robust system for information exchange in place and in use	None	<ul style="list-style-type: none"> • Establish mechanisms for feedback and demand articulation • Train K-Hub users on how to provide feedback • Enhance efficiency and effectiveness of the systems for information and knowledge exchange • Enhance the ability to assess efficiency and relevance of the platforms

Output 4: Data, knowledge and Information Clearing House established and operationalized

Expected Results	Baseline	One-year objective
A network of partners who adhere and agree to the primary goals and aspirations of the clearing house established	<ul style="list-style-type: none"> - Existence of diverse partnerships in the network - Current use of various Communication Channels 	<ul style="list-style-type: none"> - Diversity and vigour of partners in the network - Enhanced use of modern and innovative Communication Channels - More MoUs and Other formal agreements - IPR Policy reforms to support K-Hub functionality - MoU established with various organizations and there are other formal agreements - IPR Policy
Relevant available information and knowledge used collected & collated	<ul style="list-style-type: none"> - Databases - Paper based information and data - Inventory of TIMPS - Repository of information and knowledge information 	<ul style="list-style-type: none"> - K-hub portal - Virtual resources (online library)
Use of standards and procedures to ensure quality of information and knowledge facilitated	<ul style="list-style-type: none"> - None 	<ul style="list-style-type: none"> - Improved Quality assurance systems, Standards and Procedures for data, information and knowledge sharing, learning and collaboration - Quality assurance systems, standards and procedures
Information and knowledge across platforms accessible	<ul style="list-style-type: none"> - Existing databases and Websites/Portals - variety of Reports - Physical resources 	<ul style="list-style-type: none"> - More accessible and equitable platforms, Geo-spatial databases, Websites and Portals as well as Data warehouses. - Improved reporting and use of Physical resources and virtual K-Hub resources including Mobile platforms - Data warehousing, - virtual/Mobile platforms
Awareness of available information and knowledge increased and sharing of good practice promoted	<ul style="list-style-type: none"> - None 	<ul style="list-style-type: none"> - Innovative, target group specific awareness materials and promotional pathways in the K-Hub to transform access, use, learning and application of agricultural knowledge and information resources form the K-Hub

Output 5: Quality assurance systems established & operationalized

Expected Results	Baseline	One-year objective
<p>A functional quality assurance systems and team to influence KM related policies, practices and protocols established</p>	<p>None</p>	<ul style="list-style-type: none"> - Pool of quality assurance team built - Experts established; scientists and data analysts team - Policies and best practices on information and knowledge management for the hub - Formal structures and systems in place for different groups - Standard operating procedures and guidelines initiated
<p>An efficient and effective mechanism for highlighting and monitoring emerging ICT technologies established</p>	<ul style="list-style-type: none"> - None 	<ul style="list-style-type: none"> - Predictions for: future data, knowledge and information developed e.g Big Data concepts - Critical emerging issues affecting AR₄D and knowledge management identified - Implement appropriate feedback mechanisms - Policies in response to the observed trends harmonized
<p>Discourse and sensitization for agricultural research and related KM issues facilitated</p>	<ul style="list-style-type: none"> - None 	<ul style="list-style-type: none"> - Data on priority agricultural development themes, emerging ICT issues and research collected, analysed, synthesized and produced - A fully functional database for trend analysis established - Sensitization strategies for KM and data management developed and in use
<p>Protocols, standards and policies supported at project and organizational levels</p>	<ul style="list-style-type: none"> - None 	<ul style="list-style-type: none"> - At least KM and data management related policies, standards and protocols implemented

Annex C: Indicative K-Hub Budget Estimates

Budget Summary

OUTPUT	TOTAL (KSHS)	2016	2017
Output 1	3,318,000	3,318,000	0
Output 2	542,000	542,000	0
Output 3	1,460,000	1,460,000	0
Output 4	214,000	214,000	0
Strengthening Coordination	790,000	670,000	120,000
TOTAL COST	6,324,000	6,204,00	120,000

Detailed Budget

Output 1: Platform for information and knowledge exchange established & institutionalized	Unit	Number of Units	Cost per unit (Kshs)	Total (Kshs)	2016	2017	Total Cost (Kshs)
1.1 Knowledge and information needs assessment to characterize target audience and assess to K-hub needs	Baseline data and Study	10	50,000	500,000	500,000	-	500,000
1.2 Capturing, organizing and packaging targeted information and knowledge for different users		30	50,000	1,500,000	1,500,000	-	1,500,000
1.3 Establishing platforms for information and knowledge exchange		1	1,318,000	1,318,000	1,318,000	-	1,318,000
TOTAL 1: OUTPUT 1				3,318,000	3,318,000		3,318,000

Output 2: Learning, collaboration and Innovation centre established and operationalized	Unit	Number of Units	Cost per unit (Kshs)	Total Cost (Kshs)	2016	2017	Total Cost (Kshs)
1.1 Initiating and facilitating strategic agreement for collaboration and learning	1	1	10,000	10,000	10,000	-	10,000.00
1.2 Carry out formal stakeholder capacity development trainings and workshops	7	7	76,000	532,000	532,000	-	532,000
TOTAL OUTPUT 2				542,000	542,000		542,000

Output 3: Storage, Preservation & Reuse of Research Information and Data Enhanced and Maintained	Unit	Number of Units	Cost per unit (Kshs)	Total Cost (Kshs)	2016	2017	Total Cost (Kshs)
3.1 Identifying and establishing a network of partners who adhere and agree to the primary goals and intentions of the clearing house	1	10	50,000	500,000	500,000	-	500,000
3.2 Collecting and organizing relevant available information and knowledge ASAL and beyond	1	10	36,000	360,000	360,000	-	360,000
3.3 Encouraging the use of standards and procedures to ensure quality of information and knowledge in K-hub	0	0	0	0	0		0
3.4 Facilitating access to K-HUB across platforms	1	1	600,000	600,000	600,000	0	600,000
Total Output 3				1,460,000	1,460,000	0	1,460,000

Output 4: Data, Knowledge and Information Clearing House established and operationalized	Unit	Number of Units	Cost per unit (Kshs)	Total Cost (Kshs)	2016	2017	Total Cost (Kshs)
4.1 Initiating and supporting various change and quality management processes		20	2000	40,000	40,000	0	40,000
4.2 Promotion of standards and quality of knowledge and information		1	50,000	50,000	50,000	0	50,000
4.3 Identify targeted and specific capacity building needed for individuals, stakeholders and partners.		0	0	0	0	0	0
4.4 Coordination, validation and Other K-Hub management and operating costs	2% of total	1	124,000	124,000	124,000	0	124,000
Total Output 4				214,000	214,000		214,000

Output 5: Quality assurance system established and operationalized	Unit	Number of Units	Cost per unit	Total Cost (Kshs)	2016	2017	Total Cost (Kshs)
5.1 Securing information and data storage and management		1	250,000	250,000	250,000	-	250,000
5.2 Maintaining location independency		2	20,000	40,000	20,000	20,000	40,000
5.3 Scalability and sustainability and providing full time support.		1	200,000	200,000	100,000	100,000	200,000
5.4 Deploying agile virtualized and dynamic ecosystem for the K-Hub		1	300,000	300,000	300,000	0	300,000
Total Output 5				790,000	670,000	120,000	790,000
GRAND TOTALS							6,324,000

ASAL Knowledge Hub Portal Development-A Strategy for ASAL Knowledge and Information Hub

© Kenya Agricultural and Livestock Research Organization

P.O Box 57811-00200, Nairobi, Kenya

Tel: (+254) 0709 104000 / 0722 206986 / 0722 206988

Email: resource.centretodirectorgeneral, Website:<http://www.kalro.org/>