

**PLANNING, MONITORING AND EVALUATION FOR ENHANCED INSTITUTIONAL  
EFFICIENCY AND EFFECTIVENESS: THE CASE OF KARI**

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## **Abstract**

This paper argues that to achieve desired impacts at people level, agricultural research institutions have to look way beyond their research findings long before investing their limited resources in agricultural research and dissemination. For institutions such as KARI, with long standing scientific traditions focused on scientific findings, it is necessary for them to go through paradigm shifts if they are to begin to be sufficiently impact oriented. Considering the challenge in conceptualizing and institutionalizing new paradigms, this paper argues for appropriate institutional mechanisms to stimulate consensus building and to manage the change process. In the case of KARI, there was need to reinforce social science capacity, rationalize human resources, streamline linkages with clients and stakeholders, and institutionalize a performance based incentive system. The paper further argues that, an effective planning, monitoring and evaluation system needs to be installed to assist in developing a common vision, laying necessary strategies to accomplish the vision, and identifying and managing activities towards the same vision. Such a system would need to recognize the different levels of operation and the role of diverse clients and stakeholders at each level of operation.

## **Unifying Ideology (Paradigm) in KARI**

Formal agricultural research in Kenya dates back to the beginning of this century with the advent of the European settler economy (Dagg et al, unpublished). In the better part of the century, agricultural research focused on the commercial large-scale farms. During this period, a scientific paradigm reigned with emphasis on scientific findings. However, with the coming of political independence and re-discovery of the small-holder farmers, search for a new paradigm begun.

With the new reality, it was evident that the basic assumptions driving research were no longer valid. For example, scientists now had to contend with limited resources at farm level, particularly land and capital. They also had to take into account the reality of widespread non-profit orientation to production. Indeed, many farm households were found to be pre-dominantly concerned about survival rather than profit motive. In this context, multiple enterprises made sense rather than single commodities based on the principle of comparative advantage. Clearly, the challenge was beyond the remedy of simple research findings. The central issue was social change and development. Thus, a new research paradigm needed to be conceived to facilitate desired change. In other words, the new paradigm had to be heavily inclined towards impact. To achieve this goal, the new paradigm had to cherish a consultative culture.

## **Impact Orientation**

One of the major shifts in KARI's thinking in the context of the new paradigm is the recognition of the inherent limitation in focusing only on research findings. In the new perspective, emphasis is laid on generation and dissemination of appropriate technologies. This change of direction has had far reaching implications in the structure and content of the organization.

With respect to structure, KARI has diversified from its original pre-occupation in strategic research to strengthen its adaptive arm substantially. Traditionally, agricultural research in Kenya was organized around commodities and factors (e.g. maize and soil fertility respectively). These programs were nationally coordinated to cover major agro-ecological zones in the country. The main thrust of the research programs was strategic in nature. In other words, they sought to apply known scientific principles to resolve generic agricultural constraints in given agro-ecological zones. In this thrust, there was little concern for the varying socio-economic circumstances of the resident populations. Until the second phase of the National Agricultural Research Program (NARP II), around 1993, this was the dominant mode of operation in KARI.

With the advent of NARP II, concerted effort was initiated to revamp the adaptive research program. This basically entailed focusing on specific production systems in the context of varying socio-economic circumstances of the resident populations. In other words, this thrust would work with specific communities and specific production systems to resolve specific constraints given promising technological interventions. To meaningfully reach the necessary level of understanding for this kind of adaptive research, scientists needed to develop holistic approaches in the context of multi-disciplinary efforts as well as work closely with the farming communities and the supporting extension systems.

As it now stands, the two thrusts: strategic and adaptive co-exist in partnership. As promising technologies are developed in the strategic thrust, adaptive programs pick them up for on-farm trials in appropriate production systems. On the other hand, in the course of adaptation, strategic issues emerge that are passed over to the nationally coordinated programs for due attention.

All too often, technologies are generated without a very clear focus on the potential users or even a well thought out uptake pathway. In the circumstances, these technologies tend to remain on the shelves, or at best, attain insignificant adoption rates. To avoid this trend, KARI resolved to work very closely with both intermediate and end users through out the technology development and dissemination process. Towards this end, the institution developed a participatory approach to agricultural research and development, popularly called Farming Systems Approach to Research, Extension and Training (FSA-RET).

Basically, FSA-RET commits KARI to work with both clients and stakeholders in equal partnership. This means working together to identify production constraints, prioritize research agenda, design intervention points, carry out joint on-farm trials and jointly evaluate performance. It is believed that this participatory approach will enrich the depth of understanding and promote relevance of the emerging technologies. Consequently, it is hoped that this process will ensure increased adoption rates and enhance farm productivity.

### **Consultative Efforts**

Given that KARI is a large and complex organization and further considering the multiplicity of its clients and stakeholders, it became increasingly necessary to systematize consultative processes in order to maintain a sense of common purpose. This consultative effort involves both internal and external processes.

To systematize consultations, KARI identifies cross cutting issues and appoints taskforces to pursue them to their logical conclusions. These taskforces consist of representatives of the key stakeholders relating to the issue at hand. For example, the Planning, Monitoring and Evaluation (PM&E) taskforce that was

charged with the responsibility to develop a harmonized system consisted of management representatives at different operational levels; outstanding scientists from the centers; and donor representatives (Mbabu et. al., 1998). Similarly, the gender taskforce that was charged with the responsibility to institutionalize a gender sensitive approach to agricultural research and development consisted of representatives of all technical divisions, a representative of the parent government ministry, selected collaborating institutions and donor representatives (Kooijman et. al., 1998). These taskforces have the authority to engage resource persons as appropriate.

Taskforces serve several useful purposes. First, their representative nature presents them as objective organs to deal with controversial issues. Second, they provide fora for debate and systematic collection and collation of diverse information from all interested persons within the institution. This consultative process provides a basis for consensus building and hence, a harmonious way to resolve institutional conflicts. To those who would like to see the process of change moving faster, this approach would appear slow and painstaking.

To promote systematic consultation with clients and stakeholders, a series of stakeholder meetings has been institutionalized at key decision making points. One of the most popular series of these stakeholder meetings is the Center Research Advisory Committee (Mbabu et. al., 1998). These are organs to assess and approve all research projects for relevance to the end-users. Another series of these stakeholder meetings relates to priority setting process (program and thrust levels). Priority setting stakeholder meetings assess the validity of the assumptions made about the realities of the end-users. These organs also contribute to the formulation of resource allocation guidelines (Mills, 1998). The biennial scientific conference series also provides an opportunity for stakeholders to hear and assess the quality and relevance of KARI's achievements in agricultural research and development.

## **Strategies to Effect the New Paradigm**

To promote the new paradigm, the institute required a strong social science capacity to inter-phase with the clients, a rationalized human resource capacity that would be aligned with the institutional mission, carefully worked out linkages with other institutions, and a performance based incentive structure.

### **Social Science Capability**

Agricultural research in Kenya has evolved with a strong bias in biophysical sciences. This is a tradition rooted in the scientific paradigm that focused on scientific findings and not on the utilization of these results for development purposes. Since the new paradigm emphasizes on generation and utilization of appropriate technologies, there is great need to understand the different types of clients and their varying technological needs based on their production objectives. From this perspective, it became necessary for the institute to develop a social science capacity that would carry out studies to appreciate clients and their socio-economic environment.

At present, there are 69 socio-economists in KARI distributed to various research centers and programs. Their responsibility is to generate information and methodologies for strategic planning, priority setting, monitoring for economic viability and social acceptability and for impact assessment (Mbabu et. al., 1998b).

## **Rationalized Human Resource Capacity**

KARI was created through a merger of several research institutions. These included research centers formerly under the ministry of agriculture and livestock, as well as those previously under the East African Community. To a large extent, this merger absorbed most of the existing staff without due regard for the changing institutional mission. Subsequent studies established the need to further rationalize the human resource capacity in line with the changing circumstances (Fama Resources Limited, 1998).

Currently KARI has staff complement totaling to 4,640, of which 453 are scientists. This translates into a scientist/support staff ratio of 1:9.2. Considering current commitments as reflected in various priority programs, it is considered desirable to reduce the establishment to 3,586 employees, including a scientific capacity of 428. However, as we look into the medium term future, we anticipate that the staff complement would need to reduce further to about 2,674. This would reduce the scientist/support staff ratio to a more desirable level of 1:5.2.

## **Linkages and Collaboration**

In conceptualizing linkages and collaboration with other institutions, KARI perceives the existence of a global agricultural research system that is vertically and horizontally linked on the basis of comparative advantage (Ndiritu, 1998). At one end of the vertical link, are community-based organizations that are best placed for action research at the household level. Higher in the hierarchy are non-governmental organizations that tend to focus on communities in diverse environments. These tend to specialize on adaptive research. Still higher are institutions such as KARI with national mandates. These tend to focus on both strategic and adaptive research. Regional organizations such as ASARECA (Association for Strengthening Agricultural Research in Eastern and Central Africa) deal with crosscutting research



themes across neighboring countries. They too deal with both strategic and adaptive research. International Agricultural Research Centers (IARCs) take global mandates as do Advanced Research Institutes (ARI) and universities. These institutions tend to deal with both basic and strategic research.

Purposive linkages among these diverse institutions reduce duplication, facilitate building on each others' achievements and therefore increase efficiency in resource use and effective accomplishment of respective objectives. KARI uses Agricultural Knowledge and Information Systems (AKIS) framework ((ETC East Africa) to identify and inspire conscious and deliberate linkages with the various institutions for mutual gains.

### **Performance Based Incentive System**

To a large extent, the traditional reward system in KARI depended on the length of service. To the extent that productivity counted, its measurement was greatly inclined towards academic values. Now that preference tilts towards impact at people level, criteria for institutional incentives have also changed to reflect the new value (KARI 1998c).

Basically, the evaluation criteria revolve around technology development and dissemination cycle: identification and constraint analysis; formulation; and implementation of research projects. The criteria also takes into account both generation and utilization of technology. This means that both strategic and adaptive research programs are equally important. Performance criterion is also valued. As people accomplish the objectives they set, generating expected outputs and attaining impact at people level, they accumulate points that are used to differentially award various institutional rewards.

## **Planning, Monitoring and Evaluation System in KARI**

KARI perceives planning, monitoring and evaluation as sequentially related concepts. The planning process defines goals that are long term and purposes that are short term. It also identifies activities that need to be undertaken to accomplish the set objectives and specifies the resources required to undertake the activities. Planning process also outlines verifiable indicators for success (or failure) and develops a time frame within which activities have to be undertaken towards the set objectives. Monitoring, on the other hand, keeps track of the implementation schedule by focusing on the efficiency of resource use towards generating desired outputs. Evaluation then addresses effectiveness of outputs in delivering the planned purposes and goals. Thus, it is difficult to conceptualize monitoring in the absence of planning or evaluation in the absence of monitoring. The three concepts describe different stages of the same process. Perceived this way, planning, monitoring and evaluation becomes an integral part of the management process. Hence, the responsibility of every manager at his/her level and point of operation.

In our view, there are two main reasons why institutions such as KARI should plan, monitor and evaluate. First, in the context of limited resources, institutions need to be cost effective in the generation of expected outputs. Second, institutions need to be sure that expected outputs are delivered on a timely basis. Need to plan, monitor and evaluate tends to increase as organizations become larger and more complex.

In the case of KARI, programs and projects that contribute towards KARI's purpose and goal are located at different levels of the institute. Thus, it is necessary to have a system that logically links the respective levels in such a way that each reflects the goals and objectives of the subsequent levels. This hierarchy of objectives can be articulated through the use of a logical framework (see figure 1).

Further, at respective levels it is important to recognize that there are a series of logically related events. For example, at the project level, there are events related to constraint identification and project formulation; and there are a series of events related to the approval process (e.g. scientific advisory committees, research coordination committee and the Board of Management). There are also events related to implementation (resource allocation, monitoring and evaluation). These events not only need to be standardized to ensure predictable and comparable results, but also need to be planned for to ensure effective proceedings and expected outputs.

At each of these levels there are different actors at play. At the headquarters, the director KARI and his deputies take responsibility of the entire institute. The assistant directors take charge of divisions, within which there are several research programs. Below that level are the program coordinators who focus on specific research programs. Scientists and their project leaders work under the direction of the respective center directors. Project leaders supervise the operations of related scientific activities. On their part, scientists implement specific research activities with the help of technical and support staff.

In sum, for a large and complex organization, such as KARI, it is imperative that a comprehensive planning, monitoring and evaluation system be institutionalized to vertically link different levels and horizontally link different events within the same level. Only when such a system is in place can the diverse institutional organs and actors be systematically linked towards a common purpose. Thus, ensure a coherent division of labor and effective decision making processes. In effect, the institute responds to the agricultural sector, the programs to the institute's purpose and goal, projects to the program priorities and research activities to the project objectives.

## **Levels of PM&E**

As indicated above, there are three levels at which planning, monitoring and evaluation for research is located in KARI: Institute, Program, and Project/activity.

### **Institute Level**

The institute level focuses on the total system and its place in the agricultural sector and the politico-economy at large. Thus, PM&E functions at this level tend to rotate around the dual role of mobilizing the system to generate appropriate outputs and to maintain necessary linkages to facilitate dissemination and utilization of the outputs for impact at people level.

Key planning activity at this level entails development of the strategic plan. This process helps articulate institutional vision, specify the mission and spells out strategic objectives. The same process sets out long term goals and short-term institutional purposes. Ideally, this activity should be done every 5-6 years to correspond with the national development planning cycles.

In the vision, the institution chooses what it would like to become, captures the reason for its existence, highlights its core values, and states its bold and achievable aspirations for the future. For example, in the current vision, KARI would like to be an institute of excellence in agricultural research and technology transfer, which will contribute to an improved quality of life for all citizens of Kenya.

In the development of a mission, the institution clarifies on its basic character: what is it? What does it do? Whom does it do it for? How does it do it? In this spirit, KARI's current mission is that of an agricultural research institute, which develops and disseminates appropriate technologies in collaboration

with key stakeholders. The Institute seeks to proactively contribute knowledge and creative solutions which are client-based, holistic and systems oriented, gender sensitive, participatory, and sustainable. KARI contributes to the welfare of Kenyan citizens by assisting to increase agricultural productivity, conserve natural resource base and increase post-harvest value of farm produce.

To ensure that programs are synchronized with the institutional mission, priority setting is done among programs every 5-6 years. The duration gives sufficient time for sustained efforts towards resolution of given constraints. This process challenges each head of a technical division to demonstrate commitment towards the institutional mission and to articulate expected gains at people level by investing in the respective programs.

For monitoring purposes, regular center visits, quarterly and annual reports are the most systematized procedures. In the center visits, the directorate observes center operations against the set objectives, basically making sure that research programs are moving in the anticipated direction and in a timely manner. In the same visits, operational constraints are identified and potential solutions mutually sought. These visits occur as often as need arises, but not less than twice each year. Quarterly reports focus on operational constraints and propose potential solutions for remedial action. The quarterly reports also account for project resources and present budgets for the subsequent quarter. Annual reports highlight accomplishments of the concluded year and expected challenges of the following year.

Biennial conferences, as a means of monitoring provide important forums for scientists from within and outside KARI to interact and exchange ideas on emerging research findings. These events take place every two years to allow for sufficient time to make scientific progress. Parallels with the biennial conferences are center and project evaluations. The former is carried out to assess the extent to which

center management effectively supports project activities. Project evaluations assess the extent to which respective projects are responsive to client needs.

Other evaluations at this level include reviews and impact assessments. Such assessments take stock of the institutional development and performance towards the institutional mission and goals. They are done within ten-year cycles. An ongoing review will launch a third phase of the National Agricultural Research Program.

### **Program Level**

There are several events that typically represent planning, monitoring and evaluation at the program level: strategic planning, priority setting, annual review and planning meetings, mid-term and end-term project reviews.

Strategic planning at the program level usually attempts to align program objectives to the institute's mission. For example, proceeding from the premise that each program is expected to contribute to the development of appropriate technologies to enhance productivity in a sustainable manner, each program focuses on the challenges and opportunities relating to their areas of operation. The challenge could be in terms of population dynamics (land pressure and consumption patterns), environmental conditions, scientific limits (probability of success), economic goals etc. Opportunities may be identified in areas of previous scientific break-through, potential for collaborative work, human resource development, or support from clients and stakeholders. Considering all possible challenges and opportunities, programs then develop strategies for the best way forward to most effectively and efficiently contribute to the institutional mission. This exercise is done every 5-6 years under the leadership of respective assistant directors and program coordinators.

Priority setting within programs focuses on competing research thrusts within respective programs. Priority thrusts are assessed in the context of the prevailing institutional mission and the program's strategic plans. The purpose of this exercise is to identify, by ranking, the most promising research thrusts towards accomplishing the institutional mission. To accommodate any changes in the institutional direction (mission) while still providing enough time for research projects to take root, priority setting within programs is done every 2-3 years. This process is done under the guidance of program coordinators.

Annual program review and planning meetings are intended to take stock of the on-going projects and to plan for the following year's projects. During the meeting, on-going projects are examined for any products ready for dissemination while others are identified for continuation or discontinuation, depending on the progress made. On-going projects are also scrutinized for any new insights that could inspire future research thrusts. These meetings are held once a year under the leadership of the respective assistant directors, program coordinators and donor representatives.

Mid-term evaluations focus on programs and or projects under the leadership of respective assistant directors, program coordinators and donor representatives. In these evaluations, projects are assessed for progress made towards expected outputs. Constraints are identified and suggestions made to enhance the chances of generating expected outputs. Ready products are identified and recommended for dissemination while misconceived activities are recommended for discontinuation. Considering that most projects in KARI are run on five-year slices, mid-term evaluations tend to be carried out between 2-3 years upon project launching.

End-term reviews are carried out after project completion. The main purpose of these reviews is to ascertain the extent to which completed projects accomplished their objectives. On the basis of this assessment, products ready for dissemination are identified and possible areas of continuity in subsequent projects are articulated. Considering that projects in KARI are run on five-year periods, end-term reviews are usually done 5-6 years upon launching of the respective projects. These reviews are carried out by external consultants in partnership with KARI directorate and donor representatives.

### **Project Level**

PM&E events at this level are more frequent (annual) and require more detail because they focus at activity level. It is at this level where the blending of scientific knowledge and client needs takes place. This section discusses eight events that are carried out in KARI to ensure that research activities link up with the program objectives and the institutional mission, hence contributing to social welfare.

All research activities need to identify client needs. This is usually done by rigorous constraint analysis and problem definition. Such tools as participatory and rapid rural appraisals and various information systems are used for this purpose. Major outputs from this are reports on prioritized research areas. These reports form the basis for project justification. This process is carried out at the center level under the guidance of project leaders.

Once the project justification is sufficiently formulated, it is presented to the Pre-Center Research Advisory Committee (Pre-CRAC). This committee is headed by the center director and includes all the scientists in the center. In the light of previous studies carried out in the center and elsewhere, and considering the outcome of the constraint analysis reports and program priorities, the committee reviews



all the new proposals and identifies those to be submitted to the Center Research Advisory Committee (CRAC).

The CRAC consists of farmer, extension representatives (governmental and non-governmental), agro-industrialists and other stakeholders. The Center director convenes this committee and offers the secretariat while the Provincial Director of Agriculture, as a major stakeholder chairs the committee. The purpose of this committee is to ensure that research proposals address issues of relevance to the clients and that the on-going projects are generating useful outputs for the clients.

Once the research proposals meet the test of relevance, they are further developed to meet the rigors of good science. After the scientists articulate the scientific approaches, methods and analytical procedures necessary to carry out the proposed studies, the proposals are presented before the program specialist committee (PSC). These committees consist of distinguished scientists in the field at stake. The membership could be drawn from universities, international research organizations, donor community, governmental and non-governmental organizations etc

Once the proposals meet both tests - relevance and scientific rigor, they are then submitted to the research coordination committee (RCC) for resource allocation. The RCC is convened by the deputy director (research) and attended by all the assistant directors. It is here that proposed projects are rationalized in view of available resources and subsequently forwarded to KARI Board of Management (BOM) for approval.

The BOM consists of the ultimate authority in the institute. In their meetings, they deliberate on the merit of the proposed research portfolio and the budgetary implications. If they are convinced that the

proposed research agenda conforms to the institute's mission and that there are available resources to carry the research load, then they approve the work plan and the budget for implementation.

During implementation, monitoring and evaluation takes two main thrusts: regular reporting and project visits. The major reporting modes are quarterly and annual reports. Quarterly reports include progress made against work plans, constraints experienced during the quarter, proposed solutions for the identified constraints, work plans and budgets for the following quarter. Annual reports dwell on expected outputs and research highlights.

Visits include: monthly project visits by the team leaders, quarterly visits by the program coordinators, half-yearly visits by the directorate and donor representatives. The overall purpose for these monitoring events is to ensure that obstacles preventing accomplishment of expected objectives are identified early enough to provide solutions before irretrievable damage is caused to the project activities.

## **Conclusion**

To conclude, we have argued that to achieve desired impacts at people level, agricultural research institutions have to look way beyond their research findings long before investing their limited resources in agricultural research and dissemination. For institutions such as KARI, with long standing scientific traditions focused on research findings, it is necessary for them to go through paradigm shifts if they are to begin to be sufficiently impact oriented. In the case of KARI, the new paradigm entails people based values, impact orientation, and consultative culture.

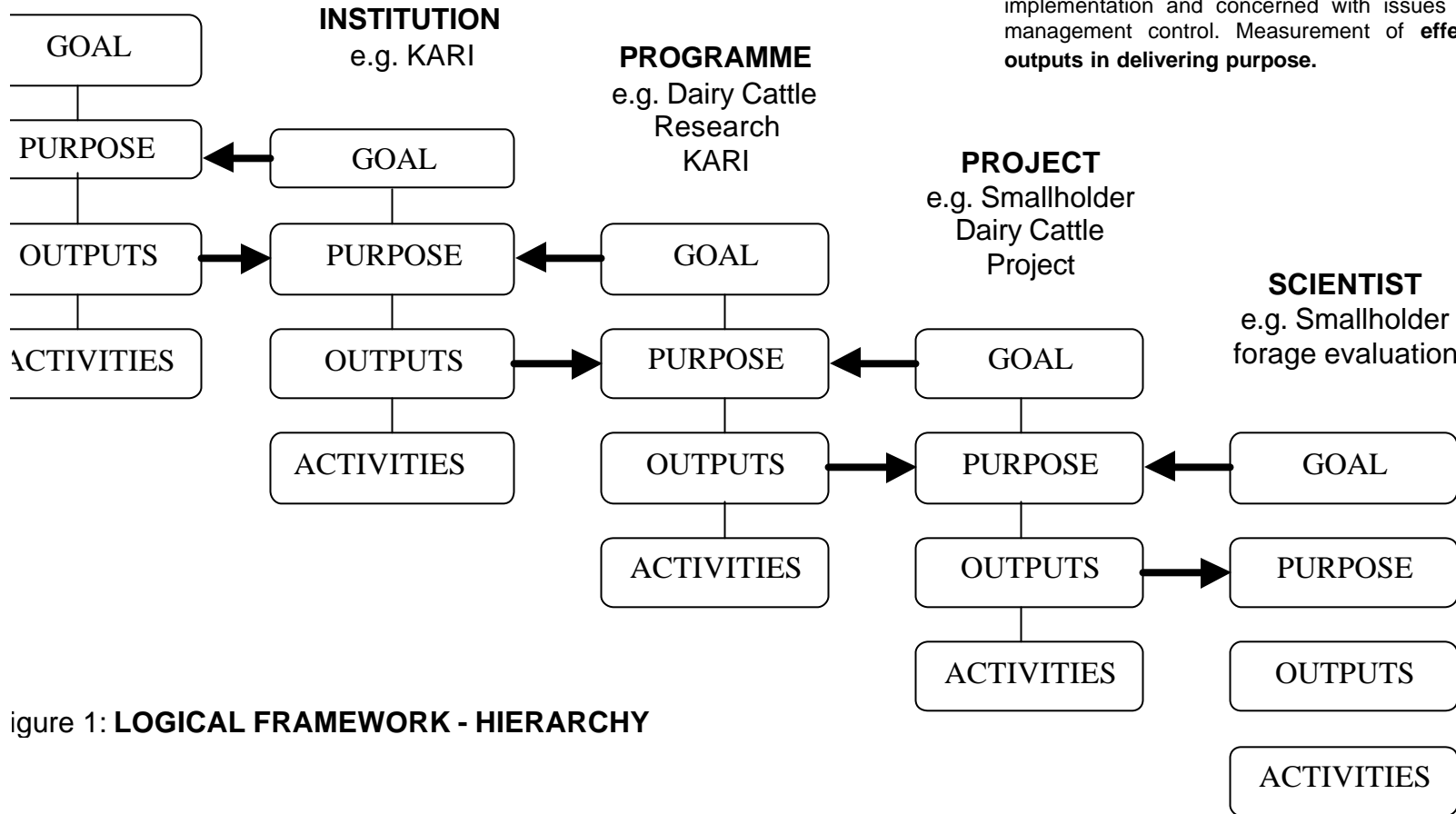
To reinforce such changes in orientation, there is need to develop institutional mechanisms that systematize translation of good ideas into appropriate technologies. In the case of KARI, there was need

to reinforce social science capacity, rationalize human resources, streamline linkages with clients and stakeholders, and institutionalize a performance based incentive system.

To facilitate logical links between different levels of operation and among various clients and stakeholders, we argued for a systematic planning, monitoring and evaluation system. We emphasized that planning, monitoring and evaluation are sequentially related processes and that they are an integral part of research management. Thus, every level of operation must consistently plan, monitor and evaluate its activities with the desired impact in mind. Ideally, the respective operational levels ought to be linked by a hierarchy of objectives

GOVERNMENT

POLICY



..... Continuous and scheduled **MONITORING**, essentially an internal management issue. This is the area under control by management. Measurement of **efficiency of utilisation**.

----- Regular **EVALUATION**, essentially external to the implementation and concerned with issues outside direct management control. Measurement of **effectiveness of outputs in delivering purpose**.

Figure 1: LOGICAL FRAMEWORK - HIERARCHY

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