RESEARCH PROGRAM ON Livestock and Fish

CGIAR

More meat, milk and fish by and for the poor

Livestock and Fish monitoring, evaluation and learning framework

www.livestockfish.cgiar.org

October 2014

ICARDA Science for Better Livelihoods in Dry Areas

WorldFish

ILRI INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE

CIAT International Center for Tropical Agriculture Since 1967 / Science to cultivate change

CGIAR is a global partnership that unites organizations engaged in research for a food secure future. The CGIAR Research Program on Livestock and Fish aims to increase the productivity of small-scale livestock and fish systems in sustainable ways, making meat, milk and fish more available and affordable across the developing world. The Program brings together four CGIAR centres: the International Livestock Research Institute (ILRI) with a mandate on livestock; WorldFish with a mandate on aquaculture; the International Center for Tropical Agriculture (CIAT), which works on forages; and the International Center for Research in the Dry Areas (ICARDA), which works on small ruminants. http://livestockfish.cgiar.org

ilri.org
better lives through livestock
ILRI is a member of the CGIAR Consortium

Box 30709, Nairobi 00100, Kenya
Phone: +254 20 422 3000
Fax: +254 20 422 3001
Email: ILRI-Kenya@cgiar.org

Box 5689, Addis Ababa, Ethiopia
Phone: +251 11 617 2000
Fax: +251 11 617 2001
Email: ILRI-Ethiopia@cgiar.org

Contents

Acronyms

CCEE	Centre-Commissioned External Evaluation
CoP	Community of Practice
DIB	Development Indicator Bank
EpIA	Ex post Impact Assessment
FC	Fund Council of the CGIAR
IDO	Intermediate Development Outcome
IEA	Independent Evaluation Arrangement of the CGIAR
IEE	Independent External Evaluations
IP	Impact Pathway
ISPC	Independent Science and Partnership Council of the CGIAR
L&F	Livestock and Fish Program
M&E	Monitoring and Evaluation
MEL	Monitoring, Evaluation and Learning
MIS	Monitoring Information System
OCS	One Common System
RBM	Results-Based Monitoring
RM	Reflexive Monitoring
SIAC	Strengthening Impact Assessment in the CGIAR (ISPC-led project)
SPIA	Standing Panel on Impact Assessment (based in ISPC)
SRF	Strategy and Results Framework (of CGIAR)
ToC	Theory of Change
PIM	Performance Indicator Matrix
POWB	Plan of Work and Budget
VC	Value Chain

Introduction

The CGIAR research program on livestock and fish aims to sustainably increase the productivity of small-scale livestock and fish systems so as to increase the availability and affordability of meat, milk and fish for poor consumers across the developing world.

The purpose of this document is to lay out a Monitoring, Evaluation and Learning (MEL) Framework for the program. The Framework provides a concise narrative of why the M&E system is important, how it operates, what kinds of data it will collect and who is responsible for data collection and analysis. Central to the entire Framework is the enunciation of a clear vision of what a successful MEL system will look like. More explicit guidance on discrete aspects of the Framework will be available on the Livestock and Fish website as they are produced (http://livestockfish.cgiar.org/).

In reading the MEL Framework, it is important to remember that it is designed for a 'research' for development program. Accordingly, the sections within the Framework have been conceived to provide the appropriate building blocks that are required to realize our vision of success. The Framework provides both an aspirational target -- our vision of what we regard as success -- and an arrow for reaching our target – a Framework that is achievable within the challenging context of the CRP structure. Over time, we anticipate that the CRP will grow, learn and emphasize new priorities; consequently, the MEL Framework should be regarded as a living document, one that will be updated periodically.

Finally, a word about words: conceptual precision around M&E terminology has suffered from the proverbial dilemma of "too many cooks in the kitchen", with the result that too often M&E nomenclature tends to confuse, rather than provide clarity. Because the intended audience for this document includes both M&E specialists and non-specialists it is intentionally written to be broadly accessible. Where possible, M&E jargon and reference to disciplinary debates has been avoided; nevertheless, terminology conveys meaning and is therefore important. When appropriate, terms have been defined in the text of the document; more precise definitions are provided in Appendix 2.

Background: CGIAR and Livestock and Fish

The CGIAR in its Strategy and Results Framework (SRF) has developed a research agenda that uses as a starting point its system's vision:

To reduce poverty and hunger, improve human health and nutrition, and enhance ecosystem resilience through high-quality international agricultural research, partnership and leadership.

In pursuit of this vision, the CGIAR has identified four strategic system-level outcomes (SLOs):

1. Reduced rural poverty
2. Improved food security
3. Improved nutrition and health
4. Sustainably managed natural resources.

The Livestock and Fish Program *(*L&F) contributes to these SLOs by transforming research outputs into development impacts that will positively change of lives of millions of beneficiaries. These changes are measured through Intermediate Development Outcomes (IDOs), defined as "changes that occur in the medium term that are intended to affect positively the welfare of the targeted population or environment, and which result, in part, from research carried out by the CGIAR and its partners."[1]

The *Livestock and Fish* IDOs are the following:

IDO1 Increased livestock and fish productivity in small-scale production systems for the target commodities (SLO2);

IDO2 Increased quantity and improved quality of the target commodity supplied from the target small-scale production and marketing systems (SLO2);

IDO3 Increased employment and income for low-income actors in the target value chains, with an increased share of employment for and income controlled by low-income women (SLO1 and SLO3);

IDO4 Increased consumption of the target commodity responsible for filling a larger share of the nutrient gap for the poor, particularly for nutritionally vulnerable populations (women of reproductive age and young children) (SLO3);

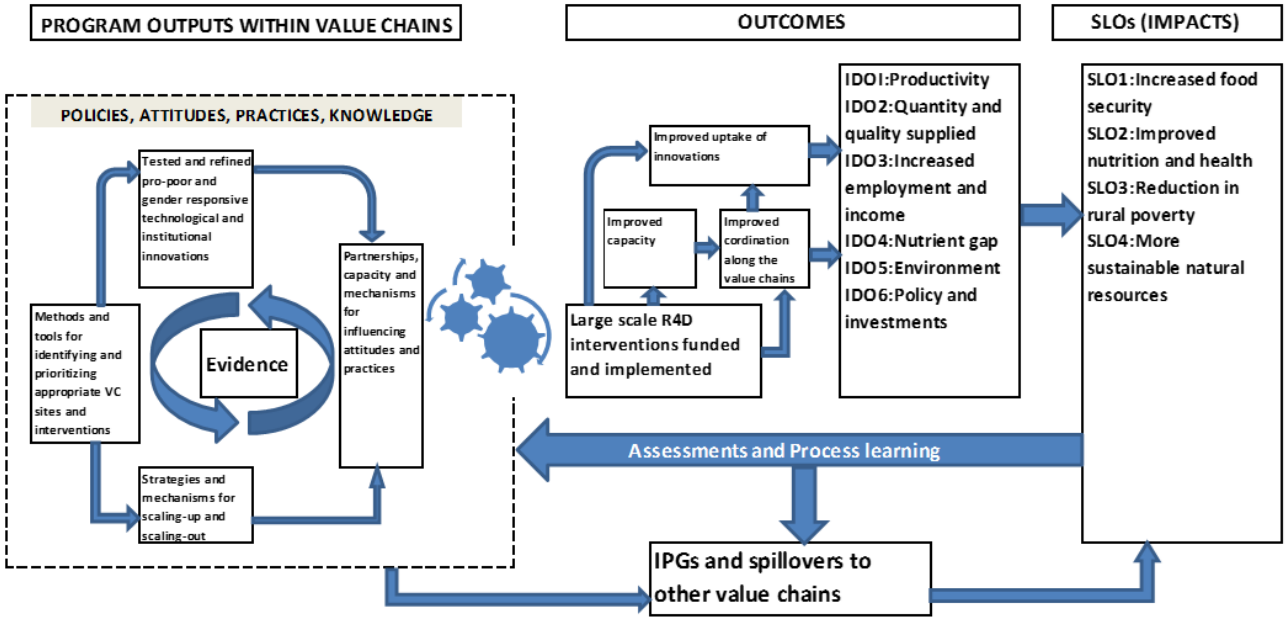
IDO5 Lower environment impacts in the target value chains (SLO4);

IDO6 Policies (including investments) and development actors recognize and support the development of small-scale production and marketing systems, and seek to increase the participation of women within these value chains (SLO2 and SLO4);

[1] Independent Science and Partnership Council. 2012. Strengthening Strategy and Results through Prioritization.

A simple Theory of Change (ToC) diagram is shown below, indicating how program outputs contribute to SLO impacts (Figure 1). Here, *L&F* scientists are responsible for creating research outputs in the form of pro-poor technological and institutional innovations appropriate to selected value chains (our "innovation labs"). However, it is only through the establishment of effective partnerships commingled with generous donor funding and private sector engagement that research outputs can be exploited within R4D platforms. Through the combined efforts of our research and development partners, successful R4D interventions are then up- and out-scaled in order to produce research outcomes that contribute to our IDOs. The combined effect of both research outcomes and the creation of international public goods (IPGs), mediated through a plethora of (necessary) support factors such as policies, customs, practices, intervention partners, funding, and so on, ultimately contribute to the sort of systems level vision that animates the CGIAR research agenda and is made concrete though its four SLOs.

Figure 1: Livestock and Fish Theory of Change



Challenges

The vision of *L&F* is that "the health, livelihoods and future prospects of the poor and vulnerable, especially women and children can be transformed through the consumption of nutritious meat, milk and fish and through shared benefits from income and job opportunities by their greater participation in animal-source food value chains." However, as the ToC suggests, the causal pathway between research outputs and SLO impacts involve a complex sequence of linkages that necessarily occur over an extended period, involve multiple actors working in multiple scales and geographies, and are derivative of a wide number of supportive factors that are completely independent of the CRP.

Accordingly, the Framework has been designed with the following considerations taken into account:

1. Research for development is an inherently unpredictable activity with potentially long time lags before development impacts are realized, yet it is still held accountable within a "prove-it" results based agenda for selected performance indicators associated with its intervention logic.
2. Before research innovations can generate measurable development impacts, a large number of development partners will be involved in project delivery; consequently it is important to recognize that the CRP and its CG partners will not have direct control over implementation of development activities.
3. The results of *L&F* innovations cannot be known in advance with a high level of certainty: they will arise from interactions within a complex change dynamic, i.e., they are emergent properties that are sensitive to implementation contexts. This implies the need to look 'outside of the box' for development outcomes and impacts – both intended and unintended, positive and negative: shifting the research focus from questions related to "what works?" to "what for whom and in what circumstances" does it work?

In practice, this makes the processes of transforming R4D inputs into development impacts through collaboration with development partners and stakeholders a critical component to achieving desired results. Consequently, *implementation theory* (i.e., how, where, when and with whom the CRP partners to deliver development activities) itself becomes a support factor for success. Retaining core program practices and principles amongst locally specific contexts is a key challenge for the Framework, and the CRP more broadly.

A second related key challenge for the CRP arises from its *program theory* (i.e., how it will bring about desired changes), which calls on development partners to implement development projects across multiple geographies and lengthy timeframes. Indeed, *L&F* research efforts are best described as a contributory cause to impact, not a sole cause. In other words, they are merely part of a sufficient causal package of factors that bring about observed long-term change (Mayne 2012). This aspect of the CRP highlights the complexity of the causal relationships between inputs, outputs and impacts and points to the need for the development of an impact measurement strategy that can make creditable causal claims even when the generation of counterfactual data may be difficult to obtain.

Finally, the program ToC clearly indicates that the *L&F* program will bring about impact through the creation of IPGs. This impact pathway postulates that research outputs, in the form of publications and other kinds of shared knowledge (e.g., tools, methods, approaches, etc.), will be widely disseminated and translated into impacts beyond the boundaries of the CRP. However, as acknowledged within CGIAR (Douthwaite et al. 2003), agricultural development is a complex process with a "high degree of non-linearity", one that is "fundamentally a social process in which people construct solutions to their problems" by opportunistically selecting only those fragments of an innovation that meet their particular needs. This implies a constructivist process, whereby knowledge is translated into impacts, but rarely in its entirety. Therefore, while linking program IPGs to system's level change is obviously of great importance to measuring the success of the CRP, it also poses an enormous methodological challenge.

Track two monitoring, evaluation and learning

The *L&F* Program is comprised of a large and diverse number of projects and research initiatives that vary in size, duration, methods and objectives. Projects are classified as either (1) research projects, which are predominantly geared toward technology development in the form of research outputs (e.g., vaccines, breeding, diagnostic techniques, etc.,) and (2) implementation projects, which are geared toward producing development outcomes and impacts.[2] The aggregate effect of all *L&F* projects is the program impact.

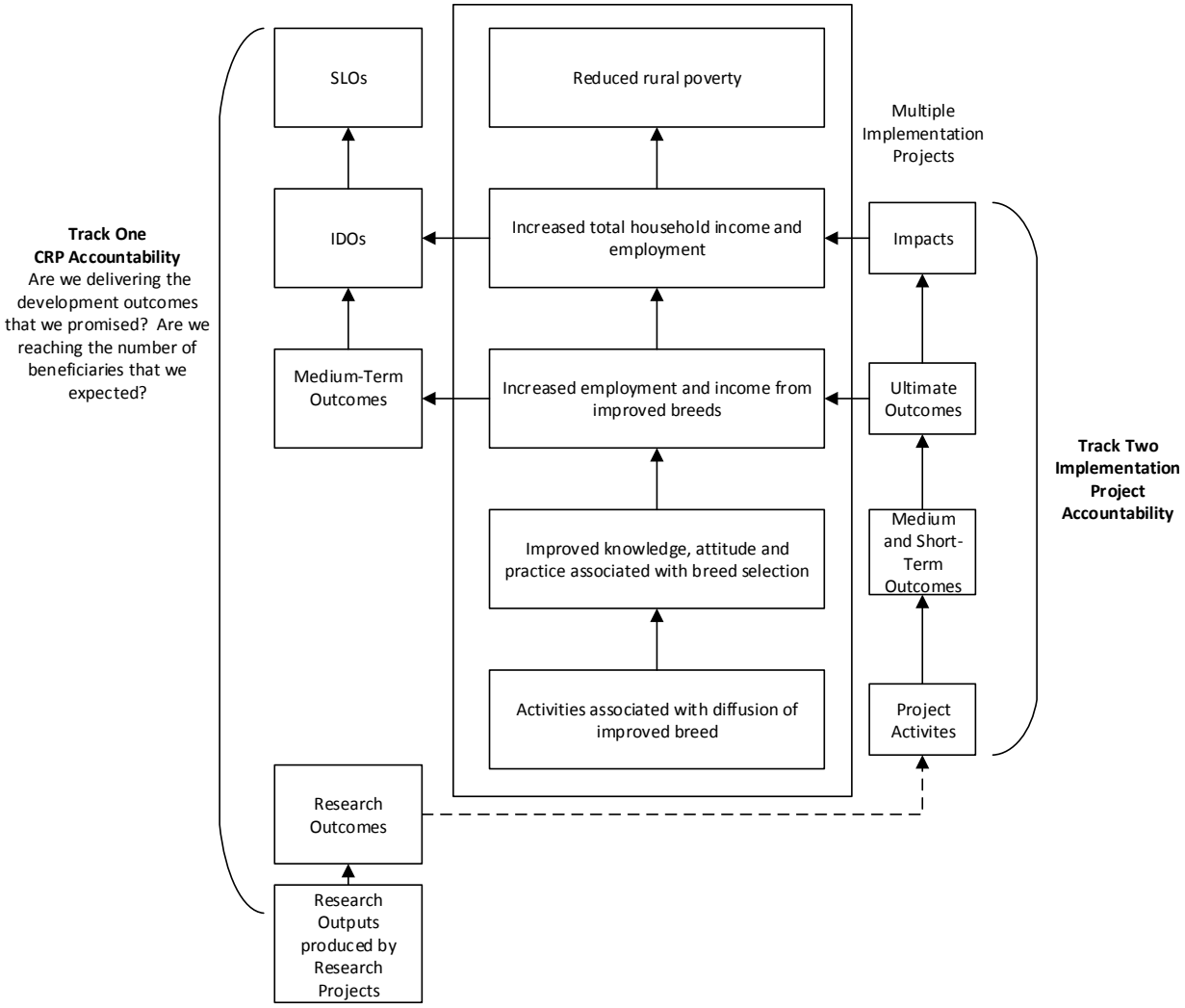
In effect, this makes the scope of the MEL Framework expansive: it must encompass component implementation projects and the overall program or 'big picture', while providing a coherent Framework for both. In this document, a two track approach is developed: the first is more appropriate for complex research interventions like the *L&F* program and falls within a 'theory-based' approach to evaluative research; the second is intended primarily for development projects and is situated firmly in the tradition of results-based project implementation. While program M&E relies on the effective collaboration of Track One and Two approaches, the majority of the MEL Framework will focus on the former (i.e., the construction of a MEL Framework ideally suited to a large research program).

The Track Two approach employed here is represented in

Figure **2** which shows how point of view provides a basis for accountability, and thus reporting obligations. In the example causal hierarchy below advances in breeding lead to reduced rural poverty; the cause and effect relationships remain the same, but point of view is relative. The hierarchy illustrates how accountability is different for the CRP and individual projects that contribute to it; here the CRP is responsible for producing program-level results (particularly at the level of IDOs) while implementing projects are responsible for producing project-level results (particularly at the level of short and medium term outcomes). Note, the scale of change is relative to each; the CRP must show IDO change at the level of national value chains

[2] Research outputs and outcomes, along with projects and other key terms are defined in Appendix 2.

Figure 2: Track Two Point of View



Track one: The Livestock and Fish research program

The *L&F* CRP is a research for development program that aims to produce scientific innovations that will have positive, long-term development impacts for millions of people. Track One refers to all of the monitoring, evaluation and learning activities directly undertaken by the CRP that are part-and-parcel of this effort.

Given the multiple demands placed on the MEL Framework (by managers, donors, the CGIAR, etc.) Track One necessarily adopts a large number of tools and procedures for managing different kinds of reporting requirements (e.g., a system for annual performance reporting to the Consortium Office). As a research program, however, the fundamental goal of the *L&F* M&E system is to provide sufficient evidence to show that over the extended life of the CRP (envisioned to be 15 to 20 years) it is pursuing the correct science to meet its stated goals.

In order to do this, the *L&F* MEL Framework has adopted as a core analytical tool the Theory of Change (ToC) approach, and an associated Evidence Base that 'proves' the many steps and assumptions that underpin our ToCs.[3] While IDO (and Medium-Term) indicators that measure progress toward development outcomes and impacts are still an integral component of our MEL Framework, they are regarded as only one part of the larger body of evidence that is required to convincingly argue that the program is contributing to desired development impacts (i.e., indicator data is part of a triangulation process).

Track two: Implementation projects

Track Two refers to only a small component of a presumably already existing M&E system employed by a development project aligned with the *L&F* program. More specifically, it refers to M&E activities conducted by a development project that are required to harmonize with, and feed into the broader CRP MEL Framework (Track One).

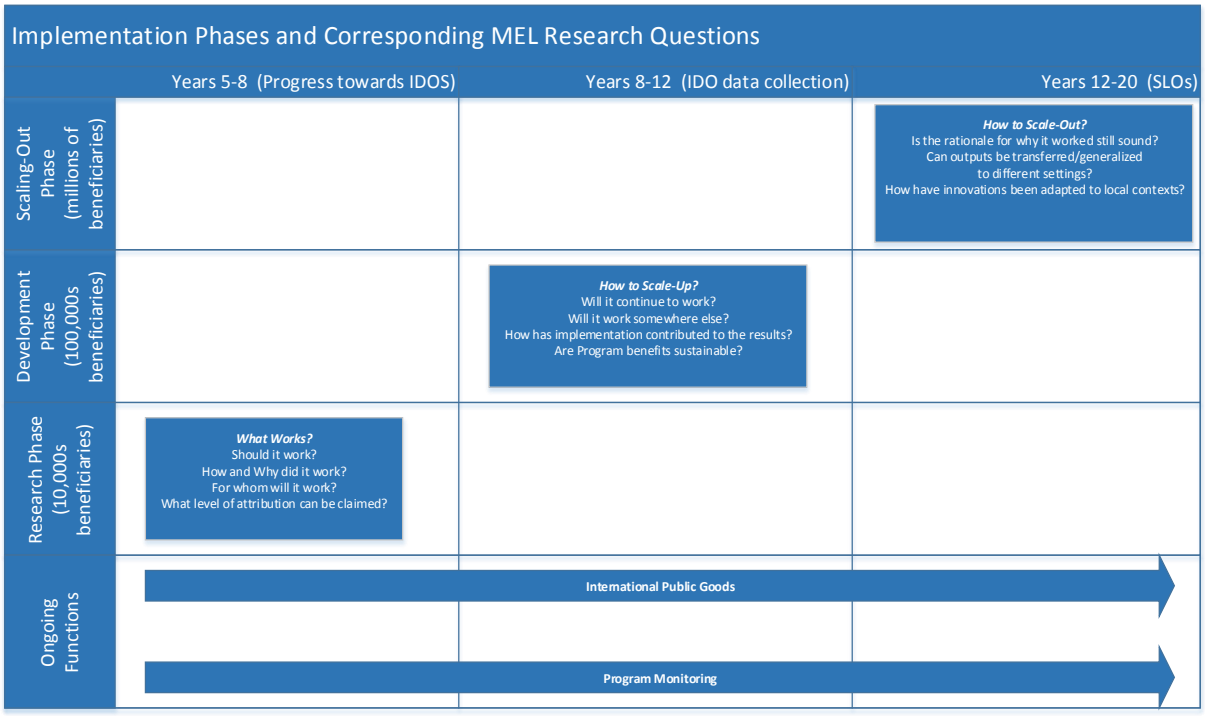
For individual development projects aligned with the *L&F* program, a well-tried Results-Based Monitoring (RBM) strategy will be adopted This approach both compliments implementation monitoring, but also goes well beyond just outputs by focusing on the 'so what' question: what difference did the project make in the lives of real people by virtue of 'being there' (Kusek and Rist 2004)? Most donors already require some type of RBM system, though formats and reporting frequencies vary (representing a spectrum of M&E burdens on implementing projects). With this diversity in mind, the CRP has intentionally tried to create a system that minimizes additional M&E reporting costs; a quick reference checklist of reporting expectations for implementing projects is provided in Appendix One.

Integrated phases

Both Track One and Two M&E will occur throughout the life of the CRP, though priorities and emphasis may change over time. For analytical purposes only, *L&F's* work within value chains (VCs) can usefully be conceptualized as consisting of three phases: 1) a Research Phase, 2) a Development Phase, and 3) a Scaling-Out Phase (Figure 3). It is important to recognize that in practice these three phases overlap considerably. This is the result of both variation in the maturity of different value chains, but also the nature of iterative program learning, involving a continual process of doing, reflecting and adjusting. This is to be anticipated within a complex system where emergent design is an expected outcome of iterative learning, and underscores the permeability of analytical boundaries.

[3] In the past, the CGIAR has relied heavily on a simple logframe-based M&E Framework for reporting -- operating as if there was little difference between research for development and development implementation. More recently, it has moved decisively toward a Theory of Change Framework, even if significant questions remain over how to operationalize this approach within an M&E system.

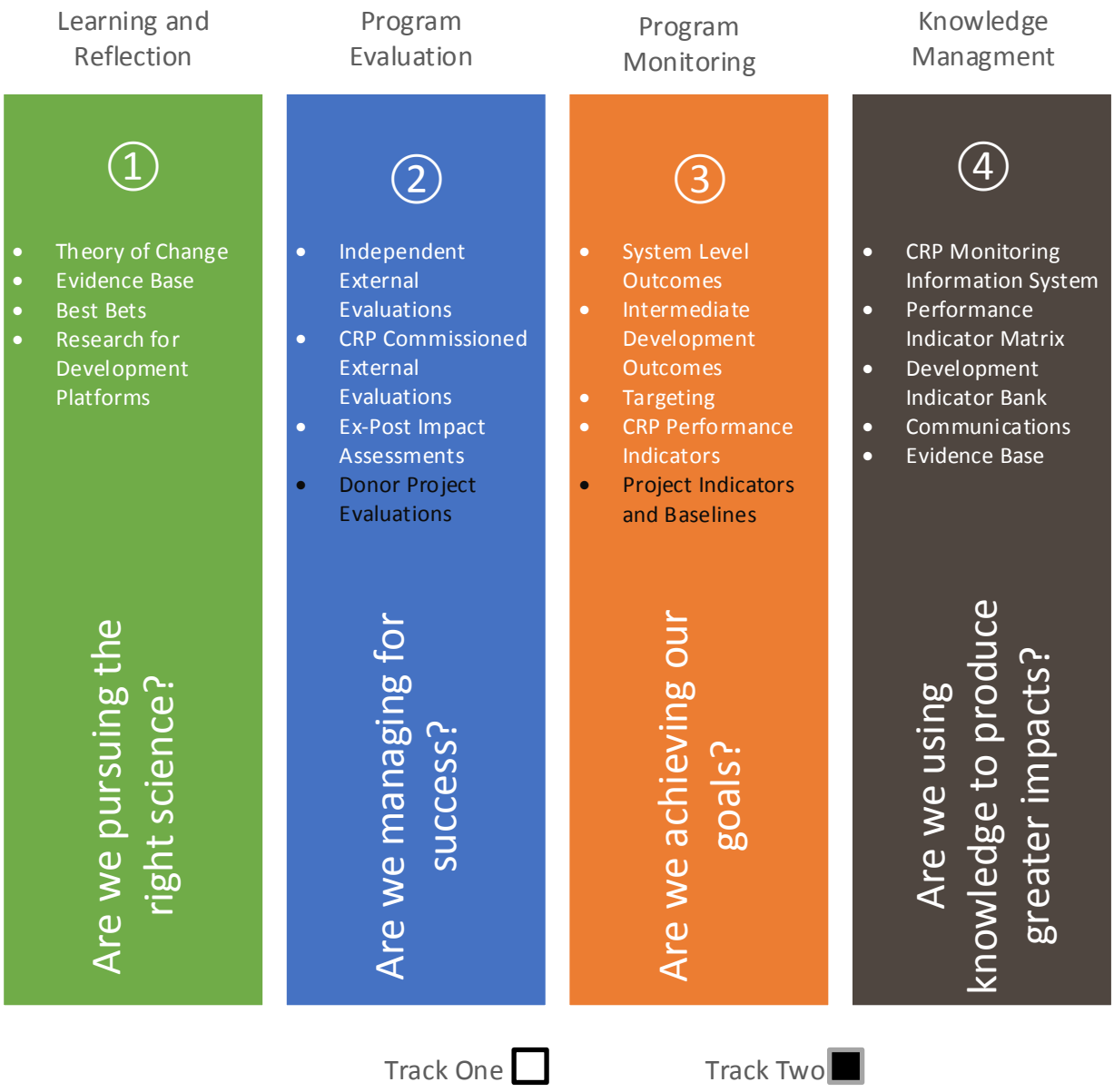
Figure 3: CRP Phases



Structure of the MEL framework

The MEL Framework is divided into four components, each dealing with a substantive issue area of concern to the CRP (Figure 4).

Figure 4: MEL Framework Overview



Component One: Learning and Reflection provides an overview of how the CRP intends to learn what science research outputs work (Best Bets) and why? More broadly, it outlines an approach for CRP learning that is designed to show that the correct science is being produced to achieve the desired development outcomes and impacts; here, considerable emphasis is placed on development of the CRP Theory of Change and an associated Evidence Base; both of which are updated periodically as new information becomes available. By continuously challenging our working hypotheses and

assumptions the L&F Program will be able to make mid-course corrections when necessary in order to reach our ultimate goals. This component of the MEL Framework relies heavily on a program theory –based evaluation approach developed substantively by John Mayne and others, and constitutes an area of research in its own right, but with obvious implications for how the CRP is managed in general. All of the activities covered in this component of the Framework feed into the MEL Learning Agenda.

Component Two: Program Evaluation outlines those activities that are designed to help keep the CRP accountable, including CGIAR mandated external evaluations. These evaluations will feed into the Evidence Base outlined in component one, but are also an important accountability mechanism that need to be conducted on a regular basis. The Independent Evaluation Arrangement (IEA) provides detailed guidance on how to conduct different kinds of evaluations; only information required to contextualize them within the broader MEL Framework is provided here. Included in this component are also Track Two project evaluations and ex-post impact assessments/evaluations. The types of feedback and accountability mechanism outlined in this component of the Framework are foundational to the appropriate management of the CRP.

Component Three: Program Monitoring explains briefly how the CRP will collect IDO and medium-term indicator data and how this data will be used. This component of the Framework should be read in conjunction with the CRP *Indicator Manual*, which is a separate document that is publically accessible from the CRP website. Program monitoring also includes information on how we will report on CGIAR mandated annual performance indicators and what indicator data we expect to receive from projects (Track Two). By comparing our output and impact targets with what we actually achieve, this component of the Framework is designed to answer the question: "Are we achieving our stated goals?"

Regardless of how well individual components of the MEL Framework function they are only as useful as the knowledge management system that links data and analysis with real-life stakeholders. *Component Four: Knowledge Management* provides an overview of the various information management systems employed by the CRP.

Component one: Learning and reflection

Theory of change and impact pathways (Track One)

During the Research Phase of the CRP, we do not expect to see significant changes to IDO indicators; measurable impacts will only be visible after the CRP moves into the Development Phase. However, even if impacts are not measurable during the first phase of the CRP, it is possible to assess the plausibility of critical linkages (or mechanisms) within a ToC logic and the extent to which research outputs are designed to fit within the social and institutional pre-conditions that will influence their eventual impact.[4]

A ToC is an outcomes-based approach currently gaining favor within the CGIAR and academic community more broadly that attempts to harness reflective and critical thinking in the design, implementation and evaluation of development programs (Vogel 2012). For a program like the *L&F* CRP, a ToC describes the set of causal assumptions that link inputs to impacts. By clearly describing the pathway, underlying assumptions and necessary support factors from inputs, to research outputs, to the development results that are being sought, a ToC is a fundamental first step in building a case for reasonably inferring causality within a complex program.

The *L&F* Program has already developed a highly stylized ToC for the program as a whole (Figure 1) and has also developed detailed impact pathways (IPs) for each value chain. Together, the program ToC and VC IPs provide a theoretical association between research outputs and development outcomes and impacts. Over the duration of the CRP, *L&F* will work with partners to further refine more specific ToCs for individual flagships and value chain products. Together, ToCs at different levels of analytical resolution will be 'nested' within a cascading whole, so that higher level ToCs frame and provide context for more specific ToCs at the level of VCs and individual projects. As a first step, MEL staff will work in close collaboration with Value Chain Coordinators to develop much more detailed ToCs and to revise them annually.

It must be recognized that development of a ToC takes time and dialogue in order to make assumptions transparent and that iterative learning may change basic assumptions over time. The goal of a ToC is not to produce a finalized document that simply fulfills an M&E reporting requirement, but rather to make our assumptions about how we think change will happen more explicit. A key premise of the ToC approach is that by continually testing our assumptions and improving upon them we are more likely to achieve our expected outcomes and impacts. As we learn and adapt, our ToC must also be continually updated to reflect our new understanding of how change is brought about; in other words, our ToCs both inform and reflect adaptive management practices.

[4] This kind of theory-based approach relies on the identification of 'mechanisms'; program mechanisms "take the step from asking whether a program works to understanding what it is about the program that makes it work" (Pawsone and Tilley, 1997:66, quoted in Stern, et al., 2012: 26).

By providing an explicit theoretical understand of a complex change dynamic, ToCs will:

- Identify critical linkages between program inputs and impacts;
- Identify critical conditions for success (e.g., contextual factors such as implementation theory, policy and economic conditions, etc.);
- Identify alternative explanations of change (counterfactuals);
- Facilitate the identification of research questions that need to be tested in order to confirm or refute the original program ToC;
- Make a cause and effect argument that can be linked to activities of the CRP.

Evidence base (track one)

L&F will develop and maintain an Evidence Base for our interventions that gradually strengthens and validates our ToC as we learn what works and how; accordingly, it is a core component of our overall learning strategy, one that is ideally suited to the needs of a research program like *L&F*.[5] Our Evidence Base, in conjunction with our ToC, will not only focus on the linkages between cause and effect, but it will allow us to provide an evidence-based narrative of our intervention logic, or contribution story (Mayne, 2001). Over time, our Evidence Base will grow into a densely packaged body of knowledge that will allow us to either validate our assumptions or re-formulate them. This process of continually testing and validating our ToC will allow us to better target our interventions and make more informed claims about their contribution to impact.

As a repository for *L&F* learning, the Evidence Base will provide a mechanism for reporting expert judgment on the strength of ToC assumptions using both primary and secondary data: (1) the Evidence Base will clearly indicate if and to what extent assumptions have been assessed, and (2) given supporting evidence, does the assessment make sense? Where assumptions are shown to be *weak* based on available evidence the CRP will target future research (including impact assessments, evaluations and other kinds of research) in order to strengthen and validate the assumption; where assumptions are shown already to be *very strong* the CRP will target other areas for scare research funding.

Data used to populate the Evidence Base will be drawn from a wide variety of quantitative, qualitative and mix-method approaches; inclusion of evidence is determined by its quality and impact on our ToC. Responsibility for maintaining the Evidence Base will be shared between the Impact and Learning Unit (ILRI) and recognized experts working within the CRP.[6]

Best bet selection criteria (track one)

A Best Bet is a technology, process, institutional or social innovation that has been chosen through a rigorous, participatory and transparent research-based selection process because of its potential for making a positive contribution to one or more of the CGIAR Livestock and Fish Research Program

[5] More information regarding data flow into the Evidence Base can be found in

Evidence base Component four: Knowledge management.

[6] Research milestones will need to be reported using some sort of template, likely to be developed in conjunction with a Results Based Management system.

Intermediate Development Outcomes (IDOs). It can be packaged discretely or as part of a bundle of related innovations.

Best Bet identification takes place during the Research Phase of the program as part of a broader objective: to design, test and promote scaling-up of an intervention or package of interventions that stimulates pro-poor transformation of targeted L&F value chains. Best Bet candidates demonstrate high development potential and are targeted for robust testing: some will prove to be unfeasible and discarded, others will show positive development impact potential and will be adopted, adapted, scaled-up and subject to continued testing within development projects.

Best Bet selection criteria and an associated selection protocol will be published as separate documents on the L&F website.

Attribution versus contribution

Within the scholarly literature there is considerable discussion about the difference between 'attribution' and 'contribution' (Stern et al. 2012, 2012; Patton 2008, Mayne, 2012). Vaessen (Mayne, 2012) distinguishes the two as follows: "Attribution emphasized the issues of *whether or not and how much* of a particular change can be attributed to an intervention. Contribution emphasizes the confluence of multiple causal factors to a particular change and emphasizes the issue of *whether or not and how* an intervention contributes to the change."

In a complex development program like *L&F,* contribution is the more analytically useful concept because it draws our attention to the causal role of the intervention, along with other factors (e.g., a causal package) that are undoubtedly contributing to the observed change. Understanding these causal roles and support factors is essential if we want to know if a technology (broadly defined), institutional innovation or intervention has contributed to observed change (positive or negative) and if it is transferable (Cartwright, 2013).

Alternatively, attribution is most commonly associated with project-based development that occurs within well-defined boundaries: spatial, temporal and institutional. The question of attribution is most relevant when our research question is seemingly straight forward: Does the technology work? In other words, we are interested in knowing to what extent an effect was caused by our intervention. In this case, attribution is the more analytically useful concept because our evaluation question has been readdressed to focus on how much an intervention has contributed to observed change.

Typically, attribution is regarded as the more rigorous of the two concepts, though insisting on one over the other is not particularly helpful in cases where establishing an attribution claim is impossible or impractical. In these cases, Funnell and Rogers (2011) go so far as to employ the less value laden term 'causal inference' in realist evaluations that involve building a credible case between cause (development inputs) and effect (development impacts) relationships. The analogy equivalent is that of building a detective case sufficient to convince a skeptical outside observer of a person's guilt or innocence based on the weight of evidence presented (White and Phillips, 2012).

The *L&F* CRP utilizes ToCs and an associated Evidence Base as 'core' MEL tools to 'prove' that our research program is producing the correct science that will lead to the kinds of development impacts

we hope to produce. Accordingly, the primary concern is with building a credible case that we are 'learning' through our research how to produce science with potentially substantive development impacts for millions of beneficiaries (achieving our desired reach). If we are able to show that our ToC assumptions are warranted, we will have constructed a plausible contribution story. Without wishing to engage in a war of semantics, the *L&F* program will typically phrase its case using the term 'contribution', which we regard as synonymous with 'causal inference'.

Implementation theory (track one)

The *L&F* Program brings together through the creation of R4D platforms a wide number of diverse partner organizations in order to turn research outputs into development outcomes. In many important respects, this requires a unique configuration of actors that is likely to change (1) between value chains, (2) from one CRP phase to another, (3) in response to emergent contextual change dynamics. Understanding the strategies employed to mobilize stakeholders and engage beneficiaries in order to bring about the desired level of scaling must therefore be an integral part of our explanation of how and what is achieved since it will almost certainly connote trade-offs between reach and results.[7]

One approach that is particularly well-suited to this need is Reflexive Monitoring.[8] Reflexive Monitoring is not a single method, but rather an umbrella approach designed to stimulate learning and contribute to the broader M&E system (Mierlo, Regeer, and Amstel 2010). The theory, tools and methods for Reflexive Monitoring form a coherent nucleus around which R4D platforms are able to facilitate iterative learning and planning; here a network of actors is deemed reflexive if they are able to develop new ways of thinking that respond to the dynamic systemic context within which they work. Significantly, Reflexive Monitoring is not an open-ended, constructivist approach in which participants negotiate meaning through a process of sharing experiences, but is rather a more normative approach in which participants are bound by long-term objectives and processes. Figure 5 indicates the process through which R4D platforms are expected to plan, implement, reflect and adapt.

Key to a Reflexive Monitoring approach in action are regularly planned workshops led by a skilled facilitator and detailed process documentation. Both of these ingredients are widely recognized as an essential pre-condition for a Reflexive Monitoring approach. In order to help bring about Reflexive Monitoring as a processes within R4D platforms, *L&F* will identify a dedicated reflexive monitoring specialist who will work closely with R4D platforms and facilitators in order to ensure that all necessary support services are in place and that platform outputs are disseminated appropriately.

Significantly, Reflexive Monitoring must be seen as not only something that innovation platforms do, but as a processes that produces its own outcomes among R4D platform actors, and consequently has important scaling impacts that must be accounted for and understood. As a result, the *L&F*

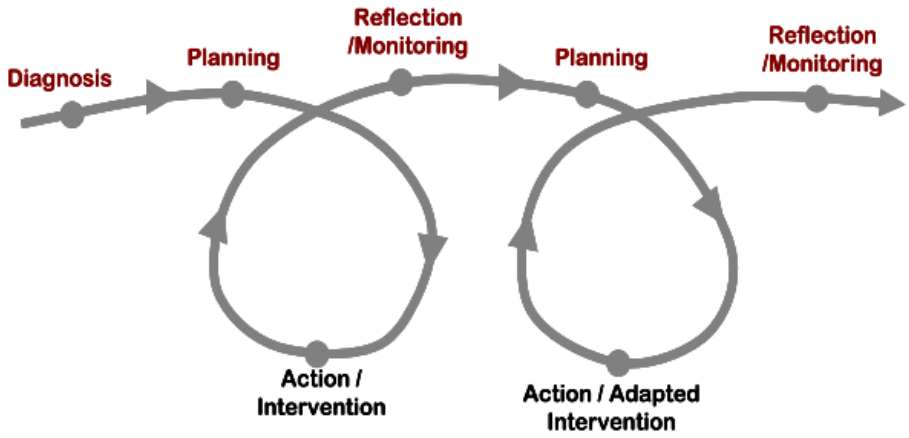
---

[7] Wigboldus and Leeuwis (2013) identify four general approaches to scaling: push, pull, plant and probe (pg. 36). The *L&F* Program will undoubtedly use a combination of all of these approaches, depending on the nature of the technological innovation, the implementation context and the phase of the CRP.

[8] See for example, Mierlo, B., *et al*., *Reflexive Monitoring in Action*, 2010.

Program will engage in formative evaluations of R4D platforms, into which Reflexive Monitoring data will provide a significant input; together, these separate but related activities will allow the program to test and adapt its theory of program implementation (a component of our ToC). As a first step, the CRP will work with Wageningen University to identify a Post-Doctoral Fellow who can lead this research effort.

Figure 5: Iterative Learning and Planning



Learning agenda

The *L&F* Learning Agenda represents a set of strategic questions that the CRP intends to answer through evaluations, impact assessments, literature reviews and other forms of targeted research. While there is already evidence to support the *L&F* ToC, there remains much to learn. Basic assumptions about what works, why, how and where will need to be tested over the coming years. As the *L&F* program moves forward, new questions will arise which will in turn also need to be addressed (see

Table 1: CRP Phases and Key Research Questions). Though the *L&F* Learning Agenda will evolve over time, it will develop from our ToC and reflect strategic research gaps that are identified in our Evidence Base; possible targets of the Learning Agenda include (but are not limited to) how *L&F* technologies impact on women's empowerment and other vulnerable populations (with particular regard to nutrition), up- and downstream value chain employment for rural, urban and peri-urban populations, effects on climate change and natural resource management, influence over policy change and so on. Over time, the *L&F* Learning Agenda will contribute to ongoing debates around food security for the poor by producing a body of knowledge that that is logically and coherently structured around our ToC and maintained in our Evidence Base.

The Learning Agenda is at the very heart of our Framework because it is both driven by our ToC, but must simultaneous function as a management tool by informing strategic decision making within the CRP. For management purposes, learning related research falls into one of two categories:

1. Project learning, typically undertaken to assess specific technologies, innovations and piloted packages (e.g., EpIAs, project evaluations, project ToCs, etc.);
2. Program learning, typically aimed at the longer-term impacts of the collective efforts of the Program Research entire CRP (e.g., epIEs, IEEs, CCEEs, VC ToCs, etc.).

Program research (track one)

Program research is geared toward generating credible evidence to systematically demonstrate why we are confident that our integrated program interventions are contributing to our desired impacts (i.e., why the suppositions that underlie our ToC are sound). Since this kind of research is geared toward supporting the entire program, the CRP Executive will provide strategic guidance for prioritizing research questions.

Funding for learning research is the responsibility of the CRP, and will be allocated from either core funding or, when the needs of the CRP mesh with those of donors, from successful research grant applications.

Project research (track two)

Project research is the responsibility of project managers and should be funded through project budgetary allocations. Among other considerations, project research should feed into Best Bet selection, pilot studies and targeting. All project research will be submitted to the CRP and will be archived in the project MIS system.

Research quality and ethics

In order to be creditable, research within the *L&F* Program will be conducted to the highest possible standards, and will be subject to an appropriate institutional ethics review process. Research originating at ILRI will be vetted by the Institutional Research Ethics Committee (IREC); research originating outside of ILRI will also be vetted by the IREC, or a similar, qualified ethics review board.

The learning agenda over time

An R4D program like *L&F* is fundamentally different than most donor-funded development projects, yet shares a similar goal: to make a positive impact in the lives of real people. Learning and reflection are two necessary activities in order to maximize positive development impacts, especially within a complex R4D program like *L&F*, which is composed of multiple phases, spread over a wide geography and involves a large number of partners. While the boundaries between each phase of the CRP are more accurately conceived as shaded rather than solid lines, the phases do representative different challenges, different partners and thence they pose different research questions.

Table 1 below shows the characteristics of each CRP phase and key research questions associated with each.

Table 1: CRP Phases and Key Research Questions

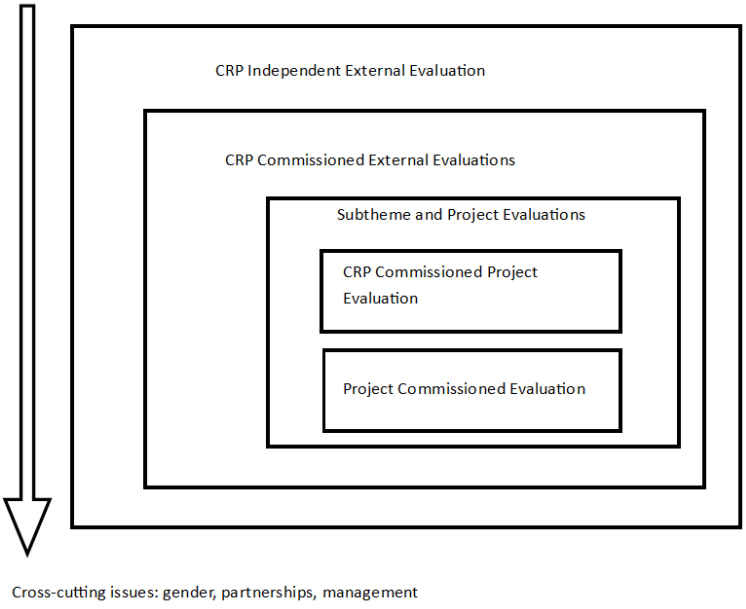
Phases and Sub-Phases	Key Research Questions
Research Phase	
During the Research Phase (lasting 5-8 years), the CRP will develop and test discrete technologies and delivery systems at the field site level within selected value chains. The Research Phase itself consists of three sub-phases: 1. Assessment: here the goal is to develop a wide variety of different technologies with pro-poor benefits. 2. Best Bet Selection: Using best bet selection criteria, discrete technologies will be identified for scaling-up. 3. Integrated Pilot: Selected Best Bet technologies will be piloted on a small-scale to test their potential contribution to achieving the goals of the CRP.	Should the innovation work? What works? How and why did it work? For whom did it work? What level of attribution can be claimed?
Development Phase	
During the Development Phase (years 8-12), a complimentary package of Best Bet technologies will be scaled-up to the sub-national scale by development partners. Innovation through processes of iterative learning is an integral component of the program theory. During this phase, the CRP expects to contribute to changes in IDO indicators.	How to scale-up? Will it continue to work? Will it work somewhere else? How has implementation contributed to results? Are program benefits sustainable?
Scaling-Out Phase	
During the Scaling-Out Phase (years 12-20), scaling-out activities will continue, with a clear emphasis on the latter. Implementation and adaption of technologies will be the role of an expanded list of partners (directly linked to the CRP) and opportunistic adopters (indirectly linked to the CRP). During this phase, the goal will be to bringing proven solutions to the widest possible number of beneficiaries both inside and outside of existing value chain countries.	How to scale-out? Is the rational for why it worked still sound? Can outputs be transferred or generalized to different settings? How have innovations been adopted to local contexts?

Component two: Program evaluation

Evaluation

An evaluation is an "assessment, as systematic and objective as possible of an on-going or completed project, program or policy, its design, implementation and results. The aim is to determine the relevance and fulfilment of objectives, developmental efficiency, effectiveness, impact and sustainability. An evaluation should provide information that is credible and useful, enabling the incorporation of lessons learned into the decision-making process of both recipients and donors" (OECD 2010). Evaluations may be both formative (i.e., mid-term, process orientation) or summative (i.e., end of project/program, outcome/impact orientation), and will target multiple levels within the CRP: the CRP as a whole, CRP themes, subthemes and projects. Figure 6 below provides a graphic representation of the overall evaluation strategy for *L&F*, in which lower-level evaluations feed into and inform higher level evaluations.

Figure 6: Evaluation Boxes



The *L&F* Program will adhere to CGIAR evaluation policy guidelines and standards which provide details on modalities and a common Framework for implementation of the policy. The Evaluation Policy provides specific guidance on the implementation of (1) Independent External Evaluations of CRPs and (2) CRP Commissioned External Evaluations. Subtheme and Project Evaluations will adhere to the CGIAR Evaluation Standards when commissioned by the CRP; evaluations that are commissioned outside of the CRP's sphere on control are encouraged to voluntarily follow the standards.

CRP independent external evaluations (track one)

Independent External Evaluations (IEEs) are commissioned by the office of the Independent Evaluation Arrangement (IEA) every four to six years and are intended to provide reliable data on a wide number of evaluations questions that typically fall into two categories:

1. Results and progress against commitments, including any evidence available on outcomes and impacts, and whether initial assumptions still hold good;
2. Fitness of purpose of the current structures, systems and partnerships of the CRP.

Evaluation results will be made publically accessible and are expected to be used by senior managers and donors to make critical decisions affecting the CRP, such as: funding levels, restructuring/consolidation of CRP components, adjustment to research lines, and CRP timeframes. *L&F* is expected to begin its first IEE in earnest in January, 2015, though preliminary data collection will begin in the first quarter of 2014.

While much of the responsibility for conducting the IEE will reside in the IEA, *L&F* will identify an Evaluation Manager who will be tasked with working closely with the IEA on all aspects of the evaluation. *L&F* will also nominate 6 to 10 individuals who will sit on the Evaluation Reference Group in order to provide guidance to the IEE evaluators and written comment on evaluation documents.

It is intended that IEEs will draw extensively from CRP Commissioned External Evaluations (CCEEs) as a source of evidence, along with other internally commissioned evaluations, annual reports and impact assessments. More details on the IEE process, roles and responsibilities can be found in the *IEA Guidance Note G1* and the *CGIAR Standards for Independent External Evaluation.*

CRP-commissioned external evaluations (track one)

CRP Commissioned External Evaluations are the responsibility of the *L&F* program. They are intended to provide a more focused evaluation of specific themes within the CRP and will constitute an important input to *L&F* management and governance decisions. CCEEs should be conducted for all *L&F* Flagships at least once between IEEs (i.e., once every 6 years); for the *L&F* program this implies that at least one CCEE will be conducted each year. Whenever feasible, CCEEs should contribute to the CRP Evidence Base.

Management of CCEEs will be assigned to an Evaluation Manager who will be mandated to commission and support the evaluation team independently of *L&F* management. Reporting of CCEE results will be made to the Evaluation Reference Group which will be composed of 6 to 10 stakeholders, of which only 1 will represent CRP management.

More details on the CCEE process, roles and responsibilities can be found in the *IEA Guidance Note G2* and the *CGIAR Standards for Independent External Evaluation.*

Project evaluations (track two)

The L&F Program is composed of numerous bilateral and partner-led development projects over which the L&F Program has varying levels of influence. In many cases, evaluations will be contractually mandated with donors at regular intervals, while in other cases evaluations are purely voluntary and may or may not be conducted.

Table 2 provides guidelines for the type and frequency of evaluations at the project level; here, evaluation frequency is tied to the overall value of the intervention.

From time-to-time, working in collaboration with its partners, the *L&F* program may commission an evaluation of a specific project. These evaluations will be conducted by an external consultant hired by the CRP, but with the full consent of the project management.

A unique set of tasks for evaluations at this level will be to both show how and why a project works, but also how it contributes to the overarching goals of the CRP (i.e., the CRP IDOs). Evaluations must be able to trace the links between project activities and outcomes to development impacts.

L&F will maintain a Help Desk to assist projects with all aspects of the project evaluation, including its conception, drafting of a TOR, implementation (including the hiring an evaluator), and so on.

Table 2: Evaluation Schedule for Projects

	Small (less then USD $1.5 million/annum)	Medium (between USD $1.5 to USD $3 million/annum)	Large (more than USD $3 million/annum)
Formative Evaluations	0	1	1 every 2 years
Summative Evaluations	1	1	1

Ex-ante impact assessments (track two)

Within the CGIAR, *ex-ante* impact assessments have traditionally been used to model potential impacts of clearly defined technological innovations (e.g., the production/consumption of new crop varieties). While this kind of modeling may be appropriate for value chain targeting and Best Bet selection, the overall complexity of the *L&F* program make wider application of *ex-ante* impact assessments unsuitable.

Ex-post impact assessments and evaluations (tracks one and two)

The OECD-DAC defines impact as "positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended"; within the CGIAR system, impacts are defined more narrowly as the consequence of the CRPs on the state of predefined SLOs and their associated IDOs. In either case, the emphasis is on seeing real changes in knowledge, attitudes practices and lives and on assembling robust evidence related to how, why, where and who benefits. Within the CGIAR, *ex-post* impact assessments are understood as "intended to determine more broadly whether the program had the desired effects on individuals,

households and institutions and whether those effects are attributable to the program intervention" (Baker, 2000). The defining characteristic of an ex-post impact assessment (EpIA) is its timing in relation to project implementation: an EpIA occurs at the end of a project, after sufficient time has passed for the emergence of long-term impacts. Impact assessments are focused on determining levels of program *attribution* of observed change.[9]

Within a simple development project, impact assessment designs are typically constructed around a counterfactual logic (what would have happened in the absence of the intervention). In order to accomplish this, Randomized Control Trials (RCTs) are frequently cited as the "gold standard" on a number of evidence ranking schemes and so deserve special mention here.[10] By comparing an observable with a theoretical one (the counterfactual) it is possible to measure the level of change in a particular place and at a particular time; here the two cases are presumed to be identical in every way, except for the cause and effect. At the project level, RCTs may be appropriate under certain conditions where the focus of assessment is on a particular well defined technology, however, at the scale and complexity at which the CRP operates RCTs should not be construed as indicative of a best method, nor as a suitable methodology for causal inference -- not least because of the difficulties in identifying methodologically sound treatment and control groups. In their recommendations to the CGIAR, de Janvry, Dustan and Sadoulet (2011) sum up well the conditions in which RCTs should be considered:

Whether … (RCTs) will be useful ultimately for documenting large-scale impacts from CGIAR research …, as opposed to establishing efficacy in a limited environment, depends on the validity of assumptions related to the ease of scaling up, the type of intervention considered (simple vs. complex), the number of years required to determine the extent of impacts across both adopters and non-adopters, and the representativeness of the selected environment in which the RCTs are conducted (relative to ultimate adoption domain). In this respect, the experimental approach may have more relevance for evaluation in the early adoption stage for pilot testing the economic and social impacts of a new technology on a relatively smaller and well defined scale, than for large-scale ex-post impact assessment.

Following guidance from the CGIAR on impact assessments, the *L&F* program will distinguish between stage I and stage II impact studies (Walker and Maredia 2008). The primary difference between these types of studies relates to their distance along the IP. Stage I EpIAs, including RCTs, are technology-focused studies that assess project impacts. Disaggregate economic rate of return studies are an example of this sort of EpIA. Responsibility for these kinds of EpIAs fall upon individual projects, though the *L&F* Executive may, from time-to-time, commission a stage I EpIA following the recommendation of the MEL Unit.

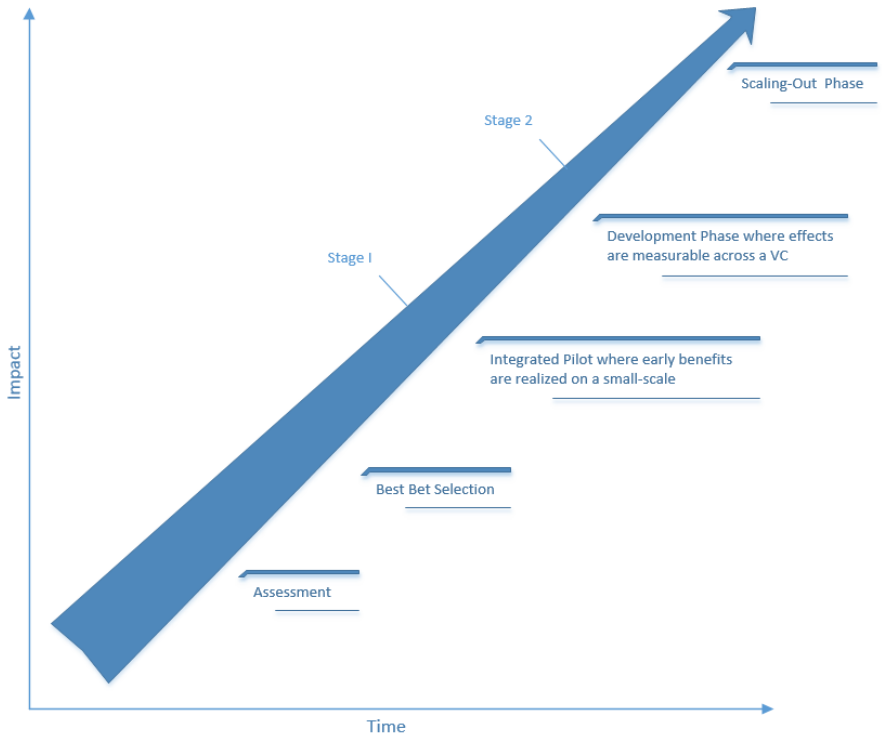
---

[9] The CGIAR, in its *Strategic Guidance for Ex Post Impact Assessments of Agricultural Research* (Walker and Maredia 2008) (Walker and Maredia 2008) focuses almost exclusively on disaggregate economic rate of return assessments, though does briefly identify aggregate and disaggregate multi-dimensional impact assessments. In this document, rather than using the modifier "multi-dimensional" we simply refer to these kinds of studies as evaluations.

[10] There are many evidence ranking schemes and organizations in existence; some of the most well-known are: GRADE, created by the Grading of Recommendations Assessment, Development and Evaluation Working Group; the Scottish Intercollegiate Guidelines Network; or the Oxford Centre for Evidence-Based Medicine.

While stage I EpIAs are an important part of our overall impact Framework, the *L&F* program will relay on, and take direct responsibility for stage II type impact studies. These studies focus on the 'bigger picture', and will employ an array of mixed methods, both qualitative and quantitative, that are able to provide answers to questions of a 'how' and 'why' nature, along with an estimate of what level of *contribution* the CRP has made to identified changes.[11] Understanding answers to these questions, as opposed to simply knowing if targets are achieved or not, is of critical importance to the *L&F* because it both helps the program improve its effectiveness and also contributes to a wider body of literature that informs research and development projects outside of the CGIAR system (i.e., it represents and international public good). As a result of this shift in emphasis from an impact accountability approach associated with stage 1 studies, to one more geared toward learning and reflection associated with stage II studies, *L&F* will designate these studies as *ex-post* impact evaluations (epIE as opposed to assessments). **Figure 7** shows the relative position of stage I and II studies. The tapering thickness of the arrow corresponds to the relative influence of the of a research output over time and observed impact (thus the shift in research goals for those associated with 'attribution' to those associated with 'contribution').

Figure 7: Stage I and II Studies in Relation to the Impact Pathway



Both impact assessments and evaluations are generally expensive, complex and require staff with specialized skills. Furthermore, in order to be creditable, they must strive to meet a high level of methodological rigor. Within the CGIAR, the Standing Panel on Impact Assessment (SPIA) is mandated to provide support to CRPs. The *L&F* Program will seek to work closely with the SPIA to

[11] DFID identifies five main design approaches for impact evaluation: 1) experimental, 2) statistical, 3) theory-based, 4) case-based and 5) participatory. The review cautions, however, that the use of experimental and statistical designs are appropriate in only very specific cases, involving one primary cause and one primary effect. (DFID, 2012).

ensure that impact assessments and evaluations are carried out to meet the standards expected by the CGIAR. Furthermore, the *L&F* Program will strive toward greater transparency by developing in 2014 an Impact Evaluation Briefing Note that will identify a portfolio of preferred methods and guidelines for implementation across the CRP.

International public goods (track one)

Within the CGIAR, International Public Goods (IPGs) are conceived as knowledge and technology and institutional innovations that have spillover potential for countries beyond the place-specific laboratories, institutions and cultural contexts in which they were produced (Kamanda and Bantilan 2010); here, a high spillover potential suggest a minimal set of support factors that are either already present or easily reproduced in different settings. Conducting multi-country comparative impact evaluations that are capable of demonstrating the transferability of *L&F* innovations represent a concrete step that the CRP can take to increase the likelihood of spillover. By contentiously including a 'transferability' criterion into all *L&F* impact evaluations and making them publically assessable, *L&F* impact evaluations will themselves become an important vehicle for reaching the CRP's second impact pathway.

Component three: Program monitoring

Development indicators

The *L&F* Program is committed to achieving a positive impact in the lives of people around the world, measured in terms of both outcomes and impacts. The CRP has already identified a list of six IDOs and is currently working to develop appropriate indicators, data collection methodologies, and targets. In all cases, indicator selection is premised on internationally recognized best practices for indicator development, along with a strong preference to harmonize indicators whenever possible with other CGIAR CRPs.

In most cases, IDO indicators and associated impacts will only be measurable over the long-term. Nevertheless, the CRP is expected to show progress toward meeting its development goals, even if those goals will not be reached for several years. As indicated above, our ToCs and Evidence Base are foundational to this effort, however the *L&F* CRP will also develop for each IDO a number of medium-term outcome indicators that logically precede IDO indicators and necessarily feed into them. Both the IDO indicators and the medium-term outcome indicators will be published in a publically accessible *IDO and Medium-Term Indicator Manual* (hereafter referred to as the *Indicator Manual*) that provides a detailed description of each.[12]

Tracking changes to IDO indicator values (tracks one and two)

According to the CGIAR SRF, all CRPs are expected to feed into the consortium SLOs. Within *L&F*, this means that research activities must be aligned with desired system level impacts and that whenever possible, projects (at the integrated pilot stage and beyond) should ensure that their indicator lists are harmonized with those of the CRP. Projects (both research and development) should incorporate and report on the indicators listed in the *Indicator Manual* according to a mutually agreed schedule.[13] Indicator data harvested from projects will be used to feed into the CRP Evidence Base to support CRP contribution claims.

For reporting purposes the *L&F* CRP will rely on already existing nationally produced indicators that are most closely aligned with those identified in the *Indicator Manual*. Given the wide number of countries in which the CRP operates and the relatively specialized information that is of interest to it (e.g., productivity of specific types of livestock and fish disaggregated by sub-national region) a perfect IDO indicator match may not always be possible, and the need to reconcile differences is to

[12] Within the CGIAR, there has been considerable discussion about the need to select standardized indicators for common IDOs. This debate is still ongoing and appears likely to continue for some time. Until otherwise directed by the Consortium Office, the *L&F* program will use the indicators identified in its indicator manual.
[13] The ideal data collection frequency depends on specific indicators, however, pragmatic choices need to be made by projects and it may not always be possible or economical to collect data according to an ideal timeframe. In those cases, the CRP will negotiate with individual projects for an alternative reporting schedule.

be expected. In cases where no comparable national data is available, the CRP will employ project level data to statistically model IDO indicator estimates.[14]

Baseline surveys (track two)

A baseline is the value of a performance indicator before a development project begins.[15] By comparing baseline values before and after implementation, project managers are able to show progress toward achieving desired outcomes and impacts.

Within the *L&F* Program, before and after baseline data is necessary (as part of an RCT where appropriate) to show some level of attribution toward achieving a desired outcomes. Baselines will therefore be conducted for specific donor-funded development projects, including some projects that are to be piloted during the Research Phase. Baseline data will be used to evaluate project results and to formulate *ex-ante* impact assessments as part of the Best Bet selection process.

Primary data collection of this sort is expensive and time consuming, particularly when collected through a formal survey tool. Project managers should therefore be sure to incorporate the cost and time of conducting a baselines (along with other sorts of M&E related activities) into their Plan of Work and Budget (POWB).

Targeting (track one)

IDO indicator targets have already been developed for each IDO within most value chains over a 10 year period and will be updated at least once per CRP phase in order to reflect the program's resource availability, implementation challenges, and practicability of interventions. IDO targets will reflect the size of populations or sub-groups relevant to each CRP phase (reach) and the level of impact the program hopes to bring about. Rigorous statistical models will be used to set and update IDO targets. Targets will also help improve results and increase the program's likelihood of achieving impact at scale.

Routine portfolio monitoring (track two)

Given the size and complexity of *L&F* Program, it is necessary to routinely monitor the outcomes and other essential data of development projects (including evaluations). This data will be collected in a simple project reporting template and submitted by projects to the CRP Management Unit on a regular schedule.[16] These data will be entered into the CRP MIS (See Component 4: Knowledge

---

[14] Conducting a representative baseline survey in order to collect IDO data for multiple VCs (i.e., for multiple countries) would be prohibitively expensive for the *L&F* Program. As stated above, the program will instead conduct a series of characterization exercises in which the best possible data will be used in order to establish estimated values for IDO indicators; which in some cases may involve statistical modelling based on project level indicators.

[15] Some Value Chains have embarked on 'Benchmarking' studies, which provide 'characterize' the situation (often using more qualitative data) before program interventions. This is a different activity and should not be confused with a Baseline Survey.

[16] In 2014 the CRP has very few active development projects; a Project Reporting Template will be developed in by Q1 2015.

Management) and will be used to provide a health check of the CRP project portfolio. Documentation that will be required from each project includes:

1. Original Project Proposal;
2. Current Logframe;
3. A complete list of all project outcome and impact indicators;
4. Data sets and reports that show progress toward goals, including field studies, baselines and evaluations (some of this may be incorporated into the DIB (See Component 4: Knowledge Management) and made publically available via ILRI's Data Portal – http://data.ilri.org/portal)

Projects will also be required to submit a short case study highlighting either a significant project success or failure. The *L&F* Case Study template provides guidelines for project case studies.[17] In most instances the topic of a case study will be chosen at the discretion of the project management, but from time-to-time the *L&F* Management Unit may request a case study on a particular topic in order facilitate learning in a particular issue area.

Data on routine portfolio monitoring will be analyzed regularly and an annual Portfolio Quality Report will be submitted to the CRP Director as an integral component to overall CRP management; significantly, portfolio quality will also feed into the Performance Indicator Matrix (see below).

Table 3: Project Routine Monitoring Schedule

	Small (less then USD $1.5 million/annum)	Medium (between USD $1.5 to USD $3 million/annum)	Large (more than USD $3 million/annum)
Routine Monitoring Report	1 per year	1 per year	2 per year
Project Case Study	1 per year	2 per year	3 or more per year

Performance Indicator Matrix (Track One)

The CGIAR has mandated the performance indicator matrix (PIM) to be the core accountability Framework for each CRP. Indicators used for reporting purposes are currently under review and may change in 2014/2015. The PIM will include the following:

1. Annual Program of Work and Budget
2. Six-monthly (mid-year) progress reports (narratives, indicators and financial data)
3. CRP Annual Report

The purpose of the PIM is to provide a quick snapshot of the program's progress toward its stated goals and will be maintained on the *L&F* MIS. Responsibility for maintaining the PIM falls on the CRP Executive, but will be populated by information collected at the VC and project levels (See Component 4: Knowledge Management for more information about the PIM and other databases).

[17] The Case Study Template will be developed by Q1 2015.

Component four: Knowledge management

Knowledge Management is more than just a Management Information System (MIS); fundamentally, it is about using knowledge more effectively to produce greater impacts. At its core, knowledge management is a continuous process of analysis, learning, reflecting, sharing and adaption; and takes place at all levels of the CRP, from project field staff up to the CRP Director and concerned donors.

Information sources for MEL knowledge management

The *L&F* CRP is a large program with multiple knowledge and information sources, all of which in some way provide inputs to the MEL Framework. Currently, a number of *ad hoc* systems are in place to fulfill the immediate needs of CRP for knowledge management across the whole program. Over time, *L&F* will develop more robust management systems that are capable of growing with the CRP. *L&F* requires and uses six core systems; both the current and planned systems are described below for each information type.

Development indicator bank

The Development Indicator Bank (DIB) will house all data related to IDO and medium-term outcome indicators. The DIB will be the primary repository of all development related data. These data are generated from both secondary data and activities on the ground (e.g., baseline surveys). The system is supported by the ILRI Research Methods Group and maintained jointly with the ILRI MEL Team.

Currently in place is an SQL database that stores some variables (currently those contributing to gender & livelihood indicators from previous research at ILRI); eventually the idea is to expand this to incorporate the variables that need to be measured for reporting medium-term outcome indicators and IDOs, as defined in the *Indicator Manual*. CRP and bilateral project activities would then use standard methods for collection of these standard variables (e.g., for the gender & livelihood indicators there are templates for questions to be incorporated into household survey questionnaires) which will be transferred into the SQL database (an electronic data bank). Summaries of individual indicators can then be extracted from the database. ILRI's recently developed data portal (version 1) is designed to make data generated by ILRI publicly available – version 2 will be designed to incorporate the electronic data bank for *L&F* and the generation of reports for indicators across activities. The data portal can already be used to store and share, where appropriate, the secondary data mentioned above. *L&F* will review and update data maintained on the DIB at least once per year.

CRP monitoring information system

The *L&F* CRP Monitoring Information System (MIS) houses data belonging to our project portfolio; both bilateral (W2/W3) and CRP Flagship projects, Clusters of Activities, Outputs and Outcomes. The purpose of the CRP MIS is to provide CRP managers with up-to-date data on the overall health of the program, monitor resources and identify resource mobilization needs. The day-to-day financial data relating to the CRP is in ILRI's Finance systems (currently SUN, moving to OCS). The system is maintained and used by the *L&F* Executive.

This system is called the Research Management System (RMS) – it is an SQL database with user interface and incorporated reporting system (JasperReports), is hosted on ILRI's corporate ICT network and therefore accessible to all staff (with log-in credentials). It is currently being used across all ILRI Programs but when ILRI's One Common System (OCS) goes live at the end of 2014 the RMS will maintain only CRP *L&F* information. Once OCS is live, ideally both financial and programmatic information can be monitored within the system and the *L&F* Executive team will review whether RMS will continue to be needed.

Performance indicator matrix

As the core accountability Framework for the CRP, the performance indicator matrix (PIM) houses a wide number of different kinds of indicators required by the CGIAR. These relate to the performance of the program and include the monitoring of *L&F* outputs (e.g. publications, tools, policies, interventions, training conducted etc.). Currently, indicators have been defined by the Consortium but work is now focused on identifying more appropriate indicators for showing program progress. Monitoring & reporting of PIM is generally done yearly. The system is maintained and used by the *L&F* Executive Team.

The current system was developed with a short timeline and uses an Access database that is completed by Flagship Leaders and other *L&F* staff who contribute to these indicators. After compilation of the information the Access databases are transferred to an SQL database for the production of summary reports. Going forward, *L&F* plans to put a front-end onto the SQL database to remove the manual manipulation of the data in Access. It may also be appropriate to link it to the MIS so indicators can be monitored by *L&F* 'element' (e.g. Cluster of Activities, Flagship Project) rather than across the whole CRP. The database sits in ILRI's database server which is separate from the corporate network and accessible to those with log-in credentials. The interface should allow *L&F* staff to enter indicator data directly into the system, although there are currently connectivity challenges for non-Nairobi based staff.

Publications

L&F knowledge products, under the umbrella 'Publications' (e.g. journal publications, activity reports, training manuals etc.), are deposited in an open access repository (http://cgspace.cgiar.org) and made publicly available, depending on agreements with partners. This resource complements the PIM providing evidence of *L&F* outputs that ultimately contribute to our outcomes, although in some cases may include direct evidence of these outcomes (e.g., final reports from bilateral projects).

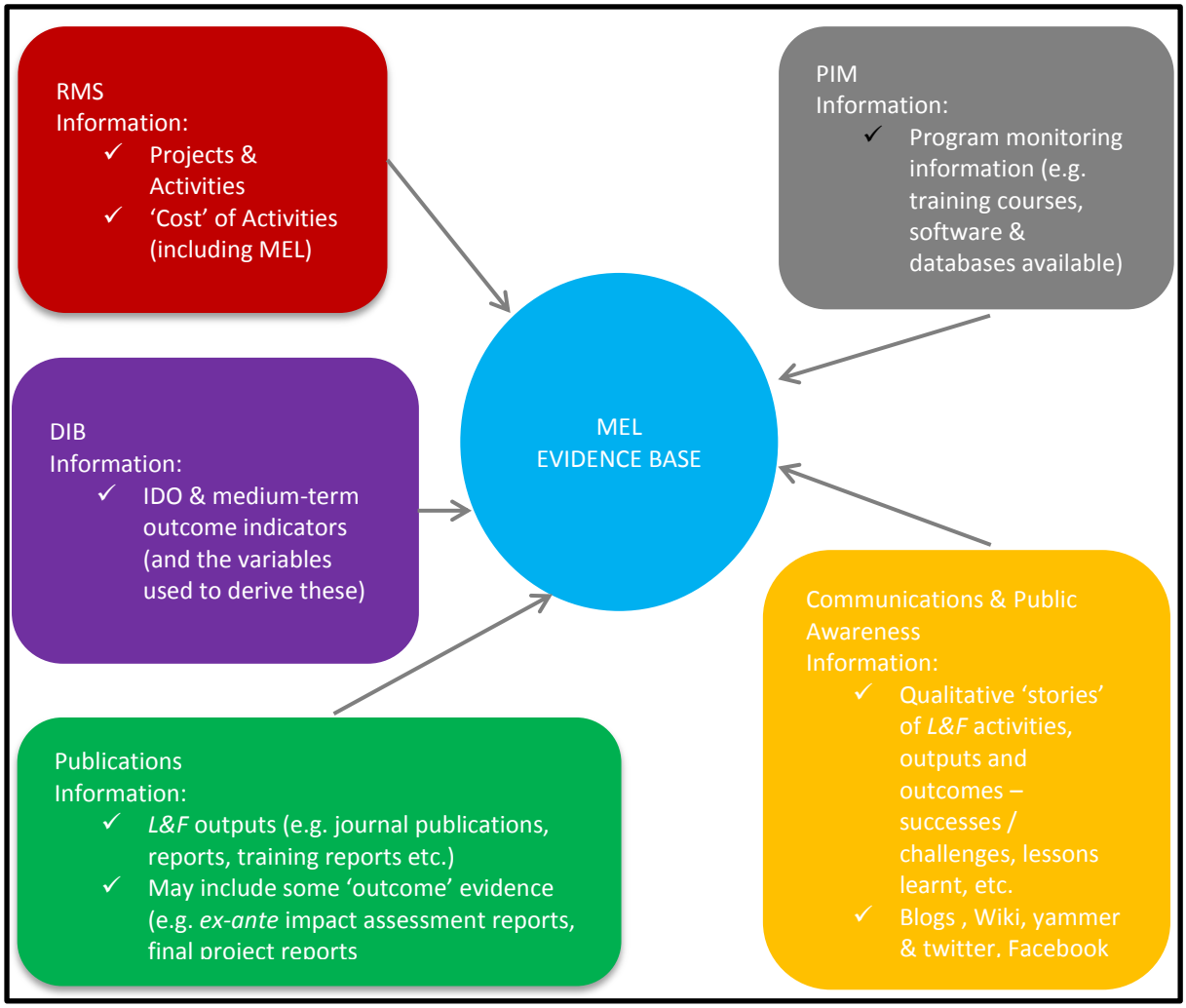
Communications and public awareness

Communication of *L&F* successes, lessons learnt and technological innovations is essential for program learning. At present, communications are achieved through a wide number of platforms, including a CRP website, Wiki, Yammer and Facebook accounts. A detailed overview of the *L&F* communications strategy will be published in 2015.

Evidence base

As discusser previously, the Evidence Base will bring together all necessary documentation that is required to substantiate our ToC; the strength of the Evidence Base will be a barometer of the internal validity of the overall *program theory* (i.e., how to bring about desired changes). It will draw heavily on the DIB system above for quantitative and primary data sources but will also extract information from the other systems (e.g. situational analysis reports housed in the Publications system) and external sources (e.g. national policies from 3rd parties). Figure 8 below provides a conceptual representation of the data flow to the Evidence Base.

Figure 8: MEL Knowledge Management



The MEL team

Monitoring, evaluation and learning is a shared responsibility spread across participating CGIAR centres, partner organizations and management staff from the *L&F* Executive Office.

In order to facilitate the smooth operation of the *L&F* MEL system, the ILRIL Principal Scientist in charge of impact and learning will support the development of a MEL community of practice (MELCoP) and will call an annual meeting of senior M&E staff in order to:

1. Review and update (as necessary) the MEL Framework
2. Build staff capacity by encouraging the exchange of information, including best practices
3. Develop and review annual work plans
4. Foster a sense of shared responsibility and collegial exchange.

Appendix 1: Implementation project checklist

Baseline with appropriate disaggregation of data	For more information see: Baseline surveys (track two) and the *L&F Indicator Manual*
Theory of Change with detailed narrative	For more information see: Theory of change and impact pathways (Track One). The CRP ToC is the combined product of a general purpose, high-level ToC, plus 'nested' ToC corresponding to each VC and more specific projects.
Independent Summative Evaluation	Many development projects are required by donors to conduct evaluations periodically. The *L&F* CRP requires that different types of evaluations be conducted according to the scale and duration of the project. For more information see: Project evaluations (Track Two)
Formative Evaluation	
M&E plans with indicators that are clearly linked to the objectives of the Programme/project	For more information see: Development indicators
Sufficient resources allocated for planned M&E activities, including the hiring of staff and the purchase of technical equipment	The *L&F* CRP maintains a Help Desk to assist with M&E planning.
M&E plan, including an organizational chart of all M&E staff showing roles and responsibilities	For more information see: Performance Indicator Matrix (Track One)Performance Indicator Matrix (Track One)
Submission of Reporting Template (Case Studies, Original Project Proposal; current logframe; a complete list of all project outcome and impact indicators, etc.)	Implementing Projects are required to submit a simple reporting template to the CRP on a regular basis (depending on size and scope). For more information see: Routine portfolio monitoring (track two)
***Ex-ante* Impact Assessments**	For more information see: *Ex-ante* impact assessments (track two)
Stage 1 *Ex-post* Impact Assessments	For more information see: *Ex-post* impact assessments and evaluations and Project research (track two)

Appendix 2: Glossary of terms

The terminology adopted by the Livestock and Fish Program has been harmonized as much as possible with existing authoritative sources, including: the *CGIAR Glossary of Evaluation Terms* and the *OECD Glossary of Key Terms in Evaluation and Results Based Management*. In a very few cases, the CRP has been obliged to develop its own definition for terms that have taken on specific meaning through convention of use.

Activities	Specific tasks performed using resources and methods in order to achieve the intended outputs. Critical factors for carrying out activities are professional skills, the availability of sufficient financial resources and the absorption capacity of the local partners as well as of the target groups and beneficiaries.
Attribution	The ascription of a causal link between observed (or expected to be observed) changes and a specific activity / intervention. Note: Attribution refers to that which is to be credited for the observed changes or results (i.e. outputs, outcomes, impact) achieved. It represents the extent to which observed effects can be attributed to a specific intervention taking account of other interventions, (anticipated or unanticipated) confounding factors, or external shocks. In CRP *L&F* we use attribution mainly in Research Phase activities, where we work within well-defined boundaries: spatially, temporally and institutionally. In this case we look for the causal link with research outputs and outcomes. During CRP *L&F* Development Phase activities then the term contribution will be more commonly used to identify causal links between activities and results, i.e. development outputs, outcomes and impact.
Audit	Financial and management audit in the CGIAR provide accountability to management at the level of the Center Boards, Consortium and Fund Council on finances and assets and also provide elements of oversight in human resources and business efficiency.
Appraisal	An *ex-ante* assessment of the quality, relevance, feasibility and potential for impact and sustainability of a research program or activity, usually prior to a decision on funding it.
Baseline Study	An analysis describing the situation prior to research activities, against which progress can be assessed or comparisons made. In the context of CRP *L&F*, specific baseline studies for aligned bilateral projects and/or designed research activities (e.g. RCTs) will provide one component of the baselining and latterly the monitoring and evaluation to the L&G Program. Their contribution will include baseline indicators for research results and potentially include initial values for development results including the development indicators (IDOs) although changes in these may not be attributable directly to the research activity.
Baselining	Specifically, for Consortium CRPs this refers to a range of analysis describing the situation/problems to be addressed by a CRP, justifying the CRP's focus and capturing the key hypotheses made by the CRP about how the target domain (geographical) and target groups will be affected by the innovations introduced by the CRP. It uses key variables and

	proxies to capture these dimensions. It can be undertaken at different levels of resolution and serves to provide an overall context and set of indicators and proxies of change that help frame the scope of the CRP. It serves as a basis for setting the initial values for the indicators of progress in achieving the objectives (research & development outputs, outcomes and eventually impacts) The baselining activity for CRP *L&F* is a diagnostic / assessment exercise made up of specific research and development project baseline studies, situational analyses, targeted diagnostic surveys and secondary data. The indicators measured should be captured both within and external to CRP research sites. The indicators captured within a research site during baselining will provide: 1) initial measures prior to interventions (as in a Baseline Study) for research activities and 2) can also provide initial quantitative assessment of initial values for our development indicators (IDOs), recognizing these are within a specific environment – the CRP Research Site. For 2, the data will need to be combined with other elements of the baselining to provide a full picture for IDO starting values. Monitoring of changes of these development indicators within a research site can be used for *ex-ante* impact assessment of the potential development impact of our research site activities when scaled-up and/or scaled-out.
Behavioral Independence	Objectivity and impartiality on the part of evaluators (which is not guaranteed by structural independence; for example evaluators may be reluctant to be critical of people they think may provide them with future contracts).
Beneficiaries (Direct & Indirect)	The individuals, groups, or organizations, whether targeted or not, that benefit, directly or indirectly, from the research or development activities and results. **Direct Beneficiaries** are those who are active participants in a research or development activity and **Indirect Beneficiaries** are further removed from the activity but still benefit from the results of the activity. For example, a development project to increase off-farm employment of women – the woman participating in the project is a direct beneficiary and their family may be indirect beneficiaries through increased wealth in the home. The characterization of direct and indirect beneficiaries for each activity of CRP *L&F* will need to be defined individually; general guidance is: within a *L&F* Research Site Research Activities, Direct = Active participants in program activities: Species producers (including their families), VC actors for specific species, organizations relating to specific value-chain, species consumers; Indirect = Non-participating in program activities: Same groups as above (IF can justify that they will receive indirect benefit from their interactions with active participants)
Best Bet	A Best Bet is a technology, process, institutional or social innovation that has been chosen through a rigorous, participatory and transparent research-based selection process because of its potential for making a positive contribution to one or more of the CGIAR Livestock and Fish Research Program Intermediate Development Outcomes (IDOs). It can be packaged discretely or as part of a bundle of related innovations.
Cluster of Activities	A breakdown of the Flagship Project, with its own objectives, methodologies and sites; its components produce outputs and research

	outcomes. Formerly known as 'CRP Outputs'.
Comparison Group	Individuals, groups and/or locations, whose characteristics are similar to those of the intervention participants / locations but who do not receive the intervention. Under trial conditions (e.g. RCT) in which the evaluator can ensure that no confounding factors affect the comparison group it is called a control group.
Comparative Advantage	In economic terms, a comparative advantage in producing or selling a good is possessed by an individual, firm or country with the lowest opportunity cost (as opposed to absolute cost) in producing the good. In these standards the term refers more broadly to the role and mandate of the CGIAR in producing international public goods where there are no alternative research suppliers that are better positioned to produce those goods.
Confirmation Bias	Tendency to seek out evidence that is consistent with the expected findings on any aspect of the evaluation, instead of seeking out evidence that could disprove them.
Contribution	Contribution emphasizes the confluence of multiple causal factors to a particular change observed and emphasizes the issue of whether or not, and how, an intervention contributes to the change observed. For the L&F Development Phase we are likely to focus on the contribution of the program to outcomes and impact (rather than attribution of the program) as many other external factors will also contribute to changes observed on-the-ground (e.g. policy, local government, other projects, changes in markets / prices, environmental changes – natural disasters, climate change etc.)
Control Group	A special case of the comparison group, in which the evaluator can control the environment and so limit confounding factors.
Cost effectiveness	Cost-effectiveness analysis (CEA) is a form of economic analysis that compares the relative costs and outcomes (effects) of two or more courses of action. Cost-effectiveness analysis is distinct from cost-benefit analysis, which assigns a monetary value to the measure of effect. In research programs costing of outputs is more feasible than outcomes that typically depend on conditions and activities outside of research.
Counterfactual	Counterfactual: The situation or condition which (hypothetically) would have prevailed if there had been no activity / intervention. For CRP *L&F* our definition of the counterfactual will depend on the level of activity being conducted. Within a research site and for specific research activities we may identify comparison or control groups / sites that provide the counterfactual information (the choice of comparison or control will depend on the number of external factors which may also be influencing observed changes). For development activities and some large-scale research activities it would be impossible to identify clearly non-participants (groups or locations) with similar characteristics and in this case we will need to use our monitoring, learning, secondary data and expert opinion to explain how changes in the activity / intervention group may be attributed to / contributed by the intervention.
Cross Cutting	Elements of the program that make a substantive contribution in multiple flagships and that make a contribution to the achievement of development outcomes. In Livestock and Fish these are Communications,

	Capacity Development, Gender and Partnerships.
Deliverable	Deliverables provides tangible evidence for the Outputs (e.g. publications, databases, and training materials) although they may also be considered to be Outputs (see definition).
Effectiveness	The extent to which the program or project objectives were achieved, or are expected to be achieved, taking into account their relative importance.
Efficiency	A measure of how economically resources/inputs (funds, expertise, time, etc.) are converted to results. In the CGIAR context assessment of efficiency refers to activities and outputs that are in the control of the research programs or cut across several CRPs. In the private sector "value for money" is commonly used for efficiency.
Evaluation (Formative and Summative)	The systematic and objective assessment of an on-going or completed project, program or policy, its design, implementation and results. In the CGIAR evaluation refers to an external, completely (IEA commissioned) or largely (CRP commissioned) independent and systematic study of an in-depth nature that uses clear evaluation criteria. In addition to research, it applies also to central CGIAR institutions, support programs and themes, and the System as a whole. An evaluation should provide information that is credible and useful, enabling the incorporation of lessons learned into the decision-making processes of major stakeholders Evaluations are typically sub-categorized as either 'summative' or 'formative'. A formative evaluation is used to improve a project, program or policy; it is conducted at an early or mid-point in the implementation cycle with the aim of informing decision-making aimed at improvement. A summative evaluation is conducted at the end of a project or program and measures success against pre-determined indicators; a summative evaluation is typically used to decide if a project or program should be adopted, continued or modified.
Evaluation Criteria	Different aspects of quality of a program which are used internationally to develop evaluation questions and serve as a check that all major issues have been considered. In the CGIAR these include relevance, efficiency, effectiveness, impact, sustainability and quality of science.
Evaluation Manager	The individual primarily responsible for managing the evaluation process, including the evaluation design, engagement of reference group, contracting evaluators, briefing evaluators and providing logistical support, troubleshooting emerging problems, giving feedback on process and reports as quality assurance, and managing feedback processes including communication events. The evaluation manager should be behaviorally, and where possible structurally, independent of CGIAR management.
Evaluation Matrix	A brief and clear description of the evaluation questions by evaluation criteria and proposed approach to each question, summarized in tabular form.
Evaluation Reference Group	A structure set up to work with the evaluation managers to ensure good communication with, learning by, and appropriate accountability to primary evaluation clients and key stakeholders, while preserving the independence of evaluators.
Evaluators	The team of individuals carrying out the evaluation; normally independent experts contracted by the evaluation commissioners. Evaluators are responsible for the detailed planning of the evaluation,

	collecting and analyzing data, and preparing and presenting reports.
Flagship Project (Discovery Vs. Delivery)	A coherent body of work with a single high level objective that contributes to one or more of the IDOs. The flagship is divided into multiple clusters of activities conducted over phases of the CRP. Discovery is interpreted as the creation of technologies that are new or applied in a different context and Delivery is interpreted as enabling innovations for scaling. The interface between these areas is an iterative process that involves both researchers and development partners creating, sharing, learning and spreading technologies.
Funder	Any organization or entity that makes a financial or in-kind contribution to a program that is reflected in the audited financial statements of the program, including partner countries that contribute for example, seconded staff, or office space, provided that these are formally recognized in the financial statements of the program.
Global public goods (a.k.a International Public Goods)	These are defined as goods with the three following economic properties: 'non-rivalrous' (i.e. consumption of this good by anyone does not reduce the quantity available to others), 'non-excludable' (it is impossible to prevent anyone from consuming it) and available worldwide. In the CGIAR the term International Public Goods is also used. It refers to issues that are deemed to be important to the international community; and typically cannot, or will not, be adequately addressed by individual entities acting alone.
Impacts	Positive and negative, primary and secondary long-term effects resulting from a chain of events to which research has contributed, directly or indirectly, intended or unintended. Note that sometimes the term impact is used to refer to more immediate results, here defined as Outcomes.
Impact Assessment (*ex-ante* & *ex-post*, Stage I)	In the CGIAR this term is generally used for an *ex-post* study that uses specialized methods to estimate the changes in selected development parameters and the extent to which these are attributable to defined research activities. The Standing Panel on Impact Assessment (SPIA) has an oversight and capacity building function for impact assessment studies in the CGIAR. With the Livestock and Fish CRP, Impact Assessments are technology-focused studies conducted in Stage I of the impact pathway and are designed to produce a warranted 'attribution' claim. Disaggregate economic rate of return studies are an example of this sort of *ex-post* impact assessment.
Impact Evaluation (*ex-post*, Stage II)	These studies focus on the 'bigger picture', and employ an array of mixed methods, both qualitative and quantitative, that are able to provide answers to questions of a 'how' and 'why' nature, along with a warranted contribution claim. As a result of this shift in emphasis from an impact accountability approach associated with stage 1 studies, to one more geared toward learning and reflection associated with stage II studies, *L&F* will designate these studies as *ex-post* impact evaluations (*ex-post* impact evaluation as opposed to assessments).
Impact Pathway	The causal pathway for a research project or flagship or value chain that outlines the expected sequence to achieve desired objectives beginning with inputs, moving through activities and outputs, and culminating in outcomes and impacts. Assumptions underpinning the causal chain and

	feed-back loops are usually included (closely related terms include Logical Framework and Theory of Change).
Impartiality	In conducting an evaluation, the absence of bias in due process, in the scope and methodology, and in considering and presenting achievements and challenges. The principle applies to the clients of the evaluation, donors and partners, management, beneficiaries, and the evaluation team.
Independence	An evaluation that is carried out by entities and persons free from the control of those involved in policy making, management, or implementation of program activities. This entails both organizational and behavioral independence, protection from interference, and avoidance of conflicts of interest.
Indicator	A quantitative or qualitative variable that represents an approximation of the characteristic, phenomenon or change of interest (for instance, efficiency, quality or outcome). Indicators can be used to monitor research or to help assess for instance organizational or research performance. Within CRP *L&F* Indicators will be captured in several ways and for different uses (see Baseline Study, Baselining, IDO and Impact). For IDO's the indicators, captured at different levels (e.g. field, farm, community, value-chain) both within and external to a CRP research site will then be combined with ToC, expert opinion (e.g. on the representativeness of CRP research sites, the scalability of impact from CRP research sites outwards) and adoption studies to provide evidence for progress towards IDOs.
Inputs	The financial, human, and material resources used in research.
Intermediate development outcome (IDO):	At a CRP level, IDO targets represent CRP-specific thrusts and target domains that are generated as a result of multiple activities by diverse actors outside the CGIAR. Their scales reflect CRP target domain and estimated volume of benefits. At System level, IDOs represent accumulation of CRP outcome results with the scale corresponding to the CGIAR's target domains.
International Public Goods (see Global Public Goods)	
Intervention	This is an action or process conducted within activities of the L&F Program on participants of the Program. It may be: • a single technology, methodology, tool, event, etc. or a combination of many • directed at a single type beneficiary or stakeholder or many • involve a single part of the value-chain or multiple points • tested in the Research Phase and promoted in the Development Phase Within a specific experimentally designed research activity (e.g. RCT) this is referred to as the 'treatment'.
Learning	Within the CRP, learning refers to a set of strategic questions that the CRP intends to answer through evaluations, impact assessments, other forms of targeted research and reflection. Learning is used for research purposes to guide decisions on research design and adjustment.
Milestones	A milestone is a scheduled event signifying the completion of a major output or a set of related outputs. It is a flag in the work plan to signify some other work has been completed. Used for internal management purposes to monitor progress towards or stages towards the achievement of clusters of activities or activities.

Monitoring	A process of continuous or periodic collection and analysis of data to compare how well a project, program, or policy is being implemented against expected results, in order to track performance against plans and targets, to identify reasons for under or over achievement, and to take necessary actions to improve performance. Monitoring is usually the responsibility of program management and operational staff, while evaluation as defined in this Policy and Standards is carried out by external evaluators. Monitoring is also used for research purposes to guide decisions on research design and adjustment.
Mutual Accountability	In the context of the CGIAR, this refers to the accountability of all partners, including donors, for the efficiency of outputs, outcomes and impacts of a program, institution or policy and sustainability of research.
Objective (Project or Program)	Improvements of a situation in terms of social and economic benefits which respond to identified development needs of the target population under a long-term vision.
Outcome (Research & Development)	**Research outcomes:** The likely or achieved effects from research outputs applied by intermediary users, for instance by national partners or international research or development organizations. **Development outcomes**: The likely or achieved short-term and medium-term effects on the target population of a development project's interventions outputs.
Output (Research & Development)	**Research Outputs:** The products, capital goods and services which result from research, capacity building and other activities related to research for development. **Development Outputs:** The products, capital goods and services which result from a development intervention; may also include changes resulting from the intervention which are relevant to the achievement of outcomes.
Panel Data	Data collected through consecutive surveys in which observations are collected on the same sample of respondents in each round. Panel data may suffer from attrition (i.e. drop-out), which can result in bias.
Research Participant	An individual, village, group, organization etc. participating directly in the research activity of CRP L&F.
Peer Review	A process of review involving qualified individuals within the relevant field. Peer review methods are employed to maintain standards of relevance and quality improve performance and provide credibility. A peer review may be an input into an evaluation.
Phase (of the CRP) Funding Cycle	Within the CRP, a phase is an analytical category used characterize progress over a broad timespan. The L&F CRP has identified three phases: a research, development and scaling-out phase. The CGIAR defines phases very differently, according to a three year funding cycle for CRPs.
Project (Development and Research)	A project is a donor-funded agreement that provides financial resources to be used during a defined timeframe to achieve specific objectives. Projects may be partially or fully associated with the program's mandate. Projects may have a pure research or development focus, or a combination of the two.
Randomized Controlled Trial (RCT)	An impact assessment design in which random assignment has been used to allocate the intervention amongst members of the eligible population. Since there should be no correlation between participant characteristics and the outcome, and differences in outcome between the treatment

	and control can be fully attributed to the intervention, i.e. there is no selection bias. However, RCTs may be subject to several types of bias and so need to follow strict protocols. Also called Experimental design.
Relevance	The extent to which the objectives of a development intervention are consistent with global and national priorities and policies, as well as those of intended beneficiaries, partners and donors. In these Standards, it also refers to the extent to which the program is consistent with the goals, the System Level Outcomes, comparative advantage and reform agenda of the CGIAR and program activities are consistent with the objectives of the program and its Intermediate Development Outcomes.
Results	The output, outcome or impact (intended or unintended, positive and/or negative) of an activity.
Review	An assessment of the progress and performance of an intervention (including research), periodically or on an ad hoc basis. The words evaluation and review are often used interchangeably, but in the CGIAR, an evaluation refers to an external, completely (IEA commissioned) or largely (CRP commissioned) independent and systematic study of an in-depth nature using clear evaluation criteria, whereas reviews may be more flexible and narrow in focus.
Scaling-out	Replicating, in whole or part, a given intervention into a new setting beyond the original national value chain, and the adaptation that is likely to be required.
Scaling-up	Replicating, in whole or part, a given intervention in an existing national value chain. Scaling-up implies a movement from a relatively small, pilot intervention of hundreds or thousands of beneficiaries, to a large-scale intervention with tens and hundreds of thousands of beneficiaries.
Secondary Data	Data that has been collected for another purpose, but may be reanalyzed in a subsequent study. Secondary data for CRP *L&F* may be at global (e.g. spatial datasets on climate, soil, livestock populations, poverty; FAOSTAT), regional (e.g. policies, trade), national or sub-national (e.g. census). It may be quantitative and/or qualitative in nature and could include expert opinion and partner reports.
Stakeholders	Agencies, organizations, groups or individuals who have a direct or indirect interest in the component of the CGIAR, for instance research program or its evaluation.
Sustainability	The continuation of benefits from a program intervention after research has been completed; the probability of continued long-term benefits or scalability of the benefits; the resilience to risk of the net benefit flows over time.
System Level Outcomes (SLOs)	The high level impact goals of the CGIAR: Reduction in rural poverty; Increase in food security; Improving nutrition and health; and more sustainable management of natural resources.
Target Group / Population	The individuals or organizations for whose benefit the research or development activity is ultimately undertaken, for example farmers or consumers in particular regions or agro ecologies. For CRP *L&F* the overall target group / population are, globally, all poor livestock farmers and associated value-chain actors including consumers! Within *L&F* selected value-chains then we focus on this population within specific species and the level to which we can extend our results to other locations (scale-out) will determine the target group / population.

Situational Analysis	A rapid assessment that scans the context of a particular national value chain, with particular emphasis on identification of existing production, market and institutional systems; other defining characteristics that may be included in a Situational Analysis include (but are not limited to) ecological, socio-political and cultural variables.
Theory of Change	Presents an explicit identification of the ways by which change is expected to occur from output to outcome and impact along an impact pathway. The TOC questions the assumptions about causality underlying the relationships between outputs, outcomes and impact. In TOC the assumptions present the mechanisms of change. There is no single method or presentational form agreed for TOCs.
Transparency	As a criterion for assessing governance and management, the extent to which decision-making, reporting, and implementation processes are clearly explained and open to view.
Triangulation	The use of three or more sources, or types of information, or types of analysis, to verify and substantiate an assessment, in order to overcome the potential bias that comes from a single source or method.
Unit of Analysis	The class of elemental units that constitute the population and the units selected for measurement; also, the class of elemental units to which the measurements are generalized.
Value-Chain	A Value-chain (VC) refers to the network of different functions or stages from production to consumption of a certain commodity or product, including the interrelationships between the main actors along the chain and all the ancillary support services (Kaplinsky and Morris, 2001).

References

Boru, D., Kuby, T., van de Fliert, E. and Schulz, S. 2003. Impact Pathway Evaluation: An Approach for Achieving and Attributing Impact in Complex Systems. *Journal of Agricultural Systems, 78*(2), 243-265.

Cartwright, N. and Hardie, J. 2012. *Evidence-based policy: a practical guide to doing it better.* Oxford University Press.

DFID. 2012. Broadening the range of designs and methods for impact evaluations. London: DFID

Funnell, S. and Rogers, P. 2011*. Purposeful Program Theory.* San Francisco: CA:Jossey-Bass.

Kamanda, J.O. and Bantilan, M.C.S. 2010. The Strategic Potential of Applied Research: Developing International Public Goods form Development-Oriented Projects. http://core.kmi.open.ac.uk/download/pdf/12102267.pdf

Kusek, J.Z. and Rist, R.C. 2004. Ten Steps to a Results-Based Monitoring and Evaluation System: A handbook for development practitioners. *Quality: World Bank Publications, 289*.

Mayne, J. 2001. Addressing attribution through contribution analysis:using performance measures sensibly. *Canadian Journal of Program Evaluation, 16*(1), 1-24.

Mayne, J. 2012. Contribution Analysis: Coming of Age? *Journal of Evaluation, 18*(3), 270-280. doi:10.1177/1356389012451663

Mierlo, B., Regeer, B and Amste, A. 2010. *Reflexive Monitoring in Action.* Retrieved from http://www.researchgate.net/publication/46383381_Reflexive_Monitoring_in_Action._A_guide_for_monitoring_system_innovation_projects/file/9fcfd505ad7d904336.pdf

OECD. 2010. Glossary of Key Terms in Evaluation and Results Based Management. 0ECD.

Seerp, W. and Leeuwis, C. 2013. Towards Responsible Scaling up and out in Agricultural Development: An exploration of concepts and principles. Wageningen.

Stern, E., Stame, N., Mayne, J., Forss, K. Davis, R and Befani, B. 2012. *Broadening the range of designs and methods for impact evaluation.* http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:BROADENING+THE+Range+of+DESIGNS+AND+Methods+for+Impact+Evaluations#1

Vogel, I. 2012. Review of the Use of ‘ Theory of Change ’ in International Development.

Walker, T. and Maredia M. 2008. *Strategic Guidance for ExPost Impact Assessment of Agricultural Research.* Rome: World Agroforestry Centre. Retrieved from http://www.worldagroforestrycentre.org/WCA2009/content/strategic-guidance-ex-post-impact-assessment-agricultural-research

Wimbush, E., S. Montague, and T. Mulherin. 2012. Applications of Contribution Analysis to Outcome Planning and Impact Evaluation. *Journal of Evaluation, 18*(3), 310-329.