CGIAR

RESEARCH PROGRAM ON
Dryland Systems

Documentation Report

2nd Science and Implementation Meeting

7-9 April, Hyderabad, India

Food security and better livelihoods for rural dryland communities

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LIST OF ACRONYMS

ALS	Agricultural Livelihood Systems
AS	Acton Site
CA	Central Asia
CCEE	CRP Commissioned External Evaluation
CD	Capacity Development
CG	Abbreviation of CGIAR
CGIAR	Consultative Group on International Agricultural Research
CPR	Common Property Resources
CRP	CGIAR Research Program
DG	Director General
DSSAT	Decision Support System for Agro technology Transfer
ESA	East and Southern Africa
FGD	Focus Group Discussions
HES	Human-Environmental System
IBLI	Index Based Livestock Insurance
ICARDA	International Center for Agricultural Research in the Dry Areas
ICRAF	World Agroforestry Centre
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IDO	Intermediate Development Outcome
ILRI	International Livestock Research Institute
IP	Impact Pathway
ISC	Independent Steering Committee
IWMI	International Water Management Institute
KM	Knowledge Management
MCRA	Mission Critical Research Area
MOOC	Massive Open Online Course
NAWA	North Africa and West Asia
NGO	Non-Governmental Organization
NRM	Natural Resource Management
PICO	The institute for People, Innovations and Change in Organizations

PMU	Program Management Unit
POWB	Plan of Work and Budget
PRA	Participatory Rural Appraisal
R4D	Research for Development
R-in-D	Research in Development
RMC	Research Management Committee
SA	South Asia
SHG	Self Help Group
SIDO	Sub Intermediate Development Outcome
SLM	Sustainable Land Management
SLO	System Level Outcome
TF	Task Force
TOC	Theory of Change
ToR	Terms of Reference
WAS &DS	West African Sahel and Dry Savannas

I. Introduction

Background

The 2nd Science and Implementation meeting of the CGIAR Research Program (CRP) on Dryland Systems held between 7 -10 April 2015 examined progress made to date to promote system approaches to address key development issues in drylands related to poverty, malnutrition and resource degradation.

A key aim of this meeting was to reposition the program in light of the new CGIAR Strategic Research Framework, the Sustainable Development Goals and preparations for the second call for CRPs proposals.

Objectives and anticipated outputs of the meeting

The main aim of the meeting was to enhance implementation of the Dryland Systems and its five flagships project. The specific objectives of the meeting were:

1. To critically review the current state of implementation of Dryland Systems research
2. To design and agree on the principles and a generic process of integrated systems research applied to all regions
3. To agree on the overall Theory of Change (TOC) and come up with a TOC/impact pathways for each flagship
4. To agree on a clear organizational framework and dialogue structures for all flagship regions
5. To develop work plans for 2015

Interaction and facilitation process

The meeting was facilitated by Dr. Jürgen Hagmann from PICOTEAM assisted by a six member steering group and ad-hoc synthesis groups. The programme was very flexible in accommodating new insights as the process evolved.

Some of the approaches used included experience sharing, small group discussions, short lectures, plenary discussions as well as short structured presentations.

There was a wide range of participants comprising program scientists, members of the Program Management Unit (PMU), Independent Steering Committee (ISC) research Management Committees(RMC) and partners.

Represented institutions included: Bioversity, ICARDA, CAZRI, CIP, CORAF/WECARD, Esys, FAO, GFAR, ICARDA, ICRAF, ICRISAT, ILRI, IWMI, Leeds and Arizona University. For a full list of participants and their contact details please see Annex V.

II. Key messages

POWB 2015/2016 Assessment

- There were budget cuts/savings that were made at the overarching program level in order to buffer reductions in the research budget for each centre.
- There is a need to strengthen systems research activities (scenarios, indicators, etc.) across the program
- The programs' generic Impact Pathway needs to be reviewed in order to *further refine it* and include *feedback loops*.
- **The revised POWB** and revised budget allocations for NAWA and ESA flagships are still pending finalization; they must be submitted before *April 6th for ISC approval on April 10thmeeting*.

Systems research

- Despite progress, we still need to work on strengthening the systems approach by establishing a common definition and understanding across the program
- W1/W2 funds should not be used to support "business as usual" research activities of each partner centers; instead these funds must be utilised to support systems research work that requires strong inter-center collaboration across regions.
- The current research skills set within partner centres and Dryland Systems program is more focused on biophysical research. This presents a challenge for systems research, which requires strong skills in both biophysical and socio-economic research. There is a need to perhaps look outside the CGIAR system to bring those much-needed skills in.
- Although comples, conducing systems research is not just an issue of having enough money/resources to do it. It is also about flagships and centers being strategic in developing better work plans and budgets designed support systems research activities and leverage synergies amongst each other and with partners.
- Research activities that do not reflect the systems approach need to be cut out from the work plan and budget in order to prioritize activities and free up money within the current budget.

Second Call

- *Finalized Impact Pathways* for each flagship are necessary, especially if we are to move into the 2nd call for CRP proposals.
- **CLIMATE CHANGE**: The kind of project proposals to develop for the second call.

Partnerships

- A lot more effort needs to be put into *partnerships for systems research*.

- We must work to cast a wider net to extend the range of partners outside the CGIAR and other System-CRPs to develop a community of practice.
- The smaller centres should make a decision *sooner rather than later* in terms of whether they will continue to be in the CRP.

Science and Implementation Meeting

- Reorganized program flagships around ALS as opposed to themes (system versus process) or geographical region
- Number of ALS categories was coalesced to three major groups (1. Pastoral & Agropastoral; 2. Rainfed including Trees and 3. Irrigated including Trees) instead of the current five (1.Pastoral, 2. Agropastoral; 3. Rainfed Systems 5. Tree-Based Systems and 5. Irrigated Systems).
- Focus more on collating and analyzing existing CGIAR data to showcase the value of ALS (Agricultural Systems plus Livelihood strategies), so that the Consortium Office can better understand how we organize ourselves and where our work is focused.
- Defining the characteristics of livelihoods to enrich ALS definitions: this is could be a potential area of Dryland Systems research.
- To incorporate input from IITA Systems Conference in Nigeria to develop principles and guidelines for systems research.
- Most decisions are made at ***farm household level***, which makes us unique (from CCAFS, WLE, etc) and fits in well with the ALS.
- Caution must be exercises in order to ensure minimal transaction costs for addressing top/critical research questions
- Interactions between ALS are equally important.
- Greater emphasis must be placed on the beneficiaries/farmer to define the ALS; must be careful not to loose sight of farmer in these discussions.
- Must bear in mind the definition of agricultural systems from CGIAR's SRF, Feb 2015, the post-Berne version, against which the program activities will undoubtedly be scrutinized.

Miscellaneous

- **EU-IFAD project**- The project is expected to start any day now; we have to look at how this project will be mapped to Dryland Systems and build additional activities. The PMU will get in touch and follow up with Fergus Sinclair, ICRAF.
- **CCEE Evaluation** - *Evaluators will re-consider their approach for reviewing bilateral projects to evaluate CRP performance*.

MEL Platform

- The MEL platform will be utilized to generate different types of analyses for various management purposes.

- The MEL platform will also enable the program to balance *against SLOs* that get less attention from current CRP work, but are *more favoured by the donors*.
- The MEL platform is designed as a robust RBM tools that will help bring greater transparency and accountability in program planning, reporting, monitoring and communication of program results. Its successful implementation requires a mind-set shift in the organizational *culture of the program and partner centers*.
- It is anticipated that the MEL platform with all also feature communication functionalities to ensure better knowledge sharing and communications across the program.
- There is a need to for each flagship/centres to allocate clear communication budgets to ensure research outputs are effectively shared and communicated to different audiences, both internally and externally.

Fund Council Meeting/Second call

- *Richard will need support with successful interventions to present at Fund Council meeting.*
- *May 13 – August 15* is crunch time!
- Important to work as a small group to get something coherent.
- Communicate intensively with the broader group to get buy-in and comments.

III. Action points

- Group reports on research questions to JH
- Group reports on way forward in ALS to JH
- Establish working groups (including external inputs) on:
    - Systems analysis including futures, (Bao et al.,)
    - Inventory of options
    - ALS - incorporate International Public Goods (IPGs) to fast track reorientation of current fglaships from regional focus to ALS focus
- Develop compelling communication material (PMU + center Communications) about Dryland Systems and its activities
- Establish the ALS coordinators, their TORs (PMU+Centers)
- Re-visit the Independent Research Teams (IRTs) and assign budget for 2015/16 as relevant
- Finalize and put into coherent framework the key research questions for each ALS –focused flagship
- Create opportunities for more interaction, capacity building, and links with other CRPs, whilst considering current budgetary limitations

- Refine/clarify framework and process, produce a short document (Working group; JdeL, LR, PV, PC, AW, RT,
- Prepare the examples for MCR for Fund Council (Task Force)
- Define the ALS with geo- informatics (CB)
- Develop the business model for the proposed organization framework clarify and define roles needed (RMC)
- Circulate all meeting documentation (JH/PMU)
- Next Science and Implementation meeting: Date and venue to be proposed by PMU and set at a later stage.

IV. Science and Implementation meeting deliverables

- Clarified systems approach w/value proposition (now modified/used by all 3 s-CRPs)
- Distributed a guideline on implementing system approach (participants to send feedback for revising).
- Feedback given on flagship presentations through gap identification
- Ratified 3 mission critical areas (with an example from the CRP)
- Developed a framework and process for system research (needs revision/clarification)
- Decided to move forward on an agricultural livelihood basis with 3 main ALS (pastoral/agro-pastoral, rainfed and irrigated)
- Identified research hypothesis that need 'system-izing for ALS
- Outlined an organizational framework that will be further elaborated after the meeting
- Teams to begin transitioning workplans to ALS (not for 2015)
- Embark on mainstreaming communications, women and youth, capacity development

V. Annexes

Annex 1 - Meeting proceedings

The following section presents the outcome of the meeting as contained in the programme shown here below:

Time	Tuesday	Wednesday	Thursday
8^{30} **Session 1** 10^{30}	Opening Setting scene	Working on challenges	**Organizational framework**
11^{00} **Session 2** 13^{00}	Overview presentation Presentation of flagships	Working on challenges	**M&E session**
14^{00} **Session 3** 15^{30}	Flagships continued	Design of systems research process	**Work plans**
16^{00} **Session 4** 18^{00}	Presentation of cross cutting themes challenges	Design of systems research process	**Wrap up Next steps Evaluation**
Evening		**Open space discussions**	

Day One– Monday 7th April 2015

1. Opening - Welcome statements

Welcome by **Dr. Richard Thomas**, Dryland Systems Program Director

The CRP Director welcomed all the participants to the meeting introducing the CCEE and Independent Task force members, in addition to the new ISC. He clarified that a management committee meeting will be held and followed by a ISC meeting. There were four guests invited to the meeting to make the process as efficient as possible and enable different tasks to be achieved in that week. Participants were informed that Dryland Systems was undergoing the CRP commissioned external evaluation and three members of the evaluation team were present in the meeting – Douglas Merrey, Ross Mcleod and Judit Szonyi. They will interact with the participants and organize visits to the flagships. Already one meeting has been held with the evaluation team in Jordan. The evaluation team will participate in the meeting as observers, but they will also take the participants through an exercise during the meeting.

Secondly, one member of the Task Force (TF) helping the Dryland Systems CRP team prepare for the 2nd call, Dr. Luuk Fleskens of Wageningen University, The Netherlands was in the meeting as an observer and report on what the TF has done.

Thirdly, there is a new ISC for the Dryland Systems, following the disbandment of the former Steering Committee last December 2014 in adherence to the rules, guidelines and governance management of CRPs on the recommendation of the independent evaluation team. Two members of the new committee were present that is Barron Orr and Jeffery Herrick.

Welcome remarks by Dr. Mahmoud Solh, ICARDA Director General

Dr. Mahmoud Solh welcomed all to the important meeting. He distinguished that the only innovation in the CGIAR is the system approach CRPs, which opens the world of agriculture and reminded that the CG has invested enormously over the years on major commodities. There are many difficulties in the world of agriculture and Dr. Mahmoud therefore wished the team a successful meeting to address these problems.

Welcome by Peter Carberry, ICRISAT Deputy Director General

The Deputy Director General of ICRISAT informed the participants he came on board in January 2015 and noted that the DG was also fairly new, both having started work in January, so they were learning a lot and figuring out how the place works. He apologized on behalf of the DG who was away in Zimbabwe fulfilling their pledge and commitment of visiting all the flagships within 100 days of getting on board.

He congratulated Martin who has come in as the new DG of CYMMIT. He reinforced Martins' message on the importance of integrating the systems model, which is the clearest approach and may be the future of CG. The new language in the CG should be about integrating systems – biophysical systems, with socio economic systems and political systems.

2. Setting scene

Participants' introductions and expectations of the meeting

The workshop participants introduced themselves by finding out from each other:

1. Who you are and where your roots are
2. What were the major highlights in your personal and professional life in the past year?
3. If you were the director of the CRP and you wanted fast progress and impact, what would be the key thing you would do?

3. Expectations and concerns

1. What should happen in this meeting?
2. What should NOT happen at this meeting?

Below is a summary of the participants' expectations of the meeting.

What should happen in the meeting?	What should not happen in this meeting
• **Formulate clear strategy for implementation** • **Clear idea of systems approach and strategy of how to implement it** • **Consensus on system research approach** • **Harmonization of systems research**	• Avoid individual center thinking • Should not be center oriented • Component research focus • Leave the meeting with no change in mindsets (way of thinking) • Negative impressions after the

across the regions • Define - system, intensification, social system and communication system • Articulate better our expectations of potential impact • Get strong leadership and commitment • Effective contribution to phase two CRP proposal • Understand existing elements and identify gaps • Propose strategy for integration • Information on funding • Build on the past (long history of research) • Changing perception • Engagement must be central to knowledge/technology transfer efforts • Communication starts with social system moves	meeting • Not get lost in technical details • No more definitions of systems research • No definitions of system • No more complications • No more fragmentation • Look back to learn and not complain • We are not learning together • Irregularity in funding

Participants' viewpoint on pertinent issues

The facilitator performed a group activity by posing thought-provoking questions for debate and participants were asked to position themselves in terms of whether they fully agree; agree a bit; not sure /in between; disagree a bit or fully disagree).

Question one: Is intensification possible or not?

- It Is difficult to intensify
- Extensive systems are difficult to be achieved in developing countries where policies are not favorable
- There are biophysical constraints
- At farm level the system is already there

Completely disagree: if available water resources can be better managed and the systems can be intensified. There is a difference between intensification and sustainable intensification.

Question two: Donors are walking away because we continue analyzing systems without changing the systems

- Donors don't have clear picture what system research is
- The reasons why they are walking away is associated to the funding

Fully Agree:

- Failure to apply system approach in the right way
- The analysis of the centers is not capturing the full picture of the system
- CG made it very difficult for research centers to focus
- System research is very complex
- Some projects are funded on short term, while system research requires long term
- If donors understand well the long term impact of system approach and how it contributes to the strategic development goals they will invest more, donor understanding is key
- Have a common understanding of systems

Question three: How much percentage of all what has been done is related to understanding the system and how much is changing the system?

- 70% understanding and 30% changing
- 40% to 60% because understanding the system is easier than changing it
- If you want to know how systems work you need to try to change it

There is need for critical review of the current state of implementation of Dryland Systems research

4. Update on Dryland Systems

As an opening, Dr. Richard Thomas, Dryland Systems Proigram Director- gave a presentation to participants about Dryland Systems CRP covering principles of CGIAR research, aim for a systems approach, Integrated Systems Research and the Task Force recommendations on Mission critical research areas. *Refer to attached presentation*.

Reflections on the presentation on updates on Dryland Systems

Verification of terminologies used – it was emphasised not to assume the audience being talked to understand the various application of systems such as systems used to describe CGIAR; describe different ecologies, talk of agricultural and livelihood systems. It is therefore not clear whether the terms are interchangeable or not.

Inter-phase with CCAFS and PEM - The major issues in drylands are institutions and governance. Even though the institutions work at different levels – macro level, there is need for stronger relationships between the institutions as systems research encompasses multiple, temporal and spatial/special skills.

It is inexcusable that there are no climate change funded projects under CCAFS for drylands systems because to understand how climate change will affect agriculture in future, you can already see them in drylands because they are affected by extreme heat, torrential rains and other changes from climate. There is therefore need to make major efforts to bring in resources that could look at impacts of climate change on drylands. While this can be done with CCAFS, but their focus is on non-drylands.

Need to identify the main issues in improving the systems - The major issues in drylands that require considerable focus are institutions and governance. These should be given high priority.

There is no rationale for keeping some of the global cross cutting CRPs because drylands touches on all of them including WLE, CCAFS and PEM because all these factors have to be considered when taking an agro ecological focus approach. The best option is to create partnerships and more collaboration across CGIAR centers and CRPs. In the 2nd call partnerships have to be clearly articulated showing how Dryland Systems reaches out to the other CRPs.

Win-win options - calls for critical analysis of the tradeoffs and interactions that occur.

Timeframe for analysis – clarify the difference between scenarios and foresight. Foresight scenarios look into the future – what is the future going to look like, and can be analyzed based on current trends, looking at uncertain scenarios and plan on how to move forward. This will entail conducting impact assessments on things that happened in the past and use lessons to help predict better what will happen e.g. impact assessment on conservation agriculture, regeneration of trees in West Africa to handle criticisms of long term research.

long term nature of systems work - can be short circuited by retroactively going back and examine what happened in the past, doing proper impact assessment from where many lessons can be drawn and be able to better predict what is likely to happen e.g. study on the impact assessment of conservation agriculture, regeneration of trees and conduct retrospective analysis and historical analysis of what systems have been doing.

Mali and Nigeria were offered as good examples where understanding on natural regeneration of trees was informed by a historical and backward looking analysis of what was preventing people from having trees, analyzing the changes in government policies and changes in other circumstances.

Budgets - In order to make progress there is need to focus the research on some elements that can be achieved bearing in mind financial and other resources available. Clarification was sought on whether discussions are outside budget constraints or if there were provisions to adjust to a budget constraint and determine the highest priorities because majority of research conducted is not short term but long term.

- The current work plan for 2015 has already been submitted and is based on the past six IDOs; however the flagships will be expected to show how work will contribute to the 10 new IDOs and the three SLOs. Therefore the teams were urged to make immediate switches and adjustments.
- Additionally several adjustments had to be made due to budget cuts, consequently next year the plan of work has to be reviewed and aligned to the 10 IDOs and 3 SLOs.
- While many things need to be put together in the new IDOs so that they are not confusing and enable the scientists to achieve the IDOs, the IDOs cannot be changed and are ready for endorsement. Then how to measure IDOs and its indicators should also be defined.

Partnerships – more collaboration across the CGIAR centers and CRPs will have to take place particularly because this will be a basis for judgment in the 2nd call where the centers have to demonstrate how they will reach out and work with other existing CRPs. The flagships will have to propose how they will implement partnerships by the end of the meeting.

Innovation platforms and learning networks - Does CGIAR have innovation platforms and learning networks where everything is flowing into or are we leveraging on existing innovation platforms/learning networks and how are we planning to efficiently leverage on them – are there any strategies, are they documented.

- CGIAR has innovation platforms and has built partnerships and alliances with other partners including the private sector.
- Additionally the flagships and CRPs have significant number of innovation platforms and learning alliances.

Looking at the nature of systems approach and the budget cuts and subsequent change of activities, the big question is "how to re-adjust so as to effectively undertake the system approach? *The systems CRP W1and W2 will not fund activities that are not systems*.

- Capacity development is needed for people involved in the CRP
- Need to focus on simplifying looking into systems and improve its performance

Issues to be sorted during the three days of the meeting

Arising from the above discussion, participants worked in groups to come up with key implementation issues that need to be sorted out during the meeting. The results of the discussions are listed here below:

- Strategic - review of critical mission areas – feedback and endorse priorities
- Operationalize – where are we now and align our activities with MCSa
- Critical requirements to identify and complete critical systems review
- Implementing systems approach
- It is important to build institutional capacities to implement systems approaches and out scale
- The concept of working with a sample of a target population
- Does subdividing agricultural livelihoods systems help to reach the IDOs
- Our systems approach needs to consider livelihood systems in a comprehensive way
- Resources and time needed to conduct systems research and achieve impact
- How do we integrate bilateral projects into CRP –systems work
- Integration with other CRPs vs Individual work across CRPs. Urgently need to understand how they do that, participatory across Dryland Systems CRP
- Linkages with other CRPs pilot commodities in system context /Systems in commodity systems
- Vertical and horizontal integration in systems analysis eg across livelihoods
- Relevance, win-win for whom? Tradeoffs (gender)
- Strategic approach to engaging partners

- Communication and knowledge sharing + learning –integral part of research process
- How others can learn from climate change adaptation
- Enabling cross regional synergies
- Defining and clarifying our theory of change
- From “generic” to “priorities” (our niche in DLs)
- Value addition - identifying outputs from this meeting
- Strategy of change
- Indicators
- Connect to context particulars e.g. unemployment,

5. Analysis and state of implementation of flagships

Each of the CRP flagship coordinators presented progress on integrating of sites, how the revised clusters of activities fit into the new IDOs and SLOs, their targets and indicators, Key constraints as well as partnerships and engagement. The regions include: Central Asia, East and Southern Africa, West African Sahel and Dry Savannas, North Africa and West Africa and South Asia. Some of the notable insights which came up include:

- Lack of scenarios and trade-off analyses (modelling: biophysical/ecological; but social)
- Lack of scaling out and dissemination strategies
- Need an options x contest inventory (by production/livelihood systems)
- Lack vulnerability/risk assessments to changes e.g. market prices
- Need indicators of livelihood resilience
- Lack of research on system improvement
- Unclear systems perspectives (e.g. livelihoods) - the disciplinary approach is still dominating
- Revisit plans with “sustainable” budget cuts and addressing gaps
- The group of 8 centers is on the spot to see if they can do the job or not
- How can science be better used by innovation platform partners? There is a need to sit together by all disciplines to see how to address the different issues of the systems
- Need to provide guidelines
- How to incorporate more socio economics activities (economic analysis, markets, value chains)
- Ex- ante evaluation of promising options
- Identify constraints in management/ governance of CPRs and sources of conflict
- Institution, gender empowerment/ transformative activities and capacity development

6. Updates from cross cutting thematic areas

6.1 Capacity Development – a brief of the capacity development Strategy, action plan and results framework (2015-2016) was presented. The Capacity development Strategy 2015-2016 has 3 goals:

1. Enhancing in-house capacities of Dryland Systems (individuals, organizations and systems)
2. Maximize the potential impact of CD interventions through partnerships
3. Ensure sustainability of CD efforts through improved focus on resource mobilization at the international, regional and local levels, diversifying and funding modalities, and improving donor relations

The major CD activities proposed for 2015:

- Skill Mapping Exercise (Needs Assessment)
- Two Onsite Capacity Development Programs
- Establishment of International Partnerships
- One MOOC development
- One Experimental Hub Setup to carry out train the trainer exercise as well as reaching out to smallholder farmers through innovative approaches
- M&E Platform (with Training Calendar)
- Proposed plan for 2016

What has been achieved so far by 2015?

- Skill Mapping Exercise in Progress: Existing survey questionnaire/instrument is examined and further enhancement is in progress as per the requirements defined by the group
- One Onsite Training Program on Decision Support System for Agro technology Transfer
- Establishment of International Partnerships
- Building Classrooms in Knowledge Cloud for Next Generation
- MOOC development
  - ✓ Pilot in progress (Diseases of Horticultural Crops and their Management:PATH-372)
  - ✓ MOOC on Systems Research proposed but not committed
  - ✓ MOOC on APSIM
- Setting up of experimental hub in progress in Ananthpur with RDT
- Proposed plan for 2016 in progress

Key Challenges encountered

- Effective Coordination among sites for greater impacts: West African Sahel and Dry Savannas; North Africa and West Asia; East and Southern Africa; Central Asia; South Asia

- Multi-Lingual content Production
- Cultural and Behaviour Changes; E-Readiness????
- Infrastructure and Connectivity Issues.
- Resource Constraints

6.2 Communications, Knowledge Sharing and Learning – The Dryland Systems Communications Program Coordinator, Ms. Tana Lala-Pritchard explained that communication and knowledge sharing must be an integral part of the research process so as to provide opportunities for CGIAR centers and others to work together in addition to creating relevance and direct contribution to development outcomes of research programs.

She highlighted the Key Communication Outcomes for Dryland Systems:

- Branding and Positioning
- Knowledge Sharing and Learning Culture
- Behaviour Change Communications and Advocacy to ensure: Uptake of Research, Influence Policy and Attract public and private sector Donors

Inline with the expected outcomes the following efforts have been embarked on

- Network of Communication Focal Points with ToRs;
- Communications and Knowledge Sharing Strategy in the pipeline;
- Branding Guidelines & Program Promotional Package;
- Success Story Guidelines and Templates;
- OA and Publications Policy in the pipeline;
- Inventory and/ or re-vamp existing tools (i.e. website, shared collaboration spaces, social media, MEL platform, etc.).
- Explore synergies with other CRPs;

The Current/Planned activities include:

- Identify list of salient policy issues and strategic side-events for strategic engagement of Dryland Systems program at global level.
- Provide guidance to partner centers in developing appropriate activities and products to communicate the Dryland Systems brand and impact to internal and external audiences
- Build internal capacities to successfully engage in and deliver communications activities through communications & KM trainings and or write-shops, etc.
- Identify and utilize target knowledge multipliers to help disseminate research outputs and success stories more widely and connect to a wider multi-disciplinary audience.
- Reach out and build ***strategic, value-added partnerships*** for greater R4D impact ;

- Build advocacy coalitions/alliances at local, regional or global level as platforms for ***advocating specific policy issues*** and solutions in the long term;
- Create and/or ***support hubs of participatory community learning*** to enhance practices and ensure uptake of innovative technologies and processes in dry land agriculture;
- Create and/or ***support relevant PPPs*** as platforms for designing, supporting and continuously delivering R4D projects.

She informed participants of the communications Focal Point in their institutions as follows:

Institution	Communications Focal Point
ICARDA	Jack Durrell
ICRAF	Akefetey Mamo
ICRISAT	Joanna Kane-Potaka
ILRI	Dorine Odongo
CIAT	Juliet Braslow
CIP	Veronique Durroux
Bioversity	Samantha Collins
IWMI	Neil Palmer
Dryland Systems	Tana Lala-Pritchard

6.3 Gender, Youth and Systems – there are many reasons for the need of gender responsive systems approach including:

- Identifying interrelations and feedback loops between ecological and economic, socio-cultural (youth, gender, ethno-social class) elements
- Understand the ecological and economic, socio-cultural change dynamics in the system
- Discover tacit trade-offs and synergies linked to social roles, status, networks
- To open new entry points for gender-responsive sustainable agricultural development

Several ways of ensuring gender-responsive systems research were explained to the participants such as:

- Involvement of women in trainings, farm demonstrations, field visits, learning alliances, intervention platforms
- Creating and strengthening of women groupings and associations
- Empowering women by developing capacity regarding their crops, livestock, farming methods, related management
- Gendered surveys
- Gender-responsive value chain development
- Gender differentiated development and dissemination of technologies and practices
- Developing capacity of women and men to perform in non-traditional roles

- Support women in livelihood building within/without ALS

Responding through research to constraints, opportunities and trade-offs of men and women alike has numerous benefits. For instance if women had equal access to resources, the world's hungry could be reduced by 17%

Day two– Wednesday 8th April 2015

The general agenda for day two focused on presentation and clustering of implementation challenges, presentation and discussion of the revised critical research areas, sharing of a good case on implementation of systems research, discussions on international public goods, proposition of practical ways to deal with implementation challenges and principles of systems research.

1.Critical implementation challenges

Arising from the presentations and analysis of the flagships, participants had worked in groups on the first day to come up with the most critical challenges in implementation of systems research. The challenges presented from the table groups were then clustered around key thematic areas and they are listed here below:

a. How to develop a TOC, monitor and evaluate it

- Defining and clarifying our TOC
- From "generic" to priorities or our "niche" in Drylands Systems
- Value addition - Identify outputs: from this meeting
- Strategy of change
- Indicators
- Are IDOs indicators realistic? Achievable?
- It is impossible to document and attribute change
- By and large, little ex ante impact analysis
- Does sub dividing agricultural livelihood systems help to reach the IDOs - Is it always necessary to subdivide?

b. How to organize ourselves effectively in the program

- Structural design of system CRP
- Integrated systems research requires a team approach
- Linkages with other CRPs – pilot commodities in system context - can inject comports
- Individual - work across CRPs
- Urgent – understand how they do that
- Participatory across Dryland Systems
- How do we integrate bilateral projects into CRP systems work

- Integration with other CRPs
- It is important to build institutional capacities to implement to implement systems approaches and out scale

c. How to come to a common framework for systems research

- Realistic approaches and research budgets - Systems research requires enough resources to ensure integration
- Lack methods to integrate different domains of systems research and there are no guidelines
- Vertical and horizontal integration in systems analysis e.g. across livelihoods systems, governance within social contexts
- Presenting systems research requires insight into integration (not possible with a list of activities)
- Contextual factors – international public good/Transfer context into public good
- Identify and apply an integrative framework to bring the systems together
- No core modelling systems
- Timing of analysis
- No application of scenarios and trade offs
- Value chain attention missing
- More robust/stronger socio-economic analysis
- The concept of working with a sample of a target population
- Implementing systems approach
    - ✓ Initial systems research
    - ✓ The systems approach needs to consider livelihood systems in a comprehensive way
    - ✓ What are the critical requirements to identify and complete critical systems research?
    - ✓ Programs seem focused on interaction not understanding systems
    - ✓ Systems in commodity systems
    - ✓ Scales of system analysis
- Not clear how interventions are related to typologies
- Policy as part of the solution such as insurance
- Common language – conceptual framework, research approaches
- No strategy for scaling out

d. How to develop strategic partnerships effectively

- Constraint – ownership approach by national partners is not there

- Strategic approach to engaging partners

e. How to balance domains in system research

- Balance between socio economic and biophysical seems skewed
- Who is doing the socio economic analysis?
- ESS under represented
- Relevance, win-win for whom? Tradeoffs (gender)

f. How to communicate effectively and learn together

- Communicating systems research – needs, work
- Telling the story – how systems research is unfolding, is there a continuum (thread) from analysis to impact?
- Communication of systems approaches is difficult
- Others can learn from climate change adaptation
- Communication and knowledge sharing and learning – to be integral part of research process
- Most vulnerable to climate change
- Enabling cross regional synergies
- No harmonization across approaches and flagships
- Little evidence of joint learning across target regions

g. How to develop capacity in an integrated way

- Capacity development for systems research: need a common denominator/common framework for all
- Systems modelling
- Integrate dryland systems and CCAFS
- Capacity development for Communication
- Capacity development for gender
- ICT tools in the hands of farmers
- Capacity development for gender etc. now one for each CRP need common principles/elements across all CRPs
- Can we strategically link communications and stakeholder engagement and partnerships and Capacity development and gender/youth to optimize all?

Comments, questions and reflections on the critical implementation challenges

After two years of being in systems research (since the Jordan meeting) the presentations and discussion give the impression that no progress has been made. It is important to find out what the problem is – are they structural reasons, communication problems and or other deeper problems. It gives the impression that everyone has a different understanding of systems research, a lot of focus is directed at activities rather than the system process where different disciplines work together.

Communicate the CRP in simple language - The group agreed on the need to communicate systems research in a simple language/way to support the communications strategy and interaction with other stakeholders e.g. a simple systems approach diagram to help focus on the core of systems research. *This calls for providing a guiding conceptual framework and diagram to be shared among the team to create a common understanding and prevent the different interpretations of system research in different contexts.*

Differentiating between ***systems analysis*** and ***systems research*** is critical as both have different components. A general framework will therefore help bring a common understanding for the different domains by detailing the core promising approach when addressing challenges e.g. in sustainable intensification, integrated livestock and crop management etc. The challenge being addressed will determine the type of system approach to be employed.

Practical ways for harmonizing the system approaches in the different action sites should be considered and appropriate communities of practice established. Generally in the Dryland Systems focus is on farming systems, coping strategies and not socio-economic approaches.

Noting lack of full capacities in our institutions, partnerships have to be built and sustained. This will have significant implications on budgets and financial spending.

Holistic approach of doing research and the comparative advantages of those involved in this CRP - The only way to answer the complex problems in drylands is by taking a holistic approach and this is provided by systems research

In concluding this session the general consensus was to establish working groups to work on the guidelines across the regions of flagships. They will identify the particular challenges in the action sites which will drive the framework to be used.

2. Revised Critical Research Areas

Richard Thomas the Dryland Systems Director gave a short presentation of the revised critical research areas. He explained in a nutshell that Systems research is a holistic approach that integrates components of human and agro-ecological systems across all dimensions in order to improve agricultural livelihoods in drylands.

Systems research for drylands:

- Focuses on farming *systems* and livelihood *portfolios*
- Considers explicit trade-offs among improving productivity, reducing risk, social, economic and environmental sustainability.
- Pays attention to value chains
- Is an iterative research *in* development approach
- Trans-disciplinary
- Local and scientific knowledge combined, co-generated and embedded in the broad community

- Women and youth groups involved and empowered throughout

In line with the above conceptual understanding of systems research, the following mission critical areas have been proposed:

Mission critical area 1: Anticipating dryland futures

- Identify critical drivers and interactions that affect poverty reduction, food security and natural resource management
- Identify the innovations and investments that increase the resilience of vulnerable systems,
- Identify the outcomes of adaptations, innovations and investments for food security, poverty reduction, natural resource management

Mission critical area 2: Co-producing knowledge for appropriate options

- Analyze tradeoffs and synergies among production, social, economic and
- Environmental factors
- Compile an inventory of existing intervention options (options x context)
- Assess sustainability of options
- Assess factors that enhance uptake of innovations

Mission critical area 3: Facilitating policies, institutions and governance for scaling and enabling innovation

- Design institutional arrangements for improved agriculture, livelihoods and ecosystem services
- Identify public-private partnerships for investments in drylands
- Design incentives for uptake of innovations
- Design insurance mechanisms
- Design strategy for scaling up including policy dialogues

Comments, questions and reflections on the mission critical areas

Despite the call to simplify things, the nature of systems research is complex. How do we simplify and be able to address all aspects of the system. There are different systems e.g. agro pastoral systems, rain fed systems and irrigated systems and the objective is to improve the performance of these systems and contribute to better livelihoods of people.

This calls for analysis and understanding of the systems more importantly to identify the bottlenecks. Focus should be on identifying fewer aspects that are critical to improve the performance of the major system as not everything in the system can be addressed, especially those under our disciplinary components.

3. Major gaps in implementation

Participants discussed in their tables if there were other cases which are not so obvious but need to be integrated or added for an effective systems research in the drylands. The discussion questions:

1. *Do you agree with this focus as the way forward?*
2. *Are we implementing this type of systems research?*
    - *If yes, where/cases*
    - *If no, what are the major gaps we have in implementation?*

There was consensus and agreement with the mission critical research areas focus and approach as the way forward because it is a good framework and not an implementation guide.

- However there is need for simplification and a common language/framework - baseline, with or without systems analysis.

Participants agreed they are doing systems research though partially and therefore more multidisciplinary activities are required, needs to be integrated with impact pathway and more holistic approach

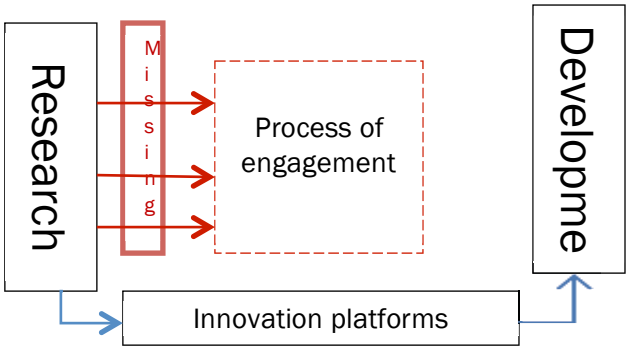
Some examples of systems research cited include:

- Bhoochatha in karnata
- CRP trade off analysis in systems context
- East shewa in ESA - New crops/varieties, Water management and Feet/fodder ocean
- Central Asia - Crop-livestock systems integration, Crop-tree integration, Salt – tolerant wheat, Integrating mungbean/legume into wheat based
- CA-SA - buffering role of seed systems to rain fed systems
- Sustainable management of CRPs. Up scaling high commodities (technology and institutions) e.g. Rajasthan
- insurance, but must show how systems research helped reveal the road AND how systems research can help assess the impact of change so all other system elements can be adjusted

Major gaps in implementation of systems research

- Policy and governance analysis
- It may take time to generate evidence to influence policy but past work should be used
- Identify ways of linking with other CRPs
- Consider the overlaps and gaps with relevant CRPs
- Good analysis of the different systems (diagram)
- Analysis of existing systems is missing

- Limitation of integrating qualitative data in modeling exercise
- Need for more focus: interactions, trade off analysis, impact on livelihoods
- No guidance on whether and how to stagger/phase mission critical areas of research
- Contradiction between contextualization with scalability, but the funds approach and conceptual framework is scalable



4. Case Study on Effective Systems Research

An example of implementation of systems research - Index Based Livestock Insurance (IBLI). ILRI in Nairobi, Kenya is implementing IBLI developed by Andrew Mude after the PARIMA project studying issues around livestock loss which led to conceptualization of livestock insurance. IBLI is an Intervention that has gone through the three Mission Critical Research Areas:

MCRA 1 -Anticipating Drylands Futures

The Livestock pastoral systems North Kenya experience drought leading resulting in loss livestock to poverty traps. Using the systems perspective analysed multiple stable states with / without livestock. Went on to identify innovations - agricultural / livestock insurance. The thinking was to mitigate risk of asset loss, and the key questions were whether the insurance industry would be interested, Would pastoralists buy into it and how to offer an affordable insurance.

MCRA 2 -Co-producing knowledge for win-win options

Working with communities	Working with Insurance industry	Working with donors
– Questionnaires among pastoralists to assess interest – Games to introduce and familiarize pastoralists with concept of insurance	– Working together to co-design the Insurance – Training of insurance staff / vendors – Continuously monitoring and learning to readjust and improve products based on lessons learned	critical Support

MCRA3 -Facilitating policies, institutions and governance

- **Policy** - IBLI and other ag insurance initiatives (Kilimu Salama) triggered a policy response

- **2014**: Kenya government setting ambition to make insurance available to all farmers
- **Institutions** :Kenya livestock insurance program KLIP rolled in Sept 2015

5. How to produce International Public Goods

This session is aimed at highlighting tangible products that the programme which ends in December 2016 will have developed. One of CGIARs mandate is to produce international public goods that have significance internationally and globally. Therefore each region was to give details of the kind of goods they are developing. The criteria for public goods: should be easily transferable, invincible in terms of innovation in methodology, technology, institutional arrangements, tools/toolboxes and processes that help make informed decisions.

Case of Land-Potential Knowledge System

Jeff Herrick the Global LandPKS Lead, made a presentation to the group about Land-Potential Knowledge System. He explained the LandPKS is a system to Share, access and (by 2017) co-Generate (Dry)land Systems Knowledge. it is a suite of integrated, modular apps connected to Cloud-based analytics and user-accessible Cloud storage. The apps allow users to access, share and interpret global knowledge and information relevant to the unique potential of each piece of land. It is supported by USDA for 1.5 years and USAID for 5years, with a growing collaborator network committed to open data/knowledge

The Pilot Projects in 2015 are in kenya and Namibia. In kenya the primary partner is Northern Rangelands Trust (NRT) and its associated Conservancies with the initial focus of identifying and prioritizing areas for restoration of perennial grasses. In namibia the primary partner is the Ministry of Lands and Resettlement with the initial focus of improving understanding of livestock carrying capacity + crop production potential of resettlement areas.

Land-Potential Knowledge System has two sets of information:

- Land Information - Land Potential (CurrentBeta): Ranking Relative Potential and Degradation Risk
- Land Cover – Immediate Results (calculated on phone) and Cloud Storage

Arising from the Land-Potential Knowledge System presentation, participants worked in regional groups to come up with innovative IPGs which have high potential for scaling up in the drylands. The groups were supposed to identify possible IPGs they could produce till end of 2016 based on the work in their sites.

The results of the discussions were clustered into five major themes and the following table presents the outcome of this exercise.

Sustainable intensification and Sustainable management
• **Process and approach for sustainable management of community based silvi-pasture system linked to livestock value chain** • **Tree fodder portfolio for livestock enhanced productivity (especially small ruminants)** • **Sustainable land management options/toolkit, database, WOCAT**

- Community based animal breeding method
- Robust farm typology based targeting interventions
- Tool for rangeland governance and similarity mapping
- Bio economic model – novelty
- Solanum crop growth model for potato
- Sustainable intensification of Dryland Systems based on integrated genetic and NRM options using historical climate analysis

Water management

- Salinity management irrigated areas: tools and approaches
- Water use trade off scenarios within moving from mono cropping towards diversified systems in transition economies
- Methodology on assessing system productivity for irrigated agricultural systems
- Feed - food raised bed food systems, water saving

Land use planning and mapping

- Agro-geo informatics
- Visualization tool for increased awareness and understanding of resource challenges
- Algorithms – free use by scientists in other regions (on CIP website)
- Tools for farming system scale spatial visualization down scaling (drone based)
- Land tenure mapping for policy makers – geo wiki

Diversification

- Methodology for livelihood diversification owned by women ad youth
- Resilience capacity index using panel data

Stakeholder engagement

- Guidelines for multi-stakeholder innovation platforms (criteria, effectiveness)
- Multi-stakeholder approach for integrating high value commodities along the value chains
- Models for partnership across countries (AIS, AR, RAS)
- Participatory research systems and methods - provide access via web (protocols)

- **Communication tools by region for scaling up**
- **Evidence based policy influence**
- **Knowledge**

6. Developing action plans for Innovative International Public Goods for Dryland Systems

In this session participants worked in groups to discuss areas of synergy across the regions and develop action plans for products that can be developed together addressing institutional arrangements, methodology, priorities as well as flagship and regional presence. The criteria for public goods: *should be easily transferable, invincible in terms of innovation in methodology, technology, institutional arrangements, tools/toolboxes and processes that help make informed decisions.*

A summary of the action plans for the proposed products are annexed.

Resultant discussions on the proposed IPGs

- Are the proposed products IPGs?
- How can the different flagships and regions work together? E.g. working together and learning on processes and approaches for sustainable management of arid systems linked to livestock value chains such as similarity mapping yet the systems are not close; scenario modeling; community based livestock breeding;
- Need for more dialogue to figure how to work together considering diversity of work and disconnected
- Innovation platforms – have been developed in other CRPs; can be considered as commodity platforms, technology platforms or thematic platforms. These innovation platforms can be at national level, regional level or even community level
- Key lessons and insights – some products are not for particular flagship, but produced for common use across the CRPs. Currently there is no budget aligned to IPGs, therefore resources have to be acquired to get the process going.

7. Practical ways of dealing with systems research Implementation challenges

There was a recap of the issues and challenges to be addressed when developing a common framework for systems research that were highlighted in the morning. These were summarised as:

- Lack methods to integrate different domains of systems research and no guidelines
- Identify and apply an integrative framework to bring the systems together. Additionally systems research requires enough resources to ensure integration
- Presenting systems research requires insight into integration (not possible with a list of activities)

- No strategy for scaling out
- Vertical and horizontal integration in systems analysis e.g. across livelihoods systems, governance within social contexts
- Systems in commodity systems
- No application of scenarios and trade offs
- systems approach needs to consider livelihood systems in a comprehensive way
- Transfer context into public good
- Missing Value chain attention

Developing a common framework for addressing implementation challenges of systems research will build on the work done by East Africa and ITF, and not start from zero. A team was tasked to work on a basic framework and report the next day.

7.1 Guidelines for implementation of systems research

Richard discussed in brief the document "**navigating amidst complexities**" which is a guideline that was developed by several scientists to help manage implementation processes of systems approaches. It provides guidelines for effective research and development for improving livelihoods and environment. It has three cornerstones:

1. Understanding how to work together
2. Establishing institutional organisational framework
3. Improving approaches to the task

The cornerstones can be used to assess strengths and weaknesses in programmes, and areas that need improvement for the systems research to succeed. The guide also assists to identity aspects that have been left out or need strengthening.

Participants were urged to give feedback on the guidelines – is it relevant, what is missing, what needs to be included so as to improve it and make it applicable to systems research

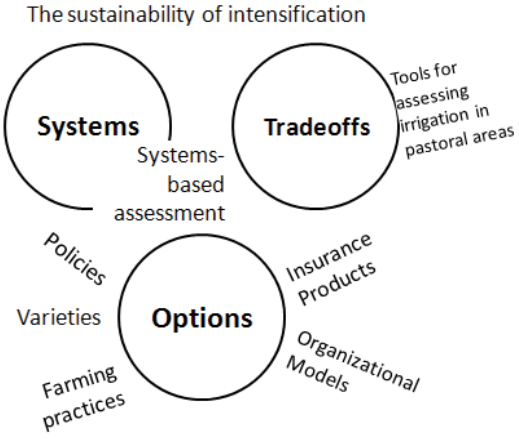
7.2 Possible framework for systems research

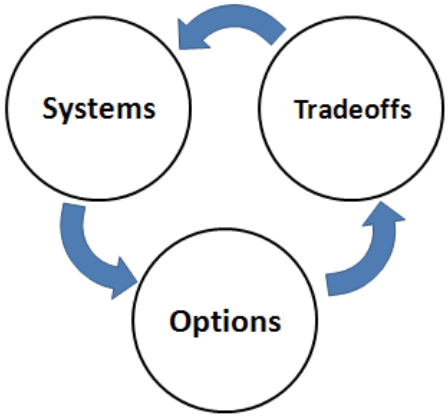
Lead up questions - how many people have used any form of systems analysis to make decisions of what research to undertake, how many have created a diagram of systems process

Lance Robinson was tasked to suggest a possible framework for systems research based on the arising issues on implementation challenges such as the need for a common language and common framework/guidelines. The proposal is linked to the working paper developed by ESA team on systems research approach as well as ITR document on the three mission critical research areas.

He explained systems are at different levels – farming level, livelihood and landscapes. The systems are sometimes referred to as the context. When conducting a systems analysis, the aim is to understand the complexities of the local place, therefore the context.

In addition to the context, the options and tradeoffs are required. Options are defined broadly as the varieties of different farming practices such as NRM models, organizational models. Trade offs and risks in sustainable intensification such as irrigation in pastoral areas, See figures below:





7.3 Linking Task Force recommendations of mission critical areas with Dryland Systems

1. Co-producing Knowledge for Options - Identify bottlenecks/ leverage points and trade offs e.g. pproject production/ environmental footprint/ equity/risk tradeoffs and work with partners to identify options that might work
2. Facilitating Policies, institutions and Governance - Interventions focused on institutional aspects of system with the aim of improving the performance of different options
3. Anticipating Dryland Futures - focusing on understanding how the systems, options and trade offs interact so at to inform work at different levels.

This framework will be applicable to flagship coordinators and Dryland Systems CRP, and one of these five key areas will have to be present:

1. Systems Analysis and Synthesis
2. Tradeoff analysis
3. Anticipating dryland futures
4. Facilitating Policies, institutions and Governance
5. Co-producing Knowledge for Options

Two examples were presented:

	Systems Analysis & Synthesis	Tradeoff analysis	Anticipating dryland futures	Facilitating Policies, Instn's & Governance	Coproducing Knowledge for Options

Research Activity X - an early stage activity. Qualitative systems analysis and HH modeling based on earlier research will be used to identify leverage points and candidate options.	✓	✓			
working with local and national stakeholders through IP to analyze the system and identify pathways for agricultural innovation	✓				✓

The group agreed that it was important to have a diagram as it shows relationships and is a very simple way of communicating to the outside world how Dryland Systems CRP is conducting its research. The diagram is very easy to understand.

The Dryland Systems website does not have a diagram or description for systems research, but there are diagrams for ToC and impact pathways. This was oversight for Dryland Systems of not developing a diagram and has to be rectified as a diagram is the easiest way of describing systems research.

It was noted that to publish a paper where systems research was core to the publication, a simple diagram helps to understand the systems approach. The shift required by the group therefore is to avoid being stuck in specificities of the system.

There is a lot to learn and this calls for continuous improvement of the framework. At the end of the day a small group was formed and tasked to further develop the framework and report back to the group on the next day.

Day three – Thursday 9th April 2015

1. Framework for systems research for CRP-Drylands

From the previous day's discussions on the need to develop a common framework so as to address the implementation challenges for Dryland Systems, Richard presented the following proposed framework for systems research.

He explained the basis for a systems approach shaped by problem solving "in practice" with the following thoughts:

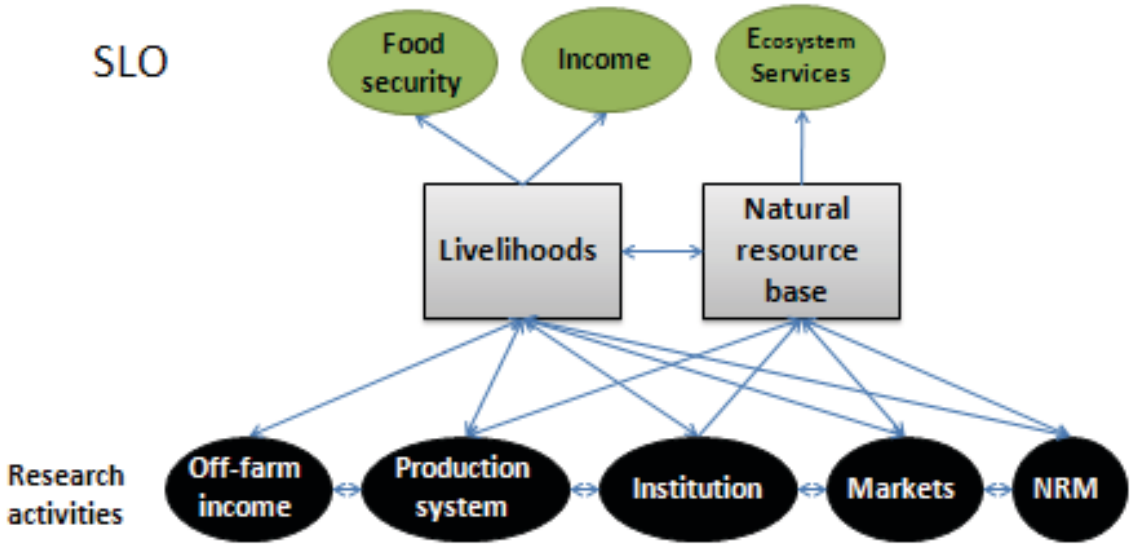
- A "systems approach" that is best defined in terms of the outcomes we seek.
- That is, we apply a systems approach to improving food security, reducing poverty and enhancing natural resources in drylands.

- Our approach does not prejudge the need for a technology, a commodity-related intervention or a disciplinary consideration.
- Approach draws upon diverse sources of scientific and local knowledge to achieve our objectives.

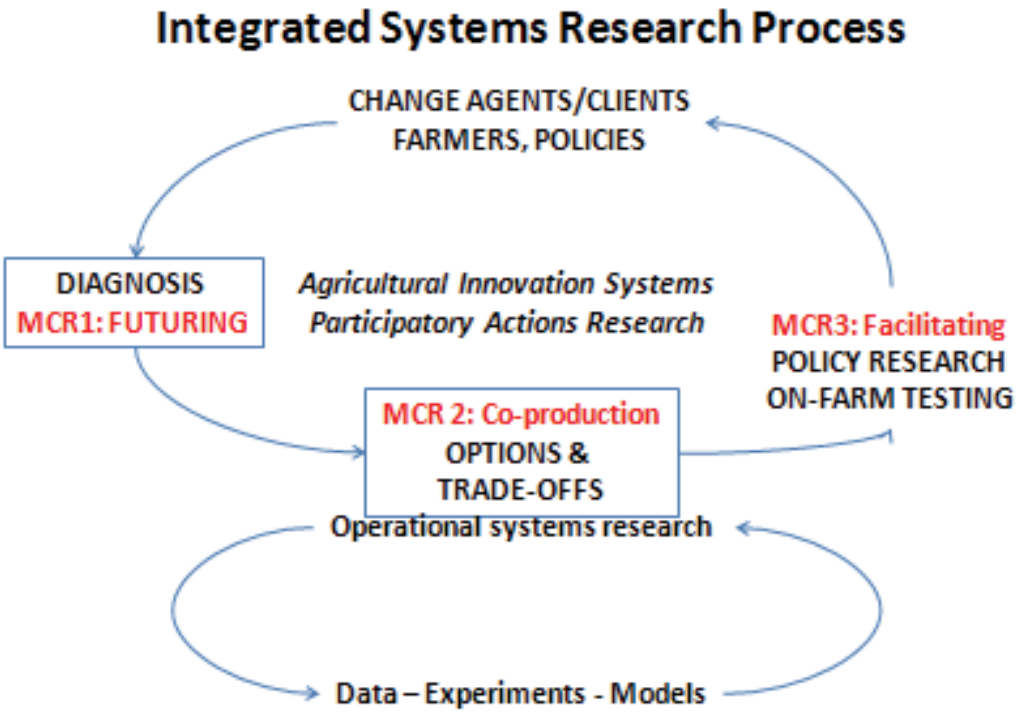
Some of the must haves that were discussed in the first science and implementation meeting:

- Moving from descriptive to predictive/diagnostic approaches including the use of systems analysis and modelling tools
- Increasing participation from a broader range of actors – need to reach out and bring in more partners
- Emergence of a value chain focus to complement an on-farm focus – different from farming systems approach
- Increasing recognition of the significance of enabling institutions and governance
- How to handle the combination of bio physical and social sciences – how to develop new quantitative and qualitative types of models looking at two aspects of human and ecological components (contested paradigms; hard systems vs soft systems; positivism vs constructivism; researcher knowledge / farmer knowledge)
- Greater recognition of social equity and gender issues

Proposed conceptual Framework for Agricultural Livelihood System and Outcomes



The systems approach taken is borrowed from the farming system approach and the principles have been modified into the Integrated Systems Research Process and link to the 3 mission critical research areas as shown below:



Diagnosis – comes from the demand of change agents /clients (farmers and policy makers) – *anticipating the future of drylands*

Co-production – action research: co-production of knowledge, study of options and trade offs. This is the stage of operationalising most of Dryland Systems systems research.

Facilitating enabling environment - policy research and on-farm testing and feedback to change agents/clients.

- The issue of causality was raised – it was not coming out clearly in the framework and would pose challenges in implementing systems research
- Other factors that cause change are not explicit e.g. education, empowerment, nutrition – however it was noted they are addressed under livelihoods.
- Not everything can be captured in the framework, it is a guide

It was agreed that a small write up would be prepared to explain the framework and approach.

2. Setting Dryland Systems work on the proposed conceptual framework

In setting Dryland Systems work in the framework and process, it was agreed that all scientists should be aware of activities in their CRPs and be able to represent it in a form of diagram or map. Jeff took the participants through an exercise to understand the process where he explained the following components in the diagram below:

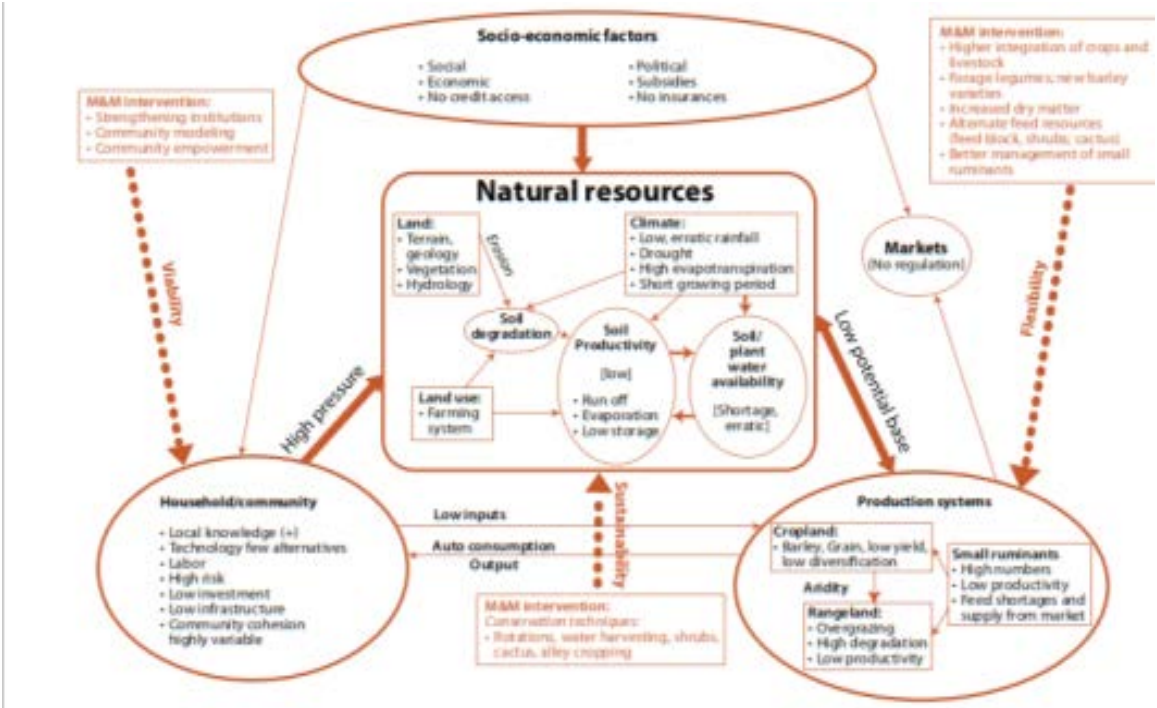


Figure 1.3: An overview of the biophysical constraints and inter-relationships with production systems, households and communities in the low rainfall areas of the Mashreq and Maghreb (M&M) regions of West Asia and North Africa (Thomas et al. 2003)

The diagram is well explained in the booklet that Richard shared on guidelines of implementing the systems approach.

The flagships will be working in trans-disciplinary teams which will change in terms of the disciplines needed as they go through the learning loop of research. It will also help to determine when a research is becoming irrelevant which import is for making decisions on next options.

3. Switching from flagships programmes as regions into ALS

Richard defined ALS as a set of farm, farming and human activity systems that determine the livelihood opportunities for agricultural households, enterprises or communities. Implicit in this focus is consideration of food and nutritional security, health and well being, employment and income generation of dryland peoples.

The **primary focus** for Drylands systems approach **(level n)** will be "agricultural livelihood system".

Areas of concern that were highlighted by participants:

- ✓ Who is the target population? The target population is agricultural households but they are interacting with people in urban areas who remit substantial resources into the agricultural households and there is movement between urban and rural communities.
- ✓ Dryland Systems domain of intervention is in the rural areas – but should capture drivers of change such as urban influence
- ✓ Communications materials should be carefully about the specificity of information to avoid confusion of the target population and expected outcome

The systems have been merged from five to three i.e. pastoral/agro-pastoral system, rainfed system and irrigated system.

In conclusion, since the work plans and activities developed were aligned to the flagships, the process now is to transition to the three ALS in 2016.

4. Developing organisation framework and research questions for the three ALS (for 2016)

In this session, participants went into groups to discuss and suggest research questions that would enable the Dryland Systems CRP respond to major concerns that need to be addressed in relevant regions and determine how to achieve a more coherent research framework across the programme. The guiding questions for this task are show in the boxes below.

Organizational Framework

- What functions do we require to create an effective system for delivery of the program?
- What role do we then require, with what tasks? + reporting
- What mechanisms do we require to ensure sharing and learning across all levels?
- How do we ensure the teams have the right capacity to deliver?

Research questions

- What are the 3 fundamental research questions in each of the 3 ALS which would drive the research
- How do you ensure coherence in the research so that you can synthesize the research across action sites in your ALS
    - Consider the drivers in the system and trade-offs

The results of the discussions are included in annex three.

Irrigated Livelihood System

✓ Addressing small scale irrigation that are outside the current action sites of the large scale irrigation

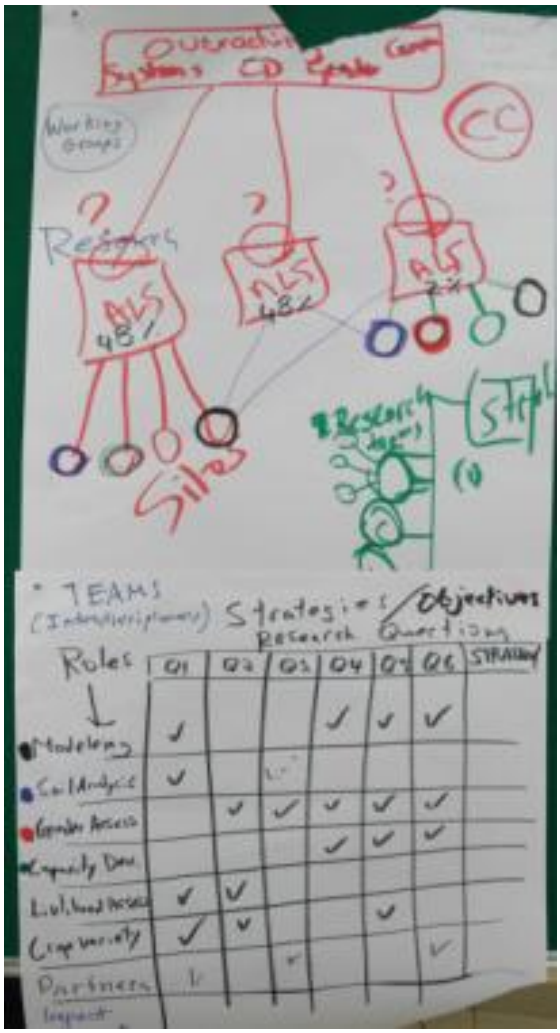
✓ A mechanism to link the two action sites and exchange outputs and experiences

✓ In 2016 as it is the last year of the first phase focus should be on finalizing, analyzing, packaging outputs and promote the outcomes of the first phase. So that can lead and contribute to the second phase of the dry land system

Feedback on research questions

- The CRPs have to address externalities and options for improving the systems for impact
- There has to be joint planning

- The reports mainly addressed bio-physical aspects and did not look into issues of poverty, gender, nutrition etc. while they may be implicit, it is good to articulate them
- Future analysis – for issues such as value chains, markets. Make a distinction between futures of livelihoods of people and futures of land use in agro pastoral areas. The dynamism of pastoral areas however was widely discussed as key to define the futures of agro pastoral areas.
- When addressing land management also include conflict on resource management
- For pastoral areas the reflection should be more on the environment rather than on productivity for people's livelihoods where people get a return for investment on the environment and not their investment in productivity – thus payment for environmental services.
- For pastoral areas address the question of cost - how do you promote investment in pastoral areas and who will pay for it.
- The questions should be linked to the system level outcomes i.e. rephrase the questions to what effect does an intervention in crop productivity or water management address rural livelihoods.
- Factor in the role of donor driven budgets for the ALS – the budgets of CG and consequently CRPs are donor driven, donors play a big role in the degree of research in the ALS.



Feedback on organization framework

Report back by group that was formed to work on the organizational structure.

The organization framework highlights

- Functions required,
- Necessary roles
- Mechanisms to ensure sharing and learning such as innovation platforms, feasibility assessment, training. Innovation platforms will also be mechanisms for communication
- Strategy to make things happen

Two directions approach –

- Bottom up research within the 3 LAS
- Management/budgets down

Addresses transition from site/region/flagship to ALS

Top-down approach:

- Overarching/overall research coordination role of the CRP
- 3 ALS led by a research coordinator
- Involves multiple locations
- Matrix approach rather than a functional approach – composed of interdisciplinary teams looking at strategies, research questions, objectives of integrated systems research.
    - Also addresses capacity development
    - The matrix also address partners and as such some budgetary issues
- Requires transition of moving towards ALS thus changes in budgets/research funding

Reflections and feedback on the organization framework

- Functions in the overarching role – ensures participatory implementation of the strategy
- How will the centers be mapped into the organization framework? At the ALS levels addressed by activities and budgets, thus identify roles and contributions of the centers.
- Synergies will be driven by overall research coordination and the interdisciplinary teams
- Mechanisms for linkage to other CRPs

Participant further discussed in their table groups how workable the organization framework is, the biggest opportunities and some challenges and actions for the programme.

Challenges and opportunities for the organization framework

- Planning and synthesis of research can be done across the regions and therefore it is not a major constraint
- Actual implementation by people working in the consortium is not efficient because the regions are very diverse and their understanding of how to conduct research is also very different. Therefore for a single person to coordinate research across the diverse regions will be very difficult. Additionally resources required to conduct research across these regions will be a constraint. Key recommendation therefore is to form teams across livelihood systems so that those with a good understanding of their region can work together.
- The matrix has several gaps – management across the ALS, but comfortable with site coordinators. More coordination is required across the ALS and some partners can be incorporated at the ALS level.
- Further articulation of budget constraints is needed

Way forward on the organization structure

- Define and clarify the roles
- Formulate a business model proposal on the organization framework
- Securing budgets especially for regional coordinators

- Who will take responsibility for the 3 ALS at the levels of individual centers
- Regional Coordinators have to be 100% in the drylands sytem
- Need firm commitments on the interdisciplinary research teams – minimum of 25 – 30% staff time
- Fill gaps in the interdisciplinary research teams through partnerships
- Development of new proposals by PMU and regional coordinators and action sites staff

5. Planning for Agricultural Livelihood systems

In this session participants develop workplans for 2017 which are strategically aligned to achieve the deliverables and the development outcomes. Each flagship develops a draft work plan, integrating the issues discussed in the last two days including transition, steps for organising in the new framework, modifications to be made in the 2015 workplans for 2016, key elements/action areas for the plan of work 2016 in order to deliver on the research questions and outcomes. There were three groups aligned to the new 3 ALS agro-pastoral agricultural livelihoods system, rainfed agricultural livelihoods system and irrigated agricultural livelihoods System.

Key highlights from the workplans

- Identify action sites across the regions for the ALS
- Identify key research areas
- Futures analysis should start immediately
- Identify the leadership for the ALS such as a coordinator dedicating 100% time to the ALS work
- Establishment of CoP and stakeholder engagement
- Communication be prioritised e.g. face to face meetings,

6. Theory of change and Impact Pathway

Bao briefly took the participants through the ToC and impact pathways thinking highlighting the focal level the of systems hierarchy, the nature of change, principles for managing desirable transitions and how program-induced change can be imagined.

Boundary matters to be focused in operation can be at global, regional, national ,district/province, community, household or individual level to achieve food security, improved income, enhanced natural resources, empowerment of disadvantage groups.

Agricultural livelihood systems combine both human and environmental system. ALS are embedded in politico-cultural, social, environmental context, containing external drivers influencing ALS.

System performance is measured by:

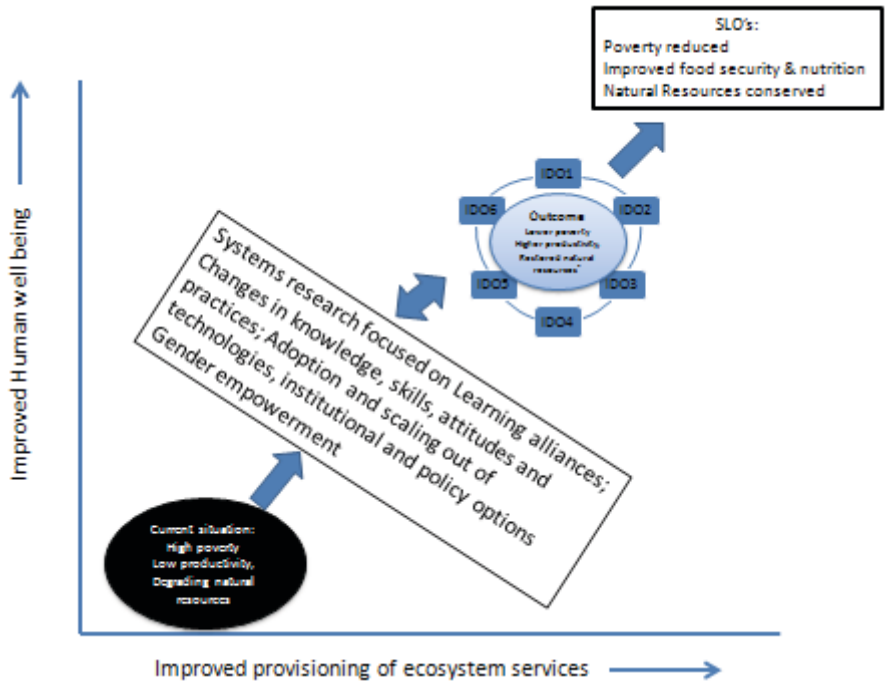
- ✓ Total farm productivity
- ✓ Economic-ecological efficiency
- ✓ Resilience (buffering, adaptive, transformative capacities)

- ✓ empowered disadvantage groups

ALS transition:

- is driven by adaptive and social learning decisions of human actors/agents
- Combined local and scientific knowledge base is key to manage desirable co-adaptation of human and environmental system.

Generic Theory of Change for Dryland Systems



Impact pathways

- Are hypothesized causal links from interventions/actions to outcomes
- Impact pathways are different from project log-frame: missing the "important middle"
- In Impact pathways details are of actors' involved, outcome indicators are rather of work plan

Systems methods toolbox comprises – SWOT, System dynamics tools, Actor-based analysis, Stakeholder analysis, Context scenarios etc

Key questions for consideration in the ToC and impact pathways:

- How do you measure improved livelihoods? How do we quantify improved livelihoods? Because livelihoods encompasses many things e.g. income, nutrition. What methodology to be used – this calls for partnerships with local NGOs who can assist with measurement of improved livelihoods.

7. CRP Commissioned External Evaluation (CCEE)

Douglas Merrey explained that the evaluation was commissioned to assess the adequacy of systems that are in place for all CRPs; progress made in research and thus verify the relevance of the CRP and its impact pathways. This is a requirement by CG before moving into phase two The CCEE team members are Douglas Merrey, Ross Mcleod, Judit Szonyi.

The main objectives for the evaluation are to:

- Verify relevance and validity of the CRP and its impact pathways
- Assess progress in major research areas
- Assess adequacy of systems in place for CRP governance and management

Approach and time table for the evaluation:

- Combination of document analysis, consultations, interviews, surveys, field visits
- Inception report due by end of April
- Intensive data collection May-June
- Submission draft report end of July and final end August to early September

The exercise is meant to be a constructive evaluation to identify lessons learnt and propose usefull ideas and recommendations for the future Dryland Systems research. As the evaluation report will be written the team will be developing their concept notes and therefore there will be dialogue between the two documents, feeding ideas and recommendations emerging from the evaluation.

Structure of the Session

- obtain insights, observations and suggestions, oriented towards lessons learned and future directions of the CRP
- Break into four groups: 3 facilitated by a CCEE team member and 1 by a PMU member - Enrico

Refer to attached reports in the Annex 4

8. Wrap-up and Conclusion

Richard gave a summary of the meeting and action points as follow:

- Clarified systems approach with value proposition (now modified/used by all 3 s-CRPs)
- Distributed a guideline on implementing system approach (please send feedback for revising and make it relevant to systems approach).
- There was significant feedback given on flagship presentations through gap identification
- Ratified 3 mission critical areas from the TF (with an example from the CRP) – those with further examples were asked to share with Richard so that they can be shared with the fund council.
- Developed a framework and process for system research (needs revision/clarification)

- Decided to move forward on an agricultural livelihood basis with 3 main ALS (pastoral/agro-pastoral, rainfed and irrigated)
- Identified research hypothesis that need 'system-izing for ALS
- Outlined an organizational framework that needs further elaborating
- Teams to begin transitioning workplans to ALS (not for 2015)
- Mainstreaming communications, women and youth, capacity development in the workplans

9. Action items

- Group reports on research questions to JH
- Group reports on way forward in ALS to JH
- Establish working groups (including external inputs and partners) on:
    - systems analysis including futures, (Bao et al.,)
    - Inventory of options (who?? Volunteers needed)
    - ALS - incorporate IPG's (??) how to fast track it after discussions with participating director generals of participating centers. Need to ensure a process/mechanism to reinforce the systems approach, study carefully the disciplines and roles needed for the ALSs after refinement of research questions
- Compelling communication material (PMU + center Communications)
- Establish the ALS coordinators, their TORs (PMU+Centers); re-visit the IRT's (Flagships?), assign budget for 2015/16?
- Research questions for ALS finalized and put into coherent framework
- Create opportunities for more interaction, capacity building, and link with other s-CRPs. Budgetary limitations?
    - Need to be proactive and set up a working group to work on alternative funding sources/resource mobilisation task force.
    - More partnerships and working together
    - Developing concept notes to W3 and bilateral funds based on good systems proposals
- Assign tasks to refine/clarify framework and process , produce a short document (Working group; JdeL, LR, PV, PC, AW, RT and other volunteers)
- Prepare the examples for MCR for Fund Council (Task Force)
- Define the ALS with geo informatics (where they are, number of people CB, etc)
- Develop business model for the proposed organization framework, clarify and define roles needed (done through research management committee - RMC)
- Circulate all documentation (JH/PMU)

- Next Science and Implementation meeting: Date; venue?
    - Date - To be discussed - it had been agreed to have the meetings annually. Meeting will be fixed within the process that leads up to the second call since the proposal has to be finalised by April 2016.
    - In May 2016 the new portfolio of CRPs will be announced.
    - Venue - Due to logistical issues such as visa, the next meeting may held in a non stop venue such as Dubai, Istanbul

10. Meeting evaluation

At the end of the meeting some quick feedback was sought from the participants on what went well, what did not go well and key take home messages. Below is a summary of the evaluation results.

What went well?

- All presentations/recommendations started with participants
- Concrete outcomes (result of good preparation) e.g. simplification of ALS
- Genuine participation and open mind constructive discussions given the good composition and mix of participants resulted in extensive learning
- Mixed group for solid recommendations
- Interactions between partners
- Small table group discussions and sharing of results which resulted in well structured discussions
- Responsive leadership and rapid uptake of feedback in strategies
- ICRISAT campus - good food and hospitality

What did not go well?

- There was no time to review budget implications and revise workplan
- Inconsistencies in discussions - virtually cost a day in setting up to get buy in of new structure
- Poor sound system
- Preparation should be improved e.g. assist in visa, no briefings on what to present
- PMU members should take notes - women targeted for that (no contribution by all) should be participatory approach
- No inclusiveness in producing system diagram
- Lack of local partners
- In some cases accommodation was poor
- Gender and youth assessed as important but lacks in practice

key take home messages

- Commitment to and uptake of systems approach
- Willingness to work together
- Focus on the science quality
- More focus on opportunities language (not to remain entrenched in negativity)
- Models for enhancing market participation of farmers (price fluctuations, value addition, microfinance)
- Open and responsive leadership
- There is still lots of work to do for implementation
- Participatory research methods more accessible by Web/media
- Pushing on communication

Way forward

- All the presentations are being uploaded on the website
- Workshop documentation incorporating all discussions to be shared
- All participants interested to contribute to the small working groups on different were encouraged to send in their feedback
- All participants were thanked for their full engagement in the process – the CCEE, TF committee, ISC members, and other observers for their contribution
- Other meetings that were slotted for the next day – ISC meeting, gender, capacity development and systems meeting,

Annex 2 – Dryland Systems IPG action plans

2.1 Sustainable Land Management options/toolkit/database

Centers: CA and WAS

Kalinganire, Antoine (ICRAF) and Karimov, Akmal (ICARDA)

Database of most promising and ready to disseminate sustainable land management (SLM) technologies and approaches are being synthesized by teams of partners in countries of Central Asia and West Africa Sahel.

The major emphasis is given to existing knowledge within organizations, projects, and communities engaged in innovations for SLM, particularly those that are readily acceptable by small and large-scale producers. Methods to collect SLM include desktop studies, survey of relevant information sources as well as expert opinions and from on-going field experiments on both farms and on-station.

To describe collected SLM the World Overview of Conservation Approaches and Technologies (WOCAT) form is adapted into a short template that included principal information about SLM including: title, short definition, description, location where implemented, land use problems that SLM is trying to address, environmental conditions suitable for application, author and references. The best fit land and water management options to reverse land degradation and enhance system productivity including databases, publications and maps would be provided along the process.

Tools for rangelands and community based silvi-pasture system governance:

ILRI, ICARDA (CA), ICRISAT (SA) - The group is exploring the idea.

Lance Robinson, Barbara Rischkowsky, Augustine Ayantunde, Shalander Kumar

2.2 Estimating Farm Household Resilience and the Livelihood Diversity

Team: Ramilan, T[a,e]., Craufurd, P[b]., Haileslassie, A[c]., Scrimgeour, F.G[d]., Kattarkandi, B[a].,

Kumar, S[a]. And Whitbread, A[a].

We begin with a quantification of resilience by developing a multi-dimensional index. Our newly developed resilient capacity index (RCI) is an innovative tool constructed from a combination of carefully chosen variables.

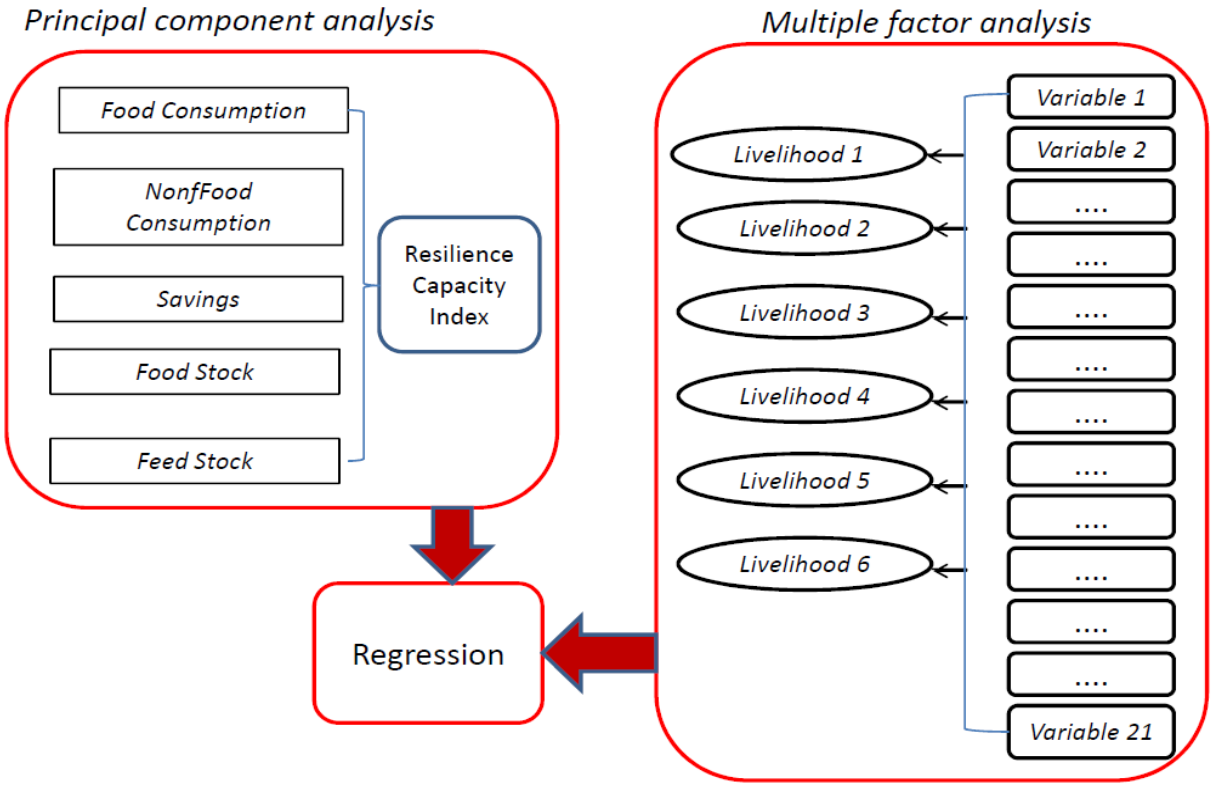
The index is considered as a latent variable defined by four continuous indicator variables, namely: food consumption, non-food consumption, savings, and food and feed stock. We believe these variables together sufficiently represent resilience at household level.

The choice of variables are justified as savings, food stock and feed stock are essential ingredients for consumption smoothing, particularly in the case of climate shocks. Food reserves help to prevent disinvestment, depletion of assets and enhance post shock recovery and resilience of households. Feed reserves are helpful to maintain livestock health and productivity and prevent death or under value sale of them during adverse climatic conditions.

Another reason for including feed stock is the tradeoff between grain and fodder in some cropping enterprises with cereals such as sorghum or maize. Further, reduced nonfood and food consumption expenditure are a proxy for vulnerability, when a household is hit by calamity

Data Source: Farm economic survey

Framework



$$RCI_j = f(FC_j, NFC_j, S_j, G_j, F_j) \qquad (1)$$

Where RCI_j= Resilience capacity index, FC_j = Food consumption expenditure, =Nonfood consumption expenditure, S_j = Cash savings, G_j= Food stock, F_j= Feed stock. j stands for households.

Potential variables for identifying livelihood types

Variables

Human capital	*Assets*	*Market exposure*
Active population	Value of farm equipment	Crop produce marketed
Mean education	Value of durable goods	Livestock produce marketed
	Land value	
Farm features	***Input use intensity***	***Income***
Farm size	Chemical fertilizer applied	Crop gross margin

Irrigated extent	Hired labour	Livestock gross margin
Drought tolerant crop	Purchased feed	Nonfarm income
Inter cropping	Credit	
Legume crop		
Crop diversity		
Tropical livestock units		
Soil fertility		

Potential uses:

- Quantifying resilience, ex ante analysis of technical interventions on resilience by bio-economic modelling ; capturing time variant nature of resilience across households
- Very objective approach, could be applied in other places
- Application is developed on Open Source R platform, to facilitate widespread application

2.3 Local agricultural and tree biodiversity-based food technologies

In West Africa, indigenous vegetables and fruit products are from many neglected and underutilized plant species. These are used by local rural populations for food, medicine and income generation. Production of these species does not require high amounts of resources such as fertilizers and pesticides. In fact when resources are limited, rural farmers use indigenous vegetables and fruits of some wild and domesticated plant species to both meet their food and nutrition security as well as to improve soil fertility.

In Benin, Niger and Nigeria, *Ocimum sp, Crassocephalum sp, Cassia tora and Vernonia sp.* (traditional leafy vegetables) are the most used. Tree species such as *Adansonia digitata* (tree leafy vegetable), *Pentadesma butyracea* (oleaginous forest resource used to produce butter), *Parkia biglobosa* (used to produce high value condiment called Aafintin in Benin and Sombala in Burkina Faso), *Viterallia paradoxa* (shea tree butter) and *Vitex doniana* (iron and calcium rich tree vegetable) are also highly valued by women. Moreover, indigenous fruit tree species such as *Tamarindus indica* and *Ziziphus mauritiana* are key in contributing to the nutrition of rural poor farmers across the drylands.

Women farmers used diverse traditional practices to process these local resources. The types and manual processing methods they use generally affect negatively the quality of the products. With assistance from Bioversity International and its national partners, value-chains analysis has been conducted for most for these species.

The World Agroforestry Centre (ICRAF) worked on indigenous fruit trees including domestication and value-chains. Varieties with desired characteristics are selected using participatory approach. Farmers are trained on quality seed/planting materials production, cropping and management techniques including planting density, crop protection, harvesting and post-harvesting methods. Effects of traditional cooking methods on food nutrient availability and organoleptic qualities of final products are investigated and appropriate methods are developed.

Moreover, fruit processing into products is being developed. To reduce time spent and labor consumption for processing various products, locally made adapted equipment are designed and produced by trained local fabricators. The growing market demand for various traditional products calls today for an increased production of these species.

2.4 Water management

2.4.1 Raised bed farming system (machine to make beds)

Products	Geographical coverage	Responsible people	Time frame
• Guidelines • Reports • Policy Briefs	• West Asia and North Africa • Central Asia	• Action Site Coordinator - West Asia and North Africa • Action Site Coordinator- Central Asia	30 September 2016

2.4.2 Options for Intensification through water management

Products	Geographical coverage	Responsible people	Time frame
1. Maps defining suitability for rainwater harvesting 2. Trade-Off analysis to identify best diversification options (dryland agricultural systems)Risk and return profiles of various investments on water management 3. Onsite and off-site impact of water management 4. Institutional models for agricultural water management – focussing on gender as well 5. Incentives and support mechanisms for promoting water management practices	• Eastern and southern Africa (ESA) • West Asia and North Africa (WANA) • Central Asia (CA)	1. KPC Rao 2. Karrou Mohammed 3. Everisto Mapedza	September 2016

2.4.3 Salinity management in irrigated areas

Products	Responsible people	Time frame
Guidelines, Reports, Field day activities addressing 1. Permanent Raised bed System (mole drain	• Central Asia Site Coordinator +	September 2016

irrigation system) 2. System of conjunctive use of canal and groundwater	Akmal Karimov	

2.5 Stakeholders Engagement

IPG1. Guidelines for multi-stakeholders IP, Learning alliances, Forums, Partnerships. They should be Gender responsive and inclusive. Initial work is to develop criteria and effectiveness

Timeframe:

#	Steps / milestones	Date
1.	Road map	May 2015
2.	Identifying Focal points for Flagship/Action site level	May 2015
3.	Draft Concept note for online consultations	June 2015
4.	On-line consultations – facilitated by focal points	July -August 2015
5.	Summary of on-line consultations	November 2015
6.	Face to face meeting	February 2016
7.	Outputs of F2F meeting and circulation of draft Guidelines	September 2016
8.	Finalization of the Guidelines and other output documents	November 2016

IPG2. Gennovate

a- **Methodology**—For buy in and for verification of methodology

(ISI) Task force on writing up methodology by November 2016 first draft

b- **Evidence on how** - gender norms, agency and agricultural innovation are linked, and how these interactions support or hinder the achievement of the Intermediate Development Objectives (IDO) across varied contexts.

#	Steps / milestones	Date
1.	Data cleaning	April 2015 (Ongoing)
2.	Writing of report	July 2015
3.	Training in South Asia	September 2015
4.	Data collection	October 2015
5.	Data cleaning	January 2016
6.	Report writing	May 2016
7.	ISI paper	December 2016

Annex 3 – Organisational Framework and Research Questions for ALS

3.1 Irrigated Livelihood System

1. What the drivers are of change in irrigated systems how we can predict the directions of global and local change.
2. How can we revitalise large scale irrigation systems under increasing water scarcity and climate change?
3. How can we empower and sustain local institutions (Water User Association) for gender inclusive management of irrigation systems?
4. What are the livelihoods and bio-physical trade-offs regarding further intensification through irrigation systems.
   - *How to empower women to participate effectively in local governance institutions?*
   - *How to empower professional women to participate effectively in government institution in irrigated systems?*
   - *What role does the feminization of agriculture have in driving change in irrigated systems and how can we address the gender-specific issues to increase productivity and alleviate poverty?*
   - *Analysis of the system or components no tool for trade-offs and come up with guidance on leverage/entry points without the tool.*
   - *Increasing irrigation – what happens to degradation*
   - *Dynamics of the system*
   - *System Characterisation and analysis for identifying entry points and find out how you will improve the performance of a system*
5. How do we create a system analysis including modelling partnerships, modelling collection and whole system analysis and identify priorities, external and internal interactions, roles relations?
   - *Large irrigated systems have been producing most of the food – 20% of area producing 40% of the food. A lot of investment in 50s 60s and 70s then decline in investment schemes – Revitalizing Irrigation Schemes – changes globally affecting markets, more water scarcity. Move to revitalise large scale irrigation schemes. Call to revitalise irrigation schemes?*
   - *How do we revitalise LSI Systems*
   - *SDGs – 6.4 water use efficiency*
   - *Should we focus on increasing productivity per unit of water or per unit of land?*
6. What are the Trade-offs between increasing land and water productivity?

- *Salinity is an issue of investment. All irrigation systems have to be drained. Problem closer to coastal areas. Poor maintenance of the drainage due to poor maintenance.*
- *How can investment be ensured in drainage systems to maintain irrigation system productivity.*

7. What are the soil salinity management strategies options to control salinity (trade-offs) to sustain irrigated systems productivity?
   - How to enhance the role of professional women in institutions?
   - What are the challenges Feminization in agriculture?
   - Modernising irrigation systems from traditional systems?
   - ALS Bottle necks, trade-offs within the system?
   - What is the future of conventional current system?
   - Alternative ALS?
   - Schemes are controlled by engineers and not
8. What are the institutional, gender and policy arrangements at different levels for increasing irrigation system productivity?
   - Men are leaving – women are more involved in farming.
   - Things are changing – how to manage multiple changes.
   - New lands being allocated to women. Women giving their land to their sons.
   - Participation of women and entering masculine activities due to migration to Saudi Arabia.
   - Cultural norms – women entering in the
   - Conflict upstream downstream linkages?
   - Agricultural policy impact on sytem productivity.
   - Impact of institutional setup in water management on system productivity
   - Water User Associations in Egypt have failed? Latest paper by Dutch researchers – failed because government was not willing to transfer authority – given decisions from government never made any decisions.
   - Egypt the other part is the old system – productivity is very high. Water scarcity and markets changes and also salinity and a lot of fertilization
   - Water Quality and sustainability of the system.
   - Salinity changes requiring different management system, drainage and threatening the system.
   - Conflict of water

- New land there is limits on crops to be grown.

3.2 Agro-Pastoral Agricultural Livelihoods System

Current action sites in total of 6-7 are available throughout all flagship regions:

- West African Sahel and Dry Savannas (WAS) -
- East and Southern Africa (ESA) -
- North Africa and West Asia (NAWA) -
- Central Asia (CA) - 1
- South Asia (SA) -

Major concerns to address in relevant regions are grouped in the following matrix

Issues to address	WAS	ESA	NAWA	CA	SA
Food/feed security	√	√	√		√
Natural resource management/degradation - land, rangelands, desertification	√	√	√	√	√
Markets		√			
Land tenure		√		√	
Water scarcity/availability (harvesting?)			√	√	
Value chains for livestock and human		√	√		
Unemployment/labor migration				√	
Malnutrition/iron deficiency, health issues				√	
Lack of diversification				√	
Overgrazing, damage to trees					√
Conflicts (pastoralists *vs.* agriculturalists)	√				

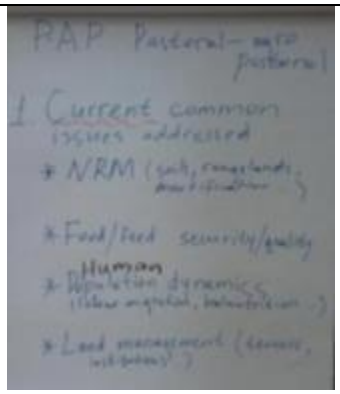
Interestingly, while raising concerns about pressing issues in relevant regions, on how many/what issues groups in flagship regions are working (√) /not working (–)

Issues	WAS	ESA	NAWA	CA	SA
Youth/gender	–	–	–	–	–
Land tenure (working but not addressing)		√		–	
Climate change issues			–		
Salinity			–	√	

Value chain			–		
Diversification (integration)			–	√	
Rangeland degradation				√	
Water availability/quality				–/√	
Unemployment/labor migration				–	
Health				–	
Conflicts	–				
Institutions/operationalizing management options					–

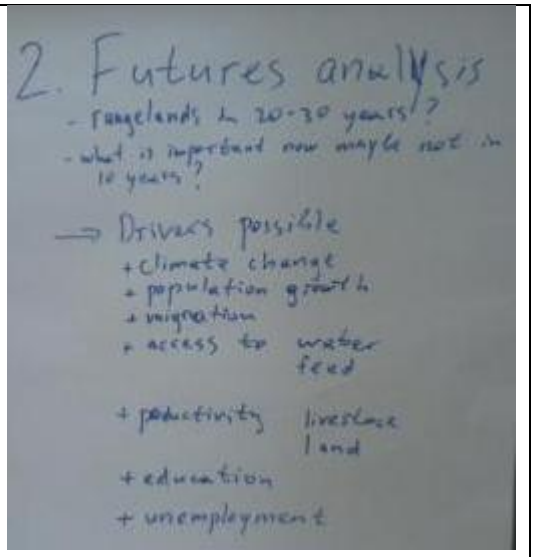
To formulate directions the following current common issues need to be addressed:

- ✓ Natural resources management (soils, rangelands, desertification etc.)
- ✓ Food/feed security/quality
- ✓ Human population dynamics (labour migration, malnutrition etc.)
- ✓ Land management (tenure, institutions, conflicts etc)



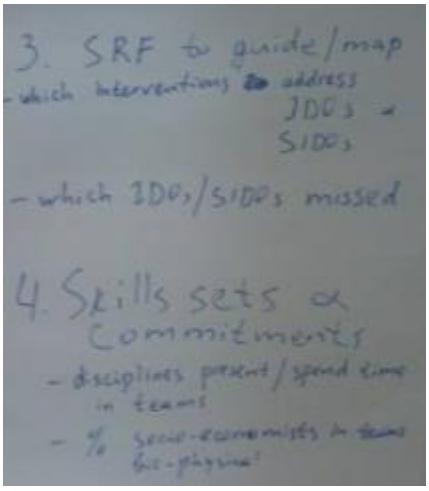
Future projections on environmental conditions of pastureland/rangelands. There is lack of centered actions on what future holds (say in 20-30 years). Some guiding questions that need to be explored:

- ✓ Topics now so important and researched may become not so important in future, say in 10 years?
- ✓ What drivers to look at that influence the system? (Climate change, population migration, access to water/feed, livestock/land productivity, education etc.)
- ✓ How about 'system mutation'? Is system responding same as before, or is it mutating?
- ✓ On future scenarios:
  - On the one hand, one can focus on what we want it to look like instead of changing of what is happening…
  - which is challenging because various stakeholders



want different things ▪ Where we 'should' be is outlined in the goals - so how do we get there? ▪ But is this systematic in a futures analysis?	

We need to consider SRF (for IDO's and SIDO's) to see which ones are being addressed/missed. We/ interventions need to target reaching IDO's.



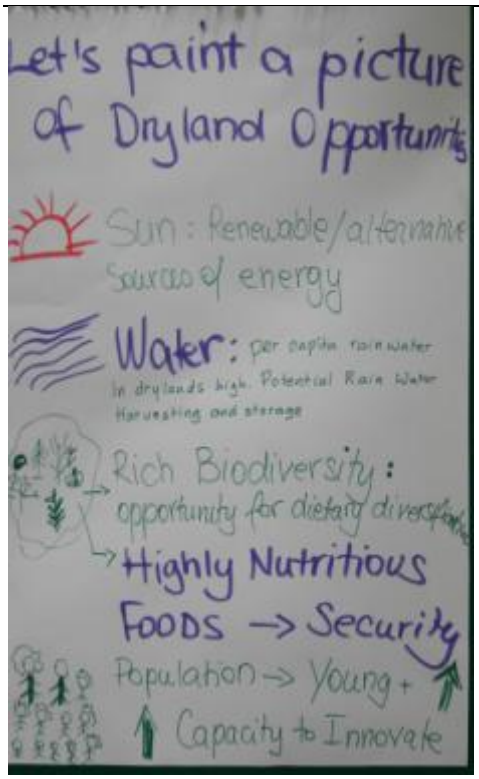
Skills sets and commitments. Inter-, multi-, trans- disciplinarity in addressing issues, who is involved and who will do that?

- Proportion of disciplines in the teams. Number of social scientists/economists varies widely within teams
- What percentage of their time is included?
- How much should be there?

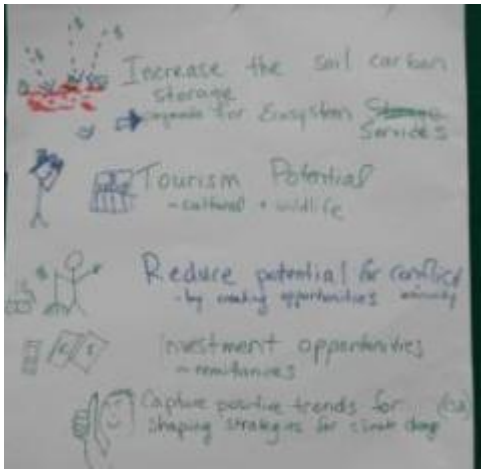
3.3 Rainfed Agricultural Livelihoods System

Report not submitted

3.4 Organizational framework and dialogue structures


Let's paint a picture of Dryland Opportunity
Sun: Renewable/alternative sources of energy
Water: per capita rain water in drylands high. Potential Rain Water Harvesting and storage
Rich Biodiversity: opportunity for dietary diversity
Highly Nutritious Foods → Security
Population → Young +
Capacity to Innovate


Rich Cultural Diversity
to enrich VC
Cross-cultural learning
Local (untapped) knowledge
Resilience/Coping Mech.
WIND / BIOMASS: Renewable sources of ENERGY
Large land area
-across continents
-potential for resource is huge
Making agriculture complementary to off-farm livelihood options


Increase the soil carbon storage
Tourism Potential
Reduce potential for conflict
investment opportunities
Capture positive trends for

Annex 4 – CRP Commissioned External Evaluation

Group 1: Governance and Management [ROSS]

1. What are the main a) strengths and b) weaknesses in the current governance and management of the CRP [and indeed of CRPs in general]? In the short run what changes would you like to see?
2. In Phase 2, what changes would you like to see in the governance and management of the CRP in order to optimize coherence, integration, efficiency, and effectiveness, while also assuring high science quality and achieving real outcomes and impacts?
3. Currently there are eight CGIAR centers involved in the implementation of the CRP which seems unwieldy to some. What are your views? Should the CRP be restructured to be led by fewer "core" CGIAR centers, with others contracted in as needed? Should the future CRP include non-CGIAR partners in its governance & management?
4. What other recommendations do you have for the future? What topics would you suggest the CCEE give highest priority to in its work?

Group 2: Research [DOUG]

1. The basic premise of the CRP is that its value addition is its integrated "systems" approach to research. How do you define "agricultural systems" research? How do you rate the extent to which Dryland Systems research meets this definition? Please provide examples.
    - Please also comment on whether Centers/partners have the right expertise for 'systems' research. Is there a shared understanding of "systems" research?
2. The Dryland Systems is currently organized in terms of geographical 'Flagship Projects'. There are suggestions to re-organize in terms of Agricultural Livelihood Systems. How should the CRP organize future research in order to maximize its quality and relevance and contribute to achieving substantial impacts?
3. What do you think will be the most important research products that will be produced by the Dryland Systems by the end of 2016?
    - Suggest criteria and if possible rank the most important ones [top 5]
4. If the future Dryland Systems budget is limited to half the current budget, where should the CRP focus its limited resources?
    - Please respond in terms of critical research issues/problems it should address; and in terms of geographical focus

Group 3: Outcomes and Impacts [JUDIT]

1. Is the Dryland Systems poised to have substantial a) outcomes, and b) impacts by the end of 2016? **If yes**: what will be the most important ones? What will be the pathways through which these outcomes-impacts are achieved? **If not**: why not and what could be possible solutions?

2. How can the CRP achieve a reasonable balance among producing quality science, achieving developmental outcomes, and contributing to capacity development?
3. The future CRPs will be under great pressure to show how the research will contribute to achieving measurable and substantial outcomes and impacts. Please identify the most important – but feasible -- potential outcomes and impact that could be achieved by 2025 in Phase 2 of Dryland Systems. Assume the CRP will be designed starting with identifiable outcomes and impacts, and working back to the research needed to achieve these.
4. Do you think the Dryland Systems is effectively targeting women and youth? Do you think it should put more priority and resources into this? Please give examples and reasons.
5. If the future Dryland Systems budget is limited to half the current budget, where should the CRP focus its limited resources?
    - Please respond in terms of potential outcomes and impacts; and in terms of geographical priorities

Group 4: Partners and Capacity Development [ENRICO]

1. Who are the main users of Dryland Systems outputs? Is there evidence of demand for Dryland Systems outputs? Is there evidence of real value added? Please provide specific examples.
2. Does the Dryland Systems engage with appropriate partners, given their roles in implementation and achieving the objectives of the program? How effective are the Dryland Systems partnerships? How could they be strengthened?
    - Please consider these questions in terms of a) research partners, and b) "boundary" partners – those who are expected to adopt or implement research outputs/recommendations, giving examples.
3. What do you consider the most important contributions of Dryland Systems to capacity development to date? Please provide specific examples.
    - Can you suggest ways to increase the contribution to capacity development?
4. The CRP has a gender and a youth strategy. Does CRP capacity building actually target women and youth adequately and take their differential needs taken into account? Does the CRP have the right partners to target women and youth effectively? Please provide examples, and suggestions for more effective targeting.

Partners and Capacity Development

This team was to provide information on Partnership and Capacity Development in Dryland Systems.

Participants:

1. Everisto Mapedza (IWMI) – Center Coordinator
2. Dina Najjar (ICARDA) – Gender Focal Point

3. Courtney Paisley (YPARD) - Director
4. Luuk Fleskens (Wageningen University, The Netherlands) –Task Force Member
5. Victor Mares (CIP) – Representative for the Center Coordinator
6. Rosana Mula (ICRISAT) – CD Focal Point
7. Per Rudebjer (Bioversity) – CD Focal Point
8. Antoine Kalinganire (ICRAF) – WAS&DS Flagship Coordinator
9. R K Bhatt (Director-Central Arid Zone Research Institute – India) – ISC Member
10. Enrico Bonaiuti (Dryland Systems) – Research Program Coordinator

Main Users of outputs

a. NARS[1] (Agricultural Research Center in Cairo, Institut National de la Recherche Agronomique in Morocco, etc.)

b. Universities (private and public)

c. Development Organizations (FAO, ILO (latter relationship development in process))

d. NGOs

e. Farmers[2]

f. Other CRPs (WLE, DC etc.)[3]

g. Policy makers

h. Clearly there is interest in drylands research see for example diagnostic produced by organizations like FAO saying Dryland System are critical agro-ecosystem; so if institution like FAO is paying attention to the Dryland Systems means there is high demand to our work.

Real Evidence and Specific Examples

- For WAS, we (DS) provided technical notes, training and germplasm (seeds and seedlings) to the private sector.
- In NAWA, capacity building for conducting gender research with NARS: Can measure downloads of material, number of enumerators trained and number of projects conducted and number of NARS centers engaged.
- In SA, National partners are taking data from Dryland Systems surveys and trying to validate them for their own use in dryland agriculture.

[1] The users highlighted in pink are the ones we mostly work with and will mostly benefit from our outputs.
[2] In most scaling out cases we reach this group indirectly via 'boundary partners'.
[3] The users highlighted in pink are the ones we mostly work with and will mostly benefit from our outputs.

- Bioversity's main Dryland Systems activity is an agro-biodiversity baseline survey (currently, this study is at the stage of data analysis and synthesis). Bioversity is also developing a training module on methodologies for agro biodiversity surveys, in collaboration with other systems CRPs, in particular the Aquatic Agricultural Systems CRP.
- Any innovations farmers have adopted? In South Asia IMWI climate project developed crop weather index insurance system worked with an NGO to do so used research findings and learning from East Africa.
- IWMI, ICARDA, ICRISAT, and other centers work with local universities (students' co-supervision and agricultural research stations)

Partnerships rationale and recommendations

- The partnerships are selected based on many criteria. Students are the future leaders and we want to work with them to influence the future. Agricultural extension organizations we hope to influence them and hence why work with them throughout the research process we are learning together with them.
- Partners are either selected based on their experience, their local knowledge of the area, their capacity to scale up. Doing systems research we also need a diversity and complementarity of partners.
- The persons to collaborate can be activity leaders or multiple activity leaders involved in the same partnership. Dryland Systems works with nontraditional partners like Coca-Cola's social responsibility funds.

Recommendations

- Early on the research questions should be of interest to partners (involve them in priorities setting, in the design of the research question).
- The Young Professional for Agricultural Development (YPARD) Director stated that collaboration had been minimal due to staff turnover and the difficulties in putting cross-cutting issues such as youth into strong places of priority. It is not always clear for partners on how and where to engage with many of the CRPs. YPARD hopes to become a stronger partner as the youth strategy and activities become more prominent.
- Need global partners because systems approach is new to the institute need partners having experience in that systems approach strengthening ability to do systems research.
- In West Africa there is limited collaboration with regional institutions such as the Forum for Agricultural Productivity (FARA) and Economic Community of West Africa States (ECOWAS) and hence a need to strengthen that.
- Connections should not be through individuals and institutions but institutions to institutions. In some cases individuals highjack the partnership, and other cases the person leaves and partnership collapses.

- If we see donors are partners then what makes Dryland Systems attractive for donors making that clear is another way to strengthen partnerships: making ourselves more attractive.
- To strengthen outcomes and sharing outcome of program with partners and resources we need to define the issues together with partners at the planning stage, take the exemplary relation between ICAR and ICRISAT products are shared.

Most Important Contributions of Capacity Development to Dryland Systems

In, SA- through the agro-pastoral systems program other farmers are seeing results and wanting to adopt technologies proposed by the program.

In EAS and NAWA-working on establishing teams and capacity building with partners to carry out gender research (sustainable capacity building)

In WAS-IP land restoration technologies, we are training extension agents also GIS tools with NARS (about 40% are women)

Ways to enhance CD role in ensuring Dryland Systems effectiveness

- Need Effective gender training (tailored towards their needs and not heavily focused on gender 101 approaches).
- Development for farmers.
- Training of partners to pass it on in their own institutions.
- Explore innovative platforms for communicating for creating stories, sharing information and knowledge in a quick way.
- Assessing the needs of young people and how they contribute to agriculture; we need to strengthen young people skills for them to become engaged.
- Need relevant capacity development of partners: ask the partners what is their priorities in capacity building.
- How to package our outputs for different audiences and partners
- Capacity development is more than training, we need to also create the enabling environment for system research (curriculum development activity), create support for systems research not only training
- Capacity development itself is not enough (need to strengthen the process of integrating scientific knowledge and other local knowledge) interactive rather than linear project

Does the CRP Target Women and Youth and Recommendations

- In CG gender has received funding and back up from highest levels and this is not hard to see, If we look at the training report the balance is skewed to men and this has to do with culture, trying to do we are trying to invite, but not enough women show up.
- Good women involvement is limited to gender specialists' projects.

- CG doing through partners, In Water User Associations we are targeting 50% women participation.
- The training needs to be relevant to women not only conducted in good location and appropriate time but the content need to be appealing and relevant to them.
- The main decision makers are men, might not be effective for women to get the training.
- We need to train women and provide equitable opportunities for access to training their; strengthening their decision making power is a gradual process.
- In 2014 there was integrative gender research, but 2015 there is no gender integrative research budget. If you want to strengthen something then you need to pour more and not less money into it. **Comment**: last year the money was not spent. **A**: there was not enough time to spend the money last year, the money was distributed and had to be spent in short time. A: Seek out partners to do the research if do not have the capacity to do it

Annex 5 – List of participants

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Annex 6 - Photo gallery















CGIAR

RESEARCH PROGRAM ON

Dryland Systems

The CGIAR Research Program on Dryland Systems aims to improve the lives of 1.6 billion people and mitigate land and resource degradation in 3 billion hectares covering the world's dry areas.

Dryland Systems engages in integrated agricultural systems research to address key socioeconomic and biophysical constraints that affect food security, equitable and sustainable land and natural resource management, and the livelihoods of poor and marginalized dryland communities. The program unifies eight CGIAR Centers and uses unique partnership platforms to bind together scientific research results with the skills and capacities of national agricultural research systems (NARS), advanced research institutes (ARIs), non-governmental and civil society organizations, the private sector, and other actors to test and develop practical innovative solutions for rural dryland communities.

The program is led by the International Center for Agricultural Research in the Dry Areas (ICARDA), a member of the CGIAR Consortium. CGIAR is a global agriculture research partnership for a food secure future.

For more information, please visit

drylandsystems.cgiar.org

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ILRI
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IWMI
International Water Management Institute