RESEARCH PROGRAM ON
Dryland Systems

CGIAR

Photo 1: Evaluation Focus Group Discussion, Sukumba, Mali/ D. Merrey

27 October 2015

# External Evaluation of the CGIAR Research Program on Dryland Systems

## Volume 1: Main Report

By Douglas Merrey, Ross McLeod, and Judit Szonyi

*Food security and better livelihoods*

*for rural dryland communities*

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 Centres 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 Centre 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

## SUGGESTED CITATION

Merrey, D.J., R. McLeod, and J. Szonyi. 2015. *Evaluation of the CGIAR Research Program on "Dryland Systems"*. 2 volumes. October, 2015. Amman, Jordan: ICARDA.

## DISCLAIMER

This document was prepared by Douglas Merrey (Team Leader), Judit Szonyi (member) and Ross McLeod (member) of the CRP-Commissioned External Evaluation team for the CGIAR Research Program on Dryland System. The views expressed in this document do not necessarily reflect the views of the Dryland Systems program.

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# ACRONYMS

| | |
|---|---|
| A4NH | Agriculture for Nutrition and Health (CRP) |
| AAS | Aquatic Agricultural Systems (CRP) |
| ACIAR | Australian Centre for International Agricultural Research |
| AfDB | African Development Bank |
| AFESD | Arab Fund for Economic and Social Development |
| ALS | Agricultural Livelihood System |
| AR4D | Agricultural Research for Development |
| ARI | Advanced research institute |
| BOKU/CDR | Universitaet für Bodenkultur Wien/Centre for Development Research |
| BoT | Board of Trustees |
| CA | Central Asia |
| CACILIM | Central Asian Countries Initiative for Land Management |
| CBO | Community-based organisation |
| CCAFS | Climate Change, Agriculture and Food Security (CRP) |
| CCEE | CRP-Commissioned External Evaluation |
| CDWG | Capacity Development Working Group |
| CIAT | International Centre for Tropical Agriculture |
| CIP | International Potato Centre |
| CIRAD | French Agricultural Research Centre for International Development |
| CO | Consortium Office |
| CRP | CGIAR Research Program |
| CPWF | Challenge Program on Water and Food |
| CSIRO | Commonwealth Scientific and Industrial Research Organization (Australia) |
| CSP | Cost sharing percentage |
| DCLAS | Dryland Cereals and Legumes Agri-food Systems |
| DDG | Deputy Director General |
| DfID | Department for International Development |
| DG | Director General |
| DGIS | Directorate-General for International Cooperation (Netherlands) |
| DRCH | Dryland Research Centre Hamburg |
| ECOWAS | Economic Community of West African States |
| ESA | East and Southern Africa |
| EU | European Union |
| FAO | Food and Agriculture Organisation of the United Nations |
| FARA | Forum for Agricultural Research in Africa |
| FC | Fund Council |
| FP | Flagship Program |
| FTA | Forests, Trees and Agroforestry (CRP) |
| FTE | Full time equivalent |
| GFAR | Global Forum on Agricultural Research |
| GFSF | Global Futures and Strategic Foresight |
| GIZ | Gesellschaft für Internationale Zusammenarbeit |
| GNDRI | Global Network of Dryland Research Institutes |

| | |
|---|---|
| GRiSP | Global Rice Science Partnership (CRP) |
| GWG | Gender Working Group |
| IASS | Institute for Advanced Sustainability Studies |
| IAU | Internal Audit Unit |
| IBLI | Index-Based Livestock Insurance |
| ICARDA | International Centre for Agricultural Research in the Dry Areas |
| ICRAF | International Centre for Research in Agroforestry (World Agroforestry Centre) |
| ICRISAT | International Crops Research Institute for the Semi-Arid-Tropics |
| IDO | Intermediate Development Outcome |
| IEA | Independent Evaluation Arrangement |
| IFAD | International Fund for Agricultural Development |
| ILRI | International Livestock Research Institute |
| IPG | International Public Good |
| IRT | Interdisciplinary Research Team |
| iIRT | Interim Interdisciplinary Research Team |
| ISAMG | Integrated Systems Analysis and Modelling Group |
| ISC | Independent Steering Committee |
| ISI | International Scientific Indexing (Institute for Scientific Information) |
| ISPC | Independent Science and Partnership Council |
| ITF | Independent Task Force |
| KAS | Knowledge, attitudes and skills |
| L&F | Livestock and Fish (CRP) |
| IWMI | International Water Management Institute |
| M&E | Monitoring and Evaluation |
| MEL | Monitoring, Evaluation and Learning |
| MoU | Memorandum of Understanding |
| NARS | National Agricultural Research Systems |
| NAWA | North Africa and West Asia |
| NGOs | Non-Governmental Organizations |
| NRM | Natural resources management |
| ODI | Overseas Development Institute |
| OCS | One Corporate System (of the CGIAR) |
| PIA | Performance Implementation Agreement |
| PIM | Policies, Institutions and Markets (CRP) |
| POWB | Plan of Work and Budget |
| PMU | Program Management Unit |
| PPA | Program Participant Agreement |
| PPP | Purchasing Power Parity |
| R&D | Research and Development |
| RMC | Research Management Committee |
| RTB | Roots, Tubers and Bananas (CRP) |
| S&IM | Science and Implementation Meeting |
| SA | South Asia |
| SARD-SC | Support to Agriculture Research for Development of Strategic Crops in Africa |
| SC | Steering Committee |

| | |
|---|---|
| SCIDR | Sheffield Centre for International Drylands Research |
| SDG | Sustainable Development Goal |
| SLO | System Level Outcome |
| SmAT | Scaling-up Climate-Smart Agroforestry Technologies |
| SRF | Strategy and Results Framework |
| SSA-CP | Sub-Saharan Africa Challenge Program |
| SRT | Strategic Research Theme |
| SWOT | Strengths, Weaknesses, Opportunities and Threats |
| ToC | Theory of Change |
| TF | Task Force |
| ToR | Terms of Reference |
| UNCCD | United Nations Commission to Combat Desertification |
| USAID | United States Agency for International Development |
| USDA | United States Department of Agriculture |
| WAS | West African Sahel and Dry Savannahs (shorthand in some tables) |
| WAS&DS | West African Sahel and Dry Savannahs |
| UN | United Nations |
| W1&2 | Windows one and two |
| W3 | Window three |
| WLE | Water Land and Ecosystems (CRP) |
| YPARD | Young Professionals for Agricultural Development |

# Acknowledgements

This Report could not have been prepared without the excellent cooperation and assistance provided by many people associated with the CGIAR Research Program (CRP) on Dryland Systems (hereinafter referred to as Dryland Systems). The CRP-Commissioned External Evaluation (CCEE) team members would like to thank all of those who have supported its efforts in carrying out the evaluation and preparing this Final Report. These include the members of Program Management Unit (PMU) of Dryland Systems and the many scientists, managers and others who have patiently made themselves available to be interviewed and who have shared their knowledge and observations with the team members. We have been impressed by the strong support and openness of all our communications.

We cannot name all those who have assisted us but wish to make special mention of the following: Sara Jani, Dryland Systems Program Administrator who has been extremely helpful in arranging all the logistics and been extraordinarily patient when we have been somewhat demanding; Enrico Bonaiuti, Dryland Systems Research Program Coordinator, who has been extremely active, indeed pro-active in supporting the team; and Richard Thomas, Dryland Systems Program Director who has been very supportive and open throughout the process. At the time of the CCEE team's interactions with the Dryland Systems PMU members, they were handling multiple tasks simultaneously, but never failed to give the CCEE priority. The leaders of the cross-cutting activities (e.g. gender, communications, livelihood systems, geo-informatics) and the advisor on intellectual property all offered useful comments on the draft final report.

The team would also like to express its appreciation to those who organized our field site visits in South Asia (Rajasthan, India), Eastern and Southern Africa (Ethiopia, Nairobi), and West African Sahel and Dryland Savannahs (Mali). We are grateful to the many scientists, NARS partners, NGOs, CBOs, and especially women and men farmers who did their best to help us understand the research program and its potential values.

Finally, we are also grateful to the members of the CCEE Oversight Committee, which is chaired by Jan de Leeuw (World Agroforestry Centre), for their detailed comments and suggestions on the Inception and draft final reports. We are also grateful to the CGIAR Independent Evaluation Arrangement (IEA) team for their detailed and useful comments on the draft Inception Report and on the first draft of this report. We have drawn on all the comments received to produce this final report.

The CCEE Team
22 October 2015

# Executive Summary

## Background and Context

During 2010-2011, the CGIAR re-organized most of its research around fifteen global research programs in addition to a separate initiative on gene banks. Each CGIAR Research Program (CRP) is managed by a Lead Centre, and includes as partners other Centres as well as non-CGIAR institutions in some cases. Each CRP is focused on a major global agricultural, food security or natural resource management challenge. During 2014-2015, all of these CRPs are being evaluated, some externally through the CGIAR Independent Evaluation Arrangement (IEA), others through teams commissioned by the CRP management. This report is a CRP-Commissioned External Evaluation (CCEE) of the Dryland Systems CRP implemented by ICARDA as Lead Centre, with ICRISAT, ICRAF, ILRI, CIAT, CIP, IWMI and Bioversity as its main partners. Although commissioned by the CRP, the evaluation is governed by guidelines prepared by the IEA, and the Inception Report and first draft Final Report were reviewed by the IEA to provide advice for quality control. The first and second draft final report were reviewed by the CRP's CCEE Oversight Committee as well as by its Program Management Unit (PMU).

As this evaluation was being implemented, the CGIAR finalized and approved a new Strategic Results Framework (SRF) intended to focus its work more sharply; and a new set of CRPs has been proposed to implement the new SRF beginning in 2017. Contrary to the expectations at the beginning of the CCEE process, the Dryland Systems CRP will not continue in its present form after 2016; however, many of its elements may be built into a systems Flagship as part of a proposed new CRP, "Dryland Cereals and Legumes Agri-food Systems" (DCLAS). Therefore, the CCEE's conclusions and recommendations have been framed within this context.

The Dryland Systems CRP did not start well. The first few proposals were heavily criticized by the CGIAR's Independent Science and Partnership Council (ISPC), Consortium Office (CO) and Fund Council (FC). A revised proposal was approved in early 2013, (though the ISPC continued to criticize it), and the CRP was officially launched in May 2013. An "Extension Proposal" for 2015-2016 was submitted in April 2014, and was also severely criticized by the CO and ISPC. The current CRP Director arrived only in mid-2014 and the PMU has been developing since then.

Dryland Systems is organized around five regional Flagships: 1) West African Sahel and Dryland Savannahs, 2) North Africa and West Asia, 3) Eastern and Southern Africa, 4) Central Asia, and 5) South Asia. Until early 2015, there was no integrating Flagship or other integrative mechanism: the regional Flagships operated as nearly independent franchises. The field work in Action Sites is largely based on legacy work of the partner Centres.

Some aspects of the Dryland Systems research program have been moving targets. For example, the concept of Agricultural Livelihood Systems (ALSs) has been adopted – but their definition has continuously evolved, from about seven, to five, to the current three: agro-pastoral and pastoral; rainfed (including trees), and irrigated (including trees). Previously agro-pastoral and pastoral were separate ALSs, as were tree-based systems. The "Strategic Research Themes" (SRTs) have also evolved over time.

For 2016, the CRP in its initial planning proposed to reduce the five regional Flagships to three based on the three ALSs. Although some CRP scientists do not favour this change from region-based to ALS-based Flagships, it has the potential for reducing transaction costs and enabling more focused comparative analysis. The CCEE found that there were serious problems with the way the CRP was designed in its early stages. However, the current design with a global flagship playing a critical role and the focus on three ALS-based Flagships is reasonably coherent and has the potential to achieve results in the remaining period of the CRP.

More recently, as this report was being finalized in October 2015, it became clear that Windows 1&2 funding availability for 2016 will be further constrained. After the draft final version of this report was reviewed by the Oversight Committee, the Consortium Office proposed an approach to allocating these funds differentially to CRPs based on an assessment of their performance. Dryland Systems was ranked lowest of all the CRPs, and therefore its budget is proposed to be reduced very drastically. The CCEE notes the ranking does not take into consideration changes that have been implemented in 2015, for example the launch of a Global Overarching Flagship Program. There is now great uncertainty about both the status of 2016 funding for this CRP, and indeed for the future landscape of CRPs beginning in 2017, as the Consortium Office has recently proposed a reduction to just eight CRPs. This uncertain context has large implications for the CCEE recommendations.

## Approach, Evaluation Questions and Methodology

According to the Terms of Reference, this evaluation has three objectives: to verify the continued relevance and validity of this CRP, to assess progress towards planned achievements, and to assess the adequacy of the governance and management systems in place. The CCEE was initiated by a meeting of the team with members of the CRP Director and Research Coordinator and a newly established Task Force in March 2015. Over the next several months, the CCEE team members had opportunities to review documents at ICARDA's Amman, Jordan office; meet and interview a wide range of scientists and other stakeholders; participate in a major Science and Implementation Meeting and observe meetings of the Steering Committee and Research Management Committee at ICRISAT's headquarters in Hyderabad, India; and visit field sites in four regions. The team leader also spent a week in Amman, Jordan in July 2015 with the PMU to discuss emerging conclusions and recommendations. The evaluation process and methodologies are described in detail in the Inception Report and in the first chapter of the Final Report.

During 2014, the CGIAR Internal Audit Unit (IAU) carried out an audit of the Dryland Systems CRP. This audit was quite critical and controversial. In its early years, the CRP had struggled to develop a proposal that satisfied the expectations of the CGIAR and the ISPC. This delayed the implementation of the CRP and establishment of a program management unit. The CCEE did not repeat the analysis done by the auditors, but did assess the auditors' recommendations, the Lead Centre's responses, and implementation of the recommendations.

The methodologies used have included the following: document, portfolio and financial data analysis, semi-structured and informal interviews, observation of meetings, an on-line survey of partners and CRP scientists, and field visits.

This evaluation has been organized around five basic questions, as follows:

- *Relevance*: How coherent and relevant are the objectives and overall design of the CRP on Dryland Systems?
- *Effectiveness, impact and sustainability*: Is the CRP likely to deliver its intended results? In other words, is it likely to produce the expected outputs and achieve its intended outcomes and impacts sustainably? Are the cross-cutting activities on gender and youth, communication, and capacity development well-integrated into the program and are they contributing to its effectiveness?
- *Quality of science*: Is Dryland Systems scientific research of a high quality and do the research outputs constitute international public goods (IPGs)? A related question is: does the Dryland Systems CRP have an agreed, coherent and scientifically credible conceptual framework encompassing a complete understanding what "systems" research is supposed to be?

- *Efficiency*: Is the governance and management structure of the CRP efficient? In other words, is the CRP using its resources well to produce 'value for money'?
- What has been the response of the CRP management to feedback received from the CGIAR on its initial and extension proposals and to the Audit Report? To what extent do the guidelines, formats and commentary from the CO and FC support efficient and effective implementation of the CRP? This question has been addressed in several chapters.

The CCEE has also briefly examined the implications of recent developments for the future direction of dryland agricultural systems research in the CGIAR.

The main conclusions and recommendations are presented in the next section, organized in terms of the basic evaluation questions.

## Main Findings and Recommendations

### *Relevance*

The CCEE concludes that overall the Dryland Systems CRP is highly relevant. There is a clear need for investing in improving sustainable productivity of dryland agricultural systems which could benefit hundreds of millions of poor people. The rationale for this CRP is very clear and difficult to dispute. The Dryland Systems CRP is well aligned with both the previous CGIAR System Level Outcomes (SLOs) and the new ones, and is also reasonably well aligned with the Intermediate Development Outcomes (IDOs). However, more attention could be paid to improving nutrition of rural households in the drylands.

The CCEE finds that the CRP has strong partnerships at regional Flagship Program and national levels with NARS, universities, NGOs, community organisations, and farmers. The working relationships among the Centres at regional Flagship level vary, but in most cases observed are not as well-integrated as would be expected. Several factors underlay this fragmentation: insufficient W1&2 funds, dependence on Centre-led bilateral projects, and budget holders are Centre- not CRP-based. The incentive structure does not encourage inter-Centre collaboration at present.

While there are also some good partnerships with ARIs working on dryland agricultural systems, the CCEE concludes that there is potential for working effectively with more ARI partners. The CGIAR Centres working on dryland agricultural systems have a substantial comparative advantage in terms of their decades of experience working in the field and with local and national partners, but could complement this through partnering with institutions having advanced modelling and data analysis capacities. Co-sponsoring Ph.D. and postgraduate fellows could be expanded as one way to achieve such partnerships; submitting joint proposals to science councils is another.

The CCEE has made two recommendations for strengthening the relevance of Dryland Systems research. These are aimed at the leadership of the Dryland Systems CRP and the proposed new CRP on dryland cereals and legumes agri-food systems (DCLAS).

1. *Pay more attention to food access and improved nutrition.*
2. *Take the initiative to facilitate and catalyse stronger partnerships linking international ARIs in dryland systems research and capacity development with developing country national partners.*

*Action for both: Dryland Systems CRP and DCLAS leadership.*

### *Effectiveness, impact and sustainability*

The ISPC has consistently criticised the Dryland Systems CRP Theory of Change. The CCEE agrees with the ISPC, but it also finds that the CRP has made significant progress in developing its Theory of Change and impact pathway framework since the Extension Proposal was prepared. Nevertheless, the current impact pathway remains too generic and abstract, and key assumptions are not spelled out. In addition, the key stakeholders who must make the changes (outcomes) needed to achieve long term impacts and their roles and linkages are not clearly identified. The current impact pathway has been developed largely from the top down (with consultation with some scientists); it has not been developed through a participatory bottom-up process with clients and partners. There is no evidence that the impact pathways developed in the regions are used as research management tools; they appear to have been developed to meet the requirement to have an impact pathway. The regional Flagship Programs have articulated a number of ambitious impact targets which, while laudable, are not linked to the impact pathway.

The CRP claims to be having important field-level impacts. This is commendable, but there is a need to document these, supported with hard evidence and a plausible theory of change; and published in both CRP-branded and peer-reviewed outlets. This would be an important contribution as there are only limited documented impact success stories from drylands.

The CCEE reviewed three cross-cutting themes: Gender and Youth, Communication, and Capacity Development. *In all three themes, the CCEE commends the recent progress made, after a somewhat slow start*. The CRP has developed high-quality strategy papers for gender, youth, and capacity development. It has recently initiated efforts to become more effective in communicating the findings, outputs, and impacts of the CRP outside the CRP. However, there is little progress to date on the use of tools to enhance internal communications and the creation of a culture of knowledge sharing among scientists.

There is a gap between the progress at central level on gender, youth and capacity development, and the activities observed in the field. This reflects the unfortunate timing of the strategy development, which has lagged behind the planning of the field research. Therefore, in the field, there is very little work underway specifically aimed at youth; and while there is important work being done on gender, it is not at the core of the field research and is not likely to lead to major impacts. This work is also hampered by the weak social science capacity at field level. The capacity development work in the field sites as reported in the Annual Reports is significant but largely traditional in nature and is not based on the Capacity Development Strategy – again reflecting the late development of the Strategy.

Finally, the CCEE cannot come to a firm conclusion regarding the sustainability of the innovations emerging from the CRP research. There are clearly important institutional and technical innovations being tested and implemented, and there are indications that some of these may be sustained and scaled out further. On the other hand, the weak engagement with policy makers observed during the field visits may limit the potential for scaling up. While the CCEE understands baseline surveys have been done in all the Action Sites, there is no indication of plans for *ex ante* or *ex post* impact evaluations during the final year of the program. The CCEE believes such studies should be given priority if possible in a difficult budgeting environment.

The CCEE makes the following recommendations on effectiveness, aimed at both the leadership of Dryland Systems as well as the leadership of DCLAS:

3. *Develop a practical, credible and useful theory of change and associated impact pathway for the remaining period of Dryland Systems and more important, for DCLAS.*

*Action: DCLAS leadership with support from Dryland Systems.*

4. *Carry out and publish credible impact assessments, and produce documentation for advocacy.*
5. *Produce and disseminate a wide range of media that communicate the main findings and state-of-knowledge on dryland systems, the lessons learned, material that can be used for training/ capacity development, etc.*
6. *Promote a strong culture of internal knowledge sharing and communication as integral to the entire research process. A possible specific action to achieve this is to establish a mechanism for sharing draft papers and encouraging informal peer reviews, perhaps through the MEL system.*

*Action for numbers 4-6: Dryland Systems PMU.*

*Quality of science*

Given the late start of the Dryland Systems CRP, it is premature to arrive at definitive conclusions regarding the quality of the research to date. Overall, most of the scientists working on the CRP are experienced professionals; 75% have six or more years of experience. Most have bio-physical disciplinary training; there are very few social scientists and economists (and those working on the CRP are mostly junior). This is a major weakness in the Program. In addition, there are very few with training in systems research.

The CRP through its various proposals and reports has expressed a fairly consistent and quite reasonable, if limited, concept of what is meant by "systems research". However, there is less clarity on how "dryland (agricultural) systems" are defined. Some gaps in conceptualization were noted. For example, stronger links could be established between the local systems under study and global systems research; and more attention could be paid to non-agricultural livelihoods, rural-urban linkages, food systems, and policy. Currently, efforts are being made to conceptually integrate "agricultural systems" and "livelihood systems". This is an important development though still a work in progress.

The CCEE examined the journal articles published in 2014 mapped to the CRP. Fifty five, i.e. about 57%, of these are published in journals with an ISI factor. About 44% of the ISI-rated papers are open-access and 35% of the ISI-rated papers were classified as "systems" or at least "multi-disciplinary". The CCEE noted the low or at best modest productivity of published journal articles per scientist, though this depends on the assumptions made. None of the papers published so far are comparative cross-ALS or cross-Flagship studies, reflecting the absence of a global program until 2015. Overall, the papers reviewed were fairly good and a few were excellent.

The CRP has no quality control procedures of its own for ensuring the quality of the research and publications; like all CRPs, it relies entirely on the procedures of the partner institutions. These are probably adequate (though there are differences among Centres) and this state of affairs reflects the current CGIAR structure. Nevertheless, the CCEE concludes that the CRP should also have mechanisms in place to ensure publications based on work it supports is of high quality and reflects a systems perspective. These would complement, not replace, Centre quality control mechanisms.

Regarding the overall research program design, the absence of a global program before 2015 has been noted. It still has some limitations, for example, aside from gender, there is no social science and economics expertise. Over time, the SRTs and more recently the ALSs have been moving targets as they seem to evolve rapidly; however the regional Flagships and Action Sites have remained fixed. There seems to be a disconnect between the work at the Action Sites and the global level program: the field work at best only partly reflects the "systems" concepts and

priorities described at the programmatic level. Much though not all of the field level research is classic testing of alternative crop varieties or management practices. Most of the field research is done in partnership with farmers and various local partners, reflecting a strong participatory approach. Finally, funds are dispersed rather thinly among many small activities, not strategically focused to produce results.

The CCEE makes the following recommendations to the Dryland Systems CRP related to quality of science:

7. *To maximize its value, during the final year of the Dryland Systems CRP the Program should consolidate its activities and focus most of its resources on producing a body of excellent scientific outputs that define the state of knowledge and provide clear directions for the next phase of research in development on dryland systems. The CRP should draw on outside expertise to complement CGIAR expertise in this endeavour. As part of this effort, the CRP should also undertake a systematic review of literature to make the case for drylands research and investments.*

   *Action: Dryland Systems PMU. The CCEE considers this its highest priority recommendation.*

8. *Invest in agreeing on a shared understanding of "agricultural systems" that integrates "livelihood systems", and what is the role and value of "systems research", and invest in training researchers in systems science.*

   *Action: Dryland Systems PMU, perhaps in cooperation with the AAS and Humid Tropics CRPs and/or with DCLAS.*

9. *The socio-economic components of systems research should be strengthened with poverty and livelihood assessments, adoption studies, policy and institutional analyses, and in-depth gender and youth studies. This will require recruitment of social and economic science and systems expertise.*

   *Action: Dryland Systems PMU using consultants; and DCLAS leadership for the future.*

10. *Strengthen the accountability of the CRP for the quality of science produced.*

    *Action: Dryland Systems Director should initiate, in consultation with other CRP Directors and the CO.*

### *Efficiency*

The current governance structure and management processes are suitable for effectively implementing the CRP, and consistent with those mandated by the FC and CO for all CRPs. The CRP has adopted the recommendations of the IAU on governance and management, for which the CCEE commends the Program. The Lead Centre (ICARDA) has responded positively to the IAU recommendations, especially commendable given the circumstances of having to leave its headquarters. Earlier recruitment of the PMU would have precluded many of the problems the CRP has faced. The IAU had made several recommendations to the CGIAR Consortium Office that would facilitate more effective management of CRPs. The CCEE agrees with the IAU that clearer guidelines and harmonized templates for planning and reporting would be very useful.

The CRP has faced large reductions in its W1&2 funds for 2015 – larger than any other CRP. These have come at a time the CRP has developed a more coherent program with strong governance and management arrangements. The CCEE does not understand the rationale for such drastic W1&2 cuts, which have severely affected the CRP's capacity to achieve all its planned outputs and outcomes. The CRP has responded by consolidating field sites and reducing the number of planned deliverables. Nevertheless, there is a need for further strategic

consolidation and focus to ensure the CRP produces excellent outputs with its diminished resources. A more vigorous advocacy program linked to an active resource mobilisation strategy is also needed.

Regarding human resources management, the CCEE was informed that there are problems recruiting good scientists given the difficult locations where the Program works. There are approximately 141 full time equivalent scientists, many of whom are nationally recruited. Only about 22% are women. The PMU is staffed by well-qualified professionals.

Finally, the CCEE commends the forward-looking, innovative and functional Monitoring, Evaluation and Learning (MEL) system that has been developed and implemented. It supports learning lessons as well as more traditional M&E, and other CRPs are either adopting it or adapting it to their needs.

The CCEE makes one recommendation for action by the CO, which reinforces recommendations made previously by the IAU.

11. *The Consortium Office should develop and adopt clearer management guidelines and harmonize templates for planning and reporting to streamline CRP management processes. Four specific improvements are:*

    a. *The CO should develop guidelines for mapping Windows 3 and bilateral projects and for cost sharing.*

    b. *The CO should review and clarify CRP Directors' authority for the new round of CRPs.*

    c. *The CO should develop standardised management costing guidelines.*

    d. *The CO should consider harmonising the templates for the POWB and for Annual Reporting, as well as OCS[1] and the use of a common space to make published outputs available (for example, CGSpace).*

    *Action: Consortium Office of the CGIAR.*

## Future directions

The proposed new CRP landscape no longer includes systems CRPs operating separately from commodity CRPs; rather, there is an attempt to integrate systems and commodities research. For drylands, the current Dryland Systems, Dryland Cereals, and Grain Legumes CRPs would be merged into one CRP, to be called CGIAR Research Program 1, *Dryland Cereals and Legumes Agri-food Systems* (DCLAS). The CCEE has examined the pre-proposal submitted in July 2015. It commends the inclusion of a systems flagship focused on people' livelihoods. However, the CCEE suggests that as currently written, the pre-proposal gives the impression of fragmentation of the components (flagships) of the proposed CRP; there is no holistic integrated "systems" perspective but rather a narrower commercial agricultural production perspective. Approaches that have worked in now-developed but formerly pioneer drylands such as in the USA and Australia will not necessarily work well in the very different contexts of developing country drylands. A livelihoods perspective rooted in a holistic integrated vision linking socio-economics and agro-ecologies should be the driving force of the CRP. This livelihoods perspective should have as its central driver finding opportunities for women and youth to thrive along with men by

[1] "One Corporate System", an effort by the CO to offer shared financial management and other services. See http://www.cgiar.org/cgiar-consortium/consortium-office/shared-services/, accessed 20 August 2015.

creating multiple livelihood options. To be successful, the CRP team should include strong systems scientists and senior social and economic scientists with excellent gender credentials.

While the priority given to South Asia and Sub-Saharan Africa based on poverty levels is logical and understandable, the CCEE is concerned that insufficient priority will be given to North Africa and Western and Central Asian dryland systems. While these regions may have lower numbers of very poor people, they have high numbers of unemployed rural youth, and are areas that exhibit high levels of social stress and political insecurity which have impacts that extend beyond the region. Agriculture remains an important sector for creating more employment opportunities for young women and men. The CGIAR should retain a strong focus on these regions.

Finally, the CCEE observes that the process of creating and planning the new CRPs seems to be driven from the top, i.e. from the levels of the CO, FC, ISPC and donors. This observation also applies to their governance: they are dominated by the priorities and interests of the CGIAR Centres, not those of their clients. The CGIAR programs ought to move toward being driven by the priorities and interests of their main partners, i.e. NARS, NGO and CBO partners.

Although the CCEE recognizes it may be going beyond its TOR, nevertheless, it makes two recommendations regarding the next phase of CRPs.

12. *A holistic integrated systems vision linking socio-economics and agro-ecologies should be the driving force of the DCLAS CRP. This livelihoods perspective should focus on promoting positive systemic change, and have as its central driver finding opportunities for women and youth to thrive along with men by creating multiple livelihood options.*

    *Action: DCLAS CRP leadership.*

13. *The design and governance of all the new CRPs should be based on clear demand from developing country clients and partners, and they should play a far stronger role in this process than is currently the case.*

    *Action: CGIAR.*

## Conclusion

After the CCEE draft final report had been completed and endorsed by the CCEE Oversight Committee, a proposal for responding to the severely constrained Windows 1&2 funding in 2016 emerged; and the Consortium Office proposed a more focused set of just eight CRPs for the next phase beginning in 2017, again responding to anticipated funding constraints. The CCEE was surprised to learn that the CO proposes an especially drastic reduction in Dryland Systems CRP for 2016. This proposal does not take into consideration the real progress made during 2015; and if it stands, will have a serious negative impact on the final results of the Dryland Systems program. If it does stand, the CCEE suggests that the CRP focus on implementing Recommendation number 7, i.e. "*… focus most of its resources on producing a body of excellent scientific outputs that define the state of knowledge and provide clear directions for the next phase of research in development on dryland systems".*

The CCEE concludes by emphasizing the following points. First, dryland agricultural livelihood systems are critically important globally and require major investments including agricultural research investments to prosper in the future. Second, the CGIAR should be the global leader in promoting sophisticated systems approaches to research on agriculture, livelihoods and natural resources. Third, successful systems research over the next 10-15 years will require significant investments in partnerships, capacity strengthening, and research. Systems research should be closely integrated with, and provide the context for, more focused commodity research as well as

research on natural resources, policies, and institutions. While the Dryland Systems CRP did not achieve as much as expected, it is a source of important lessons for the future.

# 1. Introduction

Chapter 1 is largely drawn from the Inception Report (Merrey, McLeod and Szonyi 2015a), but updated to reflect developments since that Report was completed.

## 1.1 Origins, purpose and audience

Since 2011, most of the work done by the 15 CGIAR Centres has been carried out through "CGIAR Research Programs" (CRPs). There are currently 15 CRPs, plus a separate program to support gene banks (sometimes considered to be the 16th CRP). CRPs are the key instruments for addressing the CGIAR's System Level Outcomes (SLOs). The four SLOs applicable until early 2015 were: 1) reduction of rural poverty, 2) increasing food security, 3) improving nutrition and health, and 4) more sustainable management of natural resources (CGIAR 2011). CRPs are intended to enable a clear linkage between CGIAR research and achieving desired development outcomes. Partnerships among research institutions and between research institutions and development-oriented institutions are a critical characteristic of CRPs as they are the mechanisms for achieving a critical mass of research competence linked via clear impact pathways to specific development outcomes.

During 2014-2015, all of the CRPs are undergoing external evaluations. In some cases the CGIAR's Independent Evaluation Arrangement (IEA) is directly managing the evaluation, while other CRPs are being evaluated by CRP-commissioned teams. In these cases, IEA provides quality control advisory services (Section 1.6, below). The CRP Drylands Systems (CRP 1.1, hereafter "Dryland Systems") evaluation is a CRP-Commissioned External Evaluation (CCEE).

In May 2015, the CGIAR's Consortium Board approved a new Strategy and Results Framework (SRF) for 2016 to 2030 (CGIAR 2015). This new SRF updates and refines the previous SRF, and identifies three SLOs: 1) reduced poverty, 2) improved food and nutrition security for health, and 3) improved natural resources and ecosystem services. This new SRF is the basis for restructuring the current CRPs into a more focused set. However, the evaluations of the current CRPs are being implemented in terms of their contributions to the 2011 SRF. The changing context of this CRP is discussed further below in Chapter 2.

According to the CCEE Terms of Reference (ToR)[2], the evaluation has four main purposes:

1. To enhance the contribution of the Dryland Systems CRP to reaching CGIAR goals and to finding solutions to problems characterizing dryland agricultural systems in order to sustainably increase productivity, reduce hunger and malnutrition, and improve the quality of life of the rural poor;

2. To provide useful evaluative information to CRP stakeholders that will inform the development of their full proposals for the upcoming Second Call for CRP proposals;

3. To inform the CRP appraisal process carried out by the Independent Science and Partnership Council (ISPC), CGIAR Fund Council (FC) and CGIAR Consortium Office (CO) with respect to the adequacy of Dryland Systems management structures and systems and the likelihood of achieving results; and

4. To provide lessons learned and recommendations for the future in a forward-looking manner. The recommendations are also intended to feed into immediate decision making by senior CRP management on such dimensions as what adjustments may be needed in research lines, management and partnerships, whether to modify the skill and disciplinary mix of

[2] http://drylandsystems.cgiar.org/sites/default/files/EoI_CCEE_DS.pdf, accessed 2 July 2015.

researchers, and whether to continue, increase or decrease funding for particular themes or research components.

The *objectives* of this evaluation of Dryland Systems as stated in the ToR are to:

1. Verify the continued relevance and validity of the CRP and of the planned impact pathways;

2. Assess progress towards achievements in the major research areas of the CRP since its date of approval; and

3. Assess the adequacy of the systems in place for good organizational performance (staffing, governance, partnerships, management, planning, monitoring and evaluation, and accountability).

There are many stakeholders who may have an interest in the results of this evaluation (Table 1.1). Some will be direct users, for example Dryland Systems managers; the Lead Centre Board of Trustees (BoT), senior management and researchers; the CGIAR partners; the CGIAR FC, CO, ISPC and IEA; Dryland Systems donors; and non-CGIAR partners including universities, National Agricultural Research Systems (NARS), and participating Non-Governmental Organizations (NGOs). Other stakeholders may not directly use the results, but if the evaluation produces useful recommendations that are adopted by the CRP, they may well be affected by the evaluation.

**Table 1.1 CCEE Stakeholders**

| Stakeholder | Role in the CCEE | Interest in the CCEE |
|---|---|---|
| **Internal** | | |
| Dryland Systems CRP Director and Program Management Unit (PMU) | Commissioned CCEE & manage the CRP | • Accountability for performance<br>• Learning for improvement of the CRP<br>• Increasing the likelihood of future financial support |
| Dryland Systems Research Management Committee (RMC) | Provided inputs and advice on planning field visits | • To be given a voice<br>• Accountability for contribution<br>• Role in responding to CCEE |
| Dryland Systems Independent Steering Committee (ISC) | Selected Oversight Committee to act on its behalf | • To be given a voice<br>• Accountability for contribution<br>• Role in responding to CCEE |
| Lead Centre management and Board (ICARDA) | Informants<br>Consider recommendations emerging from CCEE | • To be given a voice<br>• Accountability for contribution<br>• Role in responding to CCEE |
| CGIAR partners' management and board (ICRISAT, ILRI, IWMI, CIAT, CIP, ICRAF, Bioversity) | Informants<br>Participate in CCEE Oversight Committee | • To be given a voice<br>• Accountability for contribution |
| CRP-DS researchers | Informants (selected) | • To be given a voice<br>• Accountability for contribution |
| CGIAR FC | Primary client but no direct participation | • Accountability for its role<br>• Prioritization of future CRPs<br>• Learning how CRPs can be made more effective |
| CGIAR CO | Primary client but no direct participation | • Accountability for its role<br>• Prioritization of future CRPs<br>• Learning how CRPs can be made more effective |

| Stakeholder | Role in the CCEE | Interest in the CCEE |
|---|---|---|
| ISPC | Primary client but no direct participation | • Accountability for its role<br>• Prioritization of future CRPs<br>• Learning how CRPs can be made more effective |
| Dryland Systems Task Force | Informants | • Learning for improvement of CRP |
| **External** | | |
| Donors | Informants (selected) | • Decision making for resource allocation<br>• Learning for improved donor performance within the CGIAR |
| Research partners (e.g. NARS, Advanced Research Institutes, universities) | Informants (selected) | • To be given a voice<br>• Accountability for contribution |
| Development partners (e.g. NGOs, CBOs, government ministries and departments, policy makers) | Informants (selected) | • To be given a voice<br>• Accountability for contribution<br>• To increase CRP development impact |
| Local community members (e.g. farmers, herders, businesses) | Informants (selected) | • To be given a voice<br>• To make CRP research more relevant |
| CGIAR IEA | Quality control advice and validation | • Ensuring accountability of the CRPs<br>• Learning from individual CRP<br>• Synthesizing learning across CRPs |

*Source: Dryland Systems CCEE Inception Report.*
*Note: Format and content modified from the Terms of Reference.*

## 1.2 Evaluation questions

As discussed in the Inception Report, this CCEE has followed the guidelines provided by the IEA of the CGIAR (CGIAR-IEA 2015a: Annex 2). As required by the ToR, this evaluation has used the standard IEA evaluation criteria, specifically relevance, effectiveness, quality of science, impact, sustainability and efficiency. The CCEE has combined the assessment of impact and sustainability with effectiveness.

After an initial review of various Dryland Systems documents including proposals submitted to and commentaries from the ISPC, CO and FO, and an Audit Report published in March 2015 (CGIAR-IAU 2015a) including the responses of the Lead Centre and CRP Program Management Unit (PMU) to the Audit Report, the CCEE team decided to consider one other overarching issue: the CGIAR context and its impact on the performance of the CRP. Including this issue also responds explicitly to a question included in Annex 1 of the ToR. [3]

[3] From the ToR: "To what extent have the reformed CGIAR organizational structures and processes increased (or decreased) efficiency and successful program implementation?" In its review of the draft of this Inception Report, IEA expressed hesitation on making this "a major evaluation question". However, the evidence the team has collected to date suggests it is a potentially important factor in understanding the performance of this CRP.

The overarching questions proposed in the Inception Report have been modified based on the IEA's review of an earlier Draft Final Report. The following are the major overarching evaluation questions addressed in this report:

1. *Relevance*: How coherent and relevant are the objectives and overall design of the CRP on Dryland Systems?
2. *Effectiveness, impact and sustainability*: Is the CRP likely to deliver its intended results? In other words, is it likely to produce the expected outputs and achieve its intended outcomes and impacts sustainably? Are the cross-cutting activities on gender and youth, communication, and capacity development well-integrated into the program and are they contributing to its effectiveness?
3. *Quality of science*: Is Dryland Systems scientific research of a high quality and do the research outputs constitute international public goods (IPGs)? Related questions include: does the Dryland Systems CRP have an agreed, coherent and scientifically credible conceptual framework encompassing a complete understanding what "systems" research is supposed to be?
4. *Efficiency*: Is the governance and management structure of the CRP efficient? In other words, is the CRP using its resources well to produce 'value for money'?
5. What has been the response of the CRP management to feedback received from the CGIAR on its initial and extension proposals and to the Audit Report? To what extent do the guidelines, formats and commentary from the CO and FC support efficient and effective implementation of the CRP?

Table 1.2 maps the standard CGIAR evaluation criteria to the overarching questions.

**Table 1.2 Coverage of Evaluation Criteria by Key Evaluation Questions**

| Evaluation Questions | Evaluation Criteria | | | | | |
|---|---|---|---|---|---|---|
| | **Relevance** | **Effective-ness** | **Effici-ency** | **Impact** | **Sustain-ability** | **Quality of science** |
| 1. How coherent and relevant are the objectives and overall design of the CRP-DS? | ■ | | | | | |
| 2. Is the CRP likely to deliver its intended results and achieve sustainable outcomes and impacts? | | ■ | | ■ | ■ | ■ |
| 3. Is CRP-DS scientific research of a high quality and do the research outputs constitute international public goods (IPGs)? | ■ | | | | | ■ |
| 4. Is the governance and management structure of the CRP efficient? | | | ■ | | | |
| 5. What has been the response of CRP-DS management to feedback received from the CGIAR on its initial and extension proposals and to the Audit Report? | | ■ | ■ | | | |

## 1.3 Specific evaluation questions and criteria

During the inception period, the CCEE team identified around 70 questions that the team believed would enable it to fully address the seven overarching questions. These questions are contained in Annex 6, the Evaluation Matrix. They expand upon the "key questions" proposed in Annex 1 of the ToR. For each major criterion, a set of specific questions was identified. In some cases, the criterion has two or more sub-criteria. As a result of participating in a number of CRP events as described in the Inception Report, the CCEE team identified nine "emerging issues" requiring special attention. As the evaluation progressed, these issues were confirmed as being critically important. They are not repeated here. The CCEE team believes the evaluation issues and questions identified during the Inception period have enabled it to carry out a thorough, objective and constructive evaluation leading to specific actionable recommendations.

## 1.4 Scope

During 2014, the Independent Audit Unit (IAU) of the CGIAR carried out an internal audit of this CRP. The final report is dated 5 March 2015 (CGIAR-IAU 2015a). The Audit focused on issues related to the overall governance and management of the program and rated the overall management of the CRP as "unsatisfactory". This report generated considerable commentary from the Lead Centre and CO. While the Lead Centre, i.e. ICARDA, accepted the most important recommendations and stated that they would be implemented, there were others where the Lead Centre and indeed the Auditors suggested that the root of the problem lay with the guidelines, or lack thereof, from the CO.

The Audit Report has been an important starting point for the CCEE. The CCEE did not go back over the ground covered by the Audit but only examined key points where the team believed an update may be needed, considering that the PMU has been fully staffed since January 2015. However, the CCEE did examine in some detail the responses to, and actions taken by, the Lead Centre regarding the recommendations made by the Audit, as part of its assessment of the efficiency and effectiveness of the governance and management of the CRP[4].

As suggested by the Audit Report, the CCEE has focused most of its attention on the research and capacity building work being done by the CRP and its many partners. This includes the overall design of the Program, the work being implemented at both global and field levels, how the CRP addresses issues such as gender and youth and internal and external communications, and the quality of its scientific work.

Finally, the CCEE has been implemented in a spirit of providing constructive feedback, suggestions and recommendations. The CCEE is not an "audit" but an opportunity to reflect on lessons learned and to provide advice for both the remaining period of this CRP to the end of 2016, and for future programs working on dryland systems.

## 1.5 Methodology

The methodologies used for this evaluation are described in detail in Section 5 of the Inception Report. They are summarized and updated here.

### Data collection

The data were collected using the following methodologies:

[4] At the time this CCEE was being implemented, the CGIAR IAU was carrying out a follow-up review of CRP 1.1. The CCEE team has seen the final version of this assessment (CGIAR-IAU 2015b).

Document review. The CCEE team reviewed several hundred documents, including project proposals, strategy documents, Annual Program Reports, participating centre and partner publications, CGIAR system level documentation, management responses to reviews by the CGIAR, meeting minutes, mapped project documents, draft publications and peer-reviewed published journal articles and other scientific publications, relevant strategic documents, relevant program policies, websites and presentations. The documents cited in this report are listed in the References section; most of the other documents are available on the Dryland Systems or CGIAR websites. Many but not all are listed in Annex 3.

Analysis of project and financial databases. One member of the team reviewed annual plans and budget documents, financial data, the previous audit of the program and management responses to the Audit Report. Most of these data are available either online or at ICARDA. The team was also provided access to the CRP Monitoring, Evaluation and Learning (MEL) system.

Interviews and group discussions. The CCEE team developed Interview Guidelines for various categories of stakeholders (Annex 6). These were used to carry out individual and group interviews with numerous CGIAR senior managers and scientists, national partners, and farmer representatives. Most were face-to-face but some were via Skype, and some were complemented by email exchanges. The list of persons interviewed or consulted formally while preparing the Inception Report is contained in that report; a list of those interviewed since then can found in Annex 2 of this report. The CCEE team also facilitated a session with four working groups at the Dryland Systems Science and Implementation meeting in Hyderabad (9 April 2015), as described in the Inception Report.

Attendance and participation at several CRP meetings. The CCEE's inception meeting took place at Leeds University on 25 March 2015, hosted by Prof L. Stringer, the leader of a new Task Force that had had its first meeting. All three members of the CCEE team were briefed by the Program Director and the CCEE manager on the CRP and on the "mission critical research areas" proposed by the Task Force. In addition, the CCEE team attended and participated in the following CRP formal events in Hyderabad, India in April 2015: the Second Science and Implementation Meeting (S&IM); and meetings of the Research Management Committee (RMC) and the Independent Steering Committee (ISC). A CCEE team member also attended several CRP Working Group meetings, as reported in the Inception Report. The location at ICRISAT Headquarters enabled the CCEE team to meet a number of scientists and managers at ICRISAT in addition to scientists and CRP coordinators from the Partner Centres.

Field visits. Dryland Systems defines its Flagships in regional terms. As reported in the Inception Report, two members of the team carried out a one-day field visit to sites in Jordan that had been Dryland Systems Action Sites until the end of 2014 (it was cut in response to severe budget reductions, as was an Iran site). In addition, one team member visited Action Sites in South Asia (Rajasthan, India); the team leader visited Action Sites in Eastern and Southern Africa (Ethiopia — the Marsabit-Yabello-East Shewa Transect) and in West African Sahel and Dry Savannahs (Mali – the Wa-Bobo-Sikasso Transect). Each of these visits was 5-7 days, which provided sufficient time to observe work on the ground and meet scientists and partners. As part of the visit to Africa, the team leader spent two days in Nairobi talking to research managers and scientists based on the ILRI and ICRAF campuses (including the Directors General [DGs] of both these institutions). The itinerary of the field visits is provided in Annex 4.

Online surveys. The CCEE team has carried out online surveys of both partners of Dryland Systems and its constituent projects (in English, French and Russian), and of CGIAR scientists. The survey questions and results are reported in detail in Annexes 7 and 8; this Final Report draws on these results where appropriate.

Expert knowledge. The three CCEE team members have many years of experience in agricultural and natural resources research and research management, much of it as part of the CGIAR. The analyses, conclusions and recommendations contained in this report are informed by these experiences.

## Data analysis

The CCEE team used a variety of approaches and tools for data analysis, described in detail in the Inception Report. These included but are not limited to the following:

Evaluation matrix. The Evaluation Matrix (Annex 5) was used to identify the most appropriate and feasible data collection methods for each of the evaluation questions from the evaluation plan (ToR). It also lists some of the issues identified by the evaluators during the inception phase that required answers or validation through the data collection and assessment. It provided an overview of the issues and questions to be answered, and ensured that there was sufficient triangulation between different data sources. It has helped to design the questionnaires, interviews and data extraction tools for project records. The remaining tools listed here are designed to contribute to answering questions contained in the Evaluation Matrix.

Project portfolio analysis/ project mapping. Portfolio analysis was used to analyse activities funded through Windows one and two (W1&2) and Window three (W3) and bilateral projects mapped to the CRP, to examine the overall balance of research focus. The analysis helped determine how well the portfolio matches CRP objectives, and where there may be gaps, and provided a basis for recommendations for better alignment of activities and projects to priorities.

Organizational timeline. The organizational timeline indicates significant events, achievements, setbacks and changes in the history of the CRP. This tool has helped to provide an understanding on the specific contexts of the program. This is especially important as the program has gone through major changes in a relatively short period which may have had an impact on its performance or perceptions thereof.

Participatory evaluation. In participatory evaluation, stakeholders actively engage in developing the evaluation and its implementation. The S&IM in April 2015, with about 66 participants from eight Centres and all five Flagship regions, an ICARDA BoT member, and partners, provided an opportunity for the evaluation team to conduct a participatory evaluation with stakeholders (scientists, managers, partners and theme experts). Further, attendance at and participation in the RMC and ISC meetings and the thematic Working Group Meetings on Gender, Capacity Development and System Modelling (with Climate Change Impacts and Adaptation Strategies) provided very important early feedback to the CCEE team on questions and issues to be validated. In late July, the team leader visited the Amman, Jordan office and discussed emerging conclusions and recommendations with the CRP Director and Evaluation Manager. An earlier draft version of this report was shared with the Oversight Committee (see below), and their comments were used along with comments from IEA to prepare a revised draft. The latter was again reviewed by the PMU and Oversight Committee and their comments used to finalize the report.

Finally, the team has had almost continuous interactions and dialogue with members of the PMU during the evaluation period. This has included responding to requests for suggestions and advice regarding actions being taken by the PMU. For example, the team leader has worked with the PMU in revising the format for recording published outputs of the CRP, and developing a format for recording partnerships in the Monitoring, Evaluation and Learning (MEL) system.

Quality of science analysis. The CCEE team analysed the scientific outputs listed by the CRP for 2014. The team sought to analyse the publication quality control processes in place, the research design in place at the Action Sites visited, the scientists' perceptions of the quality of scientific

outputs, the impact factor (ISI)[5] of the journals where papers are published, and the extent to which papers are open-access and exhibit an interdisciplinary "systems" rather than a single-discipline "component" perspective. The team also tried to identify work that the Dryland Systems scientists believe will lead to significant scientific outputs during 2015 and 2016.

Analysis of the Theory of Change (ToC). The CCEE team assessed the Dryland Systems ToC and pathways to achieving impact. It drew on previous experiences of the team leader to assess their design, and used interviews to assess the extent to which the impact pathways are actually used in the management of the Program.

## 1.6 The team members, timeline and organization of the evaluation

The CCEE team has three members, all of whom are senior experienced professionals. Their biodata is contained in Annex 1, while their major responsibilities are summarised in Table 1.3.

**Table 1.3 Major Responsibilities of the CCEE Team Members**

| Name of Team Member | Major Responsibilities |
|---|---|
| **Douglas Merrey (Team Leader)** | • Overall management and synthesis, report writing, quality of science, relevance, effectiveness<br>• West Africa Sahel and Dry Savannahs, and East Africa field visits<br>• Visits to CGIAR centres in Nairobi, Kenya<br>• Interview representatives of management, scientists, partners<br>• Prepare Inception and Final Reports and Powerpoint© presentation; present report to client<br>• Represent CCEE team |
| **Judit Szonyi** | • Survey of stakeholders<br>• Theory of change and impact assessment, gender, youth, communications, capacity development, partnerships<br>• Contribute to Inception and Final Reports<br>• Assist with preparing the Powerpoint© presentation |
| **Ross McLeod** | • Writing portfolio management: governance, financial, and human resources sections of the Final Report<br>• Financial analysis of portfolio<br>• South Asia field visits<br>• Contribute to the Inception Report |

The team began its work in March 2015, with an inception meeting in Leeds, UK. Two team members subsequently spent about nine days in Amman, Jordan collecting documents, meeting scientists, ICARDA managers, and Dryland Systems managers, and doing a short field visit in Jordan. All three team members participated in the second S&IM hosted by ICRISAT in Hyderabad, India. The Inception Report was finalized and accepted in early May 2015. In May-June the field visits and online surveys were conducted. An Interim Report was submitted by the team in mid-June 2015 (Merrey, McLeod and Szonyi 2015b). The on-line survey of partners was completed in June 2015; the survey of CGIAR scientists was extended to the second week of July to encourage more responses. The first Draft Final Report was prepared during July-August 2015,

[5] "ISI" comes from the Institute for Scientific Information, which originally devised the journal impact factor index. Thompson Reuters now owns ISI. The acronym is now used loosely to refer to the journal impact factor.

and the revised Final Report in September-October 2015 based on feedback received; simultaneously there was considerable interaction with members of the PMU to obtain updated information and clarify questions as they arose.

At its meeting on 10 April 2015, the Dryland Systems ISC established an Oversight Committee for the CCEE. Its role has been to assist the CCEE team to obtain documents and to arrange interviews as needed, and to provide substantive feedback on the draft reports produced by the CCEE team. Its membership is shown in Table 1.4. The Committee reviewed and provided inputs on the draft Inception Report, and provided detailed comments on both the first and second drafts of the Final Report.

**Table 1.4 Members of the CCEE Oversight Committee**

| Member | Role and Institution |
|---|---|
| **Jan de Leeuw** | Dryland Scientist-Eastern Africa Team, ICRAF; ICRAF Centre Coordinator and RMC member; *Chair of CCEE Oversight Committee* |
| **Richard Thomas** | Director, CRP-DS and RMC Chair |
| **Enrico Bonaiuti** | Program Manager, CRP-DS and CCEE Manager |
| **Paul Vlek *** | Acting DDG Research, ICARDA; ICARDA Centre Coordinator and RMC member |
| **Anthony Whitbread** | Research Program Director, Resilient Dryland Systems, ICRISAT; ICRISAT Centre Coordinator and RMC member |

** Note: Andrew Noble became DDG Research at ICARDA in September, replacing Paul Vlek. Andrew Noble provided very useful feedback and insights that contributed to the final version of this report.*
*Source: Inception Report.*

## 1.7 Quality assurance

The CCEE team is responsible for the quality of this report. It has made a great effort to ensure the accuracy of the data presented, and the objectivity, relevance and fairness of its conclusions. The Report indicates points on which there is uncertainty or differing views. The team members have tried to validate the data from multiple sources. The team has also worked closely with the PMU to ensure the accuracy and relevance of its conclusions and recommendations. The reviews by the Oversight Committee of the draft Inception Report and two revised draft final reports have also been extremely useful in ensuring quality.

The IEA of the CGIAR takes the lead in providing advice for assuring the quality of the CCEE. Its role is explained in more detail in the Inception Report and on its website. A first draft final report was reviewed in detail by an IEA team which offered detailed suggestions for its improvement. That advice was used to prepare a new and substantially revised draft report for further review by the Oversight Committee and PMU. This Final Report has benefited from all these reviews. It will also undergo a validation review: the IEA will set up an independent review on the quality of the evaluation report and processes. The review will be provided by the IEA to the CRP leadership, Consortium Office and Fund Council.

## 1.8 Changes with respect to the ToR and the Inception Report

While there have been no major deviations from the ToR, there have been some minor changes in the plans as presented in the Inception Report. The most important change is a reduction in the number of field visits. The team had planned to carry out field visits to Action Sites in all five of the Flagship Regions. A team member did visit Action Sites in South Asia (Rajasthan, India), Eastern and Southern Africa (Ethiopia), and West African Sahel and Dry Savannahs (Mali).

Planned visits to Central Asia (Fergana Valley) and North Africa and West Asia (Tunisia) were cancelled on the direction of the CRP Director. The reason was the decision by the CGIAR not to support a second phase of this CRP. As a result of this decision, the team was not able to visit sites in one of the defined Agricultural Livelihood Systems (ALS) in which the CRP works: pastoral systems. In addition, while the Inception Report stated the team hoped to do a SWOT analysis and use contribution analysis, most significant change stories and outcome mapping, these methods were not used because of limited resources. While these changes are unfortunate, it has not materially affected the conclusions and recommendations presented in this report.

## 1.9 Main constraints of this evaluation

The Inception Report discusses three limitations: the small size of the team and limited resources compared to evaluations commissioned directly by the IEA; the large geographical spread of the regions which limited the number of scientists, partners and research sites that could be visited; and the lack of French and Russian language capacity of the team members vis-à-vis West and North Africa and Central Asia. The lack of French capacity was well-addressed by the excellent capacities of the CGIAR scientists in translation; the lack of Russian became a non-issue when the visit to Central Asia was cancelled. The cancellation of the visits to Central Asia and North Africa are also a constraint, though perhaps not major.

The three team members reside in very different time zones (Sydney Australia compared to the east coast of North America), which has limited its ability to interact face-to-face even via Skype. This has affected the potential for brainstorming as part of the process of producing the Final Report. Provision for the team to meet during the framing of the recommendations would possibly have made a difference, but the budget was limited. The team has relied on email exchanges to discuss findings and recommendations.

Another limitation has been the modest response to the on-line surveys. The response rates were 25% for the Partners Survey and 27% for the survey of scientists. This is about half the response rate in the Forestry, Trees and Agroforestry evaluation (Coccia et al. 2014). While the team has made use of some of this survey data that offer useful insights, it has used the data cautiously.

## 1.10 Structure of this report

Chapter 1 has provided an introduction to the CCEE, describing its purpose, methodologies, the CCEE team and the roles of its members, and changes with respect to the ToR and the plan as described in the Inception Report. Chapter 2 is a background description of the Dryland Systems CRP: its rationale and context, evolution and current status. Chapter 3 assesses the relevance of the CRP, including its consistency with the goals of the CGIAR and its partnerships. Chapter 4 focuses on the effectiveness, actual and potential impacts, and sustainability of the Dryland Systems CRP, with special reference to its theory of change and impact pathways. It also examines several cross-cutting issues: gender and youth, communication, and capacity development.

Chapter 5 assesses the quantity and quality of the scientific outputs of the CRP. It addresses such issues as the qualifications of the CRP staff, the conceptual framework of the Dryland Systems CRP, the research design, and the quantity and quality of its outputs with special reference to journal articles. Chapter 6 discusses the efficiency of the CRP with respect to its governance and management. It covers the following topics: governance and management including financial management and resource mobilisation and responses to budget cuts, human resources management, M&E, performance of the Lead Centre, and collaboration with other CRPs. Chapter 7 is a short discussion of the future directions of dryland systems research. Finally, Chapter 8 presents the main conclusions and recommendations.

# 2. The CGIAR Research Program on Dryland Systems

The Dryland Systems CRP focuses on dryland farmers, including pastoralists, and seeks to identify ways to enhance the sustainability, productivity, and resilience of dryland agriculture in order to reduce poverty, achieve food security and better nutrition, and conserve the natural resource base, while also promoting economic growth and diversification where feasible. Dryland farmers and pastoralists operate in complex agro-ecological and socio-economic contexts. Therefore, single-dimensional interventions by themselves are unlikely to lead to sustained improvements in people's lives and indeed may have unintended consequences. Finding ways to enable rural dryland people to manage risk and improve their lives sustainably is a daunting challenge. To succeed, it is critically important to understand dryland agricultural, ecological, and socio-economic *systems*. The Dryland Systems CRP is designed as an inter-disciplinary multi-partner research *for* development program that seeks to identify combinations of technological, institutional, policy and managerial interventions that will sustainably enhance the resilience and productivity of dryland agricultural livelihood systems.

## 2.1 The evolution of the Dryland Systems CRP

Table 2.1 documents the key milestones and dates in the evolution of the Dryland Systems CRP. The CRP is led by ICARDA; other participating CGIAR Centres include Bioversity, CIAT, CIP, ICRISAT, ILRI, IWMI and ICRAF. The official launch in May 2013 followed an inception phase which had commenced in late 2011. The overarching aim of Dryland Systems is to improve livelihoods in marginal, low-productivity dryland areas, and dryland areas that have the potential to improve productivity.

**Table 2.1 Key Milestones and Dates in the Evolution of CRP**

| | 2010 | 2011 | | 2012 | | 2013 | | 2014 | | 2015 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Inception** | | | | | | | | | | |
| Proposal submission – 10 Sept 2010 | | | | | | | | | | |
| Revised proposal submitted - 28 Feb 2011 | | | | | | | | | | |
| Inception phase conditionally approved by the CB - 4 March 2011 | | | | | | | | | | |
| Inception phase conditionally approved by the FC - 6 April 2011 | | | | | | | | | | |
| Regional 'must have' workshops – Dubai and Nairobi 11 May and 27 June 2011 | | | | | | | | | | |
| Third proposal submitted – 17 July 2011 | | | | | | | | | | |
| Unconditional approval of *inception phase* FC, Rome – 8 Nov 2011 | | | | | | | | | | |
| Four international expert consultants to facilitate inception (became part of ISAC in 2014) | | | | | | | | | | |
| Framework Development Workshop - 30 Jan 2012- Dubai | | | | | | | | | | |
| Interim Steering Committee – from Centres to organize regional inception workshops (RIWs) | | | | | | | | | | |
| Interim Interdisciplinary Research Teams (iIRTs) – for site characterisation | | | | | | | | | | |
| Steering Committee – May 22, 2013, 16 Sept 2013, 11 March 2014, December 2014 | | | | | | | | | | |
| Regional inception workshops (RIWs) | | | | | | | | | | |
| Interdisciplinary Research Teams (IRT) | | | | | | | | | | |

| | 2010 | 2011 | | 2012 | | 2013 | | 2014 | | 2015 |
|---|---|---|---|---|---|---|---|---|---|---|
| Research management Committee (RMC) ToR finalized on July 2nd 2014 | | | | | | | | | | |
| Inception phase report, 2012 | | | | | | | | | | |
| First CRP director recruited – commenced 16 June 2012, until Dec 2013; ICARDA Deputy Director Research acted as Director Jan-July 2014. | | | | | | | | | | |
| ISPC recommends approval with caveats 28 Feb 2013 | | | | | | | | | | |
| Official CRP launch- May 2013, Jordan | | | | | | | | | | |
| Program Management Unit | | | | | | | | | | |
| Extension proposal 2015-2016 submitted – 25 April 2014 | | | | | | | | | | |
| CO and ISPC Responses to Extension – 14 July and 27 June, 2014 | | | | | | | | | | |
| 2nd CRP director recruited – commenced August 2014 | | | | | | | | | | |
| Independent task force (ITF) and CCEE TORs developed – 21 July 2014 | | | | | | | | | | |
| Independent task force (ITF), First meeting – March 2015, Leeds | | | | | | | | | | |
| CCEE, 2015 | | | | | | | | | | |
| ITF, 2015 | | | | | | | | | | |
| Independent Steering Committee (ISC) starts April 2015 | | | | | | | | | | |

The original proposal was submitted on 10 Sept 2010, followed by a revised proposal submitted on 28 February 2011. A $10 million inception phase was then conditionally approved subject to a list of 'must haves by the CO and FC to characterize five target regions and develop impact pathways using hypothesis-driven research. This list of "must haves" (outlined in Box 2.1) was the subject of regional workshops in May to June 2011. The first, held on 11–13 May 2011 in Dubai, consisted of proposal developers and ten partners who worked towards identifying inputs and stakeholders to select action sites and associated activities. The second workshop convened in Nairobi with similar objectives.

The outputs of these workshops were used to gain unconditional approval of the inception phase in November 2011. This was followed by a Framework Development Workshop in January 2012 culminating in the formation of an Interim Steering Committee involving participating centres. Five regional inception workshops were then organized by Interim Interdisciplinary Research Teams (iIRTs) to inform partners, scope the approach, finalise target areas, characterise sites, identify major constraints, form hypotheses, prioritize research, develop work plans, develop a logframe, identify linkages, and discuss monitoring and evaluation plans.

The proposal was further revised during inception and submitted as a revised proposal. The CCEE has examined the comments from the ISPC review of the revised proposal to assess the degree to which "must haves" have been addressed. Overall, the ISPC (2013) considered this version of the proposal a very significant improvement on the version reviewed by the ISPC in November 2011. Engagement with stakeholders was thought to be extensive and plans for continuing engagement sound. Advances were noted as having been made in developing the parameters for site selection. It was highlighted that improvements in drylands may be difficult to measure during the lifetime of the program as this phase was scheduled to be completed at the end of 2016.

### Box 2.1 CGIAR Research Program on Dryland Systems: ISPC "must haves"

| |
|---|
| 1. Characterization of dryland systems. The proposal must define dryland areas of the developing world using a water balance approach. |
| 2. Clear hypotheses as an organizing principle to prioritize the research and results agenda |
| 3. Provide criteria for choice of target areas and action sites in both the biophysical and social sciences |
| 4. Refine site selection and characterization and prioritize activities to be carried out, working from impacts to activities |
| 5. Provide detail on the underpinning science and agronomic, genetic, and farming system approaches to be evaluated once the first phase has progressed |
| 6. Provide a comprehensive theory of how social change will result from the livelihood, gender, and innovations systems approaches in the current proposal |
| 7. Discuss current research priorities and how they affect new initiatives |
| 8. Identify clearly the research interventions proposed as a result of the diagnosis of the problems and constraints |
| 9. Describe the framework for selecting external and centre partners, their respective research activities, and how these activities collectively contribute. |
| 10. Differentiate the roles of the crop/commodity CRPs and this systems CRP |
| 11. Integrate available lessons learned from the Sub-Saharan Africa Challenge Program |
| 12. Develop a logical framework and articulate impact pathways to explicitly link a cluster of outputs to outcomes and impacts and SLOs |
| 13. Include a performance management framework |
| 14. Build climate variability resilience and sustainable dryland systems |
| 15. Redefine management structure |
| 16. Broaden the focus of the proposal to include Latin America and South Asia |

*Source: ISPC 2013.*

The ISPC recommended approval in February 2013 on the conditions that research focuses specifically on dryland systems and there would be further prioritization of activities, a greater focus on the ToC, better linking of outputs and outcomes and defining IDOs, improved partnership and gender capacity development strategies, improved interactions between commodity CRPs and Dryland Systems, and enhanced biodiversity and nutrition activities.

The Dryland Systems CRP was officially launched in May 2013, in Jordan. Over the subsequent 12 months various coordinating bodies and committees were formed. IRTs have been functioning at the regional level since 2013 and have the role of determining regional research priorities and work plans. The role and effectiveness of these bodies are discussed in Chapter 6. It is worth noting the first CRP director commenced in 16 June 2012 and resigned in December 2013. The Deputy DG for research at ICARDA acted as Director from January to July 2014. A second CRP director was recruited and officially commenced work in August 2014. ICARDA had to relocate during the inception phase due to the civil war in Syria. The overall effectiveness of governance was the subject of an audit by the CGIAR Internal Audit Unit (IAU) in late 2014 (CGIAR-IAU 2015a). It made a number of recommendations. The results of this assessment are outlined in Chapter 6 which also documents the current status of recommendation implementation.

There is a lack of clarity about the timing of the first and extension phases of the Dryland Systems, given an inception phase was undertaken and the Performance Implementation Agreement (PIA) covers the period January 2013 until December 2015. The Fund Council granted funding for an "Inception Phase" as a "preparatory" or "project development" which was not regarded by ICARDA as full project implementation. Approval of the CRP was subject to

submission of a satisfactory revised proposal. Interim management and governance arrangements were established once this had been achieved.

An Extension Proposal was submitted on 25 April 2014, with responses from the CO and ISPC being received 14 July. The ISPC reviewed the proposal in light of the February 2013 approval conditions (ISPC 2014). The very negative review of the Extension Proposal, and the Program as a whole, resulted in a special "Independent Task Force" (ITF) being recommended by the CO and established by the CRP. It met first in March 2015 as the CCEE was just getting underway. The ISPC has consistently questioned the adequacy of the Dryland Systems "theory of social change" and linkages to impact pathways (ISPC 2013, 2014). As originally conceived, the ITF had the objectives of identifying and prioritising mission critical activities that need to be resourced within the existing portfolio and, second, developing a coherent and strategically compelling case for Dryland Systems research that could form a core component of a new portfolio of CRPs (Dryland Systems Task Force 2015). Key issues raised about the Extension Proposal by ISPC and the CO are summarized in Box 2.2.

**Box 2.2 Gaps in Dryland Systems Extension Proposal – ISPC and CO Views**

| |
|---|
| **The CRP needs to include a plausible Theory of Change in the work plan. It does not present a clear indication of what research will be conducted and research appears to be local with very few outputs listed which could be considered as international public goods (IPGs).** |
| **The design principles for Flagship Programs (FPs) in this CRP need to be laid out, as FPs should be addressing the research needs to solve the major constraints to agricultural production and resource stabilisation in the dryland areas. The adoption of regional "flagship programs" seems cosmetic and encompasses quite different collections of projects being done at the sites.** |
| **The ISPC is concerned with scientific critical mass and that insufficient emphasis is given to key research areas.** |
| **Dryland Systems is currently organized in five regional FPs which do not appear to have been strategically designed. Rather, they come across as merely a collection of different on-going projects in each of the sites. No rationale is provided for the choice of the five regions where Dryland Systems works, leading the reader to conclude that opportunistic reasons probably prevailed.** |
| **Dryland Systems has no supporting global FP that provides guidance, tools and methods and draws lessons from the work in the five regions, bringing together the work and results of the regional FPs. No central link is provided either to ensure that each of the FPs plan effective gender-responsive programs, and deliver results on gender using a common strategic plan.** |
| **An annex details outputs but they are relatively modest, dispersed and without an integrating framework.** |
| **Explicitly state what the added value of Dryland Systems at CRP portfolio level actually consists of, given all the breeding work undertaken by other CRPs.** |
| **Define and explain the scientific complementarity and practical interaction with other CRPs.** |

*Sources: ISPC Commentary on the extension proposal for CRP No. 1.1 Dryland Systems (DS) for 2015-2016 (ISPC 2014), and CO Comments to CRPs regarding 2015-2016 CRP Extension Proposals.*

## 2.2 The current status of the CRP

From its beginning, Dryland Systems has been organized around five regional Flagships. Table 2.2 provides some basic data on each of them. Each Flagship has several "action sites" where applied or action research is underway; there are also sites designated for scaling out innovations that had been successfully tested in an Action Site. Figure 2.1, below, shows the locations of the Flagships and Action Sites. Each Flagship has a Flagship Coordinator and each Action Site also has a coordinator. Although each Action Site is formally classified as representing a specific ALS (based on which ALS is predominant), on the ground there are multiple gradations of livelihood strategies – leading some CRP scientists to question the salience of ALSs (for example at the second S&IM in Hyderabad in April 2015; see PICOTeam 2015).

Table 2.2 Basic Information on the Five Flagship Regions

| Flagship | CGIAR Partners* | Action Sites and ALS |
|---|---|---|
| West African Sahel & Dry Savannahs (WAS&DS) | ICRAF, ICRISAT, ICARDA, ILRI, CIP, Biodiversity | 1. Kano-Katsina-Maradi transect, Niger & Nigeria – agro-pastoral systems<br>2. Wa-Bobo-Sikasso transect, Ghana, Burkina Faso & Mali** – rainfed systems |
| North Africa & West Asia (NAWA) | ICARDA, IWMI | 1. Béni-Kedache-Sidi-Bouzidi transect, Tunisia – agro-pastoral systems<br>2. Saiss, Morocco – rainfed systems<br>Nile Delta, Egypt – irrigated crop systems |
| Eastern and Southern Africa (ESA) | ILRI, ICARDA, ICRISAT, IWMI, ICRAF, CIAT Biodiversity | 1. Marsabit-Yebello-East Shewa**, northern Kenya, southern Ethiopia--agro-pastoral & rainfed systems<br>2. Chinyanja Triangle (Changara-Ntcheu-Dodza) Transect, Malawi & northern Mozambique – rainfed systems |
| Central Asia (CA) | ICARDA, IWMI, Biodiversity, CIP | 1. Aral Sea Region in Turkmenistan, Uzbekistan, Kazakhstan — agro-pastoral and rainfed systems<br>2. Fergana Valley in Kyrgyzstan, Tajikistan, Uzbekistan — irrigated crop systems |
| South Asia (SA) | ICRISAT, ICARDA, ILRI, IWMI, Biodiversity, CIP | 1. Chakwal, Pakistan – agro-pastoral systems<br>2. Jodhpur, Barmer, Jaisalmer Districts, Rajasthan, India ** – rainfed systems<br>3. Arantapur, Kurnool Districts, Andhra Pradesh, India – rainfed systems<br>4. Bijapur district, Karnataka (India) – rainfed systems |

*Source: Compiled by CCEE Team from CRP documents.*

** Underlined Centre coordinates the flagship. ** Sites visited by CCEE team members.*

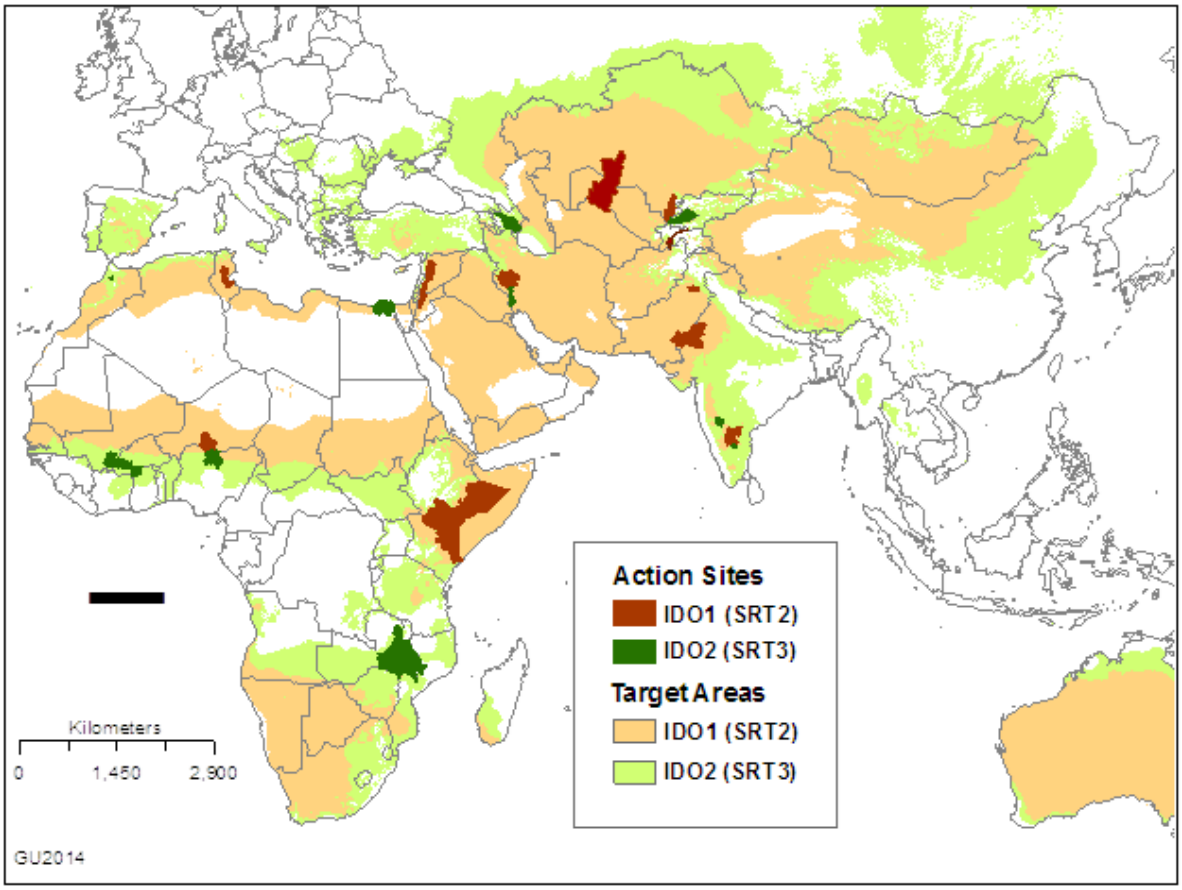
The Action Sites listed in Table 2.2 are those with at least some Windows 1&2 funding; in Flagships with Windows 3 and bilaterally funded projects, i.e. "mapped projects", there are additional sites. After the recent cuts in 2015 funding, it is clear that Windows 1&2 funding is spread very thinly. For example, after the recent budget cuts, a total of $294,863 is allocated across nine activities in the Marsabit-Yebello-East Shewa Transect, varying from $14,086 to $72,804, with most activities funded at $20,000 to $30,000[6]. Based on interviews in both the East Shewa Action Site and in the Mali site in West Africa, Centre overheads and staff costs account for most of these funds, leaving very little for operational expenses and partners.

The regional Flagships largely operate *de facto* as separate entities. They have developed their own impact pathways (until recently even the formats were not standardized) work plans and budgets with little direction from CRP management (such as common hypotheses and methodologies to facilitate comparative analysis)[7]. Until 2014, allocations of Windows 1&2 funds were based on the agreed shares of the budget for each of the CGIAR Centre partners. The CCEE understands there is now a ranking process used to allocate funds within Action Sites. The Plans of Work and Budget (POWBs) are prepared by each Flagship based on the template provided by the CGIAR, and then incorporated into the CRP's overall POWB. The extent to which mapped projects actually contribute directly to the larger goals of Dryland Systems work varies considerably. One reason for this is that most mapped projects are developed based on the

[6] Based on the revised POWB for ESA shared by the PMU with the CCEE team.
[7] The IPSC has consistently questioned the logic of this regional Flagship design.

Centres' mandates and not the mandate of the CRP. In other words, Centres negotiate with donors for projects and propose mapping it to the appropriate CRP. There is only one exception, the EU-IFAD Project which specifically supports the Dryland Systems CRP through W3, with co-financing by the CRP from W1&2[8].

**Figure 2.1 Dryland Systems Regional Flagships**




*Source: Dryland Systems 2015e:14.*

*Key: Dark red areas are actions sites in marginal "resilience systems". Dark green areas action sites in high-potential "Intensifiable Systems". Light orange and green are target areas.*

Table 2.3 provides an overview of the trends in budgeting and expenditure from 2013 to 2015. This shows that planned expenditure increased from 2013 to 2014, and has decreased dramatically with funding cuts in 2015. Actual expenditures were less in 2013 and 2014 than those proposed. For example, in 2013 actual expenditure was $35.4 million compared to the planned expenditure of $47.7 million. Actual expenditure was lowest, as a percentage of planned, in Flagship Program (FP) 2: NAWA and FP 4: CA[9]. Much of the spending variation relates to the fact that the program started only in May 2013, the W1&2 funds were received in the second part of the year, planned bilateral projects having changed implementation schedules, and reductions in W1&2 funding. Compared to the original planned expenditure of $122.7 million, three year expenditure will be around $121.9 million, or 99% of planned. Original W1&2 planned expenditures have decreased, while those associated with W3 and bilateral sources have increased.

[8] The proposed 2016 financial plan's deep cuts to this CRP will affect the CRP's contribution to the EU-IFAD project.

[9] Both led by ICARDA; this likely also reflects the disruption of having to move out of Syria.

Table 2.3 Planned and Actual Expenditure for 2013, 2014 and 2015 (USD million)

| Flagship | 2013 | | | 2014 | | | 2015[10] |
|---|---|---|---|---|---|---|---|
| | Planned | Actual | % of planned | Planned | Actual | % of planned | Planned |
| FP 1: WAS&DS | 5.9 | 3.9 | 67% | 11.7 | 9.4 | 80% | 9.0 |
| FP 2: NAWA | 17.6 | 11.3 | 64% | 13.5 | 11.2 | 83% | 5.8 |
| FP 3: ESA | 10.6 | 10.2 | 96% | 13.0 | 11.0 | 85% | 7.6 |
| FP 4: CA | 3.2 | 2.1 | 65% | 4.0 | 4.9 | 124% | 3.1 |
| FP 5: SA | 9.2 | 6.8 | 73% | 10.9 | 12.1 | 112% | 3.6 |
| **Overarching & Coordination (W1&2 only)** | 0.3 | 0.2 | 75% | 1.4 | 1.4 | 100% | 3.9 |
| **Director's Office (W1&2 only)** | 0.9 | 0.9 | 100% | 1.2 | 1.2 | 100% | 1.0 |
| **ITF (W1&2 only)** | | | | | | | 1.2 |
| Total | **47.7** | **35.4** | **74%** | **55.7** | **51.2** | **92%** | **35.3** |

*Source: Dryland Systems PMU data.*

The Dryland Systems CRP was originally conceived around four Strategic Research Themes (SRTs), sometimes referred to as Strategic Initiatives. SRT 1 involved strengthening innovation systems, developing stakeholder innovation capacity, and linking knowledge to policy action. It was envisioned that the theme would produce systematic reviews and the development of analytical frameworks to guide empirical work and facilitate comparative analyses.

SRT 2 aimed to reduce vulnerability and manage risk in resilient dryland agro-ecosystems. Objectives such as yield stability had priority over increasing productivity in these systems, and developing tools and processes to manage risk and vulnerability were the key research targets. Improving productivity was the major emphasis of SRT 3: sustainable intensification for more productive, profitable, and diversified dryland agriculture with well-established linkages to markets. The final theme (SRT 4), measuring impact and cross-regional synthesis, had the objective of mapping and characterizing dryland agricultural systems, assessing *ex ante* impacts of various agricultural innovations, and identifying priority research areas. During the course of implementation, SRTs 1 and 4 activities appear to have been incorporated into the second and third themes in action sites, based on agro-ecological zones.

Finally, in 2015 Dryland Systems has launched a budgeted "Overarching Flagship" program covering such topics as gender and youth, communications, capacity development, geo-informatics and data management, intellectual property, and integrated system analysis and modelling. This responds to a major concern expressed by the ISPC and others (Dryland Systems 2015f). Its budget is shown above in Table 2.3.

## 2.3 Conclusion

This Chapter has summarized the evolution of the Dryland Systems CRP, largely in terms of its responses to criticisms of its proposals and plans. It also briefly describes the Flagship structure of the CRP. The many changes that have occurred make establishing a baseline for evaluation

[10] W1/W2 is planned based on moving predictions made by the CO, while actual is based on received funding. For example, in 2014 planned W1/2 was based on $17million but $15.4 was received. In 2015 $8.6 million was planned in April but a lower amount may be received.

challenging. Two important observations are: the regional Flagships have operated largely as independent franchises at least until recently; and as other Chapters also highlight, funding has been fragmented and thinly allocated, and not strategically focused to achieve results.

# 3. Relevance of the Dryland Systems CRP

This chapter addresses the question, "how coherent and relevant are the objectives and overall design of the CRP on Dryland Systems?" Relevance as used by the CGIAR refers to the extent to which the program is consistent with the goals, System Level Outcomes (SLOs), comparative advantage, and reform agenda of the CGIAR, and whether program activities are consistent with the Program objectives and Intermediate Development Outcomes (CGIAR-IEA 2015a: Annex 2). The Chapter begins by discussing the rationale for a dryland systems research program. It then discusses the alignment of the Dryland Systems portfolio with the CGIAR priorities (SLOs) and Intermediate Development Outcomes, and its comparative advantage and partnerships.

## 3.1 Rationale for a dryland systems research program

The defining characteristic of drylands is their low level of annual precipitation. Precisely defining "drylands" is not easy, but the United Nations (UN) uses a broad definition: land areas with an aridity index of less than 0.65 (UN Environment Management Group 2011). The aridity index is based on the ratio between average annual precipitation and total annual potential evapotranspiration. Compounding the low precipitation is the unreliability and uncertainty of rainfall: much of the annual precipitation occurs within a short period during the year, but the amounts and timing vary drastically from year to year. Drylands are usually further subdivided into areas that are hyper-deserts, arid, semi-arid, and dry sub-humid, based on the aridity index.

The UN estimates that 41% of the world's land mass is drylands, including deserts[11]. About a third of the world's population, roughly 2.5 billion people, live in drylands[12]. Nearly half of these people are among the poorest and most vulnerable and marginalized in the world (van Ginkel et al. 2013). Around 400 million people living in drylands survive on less than $1 per day. Over 40% of Africans and Asians live in dryland areas; ninety percent of the residents of dryland areas are in developing countries. Drylands support 50% of the world's livestock, are important wildlife habitats, and account for nearly half of all cultivated systems (44%). Forty six percent of global carbon is stored in drylands. Drylands contribute substantially to global biodiversity: a third of cultivated crops originated in dry areas, and the wild ancestors and relatives of these plants still grow there. Drylands are both urban and rural: about a billion people rely directly on dryland ecosystem services, while some of the world's largest cities, including Cairo, Mexico City, and New Delhi, are located in the drylands. About two thirds of dryland systems consist of rangeland; much of the remainder consists of small farms.

The agro-ecological systems found in dry areas are very diverse and are a complex mixture of pastoral, agro-pastoral, rainfed and irrigated farming systems. The CRP began by identifying about seven dryland Agricultural Livelihood Systems (ALS) but recently consolidated its focus on three: 1) pastoral and agro-pastoral; 2) rainfed crop-livestock (including trees); and 3) irrigated crop systems (including trees) (Dryland Systems 2015e). On the ground, there are no firm boundaries separating these ALSs. For example, livestock are an integral component of most rainfed and irrigated systems, some irrigated systems are focused primarily on producing fodder

[11] 6.6% is deserts, 34.6% is other drylands (http://www.un.org/en/events/desertification_decade/value.shtml, accessed 2 July 2015). The UN excludes deserts from its concept of "drylands" in the context of sustainable development (http://www.un.org/en/events/desertification_decade/background.shtml, accessed 2 July 2015).

[12] The UN figure of 2.1 billion is for 2005. The Dryland Systems proposal dated 2013 uses slightly higher figures: 2.5 billion people, which is probably more accurate. About 16% live in chronic poverty. See also the recent Dryland Systems Task Force (2015) report. The recent Annual Report uses 1.6 billion people as its target beneficiaries (Dryland Systems 2015e).

for livestock, and most households have home gardens (which have conspicuously dropped out in the new formulations).

The people living in dryland areas face many serious challenges. Unsustainable land use and livestock and water management practices in the context of climate change impacts, exacerbated by growing populations, are leading to degradation of natural resources (land, water and biodiversity). This is threatening the well-being of dryland residents. Dryland degradation costs developing countries an estimated 4-8% of their Gross Domestic Product annually (UN Environment Management Group 2011). Rural dryland populations are characterized by high rates of poverty, malnutrition and unemployment, which are intimately linked through feedback loops to the state of natural resources. Some of the politically most unstable areas of the world, with high levels of conflict and alienation, are located in drylands, especially in West Asia and Africa; indeed, some studies have investigated linkages between drought and resource degradation in dryland areas and political unrest (e.g. Kelley et al. 2015 for Syria; Sunga 2011 for Darfur). There is, therefore, an urgent need to achieve higher rates of equitable development to reverse these trends. Since the livelihoods of a large majority of the dryland residents are based on agricultural production, this is an obvious focus for investment. Finally, while the Green Revolution invested in high potential areas, investments in agricultural research in the more marginal areas, which includes most of the drylands have been too low (e.g. Pingali 2012).

Despite these challenges, the UN Environment Management Group (2011) argues that drylands potentially offer their residents important opportunities, which can generate regional and global benefits. Their biodiversity is an asset that can be exploited more effectively; and trade in local products and services from dryland agriculture including pastoralism, ecotourism and renewable energy (solar and wind) can help stimulate regional green development. That report outlines a number of important investment opportunities that include agriculture and ecosystem services.

*The CCE concludes that there is therefore a clear and compelling rationale for a large-scale research program on dryland agricultural systems.*

## 3.2 Alignment of the portfolio with Strategic Research Framework (SRF) priorities

The previous SRF identified four System Level Outcomes (SLOs). These are: SLO1 - reduction of rural poverty, SLO2 - food security, SLO3 - improving nutrition and health, and SLO4 – natural resource management (CGIAR 2011). These are the SLOs that have guided the design and implementation of CRPs until this year[13].

The distribution of W3/bilateral investment in the System Level Outcomes (SLOs) is outlined in Table 3.1. The relative importance given to SLO2 (food security) and SLO4 (natural resource management), both at 34% of 2015 spending, is evident. The large bilateral projects with these key objectives drive this balance. For example, the USA-supported SmAT Scaling Project[14] has 2.16 million USD of expenditure in 2015, of which 60% targets SLO 4, while the DGIS[15] project has around 2.2 million USD. On a regional basis, SLO4 – natural resource management – appears to attract more funding in South Asia and Central Asia when compared to Africa. Given the poverty head counts in the regions, this balance appears to be appropriate. The Poverty

[13] The new SRF narrows the focus to three SLOs: 1) reducing poverty, 2) improving food and nutrition security, and 3) improving natural resource systems and ecosystem services (CGIAR 2015).
[14] Scaling-up Climate-Smart Agroforestry Technologies.
[15] Directorate-General for International Cooperation, Netherlands.

Headcount Ratio at $1.25 a day (PPP) (% of population) in 2011 for South Asia was 24.5% compared to 46.8% for Sub-Saharan Africa.[16]

**Table 3.1 Distribution of W3 and Bilateral Investment by IDO and SLO**

| | WAS | NAWA | ESA | CA | SA | Total |
|---|---|---|---|---|---|---|
| Total ($ million) | 7.4 | 3.8 | 8.0 | 2.3 | 2.7 | 24.3 |
| System Level Outcomes (SLOs) | | | | | | |
| SLO1 - reduction of rural poverty | 6% | 14% | 35% | 28% | 24% | 21% |
| SLO2 - food security | 46% | 31% | 39% | 7% | 18% | 34% |
| SLO3 - improving nutrition and health | 20% | 3% | 7% | 5% | 11% | 11% |
| SLO4 - natural resource management | 28% | 52% | 20% | 60% | 47% | 34% |
| IDO | | | | | | |
| IDO 1: Resilient Livelihoods | 7% | 11% | 35% | 18% | 17% | 19% |
| IDO 2: Wealth & Well-being | 15% | 24% | 17% | 11% | 24% | 18% |
| IDO 3: Food Access | 4% | 3% | 9% | 2% | 1% | 5% |
| IDO 4: Natural Resources Management | 41% | 53% | 22% | 62% | 32% | 37% |
| IDO 5 Gender Empowerment | 4% | 1% | 4% | 0% | 8% | 4% |
| IDO 6: Capacity to Innovate | 29% | 9% | 14% | 8% | 18% | 18% |

*Source: Dryland Systems PMU data in June 2015. Note: This Table is based on the previous SRF (CGIAR 2011).*

The Dryland Systems CRP has specified ambitious coverage targets for adoption of improved varieties, breeds and management practices by 2030. Of the 215 million households estimated to benefit from CGIAR-wide research in 2030, Dryland Systems accounted for nearly 30% (target of 60 million).[17] It is not clear why 30% of CGIAR-wide adoption would be derived from a CRP that accounts for 5% of overall CRP expenditures and that has a high strategic research and cooperation component.

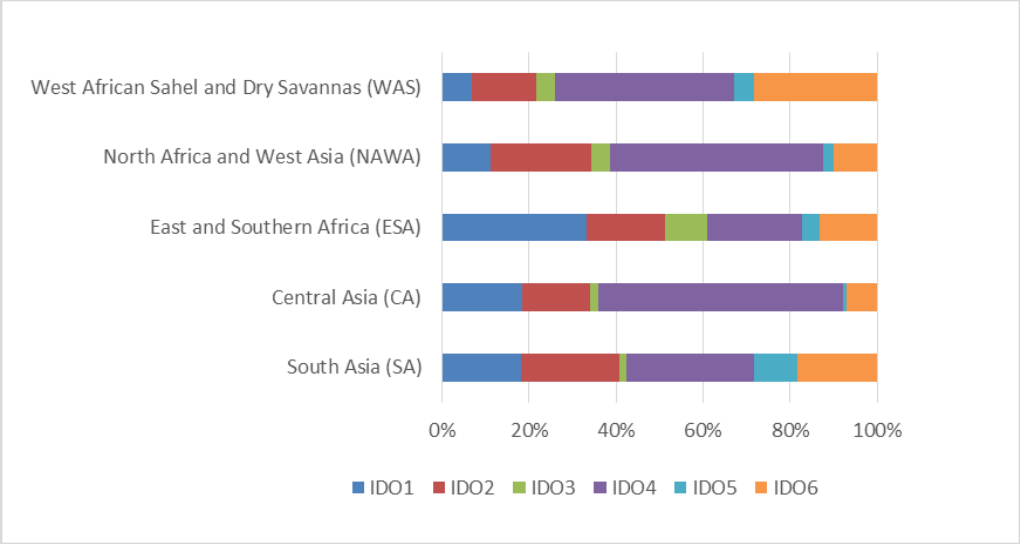
The CO's (2013) Portfolio Analysis highlighted that Type 3 CRPs which target new integrative and systemic issues (AAS, Humid-tropics, Dryland Systems, CCAFS, and A4NH) will most likely generate outputs such as new methods, databases and tools and concrete breakthroughs, though these had not yet been achieved on the ground. As stated in the ISPC 'must haves' section (Box 2.1, above), it is critical that impact pathways are defined based on robust assumptions. Current targets do not appear to be based on a logical framework grounded in realistic assumptions. Impact pathways are discussed below on Chapter 4.

## 3.3 Alignment of the portfolio with Intermediate Development Outcomes (IDOs)

Intermediate Development Outcomes (IDOs) provide the research portfolio level link to SLOs. The original Dryland Systems IDOs used in 2013[18] were reduced to six for the extension phase. This rationalisation was undertaken to simplify outcome pathways and explicitly link to the CGIAR structure for the expected Phase 2 Call. The IDOs and research and development outcomes (sub-IDOs) have been adapted for each CRP based on assessments of portfolio priorities. The value of planned total 2015 expenditures targeting IDOs in each region is provided in Figure 3.1.

[16] http://povertydata.worldbank.org/poverty/region/SSA, accessed 27 July 2015.
[17] CGIAR 2015: Table 3, Annex 3.
[18] IDO Design Group 10 September 2013, Result of CRP Discussion of the Common IDOs.

Figure 3.1 Value of Project Components and Activities per IDO (W1/2, W3 and bilateral)




*Source: Dryland Systems PMU data, June 2015.*

IDO 1 relates to resilient livelihoods. CGIAR guidance suggests it is tracked by indicators such as the number of food insecure households before and after dissemination and adoption of program outputs. Research targeting smallholder farmers may increase productivity and resilience, providing a pathway to poverty reduction. The SRF (CGIAR 2011) notes this is the classic route to increased productivity pursued by CGIAR Centres and programs in the past. It is relatively large in ESA compared to other Dryland Systems regions because the Index Based Livestock Insurance (IBLI) project has a key objective of developing a productive safety net (insurance) for vulnerable pastoralists and enhancing their ability to protect livestock assets during drought. All of the relatively large projects are mapped to IDO 1.

IDO 2 accounts for wealth and well-being. CGIAR guidance proposes it be measured by indicators such as the number of households that increased their income by at least 20% after dissemination and adoption of program outputs. This IDO attracts relatively similar resourcing across Dryland Systems regions, with the exception of WAS&DS.

IDO 3, food access, reflects the number of households that improved their dietary scores after dissemination and adoption of program outputs. It has relatively limited mapped resources across all Dryland Systems regions. Analysis of the value of research activities targeting this IDO using PMU data indicates 5% of the total portfolio value is targeting this objective (Figure 5.5). During field work in South Asia, informants highlighted that farmers in drylands integrate multiple cropping and livestock production systems to manage risk and sustain nutrition. For example, if rains do not come - crops fail - then farmers rely on livestock products. In such a dynamic environment, research needs to consider multiple systems to package appropriate farmer recommendations. Focusing on research within single product-focused CRPs does not capture this dimension. In the two Africa sites visited, the CCEE found a lot of interest by farmers in vegetable growing for improved nutrition. The use of systems tools – such as simulation and crop/livestock production modelling and trials – has the potential to identify better ways to manage these risks and improve dietary scores among poor households. Resources targeting this IDO were relatively high in the extension proposal.

*Based on the cost analysis of the portfolio portion targeting of IDOs and feedback during fieldwork, the CCEE suggests IRTs should be encouraged by the PMU to give nutrition in drylands greater attention in bilateral project development.*

IDO 4 (natural resources management) considers reduced land degradation, increased water productivity of crops, trees and livestock, enhanced soil fertility, and use or adoption of sustainable agro-ecosystem management. It is the most substantially resourced IDO. Targeting is very high in WAS&DS (50%) due to the high value Enhancing Food and Water Security for Rural Economic Development Project funded by DGIS mapped to this IDO. The project has objectives to increase water and food security and drive economic development of the rural population in target zones in Ethiopia, Kenya, Mali, Burkina Faso and Niger through addressing biophysical (soil nutrient and soil water), market and institutional constraints to rural development. In CA, the large IDO 4 proportion reflects mapping of the Knowledge Management in the CACILM[19] II project, which focuses on emerging challenges faced by smallholder farmers that increase their risks and vulnerability to the effects of climate change and land degradation and the Assessment of the Economics of Land Degradation for Improved Land Management in Central Asia project funded by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). One hundred percent of this project is mapped to IDO 4.

IDO 5 relates to gender empowerment, which receives similar relative levels of support across the regions. The needs of young people must also be taken into account as a cross cutting issue. This objective is probably best captured in IDO 6, the capacity to innovate. It reflects capacity needs of the research community, along with farmers and other stakeholders in target value chains. *Given this IDO attracts the second highest relative value of portfolio targeting, the CCEE believes the Dryland Systems portfolio is fairly well aligned with the new CRP landscape*. Country frameworks have been aligned to national priorities using innovation platforms, surveys and other participatory approaches. Funding is high in the WAS&DS region as large components of the DGIS, EU-IFAD and SmAT Scaling projects are mapped to this IDO.

## 3.4 Partnerships and comparative advantage

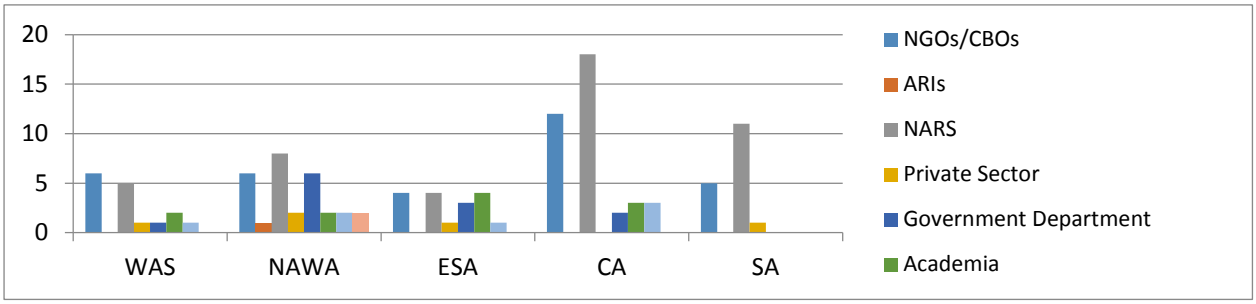
As a global research program, Dryland Systems relies on a diverse array of local, regional and global partnerships to mainstream integrated agricultural systems research and ensure that the Program's research outputs are effectively used to achieve development impacts. The Dryland Systems CRP claims to have 227 partners and 45 innovation platforms in five regional Flagships to engage directly with the beneficiaries of the research and to ensure demand-driven development (Dryland Systems 2015e). Partners include: CGIAR centres, other CRPs, scientists, agricultural and social extension workers, farming communities, policymakers, regional and international organizations, development agencies and the private sector (Figure 3.2). A survey by Dryland Systems showed a large variation among Flagships and Centres in the number and diversity of existing partnerships and the strategic perspective of future ones (e.g. the Capacity Development Strategy). Flagships with a large number of partnerships also reported a larger number and diversity of activities mapped to IDOs. The number of "advanced research institute" (ARI) partners is lower than the CCEE had expected (see below).

Based on the on-line survey (Annex 8), responding partners agree that the vision and concrete goals for the collaboration are crucial for successful partnership. Around 70% of responding partners reported that they are well aware of the Dryland Systems vision, mission and objectives. This leaves a gap of 30% of partners who need to be better informed through enhanced communication and targeting. Around 70% of the 22 partners who responded to the survey agree that the partnership substantially increased the relevance and effectiveness of dryland systems

[19] Central Asian Countries Initiative for Land Management.

research from the point of view of scientific progress as well as from the point of view of users and beneficiaries. Partners also feel confident that they substantially contributed to collecting and analysing data for research, and helped in outreach and communication of the research results (Annex 8, Question 10). Around 90% of partners who took the survey said they are involved to some degree with research implementation and outreach activities (Annex 8A, Question 12). Over 80% of partners claimed that they were involved in research prioritization, project planning and design and that there is a feedback mechanism to contribute to revised research design. This is seen as very positive.

**Figure 3.2 Dryland Systems Partners in the Five Flagship Regions**




*Source: PMU data.*

The S&IM focus group discussion brought out a few interesting recommendations:

(1) A representative of a youth organization 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.

(2) The program needs global partners because the systems approach is new to the [responding] institute, and partners need to develop capacity in the systems approach, strengthening their ability to do systems research.

(3) In West Africa there is limited collaboration with regional institutions such as the Forum for Agricultural Research in Africa (FARA) and Economic Community of West African States (ECOWAS) and hence a need to strengthen this.

(4) Connections should not be through individuals and institutions but institution to institution. In some cases individuals highjack the partnership, or in other cases the staff turnover results in the collapse of the partnership.

(5) To strengthen outcomes and sharing outcomes of program with partners, Dryland Systems needs to define the issues together with partners at the planning stage.

A major problem observed in the field visits in Africa was the problem of integrating the work of the CGIAR partners. As described in Annex 9, there remains a tendency for Centres to work in separate field sites, and carry out separate and un-coordinated surveys of the same farmers. Local partners in Ethiopia and Mali explicitly raised this issue, though in Ethiopia some recent progress had been made. Several factors are at work: insufficient W1&2 budget; dependence on bilateral projects which are dispersed to some extent and often focused more on implementation and not research; Centres' reluctance to share budgets; and budget holders are in Centres, not at Flagship or Action Site Coordination level. These issues also reflect the apparent absence clear incentives to encourage integration (Annex 9).

Based on interviews, field visits, and the survey, there is no doubt about the strength of the CRP's partnerships at national and local levels with NARS, national universities, NGOs, community-based organisations (CBOs), private firms, and farmers. However, there is an expectation,

referred to in various CRP proposals that CRPs will also collaborate with ARIs having complementary expertise. What kinds of partnerships has Dryland Systems established with ARIs, and how effective are they? The CCEE team initially found this question difficult to answer. The various planning documents (POWBs) and reporting documents (Annual Reports) refer to ARI partnerships in general terms, but rarely provide details. There are a few exceptions. For example, the NAWA 2014 Performance Monitoring Report (NAWA 2015) describes an international training course on integrated system assessment and monitoring organized in collaboration with "renowned scientists from Montpellier-SupAgro, CIHEAM-IAMM,[20] Wageningen University, Technical University of Madrid, and ICARDA" (NAWA 2014:10). The same report briefly mentions cooperation on gender with Canadian institutions and the development of a research initiative with French partners to be funded by Agropolis Foundation, Montpellier (p.37). A review of the four other Flagship Annual Reports for 2015 did not turn up any further examples of ARI partnerships. All of them emphasize their strong local partnerships including partnerships with other CGIAR Centres and CRPs.

On request, the PMU provided a draft table listing partners, derived from the MEL system. It includes the following institutions which can be regarded as ARIs: Commonwealth Science and Industrial Research Organisation (CSIRO, Australia), Institute for Advanced Sustainability Studies (IASS, Germany), and ODI (Overseas Development Institute, UK). Their roles are not specified. An Excel sheet extracted from the MEL system listing partners has also been shared with the CCEE team. With the exception of Leeds University for the Task Force, the CRP (through its Lead Centre) does not contract directly with ARIs; contracts and MoUs are always done by partner Centres for specific tasks under mapped projects. Examples of the latter are CIAT and IASS for a small activity under the "AGORA" project and agreements with the Universitaet für Bodenkultur Wien/Centre for Development Research (BOKU/CDR, Austria) for work in Ethiopia and Mozambique in ESA[21].

There are numerous universities and research institutions with substantial expertise in dryland systems research, and there is a Global Network of Dryland Research Institutes (GNDRI) with 16 member institutions[22], though it is not clear from the website how active this network actually is. Other examples of potential partners not mentioned above include the Dryland Research Centre Hamburg (DRCH); the Dryland Agriculture Institute at West Texas A&M University; Sheffield Centre for International Drylands Research (SCIDR), University of Sheffield; and Wageningen University and Research Centre[23]. Harnessing the expertise from these and other institutions to collaborate effectively to address the complex challenges posed by dryland agro-ecological systems would undoubtedly be a productive and possibly game-changing initiative.

While many of the ARIs have expertise that is not available within the CGIAR, none have the unique capabilities and advantages of the CGIAR and specifically the Dryland Systems CRP. Overall, the CGIAR Centres have a clear advantage in researching complex global agricultural issues because of the range of expertise and years of experience they can mobilize. Their unique strengths, illustrated at the Action Sites of the Dryland Systems CRP, include their experience and capacities for research and capacity development at the field level in developing countries, made

[20] The Mediterranean Agronomic Institute of Montpellier (IAMM) is one of four Mediterranean agronomic institutes of the International Centre for Advanced Mediterranean Agronomic Studies (Centre international des hautes études agronomiques méditerranéennes - CIHEAM).
[21] The BOKU example was provided by the M&E Coordinator of Dryland Systems.
[22] http://www.gndri.net/index.php, accessed 15 July 2015.
[23] The CCEE understands at least two of these, West Texas A&M and Wageningen Universities, do work on mapped projects – but this is not the same as actively participating in supporting the intellectual leadership of the CRP. A faculty member from West Texas A&M was on the ISAC until July 2014 and is said to have made important contributions; a faculty member from Wageningen is on the Task Force.

possible by their long-standing strong partnerships with regional and national institutions and their credibility with both donors and developing countries. Strategic partnerships with ARIs having specialized expertise is critically important but none of the ARIs have the unique advantages of the CGIAR.

In essence the CCEE suggests that that Dryland Systems could make better use of the expertise available through ARIs, though it recognizes that budget restrictions are a limiting factor; such partnerships could enhance the substantial comparative advantage of CGIAR Centres working on dryland agricultural systems. The CCEE also notes that since the first draft of this report was prepared, the PMU has been developing a format to record its partnerships more effectively in the MEL system. This is a welcome development.

## 3.5 Conclusions and recommendations

### Conclusions

The CCEE concludes that overall the Dryland Systems CRP is highly relevant. There is a clear need for investing in improving sustainable productivity of dryland agricultural systems which could benefit hundreds of millions of poor people. The rationale for this CRP is clear and difficult to dispute. The Dryland Systems CRP is well aligned with both the previous CGIAR SLOs and the new ones, and is also reasonably well aligned with the IDOs. However, more attention could be paid to improving nutrition of rural households in the drylands.

The CCEE finds that the CRP has strong partnerships at regional Flagship and national levels with NARS, universities, NGOs, CBOs, and farmers. The working relationships among the Centres at regional Flagship level vary, but in most cases observed are not as well-integrated as would be expected. Several factors underlay this fragmentation: insufficient W1&2 funds, dependence on Centre-led bilateral projects, and budget holders are Centre- not CRP-based. The incentive structure does not encourage inter-Centre collaboration at present.

While there are also some good partnerships with ARIs working on dryland agricultural systems, the CCEE concludes that there is great potential for working effectively with more ARI partners. The CGIAR Centres working on dryland agricultural systems have substantial comparative advantage in terms of their decades of experience working in the field and with local and national partners, but could complement this through partnering with institutions having advanced modelling and data analysis capacities.

### Recommendations

The CCEE makes two recommendations based on the analysis in this Chapter. These are both aimed at the leadership of Dryland Systems CRP and the proposed new CRP (DCLAS).

1. **Pay more attention to food access and improved nutrition.**

   *Action: Dryland Systems and DCLAS leadership.*

   The new CGIAR Strategic Results Framework gives a high priority to improving nutrition and health outcomes (CGIAR 2015). At an aggregate level it appears Dryland Systems reflects both the previous and new SLO priorities. However, food access, which reflects numbers of households having improved their dietary scores after dissemination and adoption of program outputs, has relatively limited mapped resources across all Dryland Systems regions. Systems thinking – which considers the integration of multiple cropping and livestock productions systems – is unique in the single commodity focussed CGIAR and has the potential to manage fluctuations in available nutrition. The CCEE understands improving nutrition will be given greater emphasis in the proposed new DCLAS CRP.

2. **Take the initiative to facilitate and catalyse stronger partnerships linking ARIs in dryland systems research and capacity development with national institutions in developing countries.**

*Action: Dryland Systems CRP and DCLAS leadership.*

The CCEE found that while there are some linkages and examples of collaboration of the CRP with ARIs, they are not adequate to achieve strong synergies between the strengths of the CGIAR Centres and those of advanced research institutions. An example of a way forward is to co-supervise Ph.D. students and postdoctoral fellows to do field research in collaboration with CGIAR scientists but drawing on the expertise of the ARI scientists as well. Another possibility is to prepare joint research and capacity development proposals and seek funding from new donors that already support the ARIs' work. The proposed new DCLAS CRP should build on this initiative and develop strong ARI-CGIAR partnerships for dryland research.

# 4. Effectiveness, Impact and Sustainability

This chapter addresses the following Evaluation Question: Is the CRP likely to deliver its intended results? In other words, is it likely to produce the expected outputs and achieve its intended outcomes and impacts sustainably? "Effectiveness" refers to the extent to which the Program is progressing towards meeting its objectives and is expected to achieve them, taking due account of the inherent uncertainties and risks of research. As acknowledged by the IEA, effectiveness is very difficult to assess objectively in research programs[24]. This is especially the case given the relatively short time period of the Dryland Systems CRP. This Chapter reviews the concept of theory of change and impact pathways, reviews the evolution of these in Dryland Systems and the extent to which they are used, and offers observations on evidence for impacts. It also assesses the quality and effectiveness of cross-cutting themes and finally discusses the issue of sustainability. Other elements of effectiveness are discussed in other chapters: the quality of science is discussed in Chapter 5 and governance and management in Chapter 6.

## 4.2 Theory of change and impact pathways

**What is meant by "theory of change" and "impact pathways"**

In principle, the CGIAR has a clear idea as to how research produces outcomes that lead to development impacts. It states:

> "CRPs organized around development objectives start from the development outcome and organize backwards through the impact pathway, rather than identifying research outputs produced within particular mandates and specifying illustrative impact pathways that potentially contribute to all of the system level outcomes" (CGIAR 2011: 44).

A Theory of Change (ToC) provides a roadmap to get from the current state of affairs to a more desirable state of affairs. It sets out the logic, the key underlying assumptions and risks, and ideally specifies which stakeholders need to make what changes in their knowledge, attitudes and behaviour (outcomes) in order to achieve the desired impact (for example improved nutrition). Impact pathways or "outcome models" are models or diagrams that illustrate the steps in the change process. Ideally, the ToC and associated impact pathway are developed through a brainstorming process among key stakeholders; and progress is regularly reviewed to test the assumptions and either continue along the path or modify the path based on experience. Therefore, the ToC should create a space for critical reflection and learning. This however requires a commitment to learning from experience and making adjustments based on the lessons learned (Valters 2014).[25] Figure 4.1 is a simplified "Outcome Model" to illustrate the basic logic of one ToC.

Based on interviews and personal experience of the Team Leader, it is noted that many CGIAR scientists find it difficult to apply this approach to planning research. This may be because CGIAR Centres and CRPs do not invest adequately in training scientists to use theories of change and plan their research to achieve desired impacts and outcomes. Instead, research planning seems to continue to be rather traditional, with impact pathways prepared as an afterthought to meet a bureaucratic requirement. Dryland Systems is probably not unique in facing this problem.

[24] See Annex 2 of the CGIAR Standards for Independent External Evaluation, http://iea.cgiar.org/sites/default/files/Standards.pdf (accessed 1 July 2015).

[25] This site provides a clear explanation of theories of change and their use: http://www.theoryofchange.org/what-is-theory-of-change/, accessed 26 July 2015. Valters (2014) examines the experience of one development agency with using theories of change.

Figure 4.1 Illustration of an "Outcome Logic Model"

| Desired change | Actor(s) who will change in some way | Change in Practice/ Behaviour | Change in Knowledge, Attitude and/ or Skills (KAS) Required to Achieve Change in Practice | Program Strategy to Achieve Changes in KAS and/ or Practice | Research Outputs needed for/ involved in Changes |
|---|---|---|---|---|---|
| | ← | ← | ← | ← | ← |

*Source: Derived from a format previously used by the Challenge Program on Water and Food (CPWF). It is important to note this is highly simplified, for illustration; and the actual process of change involves multiple influences and feedback loops.*

### Dryland Systems theory of change and impact pathways

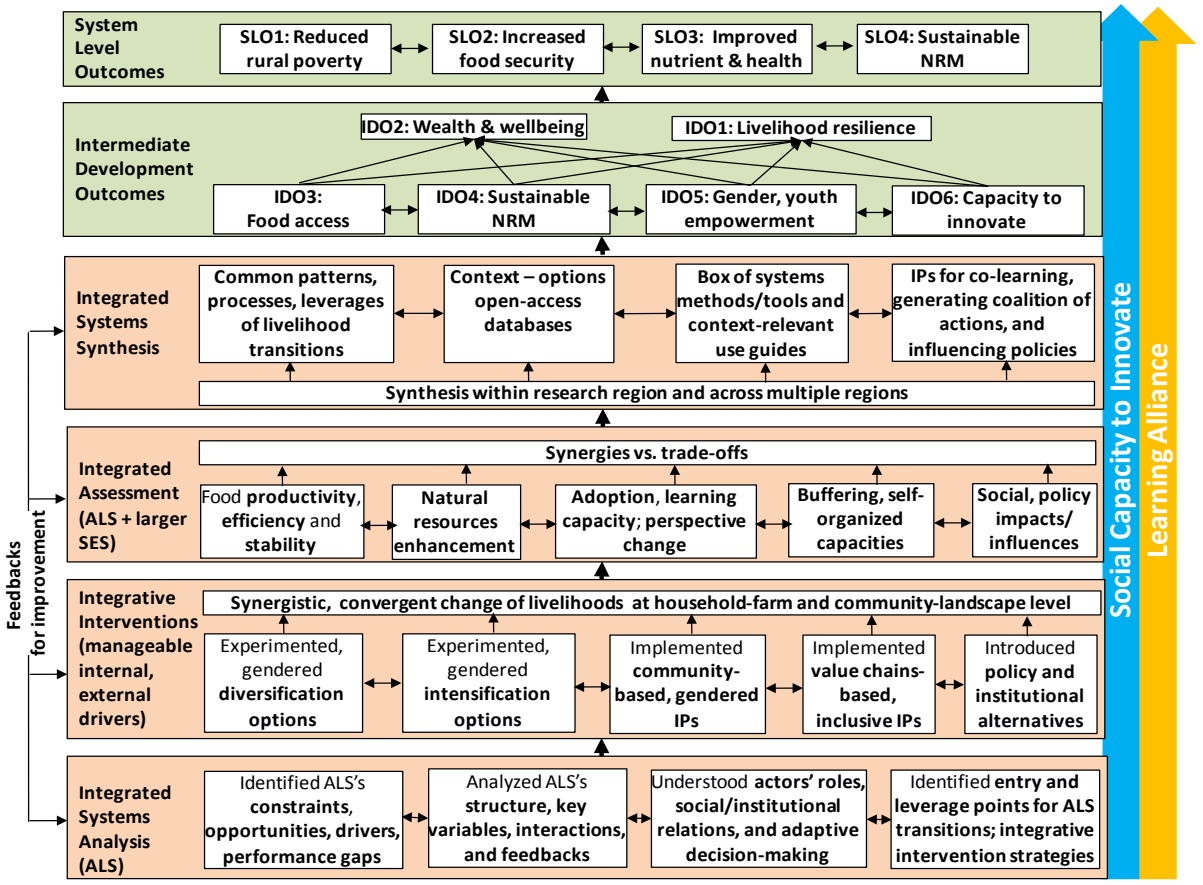
The ISPC has consistently questioned the adequacy of the Dryland Systems "theory of social change" and linkages to impact pathways, e.g. in its 28 February 2013 commentary on the revised proposal and in its commentary on the Extension Proposal dated 27 June 2014 (ISPC 2013, 2014). The CCEE found that each of the five regional Flagships has its own distinctive impact pathway diagram dated December 2014, though the team understands these are being reviewed by the ALS specialist of the Global (Overarching) Flagship Program.

The CRP's Integrated Systems Analysis and Modelling Group (ISAMG) has recently been established. Tasks of the group include the drafting of an impact pathway and preparing a strategy paper on integrated systems analysis and modelling. An "Agricultural Livelihoods Systems Expert" has recently joined the Global Flagship Program and leads the ISAMG. He has developed a revised proposed impact pathway which was presented and discussed at the April 2015 S&IM in Hyderabad, India. This is reproduced here as Figure 4.2. The underlying ToC is said to be agent-based, starting with ALS and identifying "integrative intervention strategies" to improve production and livelihoods. This ToC describes the types of interventions that are expected to bring about the outcomes depicted in the pathway of change map. Outcomes are tied to a web of interventions embedded in a system. Dryland Systems, like other system CRPs, faces a great challenge to simplify, but not to over-simplify the system, and the specific interventions that lead to impacts. The CCEE team believes the Dryland Systems has made progress in producing a more plausible, though still generic and abstract, impact pathway model that can guide the program towards their objectives.

However, the CCEE team believes more work is needed. First, there needs to be a clear statement of the underlying assumptions on which the impact pathway is based. There are currently multiple unstated assumptions about the direction of change and likelihood of synergies leading to positive outcomes. Second, there needs to be a clear specification of all the key stakeholders, their current roles, what roles they need to play, and what is required for them to be able to play these roles. This can be expressed in terms of the changes needed in their knowledge, attitudes and skills (KAS) as illustrated above in Figure 4.1; but it is critical as well to identify the various linkages among the stakeholders (for example by using network analysis) and to clearly identify the balance of power and vested interests that may affect achieving the desired outcomes. All of this needs to be validated through workshops with key stakeholders.

The ToC for Gender is a useful starting point (Figure 4.3). It depicts well the interlinkages in the system, but lacks the entry points and identification of specific gender activities and stakeholders embedded in the system and the potential for scaling up.

Figure 4.2 Dryland Systems Impact Pathway




*Notes: ALS = agricultural livelihood systems, IP = innovation platforms, SES = socio-ecological systems. Boxes in sandy orange show activities and outputs of interrelated phases of integrated systems research. Boxes in green show development outcomes driven from integrated systems research-in-development.*

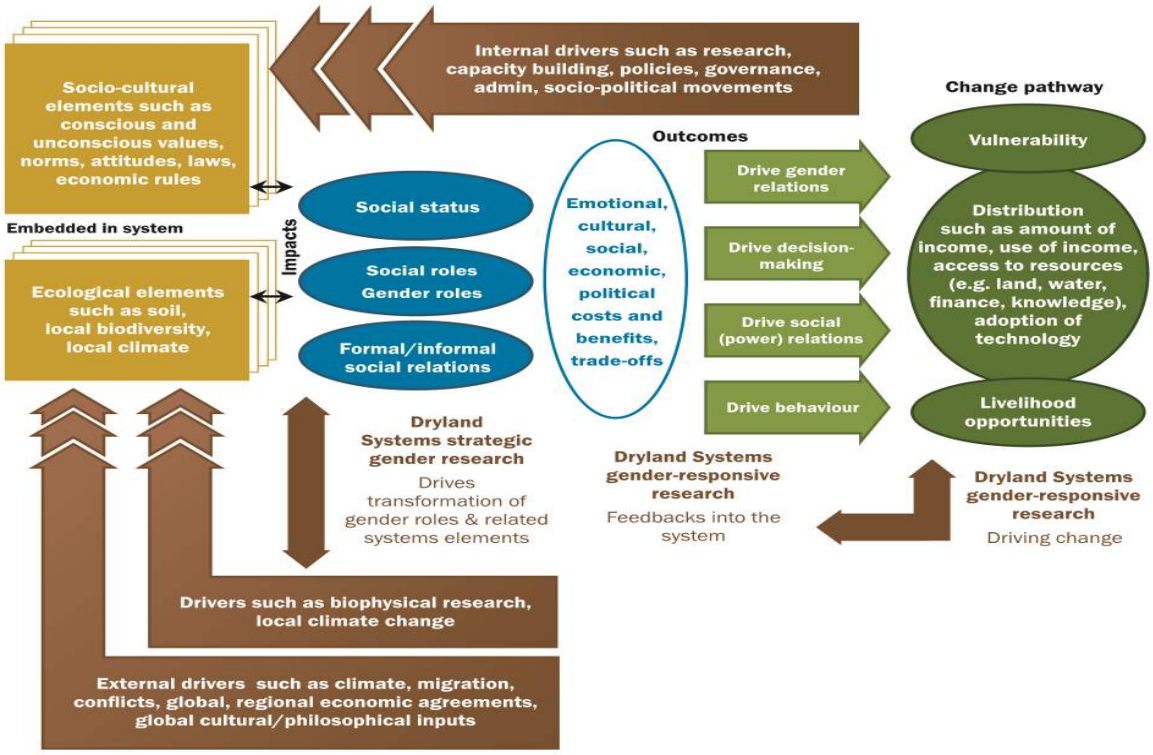
*Source: Draft Note on "Generic Impact Pathway through Integrated Systems Research in-development Approach" by Q B Le, later presented at April 2014 S&IM in Hyderabad, India.*

A generic ToC is unable to provide sufficient details on the specific interventions towards all outcomes and crosscutting themes. In addition, the current impact pathway seems to be imposed from above; it may not reflect the realities at field and Flagship levels; and it certainly does not reflect a participatory bottom-up approach to creating the pathway. The CCEE team suggests the CRP consider taking the following steps:

1. Provide hands-on training to scientists in how to use a theory of change to plan and monitor implementation of research *in* development.
2. Hold workshops with key stakeholders in each of the regional Flagships to develop realistic impact pathways that include specification of key stakeholders and their roles, power relationships, and potential entry points for change.
3. Build on the regional Flagship impact pathways to produce a generic CRP-level impact pathway.

4. Build the impact pathways into the MEL system so that that system becomes a mechanism for tracking progress toward outcomes, including the capacity to adjust the theory of change and impact pathways based on lessons from experience.

**Figure 4.3 Dryland Systems Theory of Change for Gender**



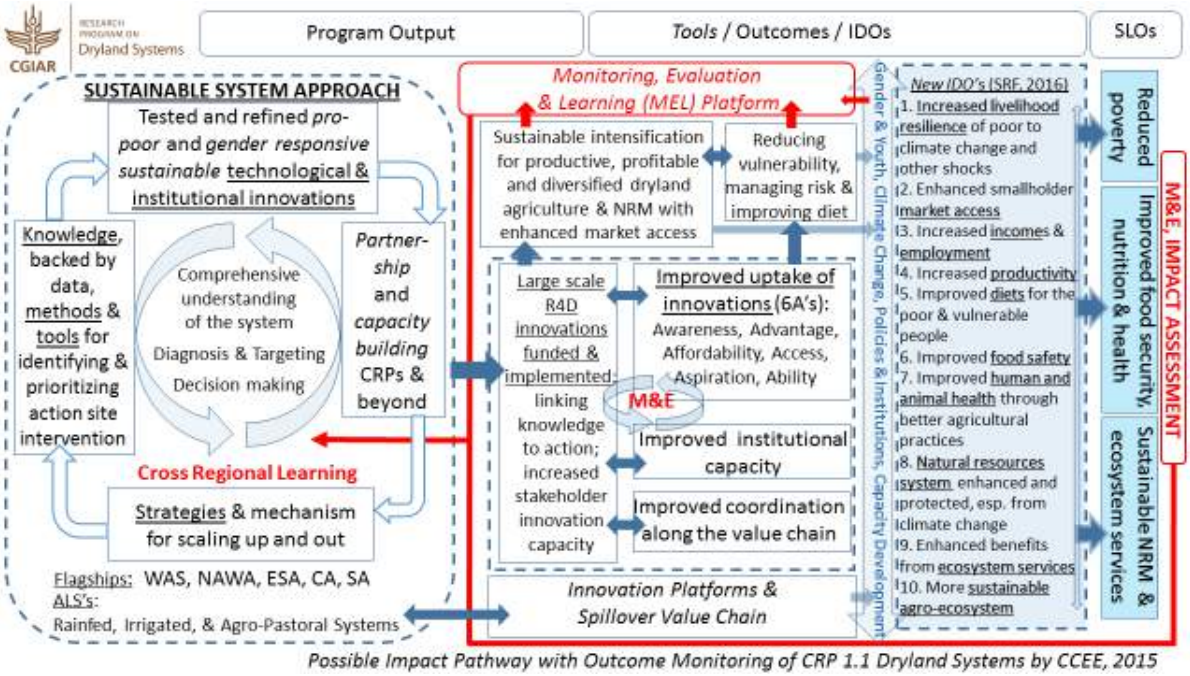

*Source: Gender Strategy 2014-2017.*

Figure 4.4, below, prepared by a member of the CCEE team, illustrates the potential central role the MEL system can play. It may be too late to apply this suggestion to the Dryland Systems CRP, but it could be considered in developing the theory of change and associated impact pathways for the proposed DCLAS CRP.

## 4.3 Evidence of impacts

In terms of what impacts have, or are likely to be evident in relation to SLOs/IDOs, interviewed researchers thought that three to four years is needed before Dryland Systems impacts will be evident. During the South Asia field visit, it was noted that research is now more demand driven; therefore more impact is likely. NARS representatives thought the most significant impact of Dryland Systems in the next two years will be greater awareness. For example, it was stated that previous to the CRP, farmers were not interested in soil or water testing. Now they are open to suggestions of what to do, so a changed attitude is evident. In the two African sites visited, there is also evidence of potentially important impacts within the next few years; in Ethiopia, the researchers are contemplating seeking bilateral funding to scale out the results of the research. Notwithstanding the limitations of the current ToC, and short life of the CRP which limits impacts, the Dryland Systems CRP has had some achievements to date. A number have been noted in annual reporting for 2013 and 2014, though it not clear which of these are from CRP and legacy investments. The following paragraphs are based on Flagship and CRP Annual Reports for 2014.

Figure 4.4 Illustration of Impact Pathway Showing the Potential Role of the MEL System




*Possible Impact Pathway with Outcome Monitoring of CRP 1.1 Dryland Systems by CCEE, 2015*

### West African Sahel and Dryland Savannahs (WAS&DS)

The claimed outcomes and impacts include the establishment of innovation platforms and conducting trials of heat tolerant wheat varieties with an observed yield increase from 1-2 to 5-6 tons/hectare in West Africa. Harvesting technologies, leafy vegetables and high value trees were tested in 88 villages. A total of 288 successful tests were conducted and 31 Farmer Field Schools undertaken. The Flagship is dominated by agro-pastoral and rainfed production systems. Packages of crop rotations, water productivity interventions, and market connections are the subjects of on-going research, along with reviewing past dryland systems work and drawing lessons from successes. Evaluating risk management strategies, assessing value-adding for post-harvest strategies, and analysing resource use and associated trade-offs to optimize community-level decision making are also on-going activities.

### North Africa and West Asia (NAWA)

This Flagship is largely comprised of rainfed, irrigated and agro-pastoral systems. Conservation agriculture development was nominated in the 2014 Annual Report as a key success in parts of Tunisia, Algeria, Iraq and Syria. Just what proportion of benefits that can be attributed to the CRP is unclear, as this work was being undertaken for some time prior to 2012. Yield gains, fuel savings, reduced labour requirements and less herbicide input were major benefits identified across an adoption area of 40,000 ha by 5,000 farmers. On-going research to improve water productivity in the Nile Delta using bed-planting and introducing integrated technical and policy innovations to increase resilience for rangeland systems are the focus of planned 2015 activities. Similarly, research is on-going at the Meknes-Sais action site in Morocco, where research focuses on sustainable intensification of wheat-based system, fruit trees-based system and vegetables-based system; and the Béni Khédache-Sidi Bouzid site in Tunisia, where reducing vulnerability and increasing farming system resilience is a key target.

### Eastern and Southern Africa (ESA)

Highlight achievements for ESA noted in the 2014 Annual Report include building value chains, introducing sustainable management of trees, the development of Index Based Livestock Insurance (IBLI), and the strengthening of partnerships, mainly in pastoral systems. On-going activities in 2015 include the examination of interventions to improve dietary diversity and quality and applying systems approaches for sustainable land and water use.

### Central Asia (CA)

The Central Asian Flagship highlighted improving coordination and cooperation among communities and the adoption of mohair and felt production by women's groups as key achievements of the program. Although not systems research, the 2014 annual report indicates 200 improved varieties of winter wheat were evaluated in on-farm trials for tolerance to salinity and frost. Piloting and out-scaling of integrated crops, trees and livestock systems; strengthening innovation platforms and piloting the improvement of quality of local wool and mohair products; and improving resilience in salt-affected croplands are key planned activities for this Flagship.

### South Asia (SA)

Adoption of practices and technologies based on legacy activities by partner organizations – such as expansion to 5.1 million ha in Karnataka, India, with integrated technology packages and up-scaling to policy within State Government institutions -- was featured as important outcomes of the South Asia Flagship in the 2014 annual report. Around 750 on-farm trials of improved cultivars, nutrition strategies and soil and water conservation were implemented and evaluated, showing potential to increase crop yield from 10% to >150%. New villages have been identified for out-scaling conservation agriculture and introducing cactus for the upcoming year of implementation. Efforts in Rajasthan focus on the fostering of Innovation Platforms for engaging partners, integration of medicinal and aromatic plants and cash crops, integrated land resources development using village clusters and index catchments, and sustainable intensification of crop and livestock production. The Chakwal Action Site is within the largest rainfed region of Pakistan; quite a number of activities are underway focused on both resilience and intensification, largely funded by Windows 3 and bilateral projects.

## CCEE Reflections on reported impacts

These achievements are commended by the CCEE and should be documented in branded and peer reviewed publications. The assessments should consider what achievements are those of the CRP, and which ones are from prior research. A review of CGIAR research impact studies since 2000 indicated that research in crop genetic improvements, pest management, natural resources management, and policy have positive benefits relative to investment (Renkow and Byerlee 2010). However, there were limited examples of dryland success stories. Overall, the CCEE also found limited examples of dryland farming or systems research success stories across a range of literature, which greatly hinders advocacy. In reality, the CGIAR inspired-Green Revolution has missed the drylands, and this should be the first region targeted in any centre-wide initiative. Pingali (2012: 12304) notes that the original purpose of the Green Revolution was to "intensify where returns would be high, with a focus on irrigated or high rainfall areas". The author suggests the Green Revolution has had a limited impact on poverty reduction in marginal areas.

Similarly to the drylands, systems research impact stories are limited in the literature. Matthews and Stephens (2002) reviewed the use of simulation models in developing countries and did not identify a large number of successful studies. Simulation studies in Australia designed to improve water productivity have identified better summer weed control, inclusion of break crops, earlier

sowing and matching Nitrogen supply to soil type, leading to increased farmer profits. These studies have achieved impact though direct contact with farmers in shaping study and simulation designs (Kirkegaard 2014). Developing countries cropping is characterised by smallholders using low plant density and limited inorganic fertiliser inputs (Whitbread et al. 2009) which requires modelling approaches to be adapted to achieve benefits through farmer participation.[26] Such interaction is costly and may limit widespread adoption. The costs and benefits of such approaches need to be considered. *Ex-ante* analysis of likely benefits and a summary of results so far using Dryland Systems approaches would be a useful enhancement to the limited body literature. The CO called for 'success stories' in systems work. The CCEE concurs. The Integrated Systems Analysis and Modelling Group (ISAMG) and the group proposed for Flagship 1 of the Dryland Cereals and Legumes Agri-Food Systems (DCLAS) could take on this work.

## 4.4 Crosscutting issues

This section discusses three cross-cutting themes of the Dryland Systems Program: Gender and Youth, Communication, and Capacity Development. It uses four levels of evidence: analysis of documents (e.g. Annual Report 2014, Gender, Youth and Capacity Development Strategies, amongst others), field interviews, field reports, observation of working group meetings, and the survey of partners and staff.

### Gender and youth

This evaluation has focused more on the Gender Strategy, due to the recent launch of the Youth Strategy initiative. Youth is discussed alongside gender, since many emerging issues are similar. The Youth Strategy (2014-2017; Dryland Systems 2015g) aims to: (1) provide *ex ante* diagnostic analysis, including adapting multidisciplinary methods and tools to identify youth issues (by gender, socio-economic class, ethnicity, and ALS); (2) identify and fill specific knowledge gaps and entry points; and (3) improve targeting (relative to all IDOs). Piloting some participatory action research methods in collaboration with partners to provide incentives and involve youth in testing/adapting demand-driven technology innovations is under way (Dryland Systems 2015m).

Recent program outputs for gender research are: (1) the Gender Research Strategy (2014-2017) published (Dryland Systems 2015h); (2) draft Guidelines for Integrating Gender into Bio-physical Research published (Dryland Systems 2015i); (3) a toolkit on gender-responsive research and gendered systems research prepared; (4) gender and system training and workshops held; and (5) a Gender Workshop Group (GWG) meeting held.

The GWG meeting in Hyderabad, April 2015, observed by a member of the evaluation team, discussed research progress and the Policy Brief: *Integrating Gender* that highlights the most important outputs and outcomes of the new gender strategy. Gender scientists from various Centres (ICARDA, ICRISAT, IWMI, Bioversity, CIP) shared tools and methods they use in gender research. The workshop facilitated an exchange of experiences and lessons learnt by Centres and regional Flagships. Discussions focused on developing potential new gender responsive tools, integrating gender into system research, the revised 'gender sensitive' theory of change (Figure 4.3, above), and strategies to enhance the impact pathway of the Gender Strategy.

The focus groups (S&IM Group 3, 2015) discussed constraints and achievements of gender mainstreaming in the CRP. Dryland Systems has introduced several gender and youth responsive interventions: training, supporting women and youth associations, gendered surveys, gender-responsive value chain development, and gender-differentiated development. A few examples of

[26] Generic Impact Pathway through Integrated Systems Research in-development Approach (draft only, to be continuously reviewed and approved by RMC or SC). Prepared by Q.B. Le and reviewed by R. Thomas March 8, 2015.

gender mainstreamed research were mentioned: 1) research on agricultural entrepreneurship and innovative capacities for women and youth for engagement in agriculture; 2) research on the gender wage gap; 3) targeted needs assessment for gender and youth; and 4) socioeconomic research on gender roles in decision making over resources. Based on information learned during the field visit to Mali, the CCEE understands these initiatives, while important, are not embedded directly in the on-going field research program.

The CCEE team observed significant progress with gender mainstreaming planning and implementation but significant women's involvement in the field is often limited to the gender specialists' projects (based on S&IM Group 4 discussion, 2015, and field visit observations). While the program-level gender and youth concerns are being mainstreamed into research and work plans of the CRP to some extent (GWG, 2015), large scale impacts in line with the IDOs cannot realistically be expected in the short timeframe remaining. A major reason for this is that the gender specialist joined the Program long after the field research program was launched.

There are serious resource constraints on effectively targeting woman and youth, according to the focus group participants (S&IM Group 4). Gender-responsive research and pilot interventions focus on the empowerment of female actors along food-related value chains and the removal of agro-economic constraints faced by women and young. Research has: 1) examined gender-related resource endowment decisions along the value chain; 2) identified specific constraints faced by women and youth to out-scaling interventions; 3) informed researchers on women-focused approaches to agriculture/ livestock value chain development; and 4) facilitated capacity development.

The S&IM Group 4 focus group discussion raised the issue that women need to be provided equitable opportunities for access to training, though strengthening their decision making power is a slow, gradual process. The group also discussed that the Program targets 50% women's participation in projects, but the participation of women remains low. The training needs to be relevant to women, not only conducted in good locations and appropriate times but, the content needs to be appealing and relevant to them.

Program coordinators at the field visit in Rajasthan claimed that gender and youth issues have been adequately considered in the research design (Merrey, McLeod and Szonyi 2015b). For example, women livestock units and baseline surveys have considered gender issues. Youth were considered through "agri-horti" kitchen garden and diversification to vegetables by around 140 farmers. Women's self-help groups have been formed. A women-focused agriculture and livestock value chain study has reportedly been completed for western Rajasthan action site[27]. It is said to contain information on household dietary diversity that is being used to design strategies for improving women's access to food and their nutritional security.

In the African Flagships, gender issues are addressed in all of the visited sites, but are not central to any of the work (Merrey, McLeod and Szonyi 2015b). There are specific activities aimed at enabling women to improve their livelihoods, but none of the action sites has a strong gender specialist to lead the work. This is especially important given the high degree of ethnic variation among communities. Hints from the Nampossella community meeting in southern Mali suggest that the innovation platform may be leading to changes in the division of labour between men and women, and women may be gaining more opportunities; but this is not being documented adequately.

In West Africa, the CCEE team found little evidence of research specifically aimed at youth, though there may be a few cases. On gender, there is some evidence that important work is

[27] The CCEE has not seen this report.

being done, as emerged from the farmer meetings, an interview, and some documents shared with the CCEE team member after his departure. Nevertheless, the scientists when challenged on this point did not agree: some claimed there is a strong emphasis on gender and gender is well-integrated into the research program, while others stated there is no conscious effort to integrate gender into crop experiments (field visit and survey). A gender survey has been designed and should begin shortly in three countries (Mali, Niger, Burkina Faso) on a limited budget. This is a potentially useful study, but notably quite separate from the main thrust of research activities. A major problem in addition to budget limitations that the CCEE team observed is the lack of senior social scientist and gender expertise. This is not unique to this flagship.

The survey of partners showed that about 75% of responding partners rated the Dryland System's gender performance as good or very good (Annex 8A, Question 16). On the negative side, about a quarter reported that improvement are needed to 1) promote diversity and gender equality in partnerships; 2) promote diversity and gender equality in the workplace; and 3) collect and analyse gender disaggregated data. Although the majority of the partners rated gender mainstreaming positively, efforts should be continued to improve gender performance. The Dryland System researchers responding to the on-line survey were more critical about gender targeting (Annex 8B, question 20). About 40 to 50% of respondents rated the gender mainstreaming effort as being effective. The Dryland Systems staff members rated two activities as being most effective: the guidelines, and collection of gender data.

There is now a strong gender strategy in place for gender mainstreaming which can be adapted to the future work on dryland systems. The same can be said for the youth strategy – Dryland Systems is to be commended as a pioneer on this. Nevertheless, these have come too late to influence the design and implementation of the field research. In the field sites the CCEE team observed a lot of useful activities providing opportunities for women. However, the team did not find any evidence of the existence of strategies to scale these out; and did not observe any in-depth research aimed at understanding the social and cultural systemic barriers to women and youth equitable access to opportunities and resources.

Overall, the CCEE team found that while the Program has a good strategy and guidelines for gender data collection, its implementation with the partners and scientists in the field is still lagging behind. Gender (and the very few youth) activities at field level are not the core focus in any sites, and are not aimed at identifying game-changing opportunities. It is mostly business as usual. In other words the strategies have had little impact on the research — perhaps largely because of the timing issue.

### Communication

Effective communication is a key aspect of the successful operation of the program. It has two dimensions: communication with stakeholders, partners, clients and others outside the CRP who are potential users of its products; and internal communication among the scientists and other partners of the CRP. Dryland Systems has recently begun investing in external communication but has not begun using available tools to enhance internal communication.

A lot has been done to improve communication in recent months: a communication specialist had been hired in the Global Program and branding guidelines have been established for publications and presentations, improving branding and visibility of Dryland Systems in 2014-2015.[28] The program identified 3,855 contacts, including donors and partners that support dissemination efforts and ensure wide outreach, engagement, and dissemination of key messages.

[28] These are on the website at http://drylandsystems.cgiar.org/content/communication-materials, accessed 26 July 2015.

Recently, the Dryland Systems CRP has launched a month-long media campaign to promote its achievements aimed at donors and other stakeholders (Dryland Systems 2015e), and with newly established branding guidelines and case studies (or outcome stories) to inspire more positive change submitted through Flagships for cross stakeholder learning. Social media channels were established with direct support of the Social Media Coordinator of the CGIAR Consortium (Facebook, Twitter, Yammer, LinkedIn), and with hashtags *#CGIARDryland, #DrylandSystems, Drylands2014AR* anyone on Twitter can monitor outreach and engagement. The Twitter account *CGIAR Dryland* has 623 followers and the Linkedin account has 49 (as of 19 July 2015). There are very few retweets on the account.

The CCEE suggests it is important that the Program focuses on improving social media presence through regular quality posting and establishing strategic contacts with high profile 'publishers'. A good example is the recent publication of the Dryland Systems Annual Report (Dryland Systems 2015e) which has reached a global audience thanks to partners assisting in its dissemination (e.g. UNCCD, GFAR, FAO, YPARD, and other CGIAR Centres). Their retweets and 'likes' added up to six digits in number. This is a good start on social media, but the Program should make sure there are regular updates and public relations activities to sustain 'digital' partnerships. Social media are very important for global visibility: these should be maintained and enhanced, however some specific stakeholder groups (famers, NARS, local institutions), constrained by internet access or the lack of knowledge on the open access policy, may still be left out. Therefore, 'traditional' media channels should also be maintained until there is evidence that the target groups become active on social media. The partners' survey showed that partners receive most research findings through training and presentations, while digital media tools are rated lower (Annex 8A, question 18).

Dryland Systems also uses SlideShare, an open access resource, for sharing presentations[29]. There are 180 presentations published with viewing rates between 40 and 200, but it has been inactive and no presentations have been published since last year[30]. SlideShare should receive regular updates and it should be an established and promoted as a source for open access presentations. The CCEE encourages the Program to share the S&IM 2015 presentations and other strategic presentations through SlideShare. The YouTube channel of Dryland Systems[31], CRP Drylands, has been inactive since 2013 with 10 subscribers (re-confirmed on 2 October 2015). It could potentially be an excellent resource for sharing video presentations or open access capacity development initiatives to promote dryland systems solutions. *The CCEE concludes these outlets are serious under-utilised by the CRP*.

The Dryland Systems website (http://drylandsystems.cgiar.org/) has been improved significantly in the last program cycle. Its main structure is well designed, and it contains good information on the program: vision, mission, objectives, flagships, program activities and strategies, and theory of change. It contains a detailed list of publications, but would benefit from a reorganization of the publications by type of documents, according to the target audience or document type, and an advanced search function. The published partners' database should be completed, and capacity development activities should be added in the 'What we do' section. Some other sections should also be added, for example detailed project descriptions with published outputs, acknowledgments to partners and information for potential future partnerships. Some parts should be updated for the next program cycle (e.g. the five ALSs have been reduced to three but the home page does not reflect this as of 6 October 2015).

[29] http://www.slideshare.net/CRPDrylandSystems/tagged/Dryland-Systems-Science-and-Implementation-Meeting, accessed 23 July 2015. See Dryland Systems 2015n.
[30] This statement was confirmed on 2 October 2015, *after* an earlier draft of this report had been reviewed by the PMU.
[31] https://www.youtube.com/watch?v=46cty42sVdM, accessed 23 July 2015.

A program document was published to inform stakeholders on the Open Access policy, but additional targeted publicity activities are required to inform stakeholders on the free access to information. In line with the open access policy, the CCEE suggests the website should become a gateway, guiding users towards other relevant open access resources. It is already happening with the list of publications and geo-referenced data, but the list should expand based on the need assessment.

The *Geo-Informatics Portal*, (http://geoagro.icarda.org/en/) accessible from the website, provides 25 open-access geo-referenced databases on climate and soil constraints, natural resource based poverty indices, market access and other valuable information for socioeconomic research. It is a very valuable knowledge product for the increasing number of researchers who use GIS and remote sensing datasets for research and development. Over 15,000 people in 119 countries have accessed Dryland Systems databases through the open-access Geo-Informatics Portal, requesting and downloading data to use for a number of purposes (Dryland Systems 2015e). However, in the survey, only 22% of the responding partners perceived the usefulness and value added of the geo-informatics database (Annex 8A, question 13), which may again reflect lack of awareness and the fact that many partners may not have the infrastructure or knowledge to benefit from the geographic datasets.

The evaluation team found that some important websites used as joined knowledge platforms are not referenced on the website. A good example is the Central Asian Countries Initiative for Land Management, CACILIM http://www.cacilm.org/en that was established through a partnership with ICARDA and local and regional stakeholders (Dryland Systems 2015e). Acting as an information repository, the CACILM website helps to increase the use of innovations developed by the CACILM Project in Central Asia. The Dryland System website should aim to become a leading information repository on dryland system research on a global level with established web links to regional initiatives.

Internal communication continues to be based largely on emails, Skype, and attending workshops. Advanced low cost software technologies (web-conferences) should increasingly be used for outreach to partners and staff in flagships in remote areas. Slow connections in remote areas remain a constraint for outreach. As internet access improves in developing countries, it opens the opportunity to increasingly use software applications to enhance communication, for example wikis. For cross-centre or cross-CRPs communication some basic communication technology (Skype) has already been used to give voice to participants, for example those who were unable to join the annual Science and Implementation Meeting in Hyderabad. Other, more advanced software applications enable holding online conferences that would save time and cost of international travels. These are not in use. The on-line monitoring, evaluation and learning (MEL) system provides an important opportunity to increasing knowledge sharing if scientists and partners can be encouraged to use it. One possibility would be to provide a space for internal brainstorming and sharing and reviewing of draft publications, new data sets that have not yet gone public, and new ideas. Creation of these capacities for better internal communication needs to be accompanied by efforts to instil a stronger culture of knowledge sharing, especially among regions but also within regions and between disciplines and participating Centres.

Overall, the CCEE concludes that the Dryland Systems external communication efforts have improved greatly, from a low base. Continued improvements can be anticipated. One gap the CCEE perceives is the lack of integration of knowledge sharing and communication into the internal research implementation process. This will require a concerted effort and the use of additional tools as well as a change in culture to be effective.

### Capacity development

Dryland Systems participating Centres have a long history of offering effective capacity development interventions, a key activity to achieve impacts for Dryland Systems. In 2014, the CRP developed a strategy for building capacity to achieve impact in line with the CGIAR capacity development principles and strategy, its "Capacity Development Strategy and Action Plan (2014-2016)" (Dryland Systems 2015j). Participatory methods for developing the strategy included key informant interviews, surveys, reviewing documents, a survey of trends in capacity development, and meetings involving stakeholders.

The Capacity Development Strategy identifies 60 different ways to build capacity. Elements of capacity building include knowledge sharing and communication, mentoring, coaching, internships, degree and non-degree research, developing policy and processes, restructuring governance, supplying equipment, developing infrastructure, and mediating partnerships, to developing strategy. The strategy has three goals that align with the goals of major international networks for capacity development. The goals target core individuals and organizations in poor, rural, dryland communities and focus on (1) increasing knowledge, skills, and capacities; (2) maximizing the potential impact of capacity development interventions through diverse partnerships; and (3) ensuring sustainability of capacity development through appropriate resource mobilization. In line with the capacity development goals, the Action Plan and Results Framework for the Capacity Development Strategy set out milestones for capacity development, and activities, outputs and outcomes.

The Capacity Development Working Group met in April 2015. This meeting, observed by a CCEE team member, included representatives from ICARDA, Bioversity, CIP, IWMI, ICRAF, ILRI CIAT and the Dryland Systems Program Coordinator. Participants outlined the capacity development activities of their respective centres followed by a discussion of the CRP's Capacity Development Strategy and Action Plan for 2014-2016, with a special focus on impact assessment. Participants outlined action points, timeline and deliveries for the next program cycle.

The Program has launched a Needs Assessment Survey and identified the priority themes for research and capacity development. The main areas where capacity development is needed were also identified in a facilitated session by the Capacity Development Working Group: (1) management of innovation platforms; (2) capacity to innovate; (3) capacity to engage partners who could produce outcomes; (3) translation of outputs to outcomes; (4) outcome and impact assessment; (5) documentation and dissemination; (6) foresight; (7) theory of change; (8) planning and prioritising to achieve goals; (9) systems research; (10) result-based management; (11) risk management; (12) learning tools; (13) strategic partnerships; and (14) leadership in research and implementation (Dryland Systems 2015j).

A Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis in the Dryland Systems Capacity Development Strategy and Action Plan identified key areas of strength: (1) strong reputation for scientific excellence; (2) repository of global knowledge on dryland systems research with open access resources; (3) strong partnership network (NARS, farmers associations); (4) access to external expertise and possibility for pooling knowledge to tackle development challenges; and (5) expertise of the staff. The SWOT analysis also identified areas where attention should be put to increase effectiveness of capacity development activities: (1) there is currently no entity responsible for planning, coordinating and M&E of capacity development activities; (2) capacity development tends to be offered mainly through workshops; (3) capacity development activities are fragmented and do not fit into a holistic approach; (4) there is no set of mechanisms to ensure and measure results on the ground; (5) there is little follow-up to make impacts sustainable, (6) lack of incentive system to motivate scientists to participate in capacity development activities of targeted beneficiaries; and (7) Dryland Systems team expertise does not stretch to all the areas where capacity development is needed (Dryland Systems 2015j).

In 2014, the CRP claims to have arranged short-term training for over 368,000 short term trainees (23% women) from local communities, NARS, government organizations, and NGOs. Training courses covered sustainable intensification, integrated soil and water management, vulnerability assessments, and integrated systems assessment and modelling. Program scientists supervised 39 Ph.D. students (eight women) and 61 M.Sc. students (52 women) (Dryland Systems 2015e).

A few recommendations emerged from the focus group discussion at the S&IM in Hyderabad on ways to enhance the role of capacity development in ensuring Dryland Systems effectiveness: (1) Need relevant capacity development of partners: ask the partners what are their priorities in capacity development. (2) Explore innovative platforms for creating and communicating stories, sharing information and knowledge in a quick way. (3) Training of partners to pass on new capacities in their own institutions. (4) Capacity development is more than training; there is a need to create the enabling environment for systems research (e.g. curriculum development activity). (5) Capacity development itself is not enough (need to strengthen the process of integrating scientific knowledge and other local knowledge). (6) How to package the outputs for different audiences and partners (including women and youth).

The CCEE is not aware of what follow-up has occurred on these points, but most of them are already built into the timeline and activities of the Capacity Development Strategy: (1) needs assessment survey, (2) review of existing and potential training capacities, (3) training 'trainers', who can transfer knowledge, (4) participation in multi-stakeholder dialogues, (5) inform stakeholders on the open access resources on dryland systems research, (6) success stories from the field shared, and (7) strengthen organizational learning and quality assurance capitalizing on the MEL platform.

Needs assessment and survey of the stakeholders had been done and partial results were shared in the Capacity Development Strategy. The CCEE team has found evidence for developing guidelines to share success stories from the field with other flagships and publishing it on social media. The MEL platform has been launched, and is a promising management tool, in term of sharing lessons and monitoring activities (see Chapter 6). Eighty percent of the partners responding to the on-line survey claimed the capacity development activities are good or very good (Annex 8A, Question 23).

To conclude, the CCEE team found that the capacity development strategy is well planned, comprehensive, and clearly identifies the goals and target audience. Its late start and limited budget will however limit the potential for achieving substantial impact before the end of 2016.

## 4.5 Sustainability

The CCEE found very little evidence to enable it to come to definitive conclusions regarding the likely sustainability of interventions that are based on Dryland Systems research. A large percentage of the CRP budget is from W3 and bilateral sources to support applied research and/or development implementation projects. These projects are implemented in collaboration with a large number of national and local partners, as discussed in Chapter 3. In many cases, for example the USAID-funded Africa RISING project, there are reasonable prospects for another phase of work.[32] The field visits confirmed the potential for sustained implementation and scaling out of both institutional and technical innovations by the CRP. In South Asia (Rajasthan, India), ESA (Ethiopia), and WAS&DS (Mali), the national and local partners explicitly asserted they

[32] This is based on comments in the Africa Rising email newsletters during 2015, and also the overall positive midterm evaluations of the project in West and East Africa (Ellis-Jones et al. 2015; Ellis-Jones et al. 2015).

would continue implementing the innovation platforms and various technical innovations that had been established and/or tested through the Program. The "technology parks" developed and launched in Mali are another example (see Annex 9). On the other hand, the lack of strong social and economic research capacity will limit the capacity of the CRP to document the potential impacts and sustainability of these innovations. In addition, based on the field visits, interviews and reviews of documents, Dryland Systems scientists have in many cases not engaged effectively with policy makers (there are exceptions, for example on livestock insurance in Eastern Africa). This weak policy engagement will limit the potential for scaling up of innovations from the Program.

Finally, the CCEE feels that *ex ante* assessments of potential impacts ought to be carried out selectively in 2016, which, combined with existing baseline data, would form a basis for *ex post* impact assessments in the future.

## 4.6 Conclusions and recommendations

### Conclusions

The CCEE agrees with the ISPC that the Dryland Systems Theory of Change needed more work. However, the CCEE also finds that the CRP has made significant progress in developing its ToC and impact pathway framework since the Extension Proposal was prepared. Nevertheless, the current impact pathway remains too generic and abstract, and key assumptions are not spelled out. In addition, the key stakeholders who must make the changes (outcomes) needed to achieve long term impacts and their roles and linkages are not clearly identified. The current impact pathway has been developed largely from the top down (with consultation with some scientists); it has not been developed through a participatory bottom-up process. There is no evidence that the impact pathways developed in the regions are used as research management tools; they appear to have been developed to meet the requirement to have an impact pathway. The CRP has articulated a number of ambitious impact targets which, while laudable, are not linked to the impact pathway.

The CRP claims to be having important field-level impacts. This is commendable, but there is a need to document these, supported with hard evidence and a plausible theory of change; and published in both CRP-branded and peer-reviewed outlets. This would be an important contribution as there are only limited documented impact success stories from drylands.

The chapter has reviewed three cross-cutting themes of the Dryland Systems Program: Gender and Youth, Communication, and Capacity Development. *In all three themes, the CCEE commends the recent progress made, after a somewhat slow start*. The CRP has developed high-quality strategy papers for gender, youth, and capacity development; and has made considerable progress in strengthening partnerships at local, national and regional levels. It has recently initiated efforts to become more effective in communicating the findings, outputs, and impacts of the CRP outside the CRP. However, there is little progress to date on the use of tools to enhance internal communications and the creation of a culture of knowledge sharing among scientists.

There is a gap between the progress at central level on gender, youth and capacity development, and the activities observed in the field. This reflects the unfortunate timing of the strategy development, which has lagged behind the planning of the field research. Therefore, in the field, there is very little work underway specifically aimed at youth; and while there is important work being done on gender, it is not at the core of the field research and is not likely to lead to major impacts. This work is also hampered by the weak social science capacity at field level (Chapter 5). The capacity development work in the field sites as reported in the Annual Reports is significant but largely traditional in nature and does not reflect the Capacity Development Strategy – again reflecting the late development of the Strategy.

Finally, the CCEE cannot come to a firm conclusion regarding the sustainability of the innovations emerging from the CRP research. There are clearly important institutional and technical innovations being tested and implemented, and there are indications that some of these may be sustained and scaled out further. On the other hand, the weak engagement with policy makers observed during the visits may limit the potential for scaling up. While the CCEE understands baseline surveys have been done in all the Action Sites, there is no indication of plans for *ex ante* or *ex post* impact evaluations during the final year of the program. The CCEE believes such studies should be given priority if possible in a difficult budgeting environment.

## Recommendations

1. **Develop a practical, credible and useful theory of change and associated impact pathway for the remaining period of Dryland Systems and, more important, for DCLAS.**

   *Action: leadership of DCLAS with Dryland Systems support.*

   The current Theory of Change (ToC) and impact pathways for the Dryland Systems CRP and the proposed DCLAS CRP remain as works in progress. The CCEE suggests that the Dryland Systems PMU collaborate with the leadership of DCLAS and follow these steps to develop a good ToC:

   1) Provide hands-on training to scientists in how to use a theory of change to plan and monitor implementation of research *in* development.

   2) Hold workshops with key stakeholders in each of the planned research field sites to develop realistic impact pathways that include specification of key stakeholders and their roles, power relationships, and potential entry points for change.

   3) Build on these localized impact pathways to produce a generic CRP-level impact pathway.

   4) Build the impact pathways into the MEL system so that that system becomes a mechanism for tracking progress toward outcomes, including the capacity to adjust the theory of change and impact pathways based on lessons from experience.

   In essence, the CCEE suggests that more needs to be done in terms of defining the logical path from research to outcomes to impacts, particularly specifying and quantifying credible assumptions and hypotheses across discovery, proof of concept, piloting and out-scaling phases. This should include specification of the roles of various stakeholders, and which stakeholders must make what changes in their behaviour based on new knowledge, attitudes and skills emerging from the research activities.

   As the SDGs have now been formally endorsed, Dryland Systems and the new DCLAS CRP team should establish a credible logical frame as soon as possible.

2. **Carry out and publish credible impact assessments, and produce documentation for advocacy**.

   *Action: Dryland Systems PMU.*

   Researchers interviewed as part of the CCEE thought that 3-4 years is needed before Dryland Systems impacts will be shown. Notwithstanding the limitations of the current theory of change, and short remaining life of the CRP, the Dryland Systems needs to be commended for its achievements to date. A number of achievements have been noted in annual reporting for 2013 and 2014, although attribution to the CRP versus legacy projects is unclear. The CRP should document these achievements through *ex ante* and *ex post* evaluations and presented

in both branded and peer reviewed publications and widely disseminated. A review of evidence on the impacts of CGIAR research published since 2000 suggests that currently there are limited examples of dryland success stories.

3. **Produce and disseminate a wide range of media that communicate the main findings and state-of-knowledge on dryland systems, the lessons learned, material that can be used for training/ capacity development, etc.**

   *Action: Dryland Systems PMU.*

   This recommendation is intended to support the recommendation in Chapter 5 to focus on producing excellent state-of-the-art scientific outputs. When people look back on the experience of the Dryland Systems CRP, they should see the real value added of its work rather than recalling the problems it faced in its early phases.

4. **Promote a strong culture of internal knowledge sharing and communication as integral to the entire research process. A possible specific action to achieve this is to establish a mechanism for sharing draft papers and encouraging informal peer reviews, perhaps through the MEL system.**

   *Action: Dryland Systems PMU.*

   This would help reduce the current perceived lack of sharing of experiences and lessons, for example among regional Flagships. Successful integration of knowledge sharing and regular communication will require a continuous effort from management. It will also require resources to be allocated based on a specific plan and enhanced human resources with communications and knowledge management skills. Other CRPs (e.g. CCAFS, WLE) may provide a model for this. A recent paper has also suggested action is needed to strengthen the capacity of scientists as peer reviewers and even recommends accreditation of peer reviewers (Mehmood-ul-Hassan and De Leeuw 2015).

# 5. Quality of Science

## 5.1 Introduction: Approach to and limitations of this assessment

This chapter addresses the following evaluation question: is Dryland Systems scientific research of a high quality and do the research outputs constitute international public goods (IPGs)? The chapter examines four aspects of the quality of science: the quality, experience and training of scientists working in the program; the procedures for planning, producing and reviewing scientific outputs; the actual quality and relevance of these outputs; and the research design itself – to what extent is it conducive to producing high quality "systems" science.

In practice, the team did not have sufficient resources to systematically assess the scientific quality of the scientists themselves; therefore this assessment relies on impressions from field visits and interviews and the results of the survey of scientists. The procedures are a function of the partners' own procedures – the CRP management does not play a direct role, as is the case in other CRPs (e.g. FTA; see Coccia et al. 2014[33]). Research design was assessed at the global and Flagship levels, and based on observations from Action Sites and reading selected publications and other documents. Annex 9 provides a summary of observations made during the field visits; further details are available in Merrey, McLeod and Szonyi (2015b).

As discussed in Chapter 2, the Dryland Systems CRP was formally launched only in May 2013. Therefore, by this reckoning, the CRP has been operational for slightly more than two years. In view of these delays, too little time has elapsed to definitively assess the quality of the science being produced. Further, at the end of 2014 its budget was cut by 50% and again by an additional 19% in early 2015. These budget cuts have also had substantial impacts on the research program. Further, many, perhaps most, of the papers attributed to Dryland Systems CRP to date are "legacy" papers, reflecting research that was planned and largely implemented before the CRP began[34]. This does not mean the papers are not of good quality, but it does mean that attributing their quality and relevance to this CRP is problematic. It also means that to the extent that previous work was largely driven by the mandates of individual centres rather than by a broader "systems" paradigm, the research produced to date reflects the previous priorities.

Because of the recent start for this CRP, the team has not attempted to analyse publications from its early years. Rather, the team has focused on publications that the Dryland Systems CRP has reported as being produced in 2014 (Dryland Systems 2015a).

## 5.2 Dryland Systems staff qualifications

Responses to several of the questions asked in the survey of CGIAR researchers working in Dryland Systems give some useful insights, though the moderate response rate (N = 39) suggests the results should be used with caution (Annex 8). Nearly 90% of the respondents have over ten years of professional experience and 75% have six or more years of experience with the CGIAR. On the other hand, about 60% of the respondents dedicate less than 20% of their staff time to Dryland Systems (W1&2) – confirming an informal poll of interviewed scientists whose time is highly fragmented, some with less than 10% of their time on this CRP. This fragmentation of scientists' time is not unique to Dryland Systems but based on the comments of scientists interviewed, it does have a significant impact on their productivity.

[33] The Water Land and Ecosystems (WLE) publication policy explicitly states journal articles funded by WLE are expected to go through the Centre's or Partner's own internal review process (WLE 2015).
[34] This is a function of the process at the initiation of CRPs: Centres were asked to map existing projects to appropriate CRPs.

The survey asked both CGIAR scientists and partners to rate the value or usefulness of Dryland Systems scientific research (see Annex 8). The results suggest a mixed view by both categories with "medium" being the most common response. These results are indicative, not definitive, given the moderate response rate to the survey.

In the interviews with CGIAR scientists working on Dryland Systems, the CCEE team members asked what their understanding is of "agricultural systems" and "systems research". The responses varied considerably – it became clear that there is no shared understanding of what is meant by these terms. For most scientists, it seemed that "farming systems" is their mental model, but when pressed, they acknowledged this model does not include higher level systems such as landscapes, watersheds, food systems, or livelihood systems. Some scientists noted that the Dryland Systems was not conducting new R&D, but the approach is different in that a new set of processes have been established. The CRP field teams now discuss options with farmers, and come up with a combination of strategies to tackle key problems. The notions of integration, farmer-led and flexibility rather than supply side R&D seemed to be the key features of 'systems' thinking that have been embedded in CRP activities. It appears that participatory methods – such as innovation platforms user groups, rapid appraisal, and community-led integrated demonstration trials – are also well underway. Interviewees noted that it is taking time for the Dryland Systems to take an explicit systems approach. This was because some people had no previous experience and understanding of the systems approach, so it was a challenge to establish the process. Based on the field visits and interviews, the CCEE shares this view that participatory systems approaches have been deployed across the Dryland Systems with some success. The approaches highlighted in the Extension Proposal such as modelling and agent-based methodologies have not yet been implemented to the same extent.

Overall, nearly all the researchers the team met during meetings, field visits and interviews are clearly well-trained in their fields (most hold a Ph.D.) and are capable professional researchers. However, most are trained in a specific discipline with very little transdisciplinary experience. Most have a narrow or incomplete understanding of "systems" research – and in many cases scientists explicitly acknowledged this. A number of younger scientists expressed a desire for training to enhance their understanding of "systems" research and their capacity to contribute more effectively.

These observations suggest that investing in building researchers' shared understandings of agro-ecological systems and strengthening their skills in working across disciplines and doing systems analysis would add considerable value to the program[35].

Based on the field visits, interviews of scientists, and a review of publications, the CCEE team found that capacity for social and economic sciences (including gender analysis) is especially weak compared to the bio-physical sciences (see Annex 9). Therefore, they will not be able to document in depth the processes of the platforms, adoption and rejection processes, and social impacts of innovations; nor are they able to do the kind of in-depth economic analyses needed. This is unfortunate as there is a growing literature on innovation platforms as an implementation strategy in an innovation *systems* framework, their challenges, and lessons learned (e.g. Klerkx et al. 2013; Swaans et al. 2013; 2014; Cullen et al. 2014). The CRP claims to have established 45 innovation platforms (Dryland Systems 2015e), but there does not seem to be a deep understanding of the concept and their potential for achieving game-changing results.

[35] In its July 2014 commentary on the Dryland Systems Extension Proposal, the ISPC expressed concern "with scientific critical mass" and suggested that if this is a limiting factor it be addressed through partnerships (ISPC 2014).

The proposed new CRP II landscape in which systems research will be more closely integrated with crop research offers opportunities for more collaboration with commodity researchers but risks taking too narrow a view of the systems within which rural people operate (see Chapter 7).

## 5.3 Dryland Systems conceptual framework: "Systems"

This section addresses the following questions articulated in Chapter 1: does the Dryland Systems CRP have an agreed, coherent and scientifically credible conceptual framework encompassing a complete understanding what "systems" research is supposed to be? Is the framework and research design based on traditions of systems and operational research as found in the scientific literature? The Dryland Systems conceptual framework includes its Theory of Change and impact pathways, discussed in Chapter 4. The CCEE notes that all of the "systems" CRPs have struggled with conceptualizing and implementing a systems research (see CGIAR-IEA 2015c for the Aquatic Agricultural Systems [AAS] CRP, and Coccia et al. 2014 for the Forests, Trees and Agroforestry [FTA] CRP).

There is a difference between defining a specific agro-ecological system such as "Dryland Systems", and defining a "systems approach". The "systems" concept draws attention to the inter-connectedness of the various elements in whatever has been defined as the "system" under study. In the case of Drylands Systems, the concept presumably refers to agro-ecological systems characterized by aridity and uncertainty regarding the availability of water. The team did not find any clear discussion of how the CRP defines "Dryland Systems" *as systems* beyond general descriptions of their characteristics.

In contrast, the CRP has offered a consistent articulation of its concept of "systems research" and its advantages over more narrowly focused single-factor or disciplinary research. Box 5.1 summarizes these statements, while Table 5.1 illustrates how the CRP distinguishes "conventional" and "systems" approaches.

**Table 5.1 Comparison of Conventional and Systems Approaches to Research**

| Conventional Approaches | Integrated Systems Research Approach |
|---|---|
| **Focus on single commodities and single livelihood components** | Focus is on farming systems and livelihood portfolios |
| **Aimed at improving productivity and closing yield gaps, regardless of risk** | Explicit consideration of trade-offs among multiple aims – improving productivity, reducing risk, and social, economic, and environmental sustainability. Aimed at multiple wins where possible, or balance among trade-offs where not |
| **Focus is on discrete value chains, overlooking externalities** | Attention given to interactions between value chains, explicitly considering externalities |
| **Focus is on innovations and investments responding to specific drivers of change within sectors at discrete scales** | Focus is on interactions between multiple drivers of change, and innovation and investment options across sectors and scales |
| **Linear, research-for-development approaches** | Iterative research-*in*-development approach |
| **Mon- or multi-disciplinary** | Inter- or trans-disciplinary |

*Source: Dryland Systems 2015e:9, Table 1.*
*Note: this is the latest version of a table used in a number of presentations, some of which are more detailed.*

Overall, the Dryland Systems CRP has a reasonable and well-articulated understanding of a "systems approach" as articulated in its proposals, its recent Science and Implementation

meeting, and in a recent paper that articulates the earlier CRP management's understanding (van Ginkel et al. 2013). The emphasis on livelihood systems, integration of social and bio-physical sciences, working at multiple scales, and the use of participatory approaches in partnership with multiple partners including farmers are commendable and broadly consistent with the "Drylands Development Paradigm" (Reynolds et al. 2007). The extent to which the field research reflects the characteristics of an "integrated systems research approach" is a separate question discussed below.

**Box 5.1 Dryland Systems Conceptualizations of "Systems"**

The Dryland Systems CRP has offered several versions of its concept of a "systems approach" and by implication of agro-ecological systems. In the November 2011 revised full proposal, following a critique of narrow single-disciplinary and reductionist approaches to research in drylands, the systems approach is defined as a holistic way of addressing a complex and interactive set of problems. It aims to identify, quantify and integrate the driving forces and interactions that shape and constrain farming systems and the management of natural resources (Roetter et al. 2000, Lockeretz and Boehncke 2000). By doing so, it helps identify researchable issues and generate testable hypotheses (Dryland Systems 2011: 21). This definition is repeated in the January 2013 Dryland Systems proposal (Dryland Systems 2013:10). The latter proposal notes that its approach is consistent with the "Dryland Development Paradigm" advocated by Reynolds et al. (2007). On page 36, the proposal articulates three hypotheses about **system dynamics**, of which the first one states "*options for improving whole-system performance are different from options for improvement of single components (as in commodity-focused CRPs)*" (italics added).

At the Science and Implementation meeting held at ICRISAT April 7-9th, 2015, the program agreed to a definition of systems research as: *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* (Dryland Systems 2015d).

A paper published in 2013 by prominent CGIAR scientists including leaders of the Dryland Systems CRP attempted to articulate the application of an integrated agro-ecosystem and livelihood approach. They state that the "key novelty … is in combining all these different strands: systems analysis; participatory approaches; combined social, economic and ecological perspectives; multiple knowledge systems; the market, institutional and policy context; and, a nested scale agro-ecosystem approach that embraces risk and eco-efficiency" (van Ginkel et al. 2013: 759).

However, the CCEE believes that the concept needs further development. For example, the approach could take more seriously the five hypotheses that constitute the Drylands Development Paradigm (see Box 5.2). This paradigm focuses on livelihoods of people living in drylands and their dependencies on specific ecosystems, applying a model of human-environment coupled systems. Linking the work at local levels to global systems research is another option that needs to be explored (see Liu et al. 2015). While the emphasis on livelihoods is important, it is critical to examine non-agricultural livelihood options that are increasingly important to rural residents of drylands: the CGIAR mandate for agricultural research should not blind its researchers to the critical importance of non-agricultural livelihoods.

Inclusion of the "food system" concept would add another important dimension, as would attention to rural-urban linkages. Although policy is mentioned in some documents, the CRP currently under-emphasizes policy reforms in its work (with a few exceptions). Strengthening the

role of social sciences and linking it more effectively with bio-physical work is another important area needing attention.

**Box 5.2 The Five Elements of the "Dryland Systems Paradigm"**

1. Human-Environmental systems are coupled, dynamic, and co-adapting, so that their structure, function, and interrelationships change over time.
2. A limited suite of "slow" variables are critical determinants of Human-Environmental system dynamics.
3. Thresholds in key slow variables define different states of Human-Environmental systems, often with different controlling processes; thresholds may change over time.
4. Coupled Human-Environmental systems are hierarchical, nested, and networked across multiple scales.
5. The maintenance of a body of up-to-date Local Environmental Knowledge is key to functional coadaptation of Human-Environmental systems.

*Source: Taken from Reynolds et al. 2007: Table 2.*

During interviews with CGIAR scientists and the field visits, team members asked many scientists what their concept or understanding is of "agricultural systems" and "systems research". The responses varied, with some scientists expressing uncertainty about the concept. Most however responded by referring to the "farming systems" model. Those with training in crop modelling perceived the "system" as being focused on crops — some combination of genetic potential, soil and water and management practices[36]. Very few of those asked offered more complex models, though when prompted, they agreed there are other models such as landscapes, river basins, etc. None of them referred to the systems concept as articulated in the Dryland Systems proposals or in the van Ginkel et al. (2013) paper. A major conclusion from the field visits is that most of the research actually being conducted in the Action Sites is either a continuation of disciplinary research (for example testing different crop varieties, or the efficacy of specific soil and water management interventions — each in separate locations), or reflect a limited level of integration, for example crop-livestock subsystems. In most sites innovation platforms have been formed, in some cases at various levels, but there is no research being conducted on their processes, effectiveness, sustainability, and potential for scaling up.

The CEE concludes that the Dryland Systems needs to do more work to articulate a consistent concept of "systems research" and suggests that Dryland Systems collaborate with other system CRPs to engage a systems research specialist to facilitate this. It should not take much time or resources as the groundwork has been laid. It is also very important to invest in strengthening the capacity of scientists to use systems approaches effectively in their field research.

## 5.4 Quantity, types and quality of publications

### Limitations

The delays in launching this CRP have made it difficult to objectively assess the quality and quantity of scientific publications. There is normally a lag time between the funding of research implementation and actual publication of papers and other outputs. The CCEE has examined the publications produced during the most recent full calendar year (2014) for which systematic data are available. These publications mostly reflect work done one to three years previously, i.e. before the official launch of the CRP. Therefore, the conclusions reached are indicative, not

[36] This reflects the 'options X contexts' model in Figure 5.1, below.

conclusive. An assessment of the quality of science produced by Dryland Systems should rightly be done in about 2018, two years after this phase is scheduled to be completed.

### The data on publications for 2014

This section is based on an analysis of the "List of Publications and Research Outputs" for 2014 (Dryland Systems 2015a). The Annual Report for 2014 (Dryland Systems 2015b) claims that in 2014, the CRP "produced 127 published articles (72 indexed by ISI), 3 books, and several policy and technical briefs." The precise numbers depend on how one counts the various categories of publications. The document lists book chapters, conference proceedings, on-line data sets (both unrestricted and restricted access), several types of technical briefs, "factsheets", and working papers, as well as journal articles. No blogs or newsletter articles are listed. The Annual Report claims 25 open-access data bases were established (p. 7) — only a few of these are listed in the Publications List[37]. It is understood the CGIAR format for Annual Reports requests only the number of publications and does not require a full list. The Dryland Systems PMU requested the lists from the Flagships and this is what is reflected in the report on publications and research outputs.[38] The PMU subsequently asked for details, which formed the basis for the 2014 List of Publications (Dryland Systems 2015a) [39].

The CCEE team carried out an analysis of the published journal articles listed in the report. The results are provided in Table 5.2. The team searched for every article on the websites of the respective journals. A few apparent anomalies were solved through contacting Centre representatives. Two papers are listed that seem more appropriately mapped to other CRPs and not Dryland Systems: one ISI article for Central Asia is mapped to WLE as well as Dryland Systems on CGSpace[40] but substantively is most appropriately a WLE product; and a paper listed by the ESA Flagship acknowledges the support of a Humid Tropics CRP project (not a Dryland Systems project) – and indeed the work was done in a humid tropics site in Tanzania[41]. An issue that emerged from this assessment is that some products are listed as outputs of two or more CRPs. There do not seem to be any CGIAR guidelines for this, and it may well lead to considerable double-counting.

Random spot checking of published papers revealed that many of them either do not have any section acknowledging the support and assistance of others, or the acknowledgements list projects and donors that are not related to this CRP. It is very rare to find a paper specifically acknowledging the support of Dryland Systems. In sum, many, probably most, of the papers listed violate CGIAR and CRP Dryland Systems policies with regard to acknowledgement of support.[42] Finally, based again on spot-checking, most of the papers are not on CGSpace or some other

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[37] The data sets and maps are on the CRP website; see http://drylandsystems.cgiar.org/content/maps-and-datasets, accessed 21 July 2015..

[38] In 2015 there is now a system in place to report details of publications mapped to the CRP on-line; therefore future reporting on published outputs should be more accurate.

[39] The analysis was first done using the published May 2015 version of this publication. This led to a continuing dialogue with the Research Coordinator; he and the CCEE team leader have collaborated to revise, correct and update that report. A revised one is being published (dated October 2015) and the final analysis in this report has been based on this new version.

[40] https://cgspace.cgiar.org/handle/10568/58441, accessed 13 July 2015. Based on an email from Everisto Mapedza, staff time for the work was at least partly charged to Dryland Systems, which is why it is attributed to both.

[41] The paper is by Job Kihara et al. published in *Nutrient Cycling in Agroecosystems* in 2014.

[42] "All Dryland Systems-related research outputs must be appropriately branded and include an acknowledgment and a disclaimer, including the acknowledgement and authorization of the author when dealing with any material, including photos." (Dryland Systems 2015c).

open-access site repository as yet[43]. The CCEE team found that some Dryland Systems scientists are sharing their publications through ResearchGate[44]; therefore the assessment done here may under-state the extent of informal sharing of publications.

Table 5.2 Analysis of Journal Articles Published in 2014 by Dryland Systems

| Flagship Region | Number of journal articles published (of which AR claims ISI) | Number articles in journals with ISI factor [range of ISI scores] (% of total) | Number open access ISI articles (% of ISI articles) | No. published in ISI single discipline journals (% of ISI articles) | No. published in ISI multi-disciplinary and/or "systems" journals (% of ISI articles) |
|---|---|---|---|---|---|
| West African Sahel & Dry Savannahs | 15 (17) | 9 [0.537-3.168] (60%) | 4 (44%) | 5 (56%) | 4 (44%) |
| North Africa & West Asia | 43 (35) | 22 [0.172 to 2.096] (51%) | 10 (45%) | 15 (68%) | 7 (32%) |
| East & Southern Africa | 16 (2) | 9 [2.101-3.73] (56%) | 6 (67%) | 6 (67%) | 3 (33%) |
| Central Asia | 5 (5) | 5 [0.236-2.978] (20%) | 0 | 2 (40%) | 3 (60%) |
| South Asia | 13* (13) | 10 [0.42-3.476] (85%) | 3 (33%) | 8 (80%) | 2 (20%) |
| TOTAL | 97** (72) | 55 (57%) | 24 (44%) | 36 (65%) | 19 (35%) |

*Source: 2014 Dryland Systems List of Publications and Research Outputs, updated 19 October 2015 (Dryland Systems 2015a). The figures reflect the CCEE actual count from this document. The CCEE had used an earlier May 2015 version; when the PMU saw the results, it initiated a process to correct and update the document to which the CCEE team leader contributed. This table reflects the final corrected version.*

*Key: This analysis examines only journal articles listed in the 2014 List of Publications publication. It does not include other published outputs listed, for example technical reports, book chapters, etc. For ISI, the JCR Impact Factor List for 2013 has used (https://www.360researchpapers.com/resources/impact-factor , accessed 6 July 2015). For journals not listed, the website of that journal was checked and if it lists an ISI factor, this was recorded. Distinguishing single-disciplinary from other journals was straightforward in most cases; but where there is ambiguity, the content of the paper as well as the journal type were considered and a judgement was made, erring on the side of "systems".*

[43] This undoubtedly reflects the fact that not all CGIAR Centres use this system; the CGIAR, surprisingly, does not have a system-wide data base for its published products.

[44] https://www.researchgate.net/directory/publications, accessed 18 September 2015.

*"AR" means "Annual Report. The number in brackets is the number of journal articles claimed to have been published in ISI journals according to the Flagship Annual Reports. This information was provided by the Program Manager.*

** One paper on mapping rice cropping extent and intensity in Bangladesh is clearly not a "Dryland Systems" paper. Nevertheless it has not been excluded here.*

*** The 2014 Dryland Systems Annual Report claims 127 articles.*

### Analysis of papers published in journals

ISI versus other journals. The analysis whose results are given in Table 5.2 counted a total of 97 published journal articles of which 55 are published in journals with an ISI factor. Table 5.3 summarizes the differences between CCEE-counted journal articles published in an ISI journal and the figures given in the CRP Annual Report. The discrepancy is rather large, casting some doubt on the accuracy of the figures provided. Returning to Table 5.2, it can be seen that just 57% of all published articles were published in a journal with an ISI score. The remainder were published in various types of national journals and open access journals that do not have an ISI ranking. Publications in these outlets may be reaching important audiences that would not have easy access to international journals.

**Table 5.3 Number of Claimed and Verified ISI Journal Articles (2014)**

| FP | Number of ISI journal articles claimed in the AR* | Number articles in journals with ISI verified by CCEE | Difference +/- |
|---|---|---|---|
| WAS | 17 | 9 | -8 |
| NAWA | 35 | 22 | -13 |
| ESA | 2 | 9 | +7 |
| CA | 5 | 5 | |
| SA | 13 | 10 | -3 |
| Total | 72 | 55 | -17 |

*Source: Updated Publications List for 2014 (Dryland Systems 2015a).*
*"AR" means "Annual Report". These figures are drawn from the respective Flagship Annual Reports for 2014.*

Open access. The CGIAR strongly encourages publications to be open access: As of November 2013, the CGIAR and its 15 Centres adopted a strong "open access policy"[45]. Table 5.2 breaks down the articles published in ISI factor journals between open and restricted access. Open access could be the results of the policy of the journal, or could be the result of the authors

[45] http://www.cgiar.org/consortium-news/cgiar-consortium-now-officially-open-access/, accessed 13 July 2015.

paying the requisite fee to the journal to make it an open access article. Only 44% of the 55 ISI journal publications are open access. In future most journal articles should be open access.

"System" versus single-discipline. Because the CRP is a systems program, it is reasonable to expect that a large number of publications attributed to the CRP will be "systems" papers. The team found that distinguishing single-disciplinary from other journals and papers was straightforward in most but not all cases; where there was ambiguity the content of the paper as well as the type of journal were considered and a judgement made, erring on the side of "systems". In this approach, "systems" papers were usually really transdisciplinary in nature but did not necessarily have an explicit "systems" conceptual framework. Applying this rough distinction, 35% of the ISI papers were classified as multi-disciplinary or systems papers. Most of these do reflect some degree of systems thinking – and a few are clearly contributions to systems analysis[46]. One would expect this percentage to grow over time.

ISI papers per dollar and scientist. The CCEE used 2014 expenditures in its initial attempt to analyse publication productivity per dollar. The PMU noted that most 2014 publications were probably a function of 2013 expenditures. Therefore the CCEE agreed to use 2013 as well as 2014 expenditures. The PMU was not able to provide an accurate figure on the number of scientists or Full Time Equivalent (FTE) scientists for 2013 as the CRP only began in 2013 and the PMU was not in place. Therefore, the CCEE has used 2014 FTE figures. The CCEE used two methodologies: 1) ISI publication productivity for the total 2013 and 2014 investment (including W1&2, W3 and bilateral funds); and 2) ISI publication productivity for W1&2 funds (2013 and 2014) only – which is the measure the CO uses. A total of 212 CGIAR scientists worked on the CRP in 2014; because few of them are full time on the CRP, the level of effort is 141 Full Time Equivalent (FTE) scientists. There are no data available for the number of scientists working on the CRP in 2013. The CCEE recognizes this is very rough and the results are at best indicative. The data used are summarized in Table 5.4.

Table 5.4 Data on Publication Productivity

| | 2013 | 2014 |
|---|---|---|
| Total expenditures (million USD) | 41.91 | 49.7 * |
| W1&2 expenditures (million USD) | 11.91 | 20.3 |
| Total ISI publications | 55 ** | 55 |
| Total USD/ISI publication (million USD) | 0.762 | 0.904 |
| W1&2 USD/ISI publication (million USD) | 0.216 | 0.369 |
| Full Time Equivalent (FTE) scientists | Not available | 141 |
| Cost of scientists (Total USD/FTE in million USD) | - | 0.325 |
| ISI publications/FTE | - | 0.39 |

** Total was $51.2 million of which 49.7 was spent by Flagships.*
*** Total during 2014 but attributed to 2013.*
*Sources: Annual Reports for 2013, 2014; PMU data (Table 6.3, below); 2014 List of Publications (Table 5.2). Numbers are rounded.*

Using 2014 total expenditure data, each of the 55 ISI publications cost $904,000; if 2013 expenditure data are used the figure reduces to $762,000. Using the only available data on FTE (2014), each FTE scientist produced 0.39 paper (if 2013 FTE data were available, this figure might be slightly improved). This is a rather low average. However, it is important to recognize there were other products produced, training activities conducted, etc. This is a very rough metric

[46] Examples of "systems" papers are Hudson et al. 2014 (NAWA Flagship); Bayala et al. 2014 (WA&DS Flagship); Robinson et al. 2015 (ESA Flagship).

but suggests that productivity in terms of scientific articles published in ISI rated journals is not very great.

However, it can be argued that W3 and bilateral funds are "development" funds and not intended to produce scientific outputs. This is an oversimplification, but is the metric used by the CO (Ellul 2015). The perception of publication productivity improves based only on W1&2 expenditures. Using 2014 W1&2 funding ($20.3 million), each ISI paper cost $369,000; using 2013 W1&2 expenditures ($11.91 million, the cost of each ISI paper is $216,000. In 2014, each FTE scientist cost around $325,000 (total 2014 expenditure divided by 141 FTE). Using this figure, W1&2 funds supported about 62 FTE scientists. Each of them produced less than one publication (0.89). [47] This is still rather modest scientific productivity.

Finally, after the draft of this report was prepared, the CCEE obtained a copy of a study commissioned by the CGIAR on the performance of CRPs in 2014 (Elsevier 2014). This report uses various methodologies and metrics to compare the performance of CRPs, among which is the publication productivity of CRPs. Claiming to use its "Fingerprint Engine", the study identified 72 ISI publications, a total lower than most other CRPs, and found Dryland Systems had a "field-weighted citation impact" lower than all other CRPs, at around the world-wide average. The CCEE findings are not inconsistent with the Elsevier findings. However, the CCEE notes that Dryland Systems did not really get launched until 2013 – later than other CRPs; therefore the data on publication performance used by Elsevier as well as the CCEE needs to be used cautiously.

Flagship versus global. All of the publications are listed under a specific regional Flagship. While several papers are methodological or conceptual in nature (e.g. Hudson et al. 2014; Robinson et al. 2015), none attempt inter-regional comparative analysis. There are no publications from the Global (or Overarching) Program – because it did not previously exist. It should be noted that by early 2015, CRP-wide "working groups" had been established for gender and youth, data management and open access, communications and knowledge sharing, capacity development, and integrated systems analysis and modelling (Dryland Systems 2015e). The CCEE team understands that in 2015 and 2016, the global team will be producing comparative studies and syntheses of findings from multiple regions.

### Quality of Dryland Systems publications

The team asked many of the scientists at the end of interviews to provide examples of "good science" produced by the CRP. Most of them sent one or more papers, usually ones they had authored or co-authored. In most cases they are single-disciplinary papers — but seemed to be quality papers in recognized journals. Several scientists pointed to an ICRAF publication, *Treesilience* (de Leeuw et al., eds. 2014)[48]. Other papers that seemed to the CCEE team to be excellent papers include a "short communication" on drylands intensification by Robinson et al. (2015); the previously discussed paper by van Ginkel et al. (2013); and a paper on the role of parklands in the Sahel in buffering climate risks (Bayala et al. 2014). These are examples, not an exhaustive list. Of the 55 ISI journal papers, 17 were published in journals with an ISI factor of 2.0 or more. Six papers are published in journals with an ISI factor of 3.0 or more.

[47] A recent CO Powerpoint presentation (Ellul 2015) used a 2014 W1&2 total ($17.7 million) and the claimed 72 ISI publications to arrive at $240,000/ ISI publication. Using these figures, Dryland Systems ISI productivity is about average for CRPs. The CCEE figures suggest a slightly different story.

[48] The acknowledgements thank DfID and three CRPs: Dryland Systems, Forest, Trees and Agroforestry, and Climate Change.

Overall, the CCEE concludes that the CRP is producing good work with a few examples of excellent research. However, there is considerable room for improvement.

### Procedures for ensuring quality of research and publications

Ensuring quality of publications begins with ensuring the quality and integrity of the research design and implementation, including data collection, analysis and interpretation, and producing papers or other documents based on the research. It also includes processes for peer review of papers before they are published. Clearly the latter process occurs when a paper is submitted to a journal. The Drylands Systems CRP currently has no procedures in place to assess and ensure the quality and integrity of the research design and implementation or of the quality or relevance of publications mapped to it. The CRP management depends on the procedures of its partner CGIAR Centres and national partners. This is not unique to this CRP and reflects the current accountability structure of CGIAR Centres.

The team did not have sufficient time or resources to examine each Centre's procedures for reviewing publications. The team is aware that some Centres require approval before papers are submitted to journals, but others do not. All Centres have some degree of quality control of their branded publications (e.g. Working Papers, Research Reports, Briefs, etc.) which are usually specified on their website. This is also the case for branded CRP publications; see for example the WLE and CCAFS publication guidelines (WLE 2015; CCAFS 2012). Dryland Systems has also recently published branding guidelines for its own publications (Dryland Systems 2015n). The CCEE concludes the CRP leadership needs to play an active role in quality control of its publications in cooperation with the partner Centres.

## 5.5 Research design

This section addresses the following question: are the research activities being implemented in the Flagship Regions and Action Sites well integrated as *systems* research based on a systems conceptual framework? From its inception, the CRP has been organized based on five regional Flagships. Until 2015 there was no cross-cutting or global flagship, unlike other system CRPs, as observed by the ISPC (2014). In 2015, the CRP has launched a new "Global Program". This refers to a small team of recently-recruited specialists working on youth and gender, capacity development, communications, data management and geo-informatics, and modelling and agricultural livelihood systems. They are assisted by "Working Groups" drawn from partner institutions.

In essence, the CCEE found that the five flagship regions have operated as independent franchises, with their own impact pathways (as of early 2014, these were not even in a standard format), work plans and budgets. They were not closely linked either conceptually or managerially into a single systems research program. Dryland Systems, like other CRPs, has attempted to retrofit existing projects, Centre mandates, and existing field sites into the CRP. The result, until recently, has been a somewhat incoherent program, an observation also made by the ISPC (2014). The current global specialists vary in terms of how they interact with the Flagship programs. For example, in West Africa the gender specialist for WAS&DS described a gender survey that was nearly ready for launch but was clearly not well-integrated with the work in the Action Site communities.

As discussed in Chapter 2, the 2011 proposal proposed organizing the work around four Strategic Research Themes (SRTs). Two SRTs define categories of production systems, low- and high-potential. These two SRTs have been retained, and the Action Sites are categorized in terms of SRT 2 (low potential) or SRT 3 (high potential).

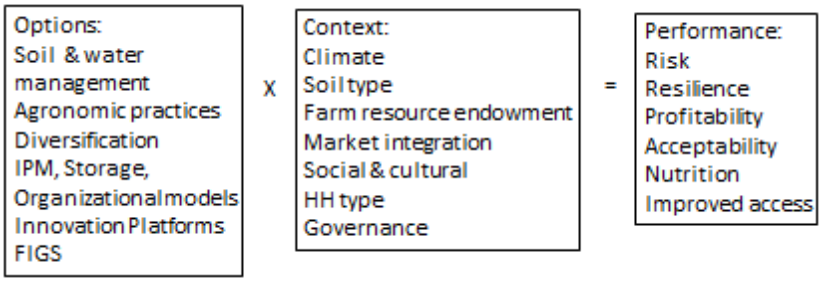
The 2014 Extension Proposal (Dryland Systems 2014a) retains the four SRTs and the five Flagships but introduces another dimension: Agricultural Livelihood Systems (ALS). These are defined as "the sets of farming and other human activity systems that determine the livelihood opportunities for agricultural households, communities, and enterprises" (Dryland Systems 2015e:10). The Extension Proposal lists five: 1) Pastoral systems; 2) Agro-pastoral systems; 3) Intensive rain-fed systems; 4) Tree-based systems; and 5) Irrigated crop systems[49]. The 2015 POWB (Dryland Systems 2015m) retains the regional Flagships and these ALS. However, recently, the five ALSs have been consolidated into three: 1) Pastoral and agro-pastoral; 2) Rainfed (including trees); and Irrigated (including trees) (Dryland Systems 2015e).[50] The 2015 POWB also introduces a new set of themes and a new articulation of the "systems approach". The new themes, linked in some presentations to the IDOs, are:

1. Improving and stabilizing system productivity through diversification and intensification;
2. Optimizing economic, social and environmental co-benefits and trade-offs;
3. Improving water management and allocation; and
4. Achieving land degradation neutrality.

The new systems framework introduced in the 2015 POWB and articulated in presentations proposes that Dryland Systems be based on an "Options X Contexts = Performance" paradigm (Figure 5.1). Adoption of this matrix was recommended by the first Science and Implementation Meeting in June 2014 (Dryland Systems 2014b). This approach is contrasted with what is referred to as the "traditional approach to CGIAR commodity program research", a theme that is further elaborated in the recent Annual Report (Dryland Systems 2015e).

Through all these permutations, while the number of Action Sites was reduced from 25 to 13 in response to budget cuts, a core set of sites in each Flagship region was retained. In some cases these are legacy areas of Centres, while other sites are new since the CRP was launched (for example Rajasthan in India). In those regions where multiple Centres are operating, the intention has been to integrate their activities in common sites. However, this has only partially been achieved: Centres were reluctant to change sites, and in any case many sites are dictated by mapped W3 and bilateral projects whose activities may not fit well with the planned CRP activities.

**Figure 5.1 Systems Approach: Options X Context = Performance**




*Source: Dryland Systems 2015b:4.*

[49] Some recent documents and presentations include two more ALS: "home garden systems" and "traditional subsistence systems".

[50] The Dryland Systems Task Force (2015) had recommended consolidating the pastoral and agro-pastoral systems.

As revealed by the field visits, at the Action Site level most research is implemented in partnership with national and local partners (NARS, NGOs, CBOs) and farmers themselves. The action or applied research is designed and implemented jointly by farmers and researchers based on agreements, and the results are jointly evaluated. At the plot level, in some but not all cases, classical experimental designs are used to evaluate the performance of particular crop varieties. Many research activities are commodity studies designed and implemented in the classical manner. Some activities assess the potential for synergies, for example dual purpose crops (food and feed), and multiple use legumes combined with bunds to improve water infiltration in fields. All of the research activities observed are aimed at discovering incremental improvements in existing farming systems, not discovering game-changing system innovations. There may be a few exceptions; for example the introduction of Index-Based Livestock Insurance (IBLI) program in eastern Africa is a potential game-changing innovation for pastoralists.

For the final year of the CRP, 2016, Dryland Systems management is proposing to re-organize the work based on the three ALSs and the global program. There will therefore be four Flagships: Global, Agro-pastoral, Rainfed, and Irrigated.[51] The draft overview of the budget seems to re-organize the existing Action Sites under these ALSs, therefore continuing to spread resources rather thinly. However, the CCEE team understands there is still considerable flexibility in terms of the 2016 plan. According to the Research Program Manager, funds may be concentrated in ten sites that will be incorporated into the proposed DCLAS CRP, and about 17% of funds will be retained as a contingency in case of budget cuts (or presumably new opportunities). Recent (October 2015) news of further reductions in W1&2 funding will lead to drastic re-thinking of these proposals.

To conclude, the overall research design as described in proposals to the CGIAR has been somewhat of a moving target, with the only dimensions that remained fixed being the five regional Flagships and their constituent Action Sites. Ironically, there is no evidence that these various higher-level re-conceptualizations have had any significant impact on the field research. Put differently, there is an apparent disconnect between the higher level conceptualizations of the Dryland Systems CRP and the actual work on the field. The team suggests there are two reasons for this. One reason is that there has not been sufficient effort to ensure that there is a shared understanding of systems research accompanied by a set of shared hypotheses and methodologies for implementing the research. The other is that the W1&2 funds account for less than a third of the total financial resources, most of which is spent on program management and coordination. Most of the field research is funded by W3 and bilaterally funded projects with agendas that are only partially consistent with the overall goals and objectives of the Dryland Systems CRP (see Chapter 3, above).

## 5.6 Conclusions and recommendations

### Conclusions

Given the late start of the Dryland Systems CRP, it is premature to arrive at definitive conclusions regarding the quality of the research to date. Many of the published outputs are the products of legacy projects mapped to the CRP and reflect centre mandates rather than the CRP mandate. Overall, as would be expected within the CGIAR, most of the scientists working on the CRP are experienced professionals; 75% have six or more years of experience. Most of the scientists have bio-physical disciplinary training; there are very few social scientists and economists (and those working on the CRP are mostly junior). This is a major weakness in the Program, especially at regional Flagship and field levels. In addition, while the CGIAR scientists are generally well-trained

[51] "Guiding Principles" and other documents circulated to the RMC by the Director via an email dated 23 July 2015.

in their discipline, there are very few with training in systems research. Indeed, demand was expressed for more training in systems work. Their time allocations are highly fragmented: most spend 20% or less of their time on this CRP, which undoubtedly has an impact on productivity.

The CRP through its various proposals and reports has expressed a fairly consistent and quite reasonable, if limited, concept of what is meant by "systems research". However, there is less clarity on how "dryland (agricultural) systems" are defined. Some gaps in conceptualization were also noted. For example, there could be stronger links to an existing "Dryland Development Paradigm" (Box 6.2); stronger links could be established between the local systems under study and global systems research; and more attention could be paid to non-agricultural livelihoods, rural-urban linkages, food systems, and policy. The CCEE notes that currently efforts are being made to conceptually integrate "agricultural systems" and "livelihood systems". This is an important development though still a work in progress.

The CCEE examined the journal articles mapped to the CRP, as contained in a recent published list (Dryland Systems 2015a). The CCEE found that 55, i.e. about 63%, of these are published in journals with an ISI factor. About 60% are open-access and 35% were classified as "systems" or at least "multi-disciplinary". The CCEE noted the low or at best modest productivity of published journal articles per FTE scientist, though this depends on the assumptions made. None of the papers published so far are comparative cross-ALS or cross-Flagship studies, reflecting the absence of a global program until 2015. Overall, the papers reviewed were fairly good and a few were excellent.

The CRP has no quality control procedures of its own for ensuring the quality of the research and publications; as is the case for all CRPs, it relies entirely on the procedures of the partner institutions. These are probably adequate (though there are differences among Centres) and this state of affairs reflects the current CGIAR structure. Nevertheless, the CCEE concludes that the CRP should also have mechanisms in place to ensure publications based on work it supports is of high quality and reflects a systems perspective. This seems especially important given that quality of science of CRPs is one of the metrics used for performance assessment.

In terms of overall research program design, the CCEE notes that there was no global program until 2015 (and it has some limitations, for example, aside from gender, no social science and economics expertise). Over time, the SRTs and more recently the ALSs have been moving targets as they seem to evolve rapidly; however the regional Flagships and Action Sites have remained fixed. There seems to be a disconnect between the work at the Action Sites and the global level program: the field work at best only partly reflects the "systems" concepts and priorities described at the programmatic level. Much though not all of the field level research is classic testing of alternative crop varieties or management practices. Most of the field research is done in partnership with farmers and various local partners, reflecting a strong participatory approach. Finally, it was noted in Chapter 2 that funds are dispersed rather thinly among many small activities, not strategically focused to produce results.

## Recommendations

The following recommendations are derived from the discussion of science quality in this chapter.

1. **To maximize its value, during the final year of the Dryland Systems CRP the Program should further consolidate its activities and focus most of its resources on producing a body of excellent scientific outputs that define the state of knowledge and provide clear directions for the next phase of research in development on dryland systems. The CRP should draw on outside expertise to complement CGIAR expertise in this endeavour. As part of this effort, the**

**CRP should also undertake a systematic review of literature to make the case for drylands research and investments.**

*Action: Dryland Systems PMU.*

*The CCEE considers this to be its highest priority recommendation, especially in view of the limited resources available.* Plans for 2016 should include specific publication plans and W1&2 resources should be focused primarily on producing these outputs. This applies mainly to scientific outputs but should be complemented using other kinds of communication media to share results widely (see related recommendation in Chapter 5). During the final year of the program, the main focus should be on producing a set of branded excellent outputs that reflect the state of the art in dryland systems research and identify the priority research areas for the future. These should build on work done at flagship levels, but the CRP should also reach out to other professionals with recognized expertise to collaborate in this endeavour. The Task Force could play a significant role in this endeavour. Organizing a series of professionally-facilitated write shops would be a productive mechanism for producing these products.

The ISPC noted that the 'must have' of discussing dryland research priorities and how they affect new initiatives was not being met. This includes gap identification and identification of key partnerships. The CCEE recommends that the case for drylands be stated in a peer-reviewed review document, along with mapping of research activities and identification of key gaps. The case should be structured around major SLOs of poverty, malnutrition and natural resource management. The assembled evidence base for the drylands systems case is currently very limited. The CCEE understands that there are sources of data that could be tapped, for example UNCCD data, better data on the number of poor people mapped by aridity levels, and ICRISAT data on malnutrition. ICARDA also has significant capacity for this kind of analysis. These types of gaps need to be captured and mapped in the analysis of historical rates of adoption of improved germplasm and farming practices in drylands and more productive areas. Malnutrition is also a major issue for the drylands. No documentation systematically collates health surveys and child nutrition indicators by aridity to demonstrate the magnitude of this issue.

The drylands constitute a significant area which the CGIAR-inspired Green Revolution has missed (e.g. Pingali 2012; Renkow and Byerlee 2010). It should now be the first region targeted in any CGIAR-wide initiative.

2. **Invest in agreeing on a shared understanding of "agricultural systems" that integrates "livelihood systems", and what is the role and value of "systems research", and invest in training researchers in systems science.**

*Action: Dryland Systems PMU, perhaps in cooperation with the AAS and Humid Tropics CRPs and/or with DCLAS.*

At the moment there is no common understanding of "systems research" within either the Dryland Systems CRP or more broadly, the CGIAR, and most conceptualizations are dominated by biophysical models. The CRP is currently working on elaborating a more coherent agricultural livelihood systems framework which the CCEE commends. The CCEE believes the systems CRPs should take the initiative to support the CGIAR in developing and disseminating its own model(s) of what it means by "systems research", what the role of systems research is in relation to other agricultural, policy and NRM research, what the overall goals and objectives of systems research will be, and establish how it will measure progress and success. The CGIAR conceptualization should integrate people and livelihoods, which will also require an investment in impact assessment methodologies specific to systems research, as

the traditional methodologies focused on returns to investments in commodities are not relevant for NRM, policy, or systems research (Merrey 2015). It will also require strengthening social science research capacity.

The CCEE finds that while most CGIAR researchers working in the Dryland Systems CRP are well-trained in their disciplines, they do not have sufficient capacity for systems research. Researchers also expressed demand for such training. The three current system CRPs could collaborate on developing and implementing a short course on systems research.

3. **The socio-economic components of systems research should be strengthened with poverty and livelihood assessments, adoption studies, policy and institutional analyses, and in-depth gender and youth studies. This will require recruitment of social and economic science and systems expertise.**

   *Action: Dryland Systems PMU using consultants; and DCLAS leadership for the future.*

   Bio-physical research is a key strength of the program but needs to be complemented by stronger socio-economic capacity. It is clear from the field visits and review of published papers that institutional, social and economic scientific research capacity is weak, and there are numerous missed opportunities for achieving deeper insights and more effective impacts. This recommendation applies to the current CRP and to the proposed future DCLAS CRP.

4. **Strengthen the accountability of the CRP for the quality of science produced.**

   *Action: Dryland Systems Director should initiate, in consultation with other CRP Directors and the CO.*

   This may require support from the Consortium Office to establish the authority of the CRP leadership to set and enforce quality standards in consultation with partner Centres. The importance of producing developmental outcomes and impacts does not free CGIAR scientists from the obligation to produce excellent science. The PMU should play a stronger role in setting standards and ensuring standards are met in terms of open access, correct acknowledgements and attribution, and fair authorship. This role should be supported by guidelines from the CO applicable to all CRPs. A major metric used to assess CRP performance is quality of science; therefore the CRP leadership should have a clear role. The CCEE recognizes this problem may be difficult to solve with the existing structure in which 15 independent Centres share responsibility for the performance of the entire CGIAR system; a more radical solution that could be considered is for the CO to hire CRP Directors and PMUs, and contract with the Centres for implementation.

# 6. Efficiency: Governance and Institutional Arrangements

## 6.1 Introduction

This chapter addresses the efficiency question: Is the governance and management structure of the CRP efficient? In other words, is the CRP using its resources well to produce 'value for money'? The CGIAR-IEA (2015a) standards for evaluation state that the criteria for efficiency cover the extent to which the program has economically converted, or is expected to convert, its inputs into results. Practically, this covers the degree to which the organization has good management and financial systems in place and the manner in which administration is efficiently managed.[52] This chapter covers these considerations using key questions in the efficiency section of the evaluation matrix to structure the evaluation. The chapter starts with an evaluation of governance, including the development of governance guidelines, transparency in lines of accountability, response by the CRP management and Lead Centre to ISPC reviews of CRP proposals and the audit; and steps that have been undertaken to strengthen CRP management.

The CGIAR Internal Audit Unit (IAU) of Dryland Systems was undertaken in mid to late 2014; its final report with the responses of the Lead Centre was finalized in March 2015 (CGIAR-IAU 2015a). That report has been followed up in mid-2015 to assess the implementation status of the 18 recommendations (CGIAR-IAU 2015b). The 2014 audit covered governance, management and compliance, project management, financial management, partner and subcontract management, and monitoring and evaluation. The audit team reviewed guidelines, policies, procedures, and agreements, and interviewed financial, operational and technical management staff. The key point of controversy appeared to centre around when the CRP was officially approved and the associated governance structures that were required at this time. The Lead Centre's response to the Audit noted that ICARDA and the auditors had different interpretations of the "Inception Phase" in that only interim management and governance arrangements were put in place by the Lead Centre until the CRP was fully approved in May 2013 at which time funding was thought to be assured.

Many of the Audit recommendations centre on the establishment of governance and institutional arrangements as a result of this differing interpretation of the inception phase. Given that organisational performance is a central element of the efficiency criteria, the CCEE assesses the degree to which key recommendations have been adopted and any current gaps still requiring action in this part of the report. In addition to the internal audit, the Independent Evaluation Arrangement (IEA) supported a system-wide review of CRP Governance and Management between June 2013 and January 2014 (CGIAR-IEA 2014). Findings from this review are also used in this chapter; along with the results of literature review (responses to ISPC 'must haves'), the minutes of Dryland Systems meetings, direct observation of the Dryland Systems Hyderabad SC, SI&M, RMC and Jodphur (Rajasthan) innovation platform meetings in early 2015, interviews with management and scientists, and interviews conducted as part of field visits.

## 6.2 Dryland Systems governance

An overall finding of the IAU Report was that the design and implementation of the governance and management structures were not adequately considered during the inception of Dryland Systems, and this had hindered effective governance and oversight - leading to undue pressure on CRP and ICARDA management. Key observations and recommendations related to the structure of the Steering Committee (SC); budget approvals were noted as being late; gender

[52] Key points in the CGIAR-IEA (2015a) standards include the extent to which the program has sound financial management, budgeting, and reporting and extent to which reformed CGIAR organizational structures have impacted upon the efficiency of program implementation.

balance was not appropriate; and SC attendance was found to be inconsistent across the life of the CRP. The SC has been restructured since the IAU audit. The PMU provided a series of reasons for delayed budgeting in the response to the Audit. These included: it was not possible to finalise the 2013 budget in the third quarter of 2012 because the CRP 1.1 proposal was not yet approved, and the 2014 budget was not approved in the third quarter of 2013 because the activities for 2014 were not yet defined.

Below the SC, planning is undertaken by the Interdisciplinary Research Teams (IRTs) at the regional Flagship level (Dryland Systems 2015k). Gaps in the current TORs flagged in the most recent Dryland Systems Governance Guidelines indicate that they should state the frequency of meetings, how binding decisions are made, and criteria for membership. The CCEE had no direct observation of IRT operations, although some IRT personnel were interviewed during field visits. For example, during field work in Africa, the WAS&DS Flagship Coordinator pointed out that the budget for holding two IRT meetings per year is not adequate given the high cost of regional travel. Equal amounts are allocated per flagship and they are not based on actual costs. Virtual meetings are not a practical solution in this region given the limitations of the internet services in much of Africa.

The Research Management Committee (RMC) coordinates and evaluates POWBs and budget allocations. Significant findings of the IAU regarding the RMC were: the terms of reference were 'draft', and records of committee deliberations were incomplete. This again was thought to be a result of a limited project setup phase. The PMU has responded to these issues by developing a RMC ToR in July 2014 that was approved during the 4th SC meeting in December 2014. Key tasks in the ToR include endorsing budget allocations for review by the ISC and approval by the Lead Centre Board of Trustees (Dryland Systems 2015k). The RMC is being supported by the Gender Working Group and the Data Management Working Group. The Capacity Development, Communication and Knowledge Sharing, and System Research Working Groups are being established in 2015. The CCEE observed the RMC meeting in Hyderabad in April 2015. Recommendations were made to the ISC for approval of next year's plans. The RMC reviewed CRP performance.

*Following review of guidelines, interviews and direct observations of the SC in early 2015, the CCEE finds IAU recommendations relating to governance have largely been adopted and clearer lines of accountability have been developed. IAU recommendations and evidence of action by the CRP are summarised in Annex 10.* The follow-up IAU review in 2015 also supports these observations of the CCEE, with four governance recommendations being fully implemented and one being superseded (CGIAR-IAU 2015b).

## 6.3 Dryland Systems management

The CCEE has assessed CRP management using the domains of the IAU which include program implementation, reviewing and reporting, and administrative efficiency. The detailed results are provided in Annex 10. Significant IAU findings relating to the PMU included: the PMU was not appropriately set up at the start of the CRP during the 2012 Inception Phase, and TORs and operational guidelines were still in 'draft' (CGIAR-IAU 2015a).

CRP management units are typically small across the CGIAR system, averaging 3.5 full time staff and one half time staff (CGIAR-IEA 2014). At the time of the IEA governance review, Dryland Systems had three full time staff, which is similar to the CRP system-wide average. CRP management costs are difficult to compare across CRPs as there are considerable differences in the way administrative support services are handled and how centres charge overhead to the CRPs as well as direct expenses for specific services and positions.

The Director's TOR has since been prepared by Dryland Systems and provided to the CCEE. The CCEE observed the Director fulfilling most of these roles. Many interviewees were very positive about the direction and energy of the CRP since appointment of the current Director and PMU staff. It is unclear why the research program coordinator, communications, systems specialist and gender positions were not filled earlier in the life of the CRP.

A risk management plan has been prepared to describe processes that will be used to identify record, discuss, and respond to program risks, and the roles and responsibilities of the people involved in the processes (Dryland Systems 2015L). It was submitted to the March 2015 ISC for approval. The Dryland Systems Research Program Coordinator is responsible for the creation and maintenance of this document and training by an expert risk analyst has been proposed for 2015. Version 7 (Dryland Systems 2014L) was provided to the CCEE in March 2015. It includes 49 risks and means of mitigation.

The ISAC was formed to provide independent advice on the quality of science. The IAU found operational guideline drafts; however, it concluded that some ISAC members did not fully understand their role. ICARDA considered the ISAC had considerable value in that it had been active since early 2013, members attended regional work planning and budget meetings and visited action sites in the five target regions during the first year of operation. Based on these observations, ISAC submitted a 'reflections' report in December 2013 (Lynam et al. 2013). The document was used to initiate the first S&IM meeting in June 2014. The CCEE found this document to be very useful, along with the concept of the S&IM, which was one of its recommendations. The wide breadth of attendees at the second S&IM meeting does need consideration, as the CCEE observed many non-participating delegates at the April 2015 meeting.

The IEA system-wide governance review concluded the reporting line of Directors were duplicative which put additional limitations on the CRP leader's authority (CGIAR-IEA 2014). The ISAC was merged with the SC to remedy this issue. It was, however, recently replaced by an Independent Task Force (ITF) due to the perceived lack of quality in the CRP's Extension Proposal. The CO and ISPC advised Dryland Systems to commission an Independent Task Force to identify mission critical areas of research, analyse the current POWB, develop and design a strategy and operating plan to position CRP in the next round of CRPs, and prepare proposals for the Second Call of CRPs. The ITF has recently been re-branded as simply the Task Force (TF), in part to reduce its cost as it now includes both external and internal members. It is providing scientific advice focused on future dryland systems research. The CCEE understands the TF will not continue into 2016[53].

It is not clear to the CCEE that the abandonment of the ISAC, then replacement with a similar body has added much value. Members of the ITF could have been included in the SC to enhance the body's strength in systems analysis. The ITF appears to be able to contribute in addressing issues relating to the natural resources SLO. Strategic issues relating to the Theory of Change – a key recurring criticism of the CRP – and poverty considerations appear to be less well covered. In the view of the CCEE, many of the issues raised by the IAU and CO have been dealt with by the filling, albeit late, of key PMU positions.

*Overall, the CCEE commends the PMU for its response to the Audit Report recommendations relating to management. Although the objective of the CCEE is not the verification of the CRP's response to the Audit, governance and management considerations in the Audit report correspond with those of the CGIAR-IEA (2015a) Standards for Independent External Evaluation*

[53] The CCEE understands there is no revised formal ToR or revised contract reflecting the current tasks of the TF. This makes it difficult to offer definitive suggestions on the role of the TF.

*for efficiency. A more detailed description of the evidence of CRP response to these recommendations observed by the CCEE is provided in Annex 10.*

## 6.4 Financial management and resource mobilization

Financial management and resource mobilization were core issues identified in the CGIAR-IAU report. Dryland Systems was criticized for not having established financial management systems and structures during the program design period, and not having a staffed PMU to provide financial management. The CO was also criticised for providing little direction and guidance on bilateral subsidies and how disbursement of CRP funds should be managed. This included no policies or procedures for Dryland Systems budget development – particularly a lack of consideration of Window 3 or bilateral funding and difficulty linking methods and outputs in the POWB with budgeting. A series of recommendations were made to address these issues and are detailed in Annex 10, along with the Dryland Systems response and status of implementation observed by the CCEE.

A major concern raised by the IAU was that funds disbursed to the Lead Centre of the CRP are being directly received and comingled with non-CRP related Lead Centre funds. ICARDA did not support this recommendation, as late release of W1&2 funds requires the Centre to pre-finance activities of the CRP. The IAU requested the CO to examine clauses 1.2 (b) and 1.3 of the PIA given time delays on disbursement. The IAU observed fund flows from the Lead Centre to Participating Centres do not adhere to the PPA in that they are not disbursed "upon receipt of funds from the Funds Office". Transfer difficulties are problematic due to financial sanctions associated with civil unrest in Syria. ICARDA uses off-setting arrangements with other Centres to practically deal with this issue. In response to the IAU, ICARDA stated it had not received complaints of late payments from partner Centres. The CCEE has received a complaint from one centre about late payment during field visits. The 2015 follow-up IAU review also points to prompt disbursement as an area for improvement (CGIAR-IAU 2015b).

The IAU requested a control process be established at the PMU whereby the overhead rates charged to CRP 1.1 by participating Centres are reviewed and monitored. This should subsequently be reported to the Steering Committee and the Lead Centre Board of Trustees and the Consortium. ICARDA agreed that the PMU needs to review and monitor the overhead rates charged to CRP 1.1. Audited accounts for 2012 show ICARDA had an indirect cost rate of 14.7%, compared to an average of 16.79% for all participating CG centres. Other issues identified in the IAU report included charging rates on monies passing through to other partners, and indirect cost recovery rates for bilateral project agreements.

The 2015 IAU follow-up review noted that documentation of internal overhead rates was still required. The IAU recommended that the CO should update FG5 to provide guidance on the subsidy of bilateral project overhead by CRP. The follow-up review has not audited the degree to which this recommendation has been adopted by the CO. ICARDA agreed to the appointment of a Finance Program Coordinator as recommended by the Audit. This position was noted by ICARDA as having a reporting responsibility to the Director of a Research Program of the Lead Centre. She is currently located in Beirut. The PMU prefers that a full time financial program coordinator be located in the PMU office in Amman.

Dryland Systems appears to be attaining expenditure levels over its life to date that reflect the original budget. However, there have been substantial changes in the composition of financing sources, with W1&2 funds decreasing significantly. The POWB 2015 was designed in light of more acute financial constraints with W1&2 resourcing reducing from $17.0 million as envisioned at the start to 2014 to $10.3 million as determined by the Fund Council in November 2014 (Dryland Systems 2015m). This was further reduced to $8.6 million in March 2015, an

additional 19% cut. Key changes in proposed operations between 2014 and 2015 are evident in Table 6.1.

**Table 6.1 2014 and June 2015 Dryland Systems POWBs**

| | 2014 | | 2015 | | Change | |
|---|---|---|---|---|---|---|
| | **W1/2** | **W3/B** | **W1/2** | **W3/B** | **%** | **%** |
| PMU, Overarching, Other | 1.8 | 0.0 | 3.9 | 0.0 | 29% | 0% |
| *Director's office* | 1.5 | | 0.974 | | | |
| *ITF and CCEE* | | | 1.0 | | | |
| *Contingency* | | | 0.282 | | | |
| *Overarching program* | | | 1.6 | | | |
| **North Africa West Asia** | 4.2 | 12.8 | 0.9 | 3.8 | -78% | -70% |
| **West Africa & Dryland Savannahs** | 3.2 | 2.2 | 1.0 | 7.4 | -66% | 233% |
| **Eastern and Southern Africa** | 3.0 | 7.1 | 1.1 | 8.0 | -62% | 13% |
| **Central Asia** | 1.7 | 1.4 | 0.8 | 2.3 | -44% | 68% |
| **South Asia** | 3.0 | 5.7 | 1.0 | 2.7 | -65% | -52% |
| Grand Total | **17.0** | **29.3** | **8.6** | **24.3** | **-49%** | **-17%** |

*Source: PMU Data.*

The CCEE found downward revisions of deliverables forecast for the program in the regional Flagship programs. This has largely been through the consolidation of sites. It is not clear who the IAU spoke with when it concluded "during interviews with scientists across the CRP it was evident that they did not see financial constraint a hindrance to the delivery of the Proposal deliverables" (CGIAR-IAU 2015a: 8). This is not the experience of the CCEE. During interviews with CRP scientists, funding cuts were continuously nominated as the key constraint on program delivery. Cuts were most severe for NAWA, with numerous sites suspended.

The CCEE supports further strategic consolidation, given the dispersed nature of activities. The pre-proposal for DCLAS identifies 10 locations to conduct research which include five countries in SSA, three in SA (all in India), one in CA and one in North Africa (NA). The CCEE suggests Dryland Systems further consolidate current research around these agreed locations, while providing scaled down budget for action sites not included in the above ten for literature preparation. Initial guidance for the 2016 POWB seen by the CCEE suggests this is happening.

The 2014 and 2015 POWBs indicate decreases in bilateral funding for NAWA and SA. WAS&DS has a very large increase in bilateral funding mapped to Dryland Systems. Assessing bilateral fund raising performance is, however, hindered by the lack of guidance about mapping and the somewhat arbitrary nature of attribution. There is currently no obligation to map bilateral projects to CRPs. Analysis of 2015 planned bilateral expenditures found that much of it is from a small number of projects approved in 2012 and 2013. Donor commitments appear to be diminishing, though not to the degree of W1&2 funding cuts. This may be a result of a number of factors including the global financial environment, negative perceptions of returns to R&D investments, and inability of ICARDA and the CRP to dedicate time to resource mobilization due to relocation from Aleppo and the process of building the PMU. The CCEE suggests that Dryland Systems needs to continue to invigorate its advocacy and resource mobilisation strategy.

Window 1&2 resource mobilisation is driven largely by the CO and FC. The CO and FC allocate Window 1 funds to CRPs, while W2 resources are allocated to CRPs by donors. A key issue is the unpredictability and uncertainty of W1&2 allocations. The CO office is observed by the CCEE to

have had limited success in mobilising additional resources and providing reasonable forecasts of fund availability.

It was estimated the W1&2 resources would increase by 10.3% in 2014 and 2015. CGIAR W1&2 funding was projected (excluding carry forward) to be $1.101 billion in 2015. These projected W1&2 funds never materialised. Dryland Systems was to receive a revised W1&2 allocation of $8.6 million on March 10, 2015, comprising a 57% reduction in W1/W2 funding. A reduction in projected W1/W2 funding of this order is nearly two times that of the CRP average. Table 6.2 provides details on the unequal reductions in predicted 2015 W1/2 funding between 2 December 6, 2013 and March 10, 2015. No clear pattern emerges from the data in this table as to which type of CRP suffered the greatest reductions. However, it shows clearly that Dryland Systems suffered the largest reduction.

**Table 6.2 2015 W1&2 Resource Allocation for each CRP by CO, 2013-2015**

| | 2015 allocation as at December 6, 2013 Millions USD | | | 2015 allocation as at March 10, 2015 Millions USD | | | % Change | | |
|---|---|---|---|---|---|---|---|---|---|
| | **W1** | **W2** | **Total** | **W1** | **W2** | **Total** | **W1** | **W2** | **Total** |
| Dryland Systems | 12.4 | 7.6 | 20.0 | 1.7 | 6.9 | 8.6 | -86% | -9% | -57% |
| Humid Tropics | 14.3 | 5.7 | 20.0 | 5.6 | 4.7 | 10.3 | -61% | -18% | -49% |
| AAS | 17.0 | 3.0 | 20.0 | 8.7 | 4.2 | 12.9 | -49% | 40% | -36% |
| PIM | 14.7 | 10.8 | 25.5 | 7.5 | 9.9 | 17.4 | -49% | -8% | -32% |
| WHEAT | 10.4 | 4.9 | 15.2 | 5.1 | 8.4 | 13.5 | -51% | 71% | -11% |
| MAIZE | 14.2 | 2.8 | 17.0 | 8.6 | 2.6 | 11.2 | -39% | -7% | -34% |
| GRiSP | 34.8 | 6.0 | 40.8 | 21.2 | 5.4 | 26.6 | -39% | -10% | -35% |
| RTB | 17.7 | 14.6 | 32.3 | 8.8 | 13.4 | 22.2 | -50% | -8% | -31% |
| Grain Legumes | 9.6 | 6.6 | 16.2 | 4.9 | 6.4 | 11.3 | -49% | -3% | -30% |
| Dryland Cereals | 4.7 | 2.4 | 7.1 | 2.6 | 2.4 | 5.0 | -45% | 0% | -30% |
| Livestock /Fish | 5.5 | 11.1 | 16.5 | 1.4 | 11.5 | 12.9 | -75% | 4% | -22% |
| A4NH | 9.2 | 17.3 | 26.5 | 4.1 | 15.5 | 19.6 | -55% | -10% | -26% |
| WLE | 28.0 | 6.0 | 34.0 | 17.0 | 5.2 | 22.2 | -39% | -13% | -35% |
| FTA | 25.0 | 7.7 | 32.8 | 14.8 | 6.4 | 21.2 | -41% | -17% | -35% |
| CCAFS | 43.9 | 4.6 | 48.4 | 27.1 | 5.5 | 32.6 | -38% | 20% | -33% |
| Genebanks | 17.0 | 1.7 | 18.7 | 17.0 | 1.7 | 18.7 | 0% | 0% | 0% |
| Total | **278.4** | **112.8** | **391.0** | **156.1** | **110.1** | **266.2** | **-44%** | **-2%** | **-32%** |

*Source: CO.*

The CCEE understands that a "grading system" was used to rank CRPs, and budget cuts for each CRP were mainly a function of this grading system. Grades ranged from "A" to "C"; Dryland Systems was the only CRP given a "C" rank[54]. This reflects the very negative assessment of the Extension Proposal by the ISPC (2014). The CCEE has not found any information on how the percentage cuts in budgets was arrived at – why the 11 "Group A "CRPs were not cut at all, while within the "B" grade cuts of three CRPs were 15% (WLE), 25% (AAS) and 40% (Humid Tropics) and Dryland Systems was cut 50%. The team is not aware of any transparent published criteria for imposing differential budget cuts. Based on an interview with the former WLE Director, the team is aware that WLE disputed the methodology but to no avail. The CCEE is also aware of a

[54] "Fund Office Analysis and Suggestions on W1/W2 Extension Proposals", no date.

protest letter sent by the ICARDA Board Chair to the FC protesting the depth of the cuts, also to no avail. In the view of the CCEE, Dryland Systems appears to have suffered an over-proportional budget reduction.

*Regardless of the merits of the methodology used, the CCEE concludes that such drastic reductions in W1&2 funding has had serious negative impacts on the Program and its potential to respond to the ISPC critique of its Extension Proposal and to achieve its goals. These reductions are especially unfortunate given the fact that the CRP has made good progress in developing a more coherent program and put in place good governance and management arrangements*.

## 6.5 Human resources management

From the interviews the CCEE conducted with the Human Resources unit, ICARDA has an established procedure which is used for CRP recruitment and assessing staff performance. Mixed views were expressed as to whether salaries and conditions are sufficient to attract high quality staff. Most notably, many scientists were concerned about the security of tenure given continual funding cuts. Younger scientists were concerned that there is insufficient funds allocated to conduct trials and research studies of high quality. In a number of countries the evaluation team was told that it was difficult to recruit international staff because of local conditions. This applies to the current location of the CRP PMU, Amman, as well. *Based on discussions with scientists, the CCEE concludes that the program has not yet been entirely successful in assembling and deploying a staff with sufficient research training and experience to shape and address its ambitions research objectives* (see Chapter 5).

As shown in Table 6.3, in 2014 PMU data indicates Dryland Systems staff time devoted to research included about 141 full-time equivalent (FTE). The highest number are allocated to ESA. NAWA is next; however, since 2014 many sites have been suspended. The high number in NAWA reflects the large proportion of national staff relative to other areas. The overall share of women researchers in the CRP is rather low, 22%, though the CCEE does not have figures for other CRPs for comparison[55]. The Gender Working Group set up in 2014 produced Guidelines for Gender-Responsive Research for Biophysical Scientists and the Dryland Systems Young Agricultural Scientist Program, which has a modest budget under Capacity Development.

An overarching flagship program has been approved to bring coherence to the CRP Flagships and activities (Dryland Systems 2015f). Activities include data synthesis and management, geo-informatics, capacity development, gender and youth, knowledge synthesis and communications, systems analysis and modelling. The communication program coordinator started on 1 November 2014, The Agricultural Livelihood Systems Expert and the Gender Program Coordinator both started work on 11th January 2015. Working groups and communities of practice have been formed to decide on the activities and budget allocations for the overarching activities.

**Table 6.3 Full Time Equivalent Staff by Flagship, 2014**

| Flagship | International | | | National | | | Total | % |
|---|---|---|---|---|---|---|---|---|
| | Total | W1&2 | W3&Bilateral | Total | W1&2 | W3&Bilateral | | |

[55] Figures provided by the PMU are as follows: 212 scientists booked to the CRP. Of these, the PMU is not sure of the gender of 22. Out of the remaining 190 scientists, 43 are female. The CRP clearly does not explicitly track scientists' gender. The CRP was not explicitly tracking scientists' gender until the CCEE raised this issue; it is now included in the MEL and the PMU is said to be updating its records.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **FP 1: West African & Dry Savannahs** | 18.4 | 6.44 | 11.96 | 21 | 3.36 | 17.64 | 39.4 | 28% |
| **FP 2: North Africa & West Asia** | 9.5 | 6.65 | 2.85 | 30.7 | 24.56 | 6.14 | 40.2 | 28% |
| **FP 3: East & Southern Africa** | 14.6 | 4.526 | 10.074 | 26.9 | 6.725 | 20.175 | 41.5 | 29% |
| **FP 4: Central Asia** | 2.7 | 1.539 | 1.161 | 1.9 | 1.9 | | 4.5 | 3% |
| **FP 5: South Asia** | 9.4 | 6.298 | 3.102 | 6.2 | 1.55 | 4.65 | 15.6 | 11% |
| **Total** | 54.6 | 25.45 | 29.147 | 86.7 | 38.1 | 48.605 | 141.2 | 100% |

*Source: PMU data.*

## 6.6 Reporting and M&E system

A Monitoring, Evaluation and Learning (MEL) plan has been developed and is currently being implemented on-line[56]. It has recently been rolled out to four other CRPs, with others also expressing interest in using it. M&E is a major responsibility of the Research Program Coordinator. His ToR states that this position should liaise with Partner Centres to harmonize M&E plans, establish a system to monitor delivery of research milestones, outputs and outcomes, create and facilitate an M&E group, review research implementation, and define activity indicators and IDO indicators with Partner Centres. The IAU audit indicated that the establishment of the position occurred after two and a half years of the CRP's existence, which led to suboptimal tracking of outputs and the absence of any mechanism to guide the program based on reports on progress (CGIAR-IAU 2015a). The CRP proposal stated that an M&E plan was to be developed to ensure that research performance is on track and that scientific outputs are of sufficient quality.

The IAU recommended, as a priority, that the Dryland Systems design and implement a comprehensive M&E plan overseeing research activities, outputs, and outcomes as well research data and publications (CGIAR-IAU 2015a). The new platform is a useful tool to monitor activity plans, which are spelled out in terms of project outputs, objectives, human resources and budget sections for W1&2 as well as W3 and bilateral funds. They are linked to the annual POWB submitted to the CO. The POWB follows a CGIAR-prescribed template (clusters of Activities and Flagship Projects); Dryland Systems is structured according to regional flagships. The Activity Plans provide a basis for monitoring.

Dryland Systems Governance Guidelines (Dryland Systems 2015k) note the platform was demonstrated to the 4th SC meeting and to the 3rd RMC. The SC members have requested the creation of a smaller number of indicators in comparison with the 34 used by the CO in order to optimize the analyses of CRP performance. This is currently being implemented. As discussed in Chapter 4, an impact pathway and results framework were not properly defined. The CCEE finds a results management culture has now taken hold in the PMU, and the platform being developed appears to be comprehensive. However, there does not appear to be a plan for evaluations, reviews, and impact assessments, possibly a result of continuing reductions in W1&2 funds – and expectations of further cuts before the end of 2015 and in 2016. This is especially unfortunate as such assessments could form a useful baseline for the next cycle of CRPs.

The CCEE notes that there is a discontinuity between the POWB template provided by the CO and the Annual Report template provided. This makes it difficult to assess program performance vis-à-vis plans. In addition, the CCEE feels that the performance indicators used by the CGIAR over-emphasize development and under-emphasize real science achievements. In other words, the criteria for measuring performance appear to be out of balance.

[56] http://mel.cgiar.org/user/login, accessed 22 July 2015.

*The CCEE commends the Dryland Systems CRP for developing a very forward-looking, innovative and functional MEL system, designed not only to track basic information on the program but also to aid in learning lessons. From the demonstrations provided to the CCEE team, it appears to be a user-friendly and comprehensive system. Several other CRPs have also noticed this and are either adopting it or using some of its structure for their own systems.*

## 6.7 Performance of Lead Centre

The last few years have seen a great deal of turmoil for the Lead Centre (ICARDA) as well as the CRP. These include being forced to leave its headquarters in Aleppo and establish the staff in other places through a decentralization process. Aside from the disruption to staff and work, this has had large financial costs. The Dryland Systems CRP has had to re-submit its proposals several times, delaying the start of implementation; has had to recruit a new Director, set up a PMU, respond to drastic cuts in budgets, and had to go through an Audit which was somewhat controversial.

ICARDA plays a fiduciary role and hosts the PMU. These arrangements were reviewed across all CRPs and host centres as part of the IEA governance review (CGIAR-IEA 2014). ICARDA was deemed to exercise a high degree of control, although the means for arriving at this conclusion is not readily transparent in the review. As described in other evaluations, host centres have to balance upstream accountability towards the Consortium Board and ICARDA's Board. Dryland Systems-related decision-making has largely been delegated to the Steering Committee.

In regards to best achieving this balance, the IAU had suggested the appointment of a financial coordinator to the PMU with no responsibilities to the Lead Centre to buttress the independence of the PMU in ensuring management accountability of CRP funds flow and disbursements. A coordinator has been appointed, although ICARDA required the position to report to an ICARDA research program. She is not 100% dedicated to the CRP. The disruptions caused by the Lead Centre having to leave Aleppo, delays in CRP implementation, the need to recruit a new Director and set up a PMU, as well as respond to drastic budget cuts have all had significant adverse effects on performance.

Finally, the IAU made several recommendations to the CO regarding management guidelines and formats (CGIAR-IAU 2015a). In the follow-up IAU report CGIAR-IAU 2015b), it is noted that no specific audit of the CO has been conducted to determine to the degree to which recommendations have been acted upon. The IAU provides practical recommendations relating to the harmonisation of budgeting and mapping procedures. Given these procedure are used across multiple centres and CRPs the CCEE fully supports these recommendations to improve across program transparency and management coherency  Therefore, the CCEE has made its own similar recommendation to the CO (see below).

*Having reviewed documentation, observed a SC meeting and conducted field visits, the CCEE concludes that the Lead Centre has responded positively to IAU recommendations. Much of the criticism could have been avoided through more rapidly staffing of the PMU which would have assisted in the production of quality documents and developing a core vision, key priorities, concrete objectives and targeted deliverables for the CRP.*

## 6.8 Collaboration with Centres and other CRPs

The IAU report noted there has been no comprehensive monitoring of partners and subcontractors, due to suboptimal staffing of the PMU. The report goes on to state that varied contractual agreements were established for participating Centres but were not consistently executed after funds were disbursed, which ICARDA agreed to rectify (CGIAR-IAU 2015a). In the future, funds will not be disbursed until a signed and executed PPA is in place. *The CCEE concurs*

*with the IAU that a system-wide policy should be established in which any variations to standardised agreements be agreed by the Consortium Office legal counsel*.

In feedback provided by ISPC on the Extension Proposal, the CRP was asked to describe Dryland Systems linkages with other CRPs as it was not clear whether some of the linkages are active or not. The Annual Report for 2013 notes that outputs from some commodity CRPs are being used but are not yet embedded in joint-systems-based activities. These linkages are being further formulated in the DCLAS proposal. Based on field work discussions, review of annual reporting and examination of the extension proposal the CCEE concurs with ISPC that more needs to be done to define and explain the scientific complementarity and practical interaction with other CRPs.

## 6.9 Conclusions and recommendations

### Conclusions

The current governance structure and management processes are largely suitable for effectively implementing the CRP. The TORs are consistent with the governance structure mandated by the FC and CB for all CRPs. The CRP has adopted the recommendations of the IAU on governance and management, for which the CCEE commends the Program management. The Lead Centre (ICARDA) has responded positively to the IAU recommendations, especially commendable given the circumstances of having to leave its headquarters. Earlier recruitment of the PMU would have precluded many of the problems the CRP has faced.

The IAU had made a number of recommendations to the Consortium Office that would facilitate more effective management of CRPs. The CCEE agrees with the IAU that clearer guidelines and harmonized templates for planning and reporting would be very useful and has made a recommendation in this area.

The CRP has faced large reductions in its W1&2 funds for 2015 – larger than any other CRP. These have come right at the time the CRP has developed a more coherent program with strong governance and management arrangements. The CCEE does not understand the rationale for such drastic W1&2 cuts[57]. These cuts have severely affected the CRP's capacity to achieve all its planned outputs and outcomes. W3 and bilateral funding are also slightly lower than expected. The CRP has responded by consolidating field sites and reducing the number of planned deliverables. Nevertheless, there is a need for further strategic consolidation and focus to ensure the CRP produces excellent outputs with its diminished resources. A more vigorous advocacy program linked to an active resource mobilisation strategy is also needed.

Regarding human resources management, the CCEE found that there are problems recruiting good scientists given the difficult locations where the Program works. There are approximately 141 full time equivalent scientists, many of whom are nationally recruited. Only about 22% are women. The PMU is staffed by well-qualified professionals. In Chapter 5 the CCEE has noted that especially at Flagship levels, the CRP is very weak in terms of social and systems sciences.

Finally, the CCEE commends the forward-looking, innovative and functional Monitoring, Evaluation and Learning (MEL) system that has been developed and implemented. It supports learning lessons as well as more traditional M&E, and other CRPs are either adopting it or adapting it to their needs.

[57] Funding for 2016 may be even more drastically reduced.

## Recommendations

Based on the analysis in this chapter, one recommendation is made to the Consortium Office of the CGIAR.

1. **The Consortium Office should develop and adopt clearer management guidelines and harmonize templates for planning and reporting to streamline CRP management processes. Four specific improvements are:**

    a. **The CO should develop guidelines for mapping Windows 3 and bilateral projects and for cost sharing.**

    In response to the IAU's criticism of current mapping processes, the CRP has agreed to develop bilateral projects guidelines. They have been drafted and circulated to the RMC as requested during the 2nd RMC meeting. They were submitted to the 2015 ISC for approval. However, they were developed in the absence of CO guidance. The CCEE believes the CO should lead this guidance and organize an on-line data base to enhance transparency.

    b. **The CO should review and clarify CRP Directors' authority for the new round of CRPs.**

    It is not clear to the CCEE that the CRP Director has sufficient authority to change resourcing to Centres based on performance. The PMU has initiated six-monthly performance reviews and claims re-allocations are possible but the CCEE is not convinced. The IEA governance review found only five of 15 CRP leaders agreed that they have adequate authority to manage and lead the CRP and recommended changes in research priorities to achieve desired results so this issue is not limited to this CRP. The CCEE also feels the CRP Director should have more authority for controlling quality of published outputs (see Chapter 6). The CO should review governance guidelines to support program director authority in shaping direction and delivering results. A more radical approach could also be considered: hiring of CRP Directors and PMU members by the CO itself, and contracting research services to the Centres.

    c. **The CO should develop standardised management costing guidelines.**

    CRP management costs are difficult to compare across CRPs as there are considerable differences in the manner in which administrative support services are handled and reported, and centres charge overhead to the CRPs as well as direct expenses for specific services and positions. The CO should develop clear costing guidelines and issue them as part of the guidelines for developing full CRP proposals for the next phase.

    d. **The CO should consider harmonising the templates for the POWB and for Annual Reporting, as well as OCS[58] and the use of a common space to make published outputs available (for example, CGSpace).**

This would make assessing performance vis-à-vis plans easier, and standardize financial and output reporting in an open and transparent manner. In addition the CGIAR should re-evaluate the performance indicators used, to achieve a better balance between development and science achievements. Adoption of this idea could enhance the potential for monitoring performance and ensuring that the CGIAR focus remains on doing excellent science that is aimed at achieving the development goals as articulated in the SLOs and IDOs. The CCEE is concerned that the over-emphasis on development performance indicators sets up stronger incentives for doing development and not science.

[58] "One Corporate System", an effort by the CO to offer shared financial management and other services. See http://www.cgiar.org/cgiar-consortium/consortium-office/shared-services/, accessed 20 August 2015.

# 7. Future Directions of CGIAR Dryland Systems Research

At the time this evaluation was planned, there was a working assumption that there could be a second phase of the CRP on Dryland Systems. Indeed, the CRP was planned from the beginning as a long-term program (two six-year phases). However, in late May 2015, well into the period of this evaluation, a decision was made to establish a new CRP landscape that would more clearly support the new CGIAR Strategic Results Framework (CGIAR 2015). The second item of the ToR for this evaluation asks that the CCEE "provide useful evaluative information to CRP stakeholders that will inform the development of their full proposals for the upcoming Second Call for CRP proposals". Previous chapters have tried to meet this expectation. To fully achieve this requirement, this chapter addresses two issues: how to ensure that by the end of 2016 this CRP has produced high-value outputs and contributed to the launch of the new phase of CRPs; and what should be the future direction of CGIAR research on dryland systems. The CCEE recognizes this goes beyond its ToR but hopes its observations will be useful in strengthening dryland systems research.

## 7.1 Maximizing value during 2015-2016

The CCEE has documented that valuable field research is being done through the Dryland Systems CRP, even if some of it is still rather traditional single-commodity work. Further, while the CRP has faced multiple challenges leading to delays and reductions in its work plans, it has nevertheless learned quite a few important lessons that will be useful in the future. It is now clear the CRP will finish at the end of 2016, far sooner than planned. Given the challenges faced, the limited time frame of its actual implementation, and reductions in its budget, there is no realistic possibility that it can achieve the ambitious outcomes (IDOs) proposed in the various proposals. However, what it can achieve is to produce a set of excellent scientific outputs, accompanied by documentation of lessons learned from implementing the program that will provide a firm foundation for future research programs on dryland systems.

The Windows 1&2 funds are the only flexible resources that can be re-programmed. Much of the field work in the Action Sites is supported by Windows 3 and bilateral funds which will continue to be used based on the agreements with donors. The CCEE has concluded that in order to make best use of the remaining time and resources, the CRP should focus its efforts beginning in late 2015 on producing high-value state-of-the-art scientific outputs, supported by an effective communication campaign to publicize the results. Based on interviews with some senior scientists involved in the Program, the CCEE believes this idea would have broad support. *A formal recommendation to this effect has been made in Chapter 5.*

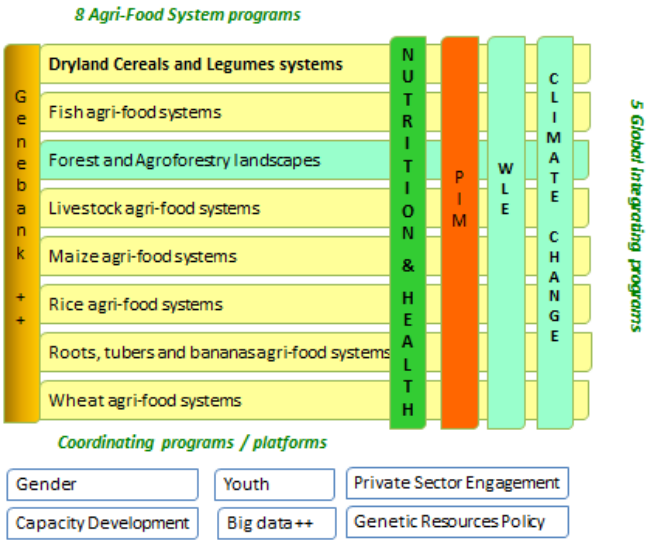
This would require substantially reducing the amount of funds being allocated to regional Flagships for field research and coordination. The PMU could create a small Flagship Support Fund and invite proposals from Flagships for small grants to bring promising work to a successful conclusion – which should include a commitment to producing one or more excellent publications. But most of the funds should be allocated to a defined program of analysis and writing, based on a definite publication plan. The CRP could build around the Task Force and the newly recruited specialists in the Global Flagship a small committee of highly-regarded scientists from both outside and within the CGIAR to lead the publication effort. That committee should develop a clear plan which could include a state-of-the-art peer-reviewed book on dryland agricultural systems, and/ or a set of high-quality papers to be published in high ISI factor journals, possibly through special issues. It could also include support to further improve or prepare open-access data sets whose availability will support more rapid start-up of the next generation of CGIAR systems research.

The Dryland Systems CRP should make every effort to be recognized by early 2017 as having made outstanding contributions to the science of dryland systems that will be the foundation for the next generation of dryland systems work led by the CGIAR.

## 7.2 Future CGIAR research on dryland systems

The CGIAR has produced a new Strategic Results Framework (SRF) both to address issues that had arisen in the implementation of its previous SRF, and to align its work to supporting the new Sustainable Development Goals (SDGs) formally approved by the United Nations General Assembly in September 2015. Based on the new SRF, a different set of CRPs has been proposed that are supposed to be linked more clearly to the broad global challenge of improving global food systems through three System Level Outcomes (improved food security and nutrition, reduced poverty, and sustainably managed NRM and eco-services). The proposed new structure is shown in Figure 7.1.

**Figure 7.1 The Proposed CGIAR Landscape of CRPs post-2017**




*Source: CO Powerpoint on CRP II Portfolio, Paris, France, 30 June 2015 at Cross-CRP Meeting on M&E.*

As part of the proposed re-alignment of the CRPs, the current Dryland Systems, Dryland Cereals, and Grain Legumes CRPs would be merged into one CRP, to be called CGIAR Research Program 1, *Dryland Cereals and Legumes Agri-food Systems* (DCLAS). The CCEE has seen the 27 July 2015 version of the pre-proposal for this CRP, to be led by ICRISAT in partnership with Bioversity, CIAT, ICARDA, IITA, ILRI and IWMI.[59] It proposes six Flagships, organized along a "delivery pipeline" which apparently reflects guidance for commodity CRPs from the ISPC and CO. The work currently being done by the Dryland Systems CRP would be, to some degree, continued within the proposed Flagship 5: "Improved Rural Livelihood Systems" (ICRISAT et al. 2015). Again reflecting the commercialized ethos of the pre-proposal, the description of this Flagship places a very high priority on interventions linking farm households to markets, both agricultural and non-agricultural.

[59] The CRP II pre-proposals are available at http://www.cgiar.org/our-strategy/second-call-for-cgiar-research-programs/crp-2nd-call-pre-proposal-submissions/, accessed 21 September 2015.

Based on the lessons learned from carrying out this evaluation, and previous experiences in the CGIAR including work with WLE and the CPWF, the CCEE offers the following observations for consideration as this and other CRP proposals are developed:

While commending the inclusion of a systems flagship focused on people' livelihoods, the CCEE suggests that as currently written, the pre-proposal gives the impression of fragmentation of the components (flagships) of the proposed CRP; there is no holistic integrated "systems" perspective but rather a narrower commercial agricultural perspective[60]. Approaches that have worked in now-developed but formerly pioneer drylands such as in the USA and Australia will not necessarily work well in the very different contexts of current developing country drylands. A livelihoods perspective rooted in a holistic integrated vision linking socio-economics and agro-ecologies should be the driving force of the CRP. This livelihoods perspective should have as its central driver finding opportunities for women and youth to thrive along with men by creating multiple livelihood options. To be successful, the CRP team should include strong systems scientists and senior social and economic scientists with excellent gender credentials.

By moving to organizing CRPs around commodities, the CGIAR seems to be weakening its potential for addressing complex integrated systems problems. For example, as it stands, the proposed DCLAS CRP does not seem to give adequate attention to rangelands and more generally to integration of livestock, crops and trees in a holistic systems vision.

While the priority given in the new CGIAR (2015) SRF to South Asia and Sub-Saharan Africa based on poverty levels is logical and understandable, the CCEE is concerned that insufficient priority will be given to North Africa and Western and Central Asian dryland systems. These regions may have lower numbers of very poor people, but they have high numbers of unemployed rural youth, and are areas that exhibit high levels of social stress and political insecurity which have impacts that extend beyond the region. Agriculture remains an important sector for creating more employment opportunities for young women and men. The CGIAR should retain a strong focus on these regions.

Finally, the CCEE observes that the process of creating and planning the CRPs seems to be driven from the top, i.e. by the CO, FC, ISPC and donors. This observation also applies to the governance of CRPs: they are dominated by the priorities and interests of the CGIAR Centres, not those of their clients. The CGIAR programs ought to move toward being driven by the priorities and interests of the CGIAR's main partners, i.e. its NARS, NGO and CBO partners in developing countries[61]. During the field visits, it was very clear that the national partners value their collaboration with the CGIAR, but also clearly would appreciate having a greater voice in priority setting and resource allocation.

## 7.3 Recommendations

Two recommendations are made in this chapter.

1. **A holistic integrated systems vision linking socio-economics and agro-ecologies should be the driving force of the DCLAS CRP. This livelihoods perspective should focus on promoting positive systemic change, and have as its central driver finding opportunities for women and youth to thrive along with men by creating multiple livelihood options.**

*Action: Leadership of DCLAS.*

[60] The ISPC has also criticized the conceptualization of systems approaches in the pre-proposals as "superficial" (ISPC 2015).
[61] ISPC (2015) makes a similar observation.

The CCEE notes that the DCLAS pre-proposal includes a strongly-stated "Cluster of Activities" within Flagship 1 on "Empowering Women and Young People through Inclusive Innovation Systems". However, the CCEE is not convinced that designating gender and youth as "Cluster of Activities" within Flagship 1 is adequate. Therefore, this recommendation could be made the central focus of the proposed Flagship on "Improved Rural Livelihood Systems" as described in the draft pre-proposal. Impacts are fostered through partnerships; therefore gender and youth mainstreaming must be integrated with capacity development, partnership, and communication strategy. To be successful, it will be important to include in the CRP team social and systems scientists with excellent gender credentials.

2. **The design and governance of all the new CRPs should be based on clear demand from developing country clients and partners, and they should play a far stronger role in this process than is currently the case.**

*Action: CGIAR.*

At the moment, the process of designing the new CRPs appears to be driven by the priorities and mandates of the CGIAR Centres, ISPC, CO and donors. Their governance processes as they have evolved during the current CRP phase are also dominated by the CGIAR Centres. To be really effective and responsive to the needs of the rural poor, it is critically important to make the CGIAR program more demand-driven and to empower national partners and clients.

# 8. Conclusions and Recommendations

## 8.1 Introduction

This evaluation of the Dryland Systems CRP has been organized around five basic questions, as follows:

- Relevance: How coherent and relevant are the objectives and overall design of the CRP on Dryland Systems? (Chapter 3)
- Effectiveness, impact and sustainability: Is the CRP likely to deliver its intended results? In other words, is it likely to produce the expected outputs and achieve its intended outcomes and impacts sustainably? Are the cross-cutting activities on gender and youth, communication, and capacity development well-integrated into the program and are they contributing to its effectiveness? (Chapter 4)
- Quality of science: Is Dryland Systems scientific research of a high quality and do the research outputs constitute international public goods (IPGs)? Related questions include: does the Dryland Systems CRP have an agreed, coherent and scientifically credible conceptual framework encompassing a complete understanding what "systems" research is supposed to be? (Chapter 5)
- Efficiency: Is the governance and management structure of the CRP efficient? In other words, is the CRP using its resources well to produce 'value for money'? (Chapter 6)
- What has been the response of the CRP management to feedback received from the CGIAR on its initial and extension proposals and to the Audit Report? To what extent do the guidelines, formats and commentary from the CO and FC support efficient and effective implementation of the CRP? (several chapters and Annex 10)

It has also briefly examined the implications of recent developments for the future direction of dryland agricultural systems research in the CGIAR. This Chapter summarizes the main conclusions of the CCEE and its recommendations.

## 8.2 Relevance: Conclusions and recommendations

The CCEE concludes that overall the Dryland Systems CRP is highly relevant. There is a clear need for investing in improving sustainable productivity of dryland agricultural systems which could benefit hundreds of millions of poor people. The rationale for this CRP is very clear and difficult to dispute. The Dryland Systems CRP is well aligned with both the previous CGIAR SLOs and the new ones, and is also reasonably well aligned with the IDOs. However, more attention could be paid to improving nutrition of rural households in the drylands.

The CCEE finds that the CRP has strong partnerships at regional Flagship and national levels with NARS, universities, NGOs, CBOs, and farmers. The working relationships among the Centres at regional Flagship level vary, but in most cases observed are not as well-integrated as would be expected. Several factors underlay this fragmentation: insufficient W1&2 funds, dependence on Centre-led bilateral projects, and budget holders are Centre- not CRP-based. The incentive structure does not encourage inter-Centre collaboration at present.

While there are also good partnerships with ARIs working on dryland agricultural systems, the CCEE concludes that there is great potential for effectively working with more ARI partners. The CGIAR Centres working on dryland agricultural systems have a substantial comparative advantage in terms of their decades of experience working in the field and with local and national

partners, but could complement this through partnering with institutions having advanced modelling and data analysis capacities.

The CCEE has made two recommendations for strengthening the relevance of Dryland Systems research. These are addressed to the Dryland Systems CRP management and to those leading the development of the new DCLAS CRP.

1. **Pay more attention to food access and improved nutrition.**
2. **Take the initiative to facilitate and catalyse stronger partnerships linking ARIs in dryland systems research and capacity development with national institutions in developing countries.**

*Action for both: Dryland Systems CRP and DCLAS leadership.*

## 8.3 Effectiveness, impact and sustainability: Conclusions and recommendations

The CCEE agrees with the ISPC conclusions regarding the weaknesses of the Dryland Systems CRP Theory of Change. But it also finds that the CRP has made significant progress in developing its ToC and impact pathway framework since the Extension Proposal was prepared. Nevertheless, the current impact pathway remains too generic and abstract, and key assumptions are not spelled out. In addition, the key stakeholders who must make the changes (outcomes) needed to achieve long term impacts, and their roles and linkages, are not clearly identified. The current impact pathway has been developed largely from the top down (with consultation with some scientists); it has not been developed through a participatory bottom-up process. There is no evidence that the impact pathways developed in the regions are used as research management tools; they appear to have been developed to meet the requirement to have an impact pathway. The CRP Flagship Programs have articulated a number of ambitious impact targets which, while laudable, are not linked to the impact pathway.

The CRP claims to be having important field-level impacts. This is commendable, but there is a need to document these, supported with hard evidence and a plausible theory of change; and published in both CRP-branded and peer-reviewed outlets. This would be an important contribution as there are only limited documented impact success stories from drylands.

The CCEE reviewed three cross-cutting themes of the Dryland Systems Program: Gender and Youth, Communication, and Capacity Development. *In all three themes, the CCEE commends the recent progress made, after a somewhat slow start*. The CRP has developed high-quality strategy papers for gender, youth, and capacity development. It has recently initiated efforts to become more effective in communicating the findings, outputs, and impacts of the CRP outside the CRP. However, there is little progress to date on the use of tools to enhance internal communications and the creation of a culture of knowledge sharing among scientists.

There is a gap between the progress at central level on gender, youth and capacity development, and the activities observed in the field. This reflects the unfortunate timing of the strategy development, which has lagged behind the planning of the field research. Therefore, in the field, there is very little work underway specifically aimed at youth; and while there is important work being done on gender, it is not at the core of the field research and is not likely to lead to major impacts. This work is also hampered by the weak social science capacity at field level. The capacity development work in the field sites as reported in the Annual Reports is significant but largely traditional in nature and is not based on the Capacity Development Strategy – again reflecting the late development of the Strategy.

Finally, the CCEE cannot come to a firm conclusion regarding the sustainability of the innovations emerging from the CRP research. There are clearly important institutional and technical innovations being tested and implemented, and there are indications that some of these may be sustained and scaled out further. On the other hand, the weak engagement with policy makers observed during the visits may limit the potential for scaling up. While the CCEE understands baseline surveys have been done in all the Action Sites, there is no indication of plans for *ex ante* or *ex post* impact evaluations during the final year of the program. The CCEE believes such studies should be given priority if possible in a difficult budgeting environment.

The CCEE makes the following recommendations on effectiveness:

3. **Develop a practical, credible and useful theory of change and associated impact pathway for the remaining period of Dryland Systems and, more important, for DCLAS.**

*Action: DCLAS leadership with Dryland Systems support.*

4. **Carry out and publish credible impact assessments, and produce documentation for advocacy.**

5. **Produce and disseminate a wide range of media that communicate the main findings and state-of-knowledge on dryland systems, the lessons learned, material that can be used for training/ capacity development, etc.**

6. **Promote a strong culture of internal knowledge sharing and communication as integral to the entire research process. A possible specific action to achieve this is to establish a mechanism for sharing draft papers and encouraging informal peer reviews, perhaps through the MEL system.**

*Action for numbers 4-6: Dryland Systems PMU.*

## 8.4 Quality of science: Conclusions and recommendations

Given the late start of the Dryland Systems CRP, it is premature to arrive at definitive conclusions regarding the quality of the research to date. Many of the published outputs are the products of legacy projects mapped to the CRP and reflect Centre mandates rather than the CRP mandate. Overall, as would be expected within the CGIAR, most of the scientists working on the CRP are experienced professionals; 75% have six or more years of experience. Most of the scientists have bio-physical disciplinary training; there are very few social scientists and economists (and those working on the CRP are mostly junior). This is a major weakness in the Program, especially at regional Flagship and field levels. In addition, while the CGIAR scientists are generally well-trained in their discipline, there are very few with training in systems research. Indeed, demand was expressed for more training in systems work. Their time allocations are highly fragmented: most spend 20% or less of their time on this CRP, which undoubtedly has an impact on productivity.

The CRP through its various proposals and reports has expressed a fairly consistent and quite reasonable, if limited, concept of what is meant by “systems research”. However, there is less clarity on how “dryland (agricultural) systems” are defined. Some gaps in conceptualization were also noted. For example, there could be stronger links to an existing “Dryland Development Paradigm” (Box 6.2); stronger links could be established between the local systems under study and global systems research; and more attention could be paid to non-agricultural livelihoods, rural-urban linkages, food systems, and policy. The CCEE notes that currently efforts are being made to conceptually integrate “agricultural systems” and “livelihood systems”. This is an important development though still a work in progress.

The CCEE examined the journal articles mapped to the CRP, as contained in a recent published list (Dryland Systems 2015a). The CCEE found that 55, i.e. about 57%, of these are published in

journals with an ISI factor. Only 44% of these are open-access and 35% were classified as "systems" or at least "multi-disciplinary". The CCEE noted the low or at best modest productivity of published journal articles per FTE scientist, though this depends on the assumptions made. None of the papers published so far are comparative cross-ALS or cross-Flagship studies, reflecting the absence of a global program until 2015. Overall, the papers reviewed were fairly good and a few were excellent.

The CRP has no quality control procedures of its own for ensuring the quality of the research and publications; like all CRPs, it relies entirely on the procedures of the partner institutions. These are probably adequate (though there are differences among Centres) and this state of affairs reflects the current CGIAR structure. Nevertheless, the CCEE concludes that the CRP should also have mechanisms in place to ensure publications based on work it supports is of high quality and reflects a systems perspective. One reason is that quality of science is an important metric used to assess CRP performance – but currently it has no control over this.

In terms of overall research program design, the CCEE notes that there was no global program until 2015 (and it has some limitations, for example, aside from gender, no social science and economics expertise). Over time, the SRTs and more recently the ALSs have been moving targets as they seem to evolve rapidly; however the regional Flagships and Action Sites have remained fixed. There seems to be a disconnect between the work at the Action Sites and the global level program: the field work at best only partly reflects the "systems" concepts and priorities described at the programmatic level. Much though not all of the field level research is classic testing of alternative crop varieties or management practices. Most of the field research is done in partnership with farmers and various local partners, reflecting a strong participatory approach. Finally, funds are dispersed rather thinly among many small activities, not strategically focused to produce results.

The CCEE makes the following recommendations related to quality of science:

7. **To maximize its value, during the final year of the Dryland Systems CRP the Program should consolidate its activities and focus most of its resources on producing a body of excellent scientific outputs that define the state of knowledge and provide clear directions for the next phase of research in development on dryland systems. The CRP should draw on outside expertise to complement CGIAR expertise in this endeavour. As part of this effort, the CRP should also undertake a systematic review of literature to make the case for drylands research and investments.**

   *Action: Dryland Systems PMU. The CCEE considers this its highest priority recommendation.*

8. **Invest in agreeing on a shared understanding of "agricultural systems" that integrates "livelihood systems", and what is the role and value of "systems research", and invest in training researchers in systems science.**

   *Action: Dryland Systems PMU, perhaps in cooperation with the AAS and Humid Tropics CRPs and/or with DCLAS.*

9. **The socio-economic components of systems research should be strengthened with poverty and livelihood assessments, adoption studies, policy and institutional analyses, and in-depth gender and youth studies. This will require recruitment of social and economic science and systems expertise.**

   *Action: Dryland Systems PMU using consultants; and DCLAS leadership for the future.*

10. **Strengthen the accountability of the CRP for the quality of science produced.**

*Action: Dryland Systems Director should initiate, in consultation with other CRP Directors and the CO.*

## 8.5 Efficiency: Conclusions and recommendation

The current governance structure and management processes are suitable for effectively implementing the CRP. The TORs are consistent with the governance structure mandated by the FC and CO for all CRPs. The CRP has adopted the recommendations of the IAU on governance and management, for which the CCEE commends the Program management. The Lead Centre (ICARDA) has responded positively to the IAU recommendations, especially commendable given the circumstances of having to leave its headquarters. Earlier recruitment of the PMU would have precluded many of the problems the CRP has faced.

The IAU had made a number of recommendations to the CGIAR Consortium Office that would facilitate more effective management of CRPs. The CCEE agrees with the IAU that clearer guidelines and harmonized templates for planning and reporting would be very useful and has made a recommendation in this area.

The CRP has faced large reductions in its W1&2 funds for 2015 – larger than any other CRP. These have come right at the time the CRP has developed a more coherent program with strong governance and management arrangements. The CCEE does not understand the rationale for such drastic W1&2 cuts. These cuts have severely affected the CRP's capacity to achieve all its planned outputs and outcomes. W3 and bilateral funding are also slightly lower than expected. The CRP has responded by consolidating field sites and reducing the number of planned deliverables. Nevertheless, there is a need for further strategic consolidation and focus to ensure the CRP produces excellent outputs with its diminished resources. A more vigorous advocacy program linked to an active resource mobilisation strategy is also needed.

Regarding human resources management, the CCEE was informed that there are problems recruiting good scientists given the difficult locations where the Program works. There are approximately 141 full time equivalent scientists, many of whom are nationally recruited. Only about 22% are women. The PMU is staffed by well-qualified professionals. The CCEE has noted that especially at Flagship and Action Site levels, the CRP is very weak in terms of social and systems sciences.

Finally, the CCEE commends the forward-looking, innovative and functional Monitoring, Evaluation and Learning (MEL) system that has been developed and implemented. It supports learning lessons as well as more traditional M&E, and other CRPs are either adopting it or adapting it to their needs.

The CCEE makes one recommendation for action by the CO, which reinforces recommendations made previously by the IAU.

11. **The Consortium Office should develop and adopt clearer management guidelines and harmonize templates for planning and reporting to streamline CRP management processes. Four specific improvements are:**

    a. **The CO should develop guidelines for mapping Windows 3 and bilateral projects and for cost sharing.**
    b. **The CO should review and clarify CRP Directors' authority for the new round of CRPs.**
    c. **The CO should develop standardised management costing guidelines.**

d. **The CO should consider harmonising the templates for the POWB and for Annual Reporting, as well as OCS[62] and the use of a common space to make published outputs available (for example, CGSpace).**

*Action: CGIAR Consortium Office.*

## 8.6 Future directions

The proposed new CRP landscape no longer includes systems CRPs operating separately from commodity CRPs; rather, there is an attempt to integrate systems and commodities research. For drylands, the current Dryland Systems, Dryland Cereals, and Grain Legumes CRPs would be merged into one CRP, to be called CGIAR Research Program 1, Dryland Cereals and Legumes Agri-food Systems (DCLAS). The CCEE has examined the pre-proposal submitted in July 2015. It commends the inclusion of a systems flagship focused on people' livelihoods. However, the CCEE suggests that as currently written, the pre-proposal gives the impression of fragmentation of the components (flagships) of the proposed CRP; there is no holistic integrated "systems" perspective but rather a narrower commercial agricultural perspective. Approaches that have worked in now-developed but formerly pioneer drylands such as in the USA and Australia will not necessarily work well in the very different contexts of current developing country drylands. A livelihoods perspective rooted in a holistic integrated vision linking socio-economics and agro-ecologies should be the driving force of the CRP. This livelihoods perspective should have as its central driver finding opportunities for women and youth to thrive along with men by creating multiple livelihood options. To be successful, the CRP team should include strong systems scientists and senior social and economic scientists with excellent gender credentials.

By organizing CRPs around commodities, the CGIAR seems to be weakening its potential for addressing complex integrated systems problems. For example, as it stands, the proposed DCLAS CRP does not seem to give adequate attention to rangelands and more generally to integration of livestock, crops and trees in a holistic systems vision.

While the priority given to South Asia and Sub-Saharan Africa based on poverty levels is logical and understandable, the CCEE is concerned that insufficient priority will be given to North Africa and Western and Central Asian dryland systems. These regions may have lower numbers of very poor people, but they have high numbers of unemployed rural youth, and are areas that exhibit high levels of social stress and political insecurity which have impacts that extend beyond the region. Agriculture remains an important sector for creating more employment opportunities for young women and men. The CGIAR should retain a strong focus on these regions.

Finally, the CCEE observes that the process of creating and planning of the CRPs seems to be driven from the top, i.e. by the CO, FC, ISPC and donors. This observation also applies to the governance of CRPs: they are dominated by the priorities and interests of the CGIAR Centres, not those of their clients. The CGIAR programs ought to move toward being driven by the priorities and interests of their main partners, i.e. NARS, NGO and CBO partners in developing countries. During the field visits, it was very clear that the national partners value their collaboration with the CGIAR, but also clearly would appreciate having a greater voice in priority setting and resource allocation.

Although the CCEE recognizes it may be going beyond its TOR, nevertheless, it makes two recommendations regarding the next phase of CRPs.

[62] "One Corporate System", an effort by the CO to offer shared financial management and other services. See http://www.cgiar.org/cgiar-consortium/consortium-office/shared-services/, accessed 20 August 2015.

12. **A holistic integrated systems vision linking socio-economics and agro-ecologies should be the driving force of the DCLAS CRP. This livelihoods perspective should focus on promoting positive systemic change, and have as its central driver finding opportunities for women and youth to thrive along with men by creating multiple livelihood options.**

*Action: DCLAS CRP leadership.*

13. **The design and governance of all the new CRPs should be based on clear demand from developing country clients and partners, and they should play a far stronger role in this process than is currently the case.**

*Action: CGIAR.*

## 8.7 Conclusion

After the CCEE final report had been completed and endorsed by the CCEE Oversight Committee, a proposal for responding to the severely constrained Windows 1&2 funding in 2016 emerged; and the Consortium Office proposed a more focused set of just eight CRPs for the next phase beginning in 2017, again responding to anticipated funding constraints. The CCEE was surprised to learn that the CO proposes an especially drastic reduction in Dryland Systems CRP for 2016. This proposal does not take into consideration the real progress made during 2015; and if it stands, will have a serious negative impact on the final results of the Dryland Systems program. If it does stand, the CCEE suggests that the CRP focus on implementing Recommendation number 7, i.e. *"… focus most of its resources on producing a body of excellent scientific outputs that define the state of knowledge and provide clear directions for the next phase of research in development on dryland systems".*

The CCEE concludes by emphasizing the following points. First, dryland agricultural livelihood systems are critically important globally and require major investments including agricultural research investments to prosper in the future. Second, the CGIAR should be the global leader in promoting sophisticated systems approaches to research on agriculture, livelihoods and natural resources. Third, successful systems research over the next 10-15 years will require significant investments in partnerships, capacity strengthening, and research. Systems research should be closely integrated with, and provide the context for, more focused commodity research as well as research on natural resources, policies, and institutions. While the Dryland Systems CRP did not achieve as much as expected, it is a source of important lessons for the future.

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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.

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