



RESEARCH  
PROGRAM ON  
Dryland Systems

Revised: May 2016

# 2016 Plan of Work and Budget



*Food security and better livelihoods  
for rural dryland communities*

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## List of Acronyms

|          |  |
|----------|--|
| ALS      | Agricultural livelihood systems              |
| CB       | Consortium Board                             |
| CO       | Consortium Office                            |
| CRP      | CGIAR Research Program                       |
| FC       | Fund Council                                 |
| IDOs     | Intermediary Development Outcomes            |
| IRTs     | Interdisciplinary Research Teams             |
| ISC      | Independent Steering Committee               |
| ISPC     | Independent Science and Partnership Council  |
| PMU      | Program Management Unit                      |
| POWB2016 | Plan of Work and Budget for 2016             |
| ITF      | Independent Task Force                       |
| FIGS     | Focused Identification of Germplasm Strategy |
| DS       | Dryland Systems                              |
| DCLAFS   | Dry Cereals and Legumes Agri-Food Systems    |
| DC       | Dryland Cereals                              |
| GL       | Grain Legumes                                |
| RTB      | Roots, Tubers and Bananas                    |

## I. Introduction

The 2016 Plan of Work and Budget (POWB2016) of the CGIAR Research Program (CRP) on Dryland Systems (hereinafter referred to as DS) was designed against a moving background of financial constraints that have seen the intended W1+2 budget fall from \$ 10.5 million USD as envisioned at the start to 2015 to \$ 2 million as determined by the CO Office in October 2015, thus leaving the CRP a limited budget to deliver outcomes and impact committed in the program proposal as it was being developed for 2016. This plan is thus designed with the W1/W2 funds only as resources to transit out of current activities. We note that the CO did not discuss the allocated resources to close operations with the PMU and ISC<sup>1</sup>.

## II. Organization of the POWB2016 activities and Program Management

Dryland Systems is part of the global effort to stem poverty, hunger, and environmental degradation. Our approach aims to achieve concrete outcomes. Collective integrated systems research involving more than 481 partners and many stakeholders targets the CGIAR strategic goals. Our [Program Impact Pathway](#) supports the [CGIAR Strategy and Results Framework 2016–2025](#), directly addresses seven United Nations post-2015 Sustainable Development Goals, and contributes to five other Goals.

Following recommendations of the ISPC and internal discussions during the 2nd Science and Implementation meeting of the CRP the program decided to re-organize its research from the original 5 flagships based around regions to 3 flagships based around Agricultural livelihood systems (ALS) as follows:

- Pastoral and agro-pastoral systems
- Rainfed systems (including tree based systems)
- Irrigated crop systems (including tree based systems)

All three ALS flagships include a large component of livestock and water management. System research activities in each ALS flagship are organized around major challenges of drylands resulting in a region x thematic matrix with the following system performances/themes:

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
4. Achieving land degradation neutrality

These four themes are investigated across the three main ALS flagships and underpinned by various cross cutting research activities on climate change, gender and youth, institutions and governance, capacity development, as well critical activities on geo-informatics, systems analysis and modeling, knowledge synthesis, sharing and communications that support the effective uptake and delivery of research.

The crosscutting research and uptake activities are an integral part of the newly established Overarching Flagship - nested in the Program Management Unit - which works to collate, synthesize and communicate program research results and outcomes at various levels. The Overarching Flagship Program was established upon recommendation by the Consortium Office.

Aside from demonstrating the adaptive management approach of the CRP, these significant changes were endorsed by the commissioned Independent Task Force (ITF) and its work to identify [Missions Critical Research Areas of Dryland Systems<sup>2</sup>](#). The critical importance of systems research in drylands was echoed in the [Task Force Report](#) to CGIAR Fund Council on *Drylands and Mission Critical Research Areas for the CGIAR* and presented to the 13<sup>th</sup> meeting of the

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<sup>1</sup> Consortium Office, 2016 Financial Plan, 19 October 2015

<sup>2</sup> Published in Agenda Item 6 of the Documentation of the 13th Fund Council Meeting:

[http://cgiarweb.s3.amazonaws.com/wp-content/uploads/2015/04/CRP-DS\\_MissionCriticalResearchAreas\\_Final.pdf](http://cgiarweb.s3.amazonaws.com/wp-content/uploads/2015/04/CRP-DS_MissionCriticalResearchAreas_Final.pdf)

CGIAR Fund Council in Bogor, Indonesia in April 2015. In this document, the Task Force outlined the value proposition of Drylands Research and three mission critical areas for future CGIAR research in drylands: (1) Anticipating drylands futures; (2) Co-producing knowledge for win-win options and (3) Facilitating policies, institutions and governance for scaling and enabling innovation.

However, the program was granted a limited budget to close operations in 2016 restricting our ability to enhance the system research and delivery of International Public Goods. The DS team contributed actively to DCLAS as a CRP formed by the merger of three phase I CRPs, namely DS, GL and DC during the Phase II pre-proposal, while the CRP Director played a leading role in shaping the systems flagship under the new WHEAT CRP. The ISPC evaluated the System Flagships (FPs 4 and 5) in DCLAS as good (ranked B on a scale from D to A).

Progress was made on several aspects and approaches developed by CRP DS as witnessed by their adoption by other CRPs. These include our Capacity Development Strategy (WHEAT, MAIZE, and DCLAFS), Youth Strategy (WHEAT, MAIZE, and DCLAFS), System Framework (DCLAFS), Monitoring and Evaluation System<sup>3</sup> (RTB, DC, GL, DCLAFS, CIP, and ICARDA).

Given these substantial changes in the organization of the Program, we emphasize that the CRP is undergoing a transitional phase that will require iterations and possible further modifications during the reporting 2016 as it attempts to gain maximum value from the limited resources. In addition, the research work will be presented with one Overarching Flagship Program and a reduced number of clusters of activities in the other three ALS flagships.

In this plan of work, we have applied the new CGIAR SRF instead of the framework submitted in the extension proposal in order to ensure our research is relevant and fully aligned with the new CGIAR priorities and donor expectations (see table below).

The contingency fund was eliminated since the CO confirmed in its Financial Plan 2016 that the 2 million USD would not be subject to reduction. W3 and Bilateral funds mapped by CG Centers are not presented in this POWB since Centers will need to change mapping priorities as result of CO decision to terminate the program.

Below Table 1 presents the planned activities related to IDOs and Table 2 presents the planned CRP gender research as requested. Please note that the request to report on each IDO and associated indicators results in several duplications in Table 1 as we use common indicators across IDOs.

<sup>3</sup> <http://mel.cgiar.org>

**Value Proposition of Dryland Systems research** “Dryland systems research can in the medium-long term improve agricultural livelihoods, nutrition and the environment of over 100 million dryland inhabitants and enable the wise use of ecosystem services valued at several hundred \$/ha 8,9 on up to 300 million ha (10% of drylands) or 190 million ha of degraded drylands. This value proposition is based on integrated systems research, which develops and tests, with farming households and development partners, feasible combinations of technical, market, governance, and policy options. Together these options improve agricultural livelihood systems. “ [Task Force Report](#) to CGIAR Fund Council on Drylands and Mission Critical Research Areas for the CGIAR.



Table 1. Planned key activities for 2016 to produce IDOs and outputs, with associated planned budgets

| Level | Level of organization within the CRP | Description of planned key activities at each level of internal organization  | Expected results of planned key activities   | Planned Budget (\$ 000s) |
|-------|--------------------------------------|---|--|--------------------------|
| n-1   | 1                                    | <p><b>Overarching Program</b></p> <p><u>Location:</u> Global, Uzbekistan, Tajikistan, Kazakhstan, Kirgizstan, Turkmenistan, Syria, Burkina Faso, Mali, Togo, Senegal, Ethiopia, Kenya, Zimbabwe, India, Zimbabwe, Niger, Nigeria, Morocco, India and other countries involved along the year.</p> | <p><b>Sub-IDO:</b> (1) Reduced Poverty (3) Increased incomes and employment (2) Increased livelihood opportunities;</p> <p><u>Progress:</u> synthesis book on this subject (perceived as overall goal integrating gender and youth goals) drafted; Research on aspirations of youth in rural areas in Morocco and recommendations for policy makers drafted; dissemination workshop with policy makers held;</p> <p><u>Indicators:</u> (1) Access increased to market opportunities, knowledge and productive assets for women and youth; (2) Inclusion of women and youth in value chains achieved; (3) More youth engage professionally in agriculture and agricultural value chains (less youth migrate out for employment);</p> <p><u>Location:</u> Morocco, global</p> <p><b>Sub-IDO:</b> (1) Reduced Poverty (4) Increased productivity (2) Closed yield gaps through improved agronomic and animal husbandry practices.</p> <p><u>Progress:</u> agricultural productivity improvement and benefited populations in relation with improved agronomic and animal husbandry practices are assessed.</p> <p><u>Indicators:</u> Rural population (household/men/women) and other stakeholders use/adopt/implement methods/tools/approaches in sustainable agri-food and livelihood systems, and agronomic, husbandry technologies for actions improving dryland productivity and agricultural livelihoods; Interventions are better targeted/prioritized by stakeholders; Female and male farmers/stakeholders use/adopt/implement methods/tools/approaches/technologies/NRM practices/varieties/frameworks/concepts for actions improving dryland livelihoods;</p> <p><u>Location:</u> Global, Burkina Faso, Togo, Senegal, Tunisia, Uzbekistan</p> <p><b>Sub-IDO:</b> (3) Improved natural resources systems and ecosystems services (1) Natural Capital enhanced and protected especially from climate change (1) Land, water and forest degradation (including deforestation) minimized and reversed</p> | 1,676.50                 |

| Level | Level of organization within the CRP | Description of planned key activities at each level of internal organization | Expected results of planned key activities  | Planned Budget (\$ 000s) |
|-------|--------------------------------------|--|---|--------------------------|
|       |                                      |  | <p><u>Progress:</u> Reports/papers: 1 chapter on SLM up-scaling synthesis in UNCCD Global Land Outlook; 1 ISI paper on framework for enhancing policy-science interfaces in sustainable land management; 1 submitted ISI paper on Global Synthesis of Dryland Systems Approach.</p> <p><u>Indicators:</u> Knowledge on SLM up-scaling at global level generated</p> <p><u>Location:</u> Global</p> <p><b>Sub-IDO:</b> (3) Improved natural resources systems and ecosystems services (3) More sustainably managed agro-ecosystems (1) Increased resilience of agro-ecosystems and communities, especially those including smallholders</p> <p><u>Progress: Reports/Papers:</u> 1 submitted paper on framework, multiscale and multidimensional indicators of sustainable (incl. resilience aspect) intensification with a focus on the context of dryland; 1 submitted paper on potentials/weaknesses and abilities of common integrated systems modelling methods/tools versus criteria required for DSS for SI, standardized descriptions of the modelling methods/tools and typical applications in dryland for supporting resilient farming systems, decision tree for guiding demand-driven selections of methods/tools; 1 submitted paper on socio-ecological types of context shaping land degradation/restoration, SLM adoptions and impacts; 1 report on tested web-based GIS for supporting stakeholders decision on SLM following the options-by-context strategy; 2 submitted papers on socio-ecological system models for scenario-based assessment of agri-food and livelihood systems (ALS) and supporting sustainable ALS management; 1 package of training materials for facilitating integrated systems capacity development and uses; <b>Tools:</b> 1 framework + 1 set of multi-scale and multi-dimensional indicators of sustainable intensification with a focus on the context of dryland; 1 decision tree for guiding demand-driven selections of methods/tools; 1 tested web-based GIS for supporting stakeholders decision on SLM following options-by-context strategy; 2 integrated system models (LUDAS - agent-based model, and iLAMPT- landscape land use planning SLM tool) for scenario-based assessment of combined interventions; <b>Datasets:</b> matrices of information on potentials/weaknesses and abilities of common integrated systems modelling</p> |                          |

| Level | Level of organization within the CRP | Description of planned key activities at each level of internal organization | Expected results of planned key activities   | Planned Budget (\$ 000s) |
|-------|--------------------------------------|--|--|--------------------------|
|       |                                      |  | <p>methods/tools versus criteria required for DSS for SI, standardized descriptions of the modelling methods/tools and typical applications in dryland for supporting resilient farming systems, GIS database of socio-ecological types of context shaping land degradation/restoration, SLM technologies and practices</p> <p><u>Indicators:</u> Female and male farmers/stakeholders use/adopt/implement methods/tools/approaches/technologies/NRM practices/varieties/frameworks/concepts for actions improving dryland livelihoods; Interventions are better targeted/prioritized by stakeholders</p> <p><u>Location:</u> Global, Burkina Faso, Togo, Senegal, Tunisia, Uzbekistan</p> <p><b>Sub-IDO:</b> (B) Gender and youth (1)Equity and inclusion achieved (1) Gender-equitable control of productive assets and resources.<br/> <u>Progress:</u> 1 scientific paper sub-mitted to journal: 'Migration, Gender, Decision-making Power and the Environment in the Saiss Region of Morocco'<br/> <u>Indicators:</u> (1) Women receive equal amount of information on agriculture-related technologies, innovations and markets as men of their social group; (2a, 2b) Impact of empowerment interventions on gender-equitable and youth inclusive control of productive assets and resources known and interventions better targeted; (3a, 3b) Women perceive control of and decision-making on productive assets and resources in their households as gender-equitable; (4) Wage &amp; Working Conditions of female agricultural labourers improved;<br/> <u>Location:</u> Morocco, Burkina Faso, Mali, Niger, Nigeria, India<br/> <b>Sub-IDO:</b> (B) Gender and youth (1) Equity and inclusion achieved (2) Technologies that reduce women's labour and energy expenditure developed and disseminated;<br/> <u>Progress:</u> in gender-mainstreamed biophysical research;<br/> <u>Indicator:</u> women report reduction in labour burden;<br/> <u>Location:</u> global<br/> <b>Sub-IDO:</b> (B) Gender and youth (1) Equity and inclusion achieved (3) Improved capacity of women and young people to participate in decision-making.<br/> <u>Progress:</u> synthesis of DS research results started;<br/> <u>Indicator:</u> Women perceive a greater involvement in decision making at household and community level;<br/> <u>Location:</u> global<br/> <b>Sub-IDO:</b> (C) Policies and institutions (1) Enabling environment improved</p> |                          |



| Level | Level of organization within the CRP | Description of planned key activities at each level of internal organization | Expected results of planned key activities  | Planned Budget (\$ 000s) |
|-------|--------------------------------------|--|---|--------------------------|
|       |                                      |  | <p><u>Progress:</u> Briefs and multi-stakeholder workshops on tools/approaches/technologies/NRM practices/varieties/frameworks/concepts for actions improving dryland livelihoods are given.</p> <p><u>Indicators:</u> Policy-decision makers and NARS use/adopt/implement methods/tools/approaches/technologies/NRM practices/varieties/frameworks/concepts for actions improving dryland livelihoods; Interventions are better targeted/prioritized by policy-decision makers and NARS</p> <p><u>Location:</u> Global, Burkina Faso, Togo, Senegal, Tunisia, Uzbekistan</p> <p><b>Sub-IDO:</b> (C) Policies and institutions (1) Enabling environment improved (1) Increased capacity of beneficiaries to adopt research outputs</p> <p><u>Progress:</u> Briefs, multi-stakeholder workshops, training courses on tools/approaches/technologies/NRM practices/varieties/frameworks/concepts for actions improving dryland livelihoods are given.</p> <p><u>Indicators:</u> NARS, NGO and rural populations with improved capacities: The systems modelling/analytical framework tools will be used for improving understanding of the systems dynamics of the agro-food value chains, and stakeholders' abilities in identifying entry points to strengthen the value chains and make them more inclusive; stakeholders' abilities in creating and customizing resilience options improved</p> <p><u>Location:</u> Global</p> <p><b>Sub-IDO:</b> (D) Capacity development (1) National partner and beneficiaries enabled (1) Enhanced institutional capacity of partner research organizations</p> <p><u>Progress:</u> Briefs, multi-stakeholder workshops, training courses on tools/approaches/technologies/NRM practices/varieties/frameworks/concepts for actions improving dryland livelihoods are given.</p> <p><u>Indicators:</u> NARS, NGO and rural populations with improved capacities: The systems modelling/analytical framework tools will be used for improving understanding of the</p> |                          |

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|-------|--------------------------------------|--|---|--------------------------|
|       |                                      |  | <p>systems dynamics of the agro-food value chains, and stakeholders' abilities in identifying entry points to strengthen the value chains and make them more inclusive; stakeholders' abilities in creating and customizing resilience options improved</p> <p><u>Location:</u> Global</p> <p><b>Sub-IDO:</b> (D) Capacity development (1) National partner and beneficiaries enabled (2) Enhanced institutional capacity of partner research organizations.</p> <p><u>Progress:</u> Tool 'Is your organization gender fit?' tested; Briefs, multi-stakeholder workshops, training courses, scientific reports at international conferences on tools/approaches/technologies /NRM practices/varieties/frameworks/concepts for actions improving dryland livelihoods are given.</p> <p><u>Indicator:</u> NARS integrate gender and youth into their research; Female and male farmers/stakeholders use/adopt/implement methods/tools/approaches/technologies/NRM practices/varieties/frameworks/concepts for actions improving dryland livelihoods; Interventions are better targeted/prioritized by stakeholders</p> <p><u>Location:</u> Global, Burkina Faso, Togo, Senegal, Tunisia, Uzbekistan</p> <p><b>Sub-IDO:</b> (D) Capacity development (1) National partner and beneficiaries enabled (3) Increased capacity for innovation in partner research organizations</p> <p><u>Progress:</u> Briefs, multi-stakeholder workshops, training courses on tools/approaches/technologies/NRM practices/varieties/frameworks/concepts for actions improving dryland livelihoods are given.</p> <hr/> <p><u>Indicators:</u> NARS, NGO and rural populations with improved capacities: The systems modelling/analytical framework tools will be used for improving understanding of the systems dynamics of the agro-food value chains, and stakeholders' abilities in identifying entry points to strengthen the value chains and make them more inclusive; stakeholders' abilities in creating and customizing resilience options improved</p> <p><u>Location:</u> Global</p> |                          |

| Level | Level of organization within the CRP | Description of planned key activities at each level of internal organization   | Expected results of planned key activities  | Planned Budget (\$ 000s) |
|-------|--------------------------------------|--|---|--------------------------|
| n-1   | 2                                    | <p><b>Pastoral and agro-pastoral systems</b></p> <p><b>Location:</b> Ethiopia, Uzbekistan (Aral Sea Region), Morocco</p> | <p><b>Sub-IDO:</b> (1) Reduced Poverty (3) Increased incomes and employment (2) Increased livelihood opportunities;</p> <p><b>Progress:</b> Research on aspirations of youth in rural areas in Morocco and recommendations for policy makers drafted; Roles of technology targeting and institutional innovations considering value chains for trajectory development in contributing towards stabilizing farm incomes, smoothening livelihood of resource poor farmers in vulnerable dry regions are reported.</p> <p><b>Indicators:</b> (1) Access increased to market opportunities, knowledge and productive assets for female and male youth; (2) Inclusion of female and male youth in value chains achieved; (3) More youth engage professionally in agriculture and agricultural value chains (less youth migrate out for employment); Household/men/women with improved incomes and livelihood opportunities</p> <p><b>Location:</b> Morocco, India</p> <p><b>Sub-IDO:</b> (3) Improved natural resources systems and ecosystems services (3) More sustainably managed agro-ecosystems (1) Increased resilience of agro-ecosystems and communities, especially those including smallholders</p> <p><b>Progress: Reports/Papers:</b> Report on stakeholder plans derived for participatory systems analysis and modelling; Journal paper on characterization of types of agricultural livelihoods and its performance in term of land and labor use efficiencies in the study area; Journal paper on tested operational SD/agent-based model and underlying datasets; system tool-aided; <b>Tools:</b> Prototype agent-based models which can be adapted to specific contexts.</p> <p><b>Indicators:</b> Agro-pastoral population (men/women) and areas with improved farm and agro-ecosystem management.</p> <p><b>Location:</b> Ethiopia, Uzbekistan</p> <p><b>Sub-IDO:</b> (C) Policies and institutions (1) Enabling environment improved (1) Increased capacity of beneficiaries to adopt research outputs</p> <p><b>Progress:</b> Model results will be used to influence policy changes that will lead to higher productivity, better-managed resources and higher and sustainable income for the rural poor. Briefs, multi-stakeholder workshops, training courses on</p> | 85.00                    |

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|-------|--------------------------------------|--|--|--------------------------|
|       |                                      |  | <p>tools/approaches/technologies/NRM practices/varieties/frameworks/concepts for actions improving dryland livelihoods are given.</p> <p><u>Indicators:</u> NARS and rural population (men/women) with improved capacities in using/customizing modelling/analytical framework, tools and research results for improving the management of the agro-pastoral production and livelihood systems.</p> <p><u>Location:</u> Uzbekistan, Ethiopia, Tunisia, India, Mali, Niger</p> <p><b>Sub-IDO:</b> (D) Capacity development (1) National partner and beneficiaries enabled (1) Enhanced institutional capacity of partner research organizations</p> <p><u>Progress:</u> <b>Report/papers:</b> A working paper on synthesis of DS Innovation Platforms research across flagships. This report identifies: Process for designing, establishing and making IPs effectively functional in dry areas; Critical factors for success of IPs identified; Lessons on making systemic changes through IPs in the wider systems context to influence policies and institutions; and cross regions learnt lessons help institutionalizing the IPs for effective use of technology and market by smallholder farmers; <b>Informed stakeholders' decision-making:</b> Decisions of smallholder farmers, other land managers and local policy decision-makers on land management improved</p> <p><u>Indicators:</u> NARS and rural population (men/women) with improved capacities in using/customizing modelling/analytical framework, tools and research results for improving the management of the agro-pastoral production and livelihood systems.</p> <p><u>Location:</u> India, Mali, Niger, Nigeria, Zimbabwe, Malawi</p> <p><b>Sub-IDO:</b> (D) Capacity development (1) National partner and beneficiaries enabled (2) Enhanced individual capacity in partner research organizations through training and exchange</p> <p><u>Progress:</u> <b>Report/papers:</b> A working paper on synthesis of DS Innovation Platforms research across flagships. This report identifies: Process for designing, establishing and making IPs effectively functional in dry areas; Critical factors for success of IPs identified; Lessons on making systemic changes through IPs in the wider systems</p> |                          |

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|-------|--------------------------------------|--|---|--------------------------|
|       |                                      |  | <p>context to influence policies and institutions; and cross regions learnt lessons help institutionalizing the IPs for effective use of technology and market by smallholder farmers; <b>Informed stakeholders' decision-making:</b> Decisions of smallholder farmers, other land managers and local policy decision-makers on land management improved.</p> <p><u>Indicators:</u> NARS and rural population (men/women) with improved capacities in using/customizing modelling/analytical framework, tools and research results for improving the management of the agro-pastoral production and livelihood systems</p> <p><u>Location:</u> India, Mali, Niger, Nigeria, Zimbabwe, Malawi</p> <p><b>Sub-IDO:</b> (D) Capacity development (1) National partner and beneficiaries enabled (3) Increased capacity for innovation in partner research organizations</p> <p><u>Progress:</u> <b>Report/papers:</b> A working paper on synthesis of DS Innovation Platforms research across flagships. This report identifies: Process for designing, establishing and making IPs effectively functional in dry areas; Critical factors for success of IPs identified; Lessons on making systemic changes through IPs in the wider systems context to influence policies and institutions; and cross regions learnt lessons help institutionalizing the IPs for effective use of technology and market by smallholder farmers; <b>Informed stakeholders' decision-making:</b> Decisions of smallholder farmers, other land managers and local policy decision-makers on land management improved</p> <p><u>Indicators:</u> NARS and rural population (men/women) with improved capacities in using/customizing modelling/analytical framework, tools and research results for improving the management of the agro-pastoral production and livelihood systems</p> <p><u>Location:</u> India, Mali, Niger, Nigeria, Zimbabwe, Malawi, Ethiopia, Morocco, Uzbekistan</p> <p><b>Sub-IDO:</b> (D) Capacity development (1) National partner and beneficiaries enabled (4) Increased capacity for innovation in partner development organizations and in poor and vulnerable communities</p> |                          |

| Level | Level of organization within the CRP | Description of planned key activities at each level of internal organization  | Expected results of planned key activities   | Planned Budget (\$ 000s) |
|-------|--------------------------------------|---|--|--------------------------|
|       |                                      |   | <p><u>Progress:</u> <b>Report/papers:</b> A working paper on synthesis of DS Innovation Platforms research across flagships. This report identifies: Process for designing, establishing and making IPs effectively functional in dry areas; Critical factors for success of IPs identified; Lessons on making systemic changes through IPs in the wider systems context to influence policies and institutions; and cross regions learnt lessons help institutionalizing the IPs for effective use of technology and market by smallholder farmers; <b>Informed stakeholders' decision-making:</b> Decisions of smallholder farmers, other land managers and local policy decision-makers on land management improved</p> <p><u>Indicators:</u> NARS and rural population (men/women) with improved capacities in using/customizing modelling/analytical framework, tools and research results for improving the management of the agro-pastoral production and livelihood systems</p> <p><u>Location:</u> India, Mali, Niger, Nigeria, Zimbabwe, Malawi, Ethiopia, Morocco, Uzbekistan</p>   |                          |
| n-1   | 3                                    | <p><b>Rainfed systems</b></p> <p><b>Location:</b> India (Karnataka/Bijapur; Rajasthan/Jaisalmer, Chohtan, Jodhpur), Mali, Ghana, Malawi and Niger Malawi;</p> | <p><b>Sub-IDO:</b> (1) Reduced Poverty (3) Increased incomes and employment (2) Increased livelihood opportunities</p> <p><u>Progress:</u> research planned - due to start mid-2016; Changed perception/behaviour: Improved understanding of how research for development through technology targeting and institutional innovations considering value chains for trajectory development can contribute towards stabilizing farm incomes, and smoothening livelihood of resource poor farmers in vulnerable dry region;</p> <p><u>Indicator:</u> Access increased to market opportunities, knowledge and productive assets for women and youth; Rural communities (household/men/women) use/adopt/implement methods/tools/approaches in sustainable agri-food and livelihood systems, and agronomic, husbandry technologies for actions improving dryland productivity and agricultural livelihoods; Interventions are better targeted/prioritized by stakeholders; Female and male farmers/stakeholders use/adopt/implement methods/tools/approaches/technologies/NRM practices/varieties/frameworks/concepts for actions improving dryland livelihoods;</p> <p><u>Location:</u> India (Karnataka/Bijapur; Rajasthan/Jaisalmer, Chohtan, Jodhpur)</p> <p><b>Sub-IDO:</b> (1) Reduced Poverty (4) Increased productivity (2) Closed yield gaps</p> | 178.50                   |



| Level | Level of organization within the CRP | Description of planned key activities at each level of internal organization | Expected results of planned key activities  | Planned Budget (\$ 000s) |
|-------|--------------------------------------|--|---|--------------------------|
|       |                                      |  | <p>through improved agronomic and animal husbandry practices.</p> <p><u>Progress:</u> Changed perception/behaviours: Improved understanding of how research for development through technology targeting and institutional innovations can contribute to sustainable intensification in potential dry region; Reports/papers: 1 submitted manuscript on the socio-ecological determinants of land use, input and labour allocation choices are identified; 1 report on Yield response functions for the main crop in Malawi, maize, are estimated;</p> <p><u>Indicators:</u> Rural communities (household/men/women) use/adopt/implement methods/tools/approaches in sustainable agri-food and livelihood systems, and agronomic, husbandry technologies for actions improving dryland productivity and agricultural livelihoods; Interventions are better targeted/prioritized by stakeholders; Female and male farmers/stakeholders use/adopt/implement methods/tools/approaches/technologies/NRM practices/varieties/frameworks/concepts for actions improving dryland livelihoods;</p> <p><u>Location:</u> India, Malawi</p> <p><b>Sub-IDO:</b> (3) Improved natural resources systems and ecosystems services (2) Enhanced benefit from ecosystem goods and services (2) Agricultural systems diversified and intensified in ways that protect soils and water</p> <p><u>Progress:</u> Reports/papers: 1 submitted manuscript on The major determinants of SLM option choice and adoption by smallholders are evaluated; Tools: 1 prototype agent-based model for mixed crop-livestock systems in Malawi condition.</p> <p><u>Indicators:</u> Generated Knowledge on SLM adoption in mixed crop-livestock systems in Malawi; NARS and rural communities (men/women) informed about benefits, cost-effective alternatives and entry-points in SLM.</p> <p><u>Location:</u> Malawi</p> <p><b>Sub-IDO:</b> (3) Improved natural resources systems and ecosystems services (3) More sustainably managed agro-ecosystems (1) Increased resilience of agro-ecosystems and communities, especially those including smallholders</p> |                          |

| Level | Level of organization within the CRP | Description of planned key activities at each level of internal organization | Expected results of planned key activities  | Planned Budget (\$ 000s) |
|-------|--------------------------------------|--|---|--------------------------|
|       |                                      |  | <p><b>Progress: Reports/papers:</b> 1 report on Synthesis of DS integrated system research on rain-fed systems in SA (India) for enhancing socio-ecological resilience and agricultural livelihoods (one working paper); 1 Report on Agro-ecological biodiversity Assessment; 1 submitted paper on characterized smallholder farming system typologies and their resource use efficiencies; 1 report on Scenarios of multidimensional drivers of small holders rainfed systems; <b>Tools:</b> Practical framework for implementation of integrated systems research in Indian Drylands; <b>Datasets:</b> 2 datasets on Agricultural Biodiversity Assessment dataset; 1 Dataset on system characterization (incl. typologies + resource use efficiencies); 1 Dataset on scenarios of multidimensional drivers of small holders</p> <p><b>Indicators:</b> Generated Knowledge on SLM adoption in mixed crop-livestock systems in Malawi; NARS, NGO and rural communities (household/men/women) informed about benefits, cost-effective alternatives and entry-points in SLM.</p> <p><b>Location:</b> India, Mali, Ghana, Malawi and Niger, Morocco</p> <p><b>Sub-IDO:</b> (B) Gender and youth (1) Equity and inclusion achieved (1) Gender-equitable control of productive assets and resources.<br/> <b>Progress:</b> impact research started, building on earlier WEAI studies;<br/> <b>Indicators:</b> impact of empowerment interventions on gender-equitable and youth inclusive control of productive assets and resources known and thus interventions better targeted; Women perceive a gender-equitable control of productive assets and resources in their households<br/> <b>Location:</b> Mali, India (Karnataka/Bijapur; Rajasthan/Jaisalmer, Chohtan, Jodhpur)<br/> <b>Sub-IDO:</b> (B) Gender and youth (1) Equity and inclusion achieved (3) Improved capacity of women and young people to participate in decision-making.<br/> <b>Progress:</b> research planned - due to start mid-2016;<br/> <b>Indicator:</b> Women perceive a greater involvement in decision making at household and community level<br/> <b>Location:</b> India (Karnataka/Bijapur; Rajasthan/Jaisalmer, Chohtan, Jodhpur)<br/> <b>Sub-IDO:</b> (C) Policies and institutions (1) Enabling environment improved (1) Increased capacity of beneficiaries to adopt research outputs</p> <p><b>Progress:</b> Briefs, multi-stakeholder workshops, training courses on</p> |                          |

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|-------|--------------------------------------|--|---|--------------------------|
|       |                                      |  | <p>tools/approaches/technologies/NRM practices/varieties/frameworks/concepts for actions improving dryland livelihoods are given.</p> <p><u>Indicators:</u> Systems research results will be used to influence policy changes that will lead to higher productivity, better managed resources and higher and sustainable income for the rural poor. NARS, NGO and rural populations with improved capacities.</p> <p><u>Location:</u> Morocco, Uzbekistan, Ethiopia, Malawi, Tunisia, Burkina Faso, Togo</p> <p><b>Sub-IDO:</b> (D) Capacity development (1) National partner and beneficiaries enabled (1) Enhanced institutional capacity of partner research organizations</p> <p><u>Progress: Report/papers:</u> A working paper on synthesis of DS Innovation Platforms research across flagships. This report identifies: Process for designing, establishing and making IPs effectively functional in dry areas; Critical factors for success of IPs identified; Lessons on making systemic changes through IPs in the wider systems context to influence policies and institutions; and cross regions learnt lessons help institutionalizing the IPs for effective use of technology and market by smallholder farmers; <b>Informed stakeholders' decision-making:</b> Decisions of smallholder farmers, other land managers and local policy decision-makers on land management improved</p> <p><u>Indicators:</u> The synthesis research results will be used to influence policy changes that will lead to higher productivity, better managed resources and higher and sustainable income for the rural poor. NARS, NGO and rural populations with improved capacities.</p> <p><u>Location:</u> India, Mali, Niger, Nigeria, Zimbabwe, Malawi</p> <p><b>Sub-IDO:</b> (D) Capacity development (1) National partner and beneficiaries enabled (2) Enhanced individual capacity in partner research organizations through training and exchange</p> <p><u>Progress: Report/papers:</u> A working paper on synthesis of DS Innovation Platforms research across flagships. This report identifies: Process for designing, establishing</p> |                          |

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|-------|--------------------------------------|--|--|--------------------------|
|       |                                      |  | <p>and making IPs effectively functional in dry areas; Critical factors for success of IPs identified; Lessons on making systemic changes through IPs in the wider systems context to influence policies and institutions; and cross regions learnt lessons help institutionalizing the IPs for effective use of technology and market by smallholder farmers; <b>Informed stakeholders' decision-making:</b> Decisions of smallholder farmers, other land managers and local policy decision-makers on land management improved</p> <p><u>Indicators:</u> The synthesis research results will be used to influence policy changes that will lead to higher productivity, better managed resources and higher and sustainable income for the rural poor. NARS, NGO and rural populations with improved capacities.</p> <p><u>Location:</u> India, Mali, Niger, Nigeria, Zimbabwe, Malawi</p> <p><b>Sub-IDO:</b> (D) Capacity development (1) National partner and beneficiaries enabled (3) Increased capacity for innovation in partner research organizations</p> <p><u>Progress:</u> <b>Report/papers:</b> A working paper on synthesis of DS Innovation Platforms research across flagships. This report identifies: Process for designing, establishing and making IPs effectively functional in dry areas; Critical factors for success of IPs identified; Lessons on making systemic changes through IPs in the wider systems context to influence policies and institutions; and cross regions learnt lessons help institutionalizing the IPs for effective use of technology and market by smallholder farmers; <b>Informed stakeholders' decision-making:</b> Decisions of smallholder farmers, other land managers and local policy decision-makers on land management improved</p> <p><u>Indicators:</u> The synthesis research results will be used to influence policy changes that will lead to higher productivity, better managed resources and higher and sustainable income for the rural poor. NARS, NGO and rural populations with improved capacities.</p> <p><u>Location:</u> India, Mali, Niger, Nigeria, Zimbabwe, Malawi, Ethiopia, Morocco,</p> |                          |

| Level | Level of organization within the CRP | Description of planned key activities at each level of internal organization                        | Expected results of planned key activities  | Planned Budget (\$ 000s) |
|-------|--------------------------------------|---|---|--------------------------|
|       |                                      |   | <p>Uzbekistan</p> <p><b>Sub-IDO:</b> (D) Capacity development (1) National partner and beneficiaries enabled (4) Increased capacity for innovation in partner development organizations and in poor and vulnerable communities</p> <p><b>Progress: Report/papers:</b> A working paper on synthesis of DS Innovation Platforms research across flagships. This report identifies: Process for designing, establishing and making IPs effectively functional in dry areas; Critical factors for success of IPs identified; Lessons on making systemic changes through IPs in the wider systems context to influence policies and institutions; and Cross regions learnt lessons help institutionalizing the IPs for effective use of technology and market by smallholder farmers; <b>Informed stakeholders' decision-making:</b> Decisions of smallholder farmers, other land managers and local policy decision-makers on land management improved</p> <p><b>Indicators:</b> The synthesis research results will be used to influence policy changes that will lead to higher productivity, better managed resources and higher and sustainable income for the rural poor. NARS, NGO and rural populations with improved capacities.</p> <p><b>Location:</b> India, Mali, Niger, Nigeria, Zimbabwe, Malawi, Ethiopia, Morocco, Uzbekistan</p> |                          |
| n-1   | 4                                    | <p><b>Irrigated systems</b></p> <p><b>Location:</b> Morocco, Niger, Mali, Burkina Faso, Nigeria</p> | <p><b>Sub-IDO:</b> (1) Reduced Poverty (3) Increased incomes and employment (2) Increased livelihood opportunities</p> <p><b>Progress:</b> in 2015, 15% of target of 75.000 women (in 2018) achieved (W3 project with USAID) - research currently continues;</p> <p><b>Indicator:</b> inclusion of women and youth in value chains achieved (in 2018)</p> <p><b>Location:</b> Niger, Mali, Burkina Faso, Nigeria</p> <p><b>Sub-IDO:</b> (3) Improved natural resources systems and ecosystems services (3) More sustainably managed agro-ecosystems (1) Increased resilience of agro-ecosystems and communities, especially those including smallholders</p>  | 60.00                    |

| Level | Level of organization within the CRP | Description of planned key activities at each level of internal organization | Expected results of planned key activities   | Planned Budget (\$ 000s) |
|-------|--------------------------------------|--|--|--------------------------|
|       |                                      |  | <p><b>Progress: Reports/papers:</b> 1 submitted papers on Characterization of types of agricultural livelihoods and its performance in term of land and labour use efficiencies in the study area; 1 submitted paper on Tested new operational SD/agent-based model; report submitted paper on Scenarios of multidimensional drivers of small holders irrigated systems; <b>Tools:</b> SD/agent-based model for ex-ante impact assessments of combined interventions; <b>Datasets:</b> 1 household-landscape dataset; 1 Dataset on scenarios of multidimensional drivers of small holders</p> <p><b>Indicators:</b> Irrigated areas and population (household/men/women) and with improved farm and agro-ecosystem management.</p> <p><b>Location:</b> Uzbekistan, Morocco</p> <p><b>Sub-IDO:</b> (B) Gender and youth (1) Equity and inclusion achieved (1) Gender-equitable control of productive assets and resources.</p> <p><b>Progress:</b> research is currently carried out;</p> <p><b>Indicators:</b> Wage &amp; Working Conditions of female agricultural labourers improved; Out-migration from rural areas reduced;</p> <p><b>Location:</b> Morocco</p> <p><b>Sub-IDO:</b> (C) Policies and institutions (1) Enabling environment improved (1) Increased capacity of beneficiaries to adopt research outputs</p> <p><b>Progress:</b> Briefs, multi-stakeholder workshops, training courses on tools/approaches/technologies/NRM practices/varieties/frameworks/concepts for actions improving dryland livelihoods are given.</p> <p><b>Indicators:</b> NARS, NGO and rural populations with improved capacities: Systems research results will be used to inform and influence policy changes that will lead to higher productivity, better managed resources and higher and sustainable income for the rural poor.</p> <p><b>Location:</b> Morocco, Uzbekistan, Egypt, India</p> <p><b>Sub-IDO:</b> (D) Capacity development (1) National partner and beneficiaries enabled (2) Enhanced individual capacity in partner research organizations through training</p> |                          |



| Level | Level of organization within the CRP | Description of planned key activities at each level of internal organization | Expected results of planned key activities  | Planned Budget (\$ 000s) |
|-------|--------------------------------------|--|---|--------------------------|
|       |                                      |  | <p>and exchange</p> <p><b>Progress: Report/papers:</b> A working paper on synthesis of DS Innovation Platforms research across flagships. This report identifies: Process for designing, establishing and making IPs effectively functional in dry areas; Critical factors for success of IPs identified; Lessons on making systemic changes through IPs in the wider systems context to influence policies and institutions; and cross regions learnt lessons help institutionalizing the IPs for effective use of technology and market by smallholder farmers; <b>Informed stakeholders' decision-making:</b> Decisions of smallholder farmers, other land managers and local policy decision-makers on land management improved</p> <p><b>Indicators:</b> NARS, NGO and rural populations with improved capacities: Systems research results will be used to inform and influence policy changes that will lead to higher productivity, better managed resources and higher and sustainable income for the rural poor.</p> <p><b>Location:</b> Morocco, Uzbekistan, Egypt, India</p> <p><b>Sub-IDO:</b> (D) Capacity development (1) National partner and beneficiaries enabled (4) Increased capacity for innovation in partner development organizations and in poor and vulnerable communities</p> <p><b>Progress: Report/papers:</b> A working paper on synthesis of DS Innovation Platforms research across flagships. This report identifies: Process for designing, establishing and making IPs effectively functional in dry areas; Critical factors for success of IPs identified; Lessons on making systemic changes through IPs in the wider systems context to influence policies and institutions; and cross regions learnt lessons help institutionalizing the IPs for effective use of technology and market by smallholder farmers; <b>Informed stakeholders' decision-making:</b> Decisions of smallholder farmers, other land managers and local policy decision-makers on land management improved</p> <p><b>Location:</b> Morocco, Uzbekistan, Egypt, India</p> |                          |

| Level | Level of organization within the CRP               | Description of planned key activities at each level of internal organization   | Expected results of planned key activities   | Planned Budget (\$ 000s) |
|-------|--|--|--|--------------------------|
| n-2   | 1.1 Gender and Youth                               | <p><b>Objectives:</b> Contribute to a better understanding of pathways to gender equity and equality and inclusion of youth in dryland systems.</p> <p><b>Location:</b> Global; with outputs regarding youth in Morocco;</p> <p><b>Methods:</b> participatory (systems) analysis methods (synthesis report, youth research in Morocco)</p> <p><b>Gender dimension:</b> Cross-site, cross-country, and cross-flagship comparative analyses of system elements constituting current gender equality and youth inclusion and identification of drivers of change in specific contexts and options for action.</p> | <p><b>Outputs:</b> 1 synthesis report and 1 policy brief on 'what works' in women and youth empowerment in drylands' livelihood systems; 2 Policy briefs on gender-responsive extension services and beneficial inclusion of women and youth in agricultural and agri-business value chains published; 1 Youth Study/1 Policy brief on how to motivate and engage youth in agriculture in collaboration with YPARD/HAFI; 1 test of and dissemination of Organisation analysis tool for NARS to facilitate integration of gender and youth concerns into their research; 1 blog on participatory systems analysis method; 3 dissemination of gender &amp; youth research of and by Gender Working Group (participation in conferences); Research coordination and gender mainstreaming resulting in inputs to CO gender mainstreaming efforts and gender-responsive research outputs in flagships;</p> <p><b>Outcomes:</b> Development partners informed on recommended interventions ('what works') to achieve gender equity and equality in agro-pastoral systems in drylands and recommended interventions; Pathways for the inclusion of youth in dryland's agriculture delineated;</p> | 65.16                    |
| n-2   | 1.2 Geoinformatics, Monitoring and Data Management | <p><b>Objectives:</b> Development of the Geospatial Science, Technology and Application (GeSTA) in an integrated agro-ecosystem system research and outreach;</p> <p><b>Location:</b> Uzbekistan, Tajikistan, Kazakhstan, Kirgizstan, Turkmenistan, Syria and other countries involved along the year.</p>   | <p><b>Outputs:</b> Mapping agro-ecosystems at landscape scales and related data streamlining, and online data visualization; Maintenance of climate station, data collection and reporting, web-tools for open access; development and enchantment of GeoAgro Portal, M&amp;E tool enhancement; tools for monitoring cross-cutting themes; MEL tool harmonization in partnership with CRPs (RTB, DC, GL); data management processes and support pack; assessment of land degradation and agricultural production. At least 3 ISI papers on land degradation, croplands and agricultural productivity; at least 20 key datasets and tools.</p> <p><b>Outcomes:</b> Leveraging the role of the Geospatial Science, Technology and Application (GeSTA) in an integrated agro-ecosystem system; Better understanding of the spatial-</p>   | 413.29                   |

| Level | Level of organization within the CRP       | Description of planned key activities at each level of internal organization   | Expected results of planned key activities   | Planned Budget (\$ 000s) |
|-------|--|--|--|--------------------------|
|       |  | <p><b>Methods:</b> An integrated Geoinformatics application in agro-ecosystem research and modelling; Earth observation based time-series analysis of land use and intra annual vegetation dynamics; vegetation trend analysis for estimating land deration pattern, magnitude and direction; Geospatial modelling and monitoring of the agro-ecosystems productivity at various spatio-temporal scales (for CA);</p>  | <p>temporal dynamics of the vegetation and land degradation pattern and productivity; Quantification of the land use and land cover dynamics; Improved integration and outscaling options for agricultural livelihood systems (ALS); Effective Results-based management as result of MEL adoption;</p>   |                          |
| n-2   | 1.3 Knowledge Synthesis and Communications | <p><b>Objectives:</b> To provide a credible and authoritative platform for scientific information, knowledge and tools on drylands agriculture; To actively reach out to and mobilize staff, partners and beneficiaries at all levels; To facilitate user-driven research, science-based dialogue, knowledge sharing, and evidence-based policy, among key partners;</p> <p><b>Location:</b> Global communications with stories on research activities and</p> | <p><b>Outputs/progress:</b> End-of program Synthesis Report; Program annual report (publication + virtual) is disseminated widely through various communications tools and social media campaigns; Quarterly newsletter developed and used to disseminate program news and drive critical debate on select policy issues; Partner centers submit program research outputs and impact stories through a variety of mediums (publications, photos, written articles, etc) on a regular basis as per annual plan of communication activities defined in collaboration with Program Communications; Annual calendar of external strategic side-events and program activities is created and used widely throughout the program; the program engages in at least 4 global strategic events with UNCCD, ELD, etc; Package of program promotional materials as well as targeted communications materials to promote dryland issues to potential donors and investors (animation video, infographics, etc.) is created, updated and disseminated; Existing tools for external and internal communication (i.e. website, shared collaboration spaces, social media, etc) are improved and updated in order to enable greater sharing of knowledge, news and information between partner centers and other actors collaborating with the</p> | 258.29                   |

| Level | Level of organization within the CRP | Description of planned key activities at each level of internal organization   | Expected results of planned key activities  | Planned Budget (\$ 000s) |
|-------|--------------------------------------|--|---|--------------------------|
|       |                                      | <p>outcomes identified and sourced from different countries/geographical regions where the program ALS flagships operate.</p> <p><b>Methods:</b> 9-step Process of Communications Planning linking Research to Development Outcomes.</p> <p><b>Gender dimension:</b> Communications will cover stories of on research activities and outcomes targeting, benefiting or empowering women in rural drylands and/or agricultural research, as much as it is possible.</p> | <p>program; New research outcomes stories are developed on the basis of Outcome story toolkit and disseminated in a variety of way; Various Branding, Communication and Reporting templates are utilized successfully by all partner centers;</p> <p>Blog and social media guidelines for scientists are developed and at least 24 blogs published to promote research outcomes. Training on Blog Writing is implemented in collaboration with CDU at ICARDA; Guidance and support is provided partner centers in developing appropriate activities and products to communicate the brand and impact of program to internal and external audiences; Identified list of salient policy issues and strategic side-events for strategic engagement of the program at global level; Dryland Systems is an active participant and contributor in the KM4CRPs initiative thus contributing to creation of synergies with other CRPs; Reports on increased number of social media followers and website traffic, and other targeted social media campaigns.</p> <p><b>Outcome Indicators:</b> (1) Dryland Systems becomes increasingly viewed as the leading source and disseminator of science-based knowledge and information on dryland agriculture development to benefit both the poor and the environment of target dryland systems through the use of innovative, relevant and appropriate communication tools and processes; (2) Dryland Systems creates, fosters and sustains an organizational culture of knowledge sharing and learning that engages all staff and partners in the process of gathering, developing and deploying intellectual/research capital to facilitate realization of overall programmatic goals, at all levels; (3) Dryland Systems activities and research results are effectively communicated in ways that will engage, influence and positively affect the behaviour of target local, regional and global audiences to undertake policy actions and/or social mobilization on salient policy issues affecting the lives of people and communities in the dryland areas.</p> |                          |
| n-2   | 1.4 Integrated System Analysis       | <b>Objectives:</b> (1) To develop an up-to-date, effective framework   | <b>Outputs/progress:</b> End-of program Synthesis Report; Program annual report (publication + virtual) is disseminated widely through various communications tools   | 342.96                   |

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|-------|--------------------------------------|---|---|--------------------------|
|       | and Modelling                        | <p>for assessing dryland sustainable intensification (SI) and steering transitions of current agricultural livelihood systems (ALS) to SI regimes; (2) To review integrated systems modelling methods/tools for researching and supporting sustainable (including resilient aspect) intensification transition, and develop guidelines for and context-relevant method selections; (3) To develop and map functional typologies of socio-ecological context that shapes the relevance, and adoptions, and impacts of SLM options; (4) To build a web-based GIS options-by-context platform as decision support systems (DSS) for multiple stakeholders in SLM, (5) To develop integrated systems models/tools for supporting farmers, policy decision-makers and other stakeholders in their sustainable farm and land managements; (6) To build research and educational capacities on integrated system research in the partnership</p> | <p>and social media campaigns; Quarterly newsletter developed and used to disseminate program news and drive critical debate on select policy issues; Partner centers submit program research outputs and impact stories through a variety of mediums (publications, photos, written articles, etc) on a regular basis as per annual plan of communication activities defined in collaboration with Program Communications; Annual calendar of external strategic side-events and program activities is created and used widely throughout the program; the program engages in at least 4 global strategic events with UNCCD, ELD, etc; Package of program promotional materials as well as targeted communications materials to promote dryland issues to potential donors and investors (animation video, infographics, etc.) is created, updated and disseminated; Existing tools for external and internal communication (i.e. website, shared collaboration spaces, social media, etc) are improved and updated in order to enable greater sharing of knowledge, news and information between partner centers and other actors collaborating with the program; New research outcomes stories are developed on the basis of Outcome story toolkit and disseminated in a variety of way; Various Branding, Communication and Reporting templates are utilized successfully by all partner centers;</p> <p>Identified list of salient policy issues and strategic side-events for strategic engagement of the program at global level; Dryland Systems is an active participant and contributor in the KM4CRPs initiative thus contributing to creation of synergies with other CRPs; Reports on increased number of social media followers and website traffic, and other targeted social media campaigns.</p> <p><b>Outcome Indicators:</b> (1) Dryland Systems becomes increasingly viewed as the leading source and disseminator of science-based knowledge and information on dryland agriculture development to benefit both the poor and the environment of target dryland systems through the use of innovative, relevant and appropriate communication tools and processes; (2) Dryland Systems creates, fosters and sustains an organizational culture of knowledge sharing and learning that engages all staff and partners in the process of gathering, developing and deploying intellectual/research capital to facilitate realization of overall programmatic goals, at all levels; (3) Dryland Systems activities and research results are effectively communicated in ways that will engage, influence and positively affect the behaviour</p> |                          |

| Level | Level of organization within the CRP | Description of planned key activities at each level of internal organization  | Expected results of planned key activities  | Planned Budget (\$ 000s) |
|-------|--------------------------------------|---|---|--------------------------|
|       |                                      | <p>portfolio of CRP-DS.</p> <p><b>Location:</b> Global [objectives (1), (2), (3) and (4)]; Burkina Faso, Mali, Togo, Senegal, Ethiopia, Kenya, Zimbabwe, Uzbekistan [objectives (6), (5) and partly (4)].</p> <p><b>Methods:</b> Overarching approaches applied for all research activities: complex adaptive human-environmental systems (or complex adaptive socio-ecological systems) and trans-disciplinary processes; Literature reviews (including previous CRP-DS publications) and framework development [objectives (1) and (2)]; Multi-dimensional spatio-temporal analysis and multi-variate statistic tests [objective (3)]; web-based GIS platform development cycle, use cases library development [objective (4)]; crop production system modeling, integrated landscape/watershed analysis tools (System Dynamics - SD, farm nutrient flow analysis, LUDAS - an agent-based model for community-landscape dynamics capturing adaptive</p> | <p>of target local, regional and global audiences to undertake policy actions and/or social mobilization on salient policy issues affecting the lives of people and communities in the dryland areas.</p> |                          |



| Level | Level of organization within the CRP | Description of planned key activities at each level of internal organization  | Expected results of planned key activities | Planned Budget (\$ 000s) |
|-------|--------------------------------------|---|--|--------------------------|
|       |                                      | <p>households' decision-making, iLAMPT - an integrated landscape model for SLM assessment and planning), ecological-economic efficiency assessment tools (Data Envelopment Analysis Programming - DEAP), material flow analysis, systems dynamics and agent-based modeling applied for smallholder, landscape and food value chain systems [objectives (5) and (6)], training and follow-up research on (climate based- crop risk management tools that range from crop-soil farming system models (e.g. APSIM, DSSAT), household bio-economic models approaches (e.g. optimization, cash-flow budgeting), to coupled farm-region-national bio-economic models (e.g. value chain model), whole farm dynamic models (e.g. NUANCES, APSFARM) with the aims to promote the uses of such tools in research for development, and identify market led opportunities for smallholder farming systems. [objective (6)]</p> <p><b>Gender dimension:</b> reflected in</p> |  |                          |

| Level | Level of organization within the CRP | Description of planned key activities at each level of internal organization   | Expected results of planned key activities   | Planned Budget (\$ 000s) |
|-------|--------------------------------------|--|--|--------------------------|
|       |                                      | activities under objectives (5) and (6).   |  |                          |
| n-2   | 1.5 Capacity Development             | <p><b>Objectives:</b> (1) To assess the current status of Innovation Platform approaches across the CGIAR with a focus on the Drylands: origin and theoretical framing, intended purpose, including the variety of Innovation Platforms emerging in different in drylands and other regions; (2) To understand how different IPs are placed in terms of process/framework, key drivers, business model/sustainability? (3) To assess the impacts of varying approaches and generate lessons learned.</p> <p><b>Location:</b> India, Zimbabwe, Mali, Niger, Nigeria</p> <p><b>Methods:</b> (1) Methods for scoping: Diagnostic analysis using published report; website; questionnaire response from activity leaders; (2) Steps for analysing case studies across in different countries/regions: Process designing, establishing and making IPs effectively functional; Entry point identification through IPs;</p> | <p><b>Outputs:</b> A working paper on synthesis of DS Innovation Platforms research across flagships. This report identifies: Process for designing, establishing and making IPs effectively functional in dry areas; Critical factors for success of IPs identified; Lessons on making systemic changes through IPs in the wider systems context to influence policies and institutions; and cross regions learnt lessons help institutionalizing the IPs for effective use of technology and market by smallholder farmers.</p> <p><b>Outcomes:</b> The synthesis of IPs research under Dryland Systems would help analyze its process of creating synergy among related stakeholders in the wider systems context and bring out guidelines and lessons to influence policy for larger impacts through such innovation and learning partnerships, thereby achieving sub-IDOs D1.1 "Enhanced institutional capacity of partner research organizations", D1.2 "Enhanced individual capacity in partner research organizations through training and exchange", D1.3 "Increased capacity for innovation in partner research organizations", D1.4 "Increased capacity for innovation in partner development organizations and in poor and vulnerable communities"</p> | 93.42                    |

| Level | Level of organization within the CRP | Description of planned key activities at each level of internal organization  | Expected results of planned key activities  | Planned Budget (\$ 000s) |
|-------|--------------------------------------|---|---|--------------------------|
|       |                                      | <p>Mapping IP's gender inclusive role; Systemic change in wider context (if any); Analyzing cross cutting enabling factors</p> <p><b>Gender dimension:</b> One of the main aims of the IPs is to facilitate all the major actors to come together in a partnership to diagnose problems, identify opportunities and find ways to achieve their goals. In our case of agriculture, gender integration remained an integral part of IPs to harness the potential of dryland farming systems. Hence, we plan to look as how IPs enable gender integration.</p> |   |                          |
| n-2   | 1.6 Institutions and Governance      | <p><b>Objectives:</b> To influence global policy on sustainable land management practices and research investment and development in rural drylands where the world's most poorest and most marginalized communities live.</p> <p><b>Location:</b> Global with case studies identified and sourced from different countries/geographical regions where the program ALS</p>  | <p><b>Outputs:</b> Research publication on Drylands and SDGs to promote and buttress the importance of rural drylands for the global SDGs 2030 Development Agenda; Global Atlas/Inventory of all SLM and NRM options and technologies in drylands; Scientific coordination of the Economics of Land Degradation (ELD) Initiative Executive Secretariat and Strategy Workshop; Chapter of UNCCD's Global Land Outlook report on Scaling up SLM technologies and practices and write-shop; Publication on Dryland Systems Legacy and Future Recommendations (building on Mission Critical Areas document produced by the Task Force and key program research achievements. Five different communications/advocacy campaigns (consisting in blog articles, social media, video, newsletter articles) to promote the above mentioned publications and workshops.</p> <p><b>Outcomes:</b> (1) Dryland Systems becomes increasingly viewed as the leading source and disseminator of science-based knowledge and information on dryland</p> | 503.38                   |

| Level | Level of organization within the CRP  | Description of planned key activities at each level of internal organization  | Expected results of planned key activities   | Planned Budget (\$ 000s) |
|-------|---|---|--|--------------------------|
|       |   | <p>flagships operate.</p> <p><b>Methods:</b> Research reviews and synthesis plus application of 9-step Process of Communications Planning linking Research to Development Outcomes to promote research outcomes.</p> <p><b>Gender dimension:</b> Research synthesis and communications it will cover case studies/stories on research outcomes targeting, benefiting or empowering women in rural drylands and/or agricultural research, as much as it is possible.</p> | <p>agriculture development to benefit both the poor and the environment of target dryland systems through the use of innovative, relevant and appropriate communication tools and processes; (2) Dryland Systems creates, fosters and sustains an organizational culture of knowledge sharing and learning that engages all staff and partners in the process of gathering, developing and deploying intellectual/research capital to facilitate realization of overall programmatic goals, at all levels; (3) Dryland Systems activities and research results are effectively communicated in ways that will engage, influence and positively affect the behaviour of target local, regional and global audiences to undertake policy actions and/or social mobilization on salient policy issues affecting the lives of people and communities in the dryland areas.</p> |                          |
| n-2   | 2.1 Improving and Stabilizing System Productivity through Diversification and Intensification | <p><b>Objectives:</b> To use systems modelling to assist stakeholders to identify promising interventions around land and resource management</p> <p><b>Location:</b> Ethiopia</p> <p><b>Methods:</b> (1) Participatory systems analysis using influence diagrams, (2) agent-based modeling, (3) pilot implementation with local stakeholders for input into their</p>  | <p><b>Outputs:</b> Report on stakeholder plans derived for participatory systems analysis and modelling; Prototype agent-based models which can be adapted to specific contexts.</p> <p><b>Outcomes:</b> Decision-making around land issues in Yabello improved, thereby contributing to sub IDO 3.3 "More sustainably managed agro-ecosystems"</p>  | 35.00                    |

| Level | Level of organization within the CRP   | Description of planned key activities at each level of internal organization  | Expected results of planned key activities   | Planned Budget (\$ 000s) |
|-------|--|---|--|--------------------------|
|       |  | <p>decision-making processes around land issues.</p> <p><b>Gender dimension:</b> Earlier phases of this activity incorporated gender analysis into the participatory systems analysis. This informs the modelling work.</p>   |  |                          |
| n-2   | 2.2 Optimizing economic, social and environmental co-benefits and trade offs | <p><b>Objectives:</b> (1) To define and characterize clusters of smallholders' livelihood systems and contexts in Aral Sea Region (ASR); (2) To develop an aggregated system dynamics model for agro-pastoral livelihood system as (socio-ecological system) capturing livelihood contexts and key drivers of change in Aral Sea region; and (3) To inform stakeholders (including policy decision-makers) on a portfolio of leverage points and processes needed for improving natural resources and livelihood resilience based on comparing systems' scenarios explored by the developed system dynamics model.</p> <p><b>Location:</b> Uzbekistan (Aral Sea Region)</p> <p><b>Methods:</b> Livelihood typology analysis [objective (1)]; System</p> | <p><b>Outputs:</b> Characterized types of agricultural livelihoods and its performance in term of land and labour use efficiencies in the study area (one paper submitted to ISI journal [objective (1)]; Tested operational SD/agent-based model and underlying datasets (one paper submitted to ISI journal) [objective (2)]; system tool-aided multi-stakeholder workshop, one writing shop organized [objective (3)].</p> <p><b>Outcomes:</b> Decisions of smallholder farmers, other land managers and local policy decision-makers on land management improved, thus contributing to sub-IDO 3.3.1 "Increased resilience of agro-ecosystems and communities, especially those including smallholders", and sub-IDO D.1.2 "Enhanced individual capacity in partner research organizations through training and exchange".</p> | 50.00                    |

| Level | Level of organization within the CRP  | Description of planned key activities at each level of internal organization   | Expected results of planned key activities  | Planned Budget (\$ 000s) |
|-------|---|--|---|--------------------------|
|       |   | dynamics (SD) modelling in specific to likelihood types (Vensim/Netlogo software) [objective (2)]; SLM adaption analysis and applied for calibrating agent's decision (Vensim/Netlogo software) [objective (2)]; and participatory approach used for the entire process [objective (3)].<br><b>Gender dimension:</b> Gender aspects are considered in the participatory specification of variables and outputs, and in the way the model is used for informing stakeholders' land/farm management. |   |                          |
| n-2   | 2.3 Improving Water Management and Allocation                                 | <b><u>Not active in 2016 due to CO reduced budget communicated in Nov 2015</u></b>   | <b><u>Not active in 2016 due to CO reduced budget communicated in Nov 2015</u></b>  | -                        |
| n-2   | 2.4 Achieving Land Degradation Neutrality                                     | <b><u>Not active in 2016 due to CO reduced budget communicated in Nov 2015</u></b>   | <b><u>Not active in 2016 due to CO reduced budget communicated in Nov 2015</u></b>  | -                        |
| n-2   | 3.1 Improving and Stabilizing System Productivity through Diversification and | <b>Objectives:</b> (1) To understand how the multi-disciplinary and integrated systems approach framework is implemented for enhancing socio-ecological resilience of smallholder drylands farm systems in India;  | <b>Outputs:</b> India (done by ICRISAT): Practical framework for implementation of integrated systems research in Indian Drylands; Synthesis of DS integrated system research on rain-fed systems in SA (India) for enhancing socio-ecological resilience and agricultural livelihoods (one working paper)<br><br>West and East Africa (done by Bioversity): Agricultural Biodiversity Assessment data collection and datasets curation and dissemination through Dataverse and other | 80.00                    |

| Level | Level of organization within the CRP | Description of planned key activities at each level of internal organization  | Expected results of planned key activities  | Planned Budget (\$ 000s) |
|-------|--------------------------------------|---|---|--------------------------|
|       | Intensification                      | <p>(2) To identify the appropriate institutions and policy that enable stakeholders to adopt integrated systems approach to improve the farming systems resilience and economic viability; (3) To assess how ex-ante assessment approaches help in co-designing resilient and economically viable farming systems using integrated approaches and what is the potential impacts with examples from Rajasthan and other two Indian action sites.</p> <p><b>Location:</b> India, Mali, Ghana, Malawi and Niger</p> <p><b>Methods:</b> For synthesising systems research-in development in DS actions sites in India (ICRISAT): Developing contextual framework for implementing integrated systems research based on the CRP DS work; Compiling and analysing data of ex-ante assessment to co-design integrated diversified farm systems; Assessing key indicators of effectiveness of integrated system approach framework based on the</p> | <p>channels (two datasets + Technical Report)</p> <p><b>Outcomes:</b> The synthesis of Dryland systems integrated system research on rain-fed systems in India would provide a practical framework, which could be implemented for enhancing socio-ecological resilience and agricultural livelihoods under diverse resource situations (IDO 3.3 "More sustainably managed agro-ecosystems"). It will provide tools and methods to help strengthen capacity of stakeholders for co-designing resilient and viable farming systems (IDO D.1 "National partner and beneficiaries enabled"). Understanding of how research for development through technology targeting and institutional innovations considering value chains for trajectory development can contribute towards stabilizing farm incomes, sustainable intensification and smoothening livelihood of resource poor farmers in vulnerable dry regions (IDO 1.3 "Increased incomes and employment"; IDO 1.4 "Increased productivity").</p> |                          |



| Level | Level of organization within the CRP | Description of planned key activities at each level of internal organization  | Expected results of planned key activities  | Planned Budget (\$ 000s) |
|-------|--------------------------------------|---|---|--------------------------|
|       |                                      | <p>systems work in DS action sites; Preliminary impact assessment of integrated systems approach on farm income and its stability in DS action sites.</p> <p>For synthesizing work in West Africa (Ghana, Mali and Niger) and East Africa (Malawi) (Bioversity): Focus group discussions; a household survey of crop diversity including key socioeconomic data; and a food consumption and dietary diversity module for one woman and a child (6-59 months of age if available) in the surveyed households.</p> <p><b>Gender dimension:</b> Gender mainstreaming has been an important constituent of the integrated system approach implemented as part of CRP Dryland systems in South Asia. This study will highlight the potential of gender mainstreaming through integrated systems approach. It will also identify leverage points for rural women empowerment.</p> |   |                          |
| n-2   | 3.2 Optimizing Economic,             | <b>Objectives:</b> (1) To identify socio-ecological determinants of land  | <b>Outputs:</b> The socio-ecological determinants of land use, input and labour allocation choices are identified (one paper submitted to ISI journal) [objective (1)]; The major | 98.50                    |

| Level | Level of organization within the CRP                | Description of planned key activities at each level of internal organization   | Expected results of planned key activities  | Planned Budget (\$ 000s) |
|-------|---|--|---|--------------------------|
|       | Social and Environmental Co-benefits and Trade offs | <p>use, fertilizer input and labor allocation choices, (2) To evaluate type specific determinants of SLM options, and (3) To estimate yield response functions for the main crop, maize. (a) Assess the impacts of gender mainstreaming interventions on women's and youth's empowerment (WE) in the DS (as a following-up of all WAS-DS intervention regarding gender mainstreaming in KKM and WBS); (b) Empowering and Transforming Rural Communities and Institutions: micro-level evidences on social and gender norms, aspirations of youth and access to and control-over resources, assets and knowledge including services; The VDSA longitudinal panel data, which is disaggregated by gender and other social variables, will be analyzed on issues related to patterns of change with respect to occupation choice, education, wages and other details.</p> <p><b>Location:</b> Malawi; (a) Mali; (b)</p> | <p>determinants of SLM option choice and adoption by smallholders are evaluated (one paper submitted to ISI journal) [objective (2)]; Yield response functions for the main crop in Malawi, maize, are estimated (one paper draft(technical report)[objective (3)]; prototype customized LUDAS model to Malawi condition.(a) 1 report and 1 scientific article on impact regarding Women empowerment and youth inclusion; Options (tools/methods) for improving policies to be gender sensitive; Minimum standards checklist on gender equity for policy development and implementation; WEAI contextualized to the dryland system; Leaflet on the impact of gender mainstreaming and empowerment in the DS; (b) 1 research report on Who wants to farm? Rural youth aspirations, constraints/gaps and opportunities for agriculture-based livelihoods; One Policy brief on how to better include women and youth in value chains in a situation of growing feminization of agriculture; Video documentaries; Social network architecture on one rural community; Datasets; Posters and flyers based on the findings of the study;</p> <p><b>Outcomes:</b> Stakeholders, especially NARS and policy-makers are scientifically informed about drivers constraining or promoting sustainable intensification of mixed crop-livestock systems in Malawi, thereby contributing to the achievement of sub-IDO 1.4.2 "Closed yield gaps through improved agronomic and animal husbandry practices", sub-IDO 1.4.5 "Increased access to productive assets, including natural resources", sub-IDO 3.3.1 "Increased resilience of agro-ecosystems and communities, especially those including smallholders."; (a) Understanding created of 'what works' for empowering and the beneficial inclusion of women and youth in value chains in agro-pastoral agricultural systems; (b) Information on how to create greater access to market opportunities, knowledge and productive assets for women and youth used by development partners.</p> |                          |

| Level | Level of organization within the CRP | Description of planned key activities at each level of internal organization  | Expected results of planned key activities | Planned Budget (\$ 000s) |
|-------|--------------------------------------|---|--|--------------------------|
|       |                                      | <p data-bbox="524 301 882 395">India (Karnataka/Bijapur; Rajasthan/Jaisalmer, Chohtan, Jodhpur)</p> <p data-bbox="524 421 896 1235"><b>Methods:</b> Multivariate data analyses for decision and production functions for generating parameters defining dynamics in terms of probability to observe change and bounding limits of sustainable intensification (SI) indicators with respect to farm types [objective (1)]; Sustainable Livelihood Framework for guiding the integrative causal analyses models of household's decisions on resources uses and SLM practices, Multivariate non-linear regression statistics [objective (2)]; Modified Coub-Douglas production function and related regression analyses [objective (3)]. These empirical analyses will help calibrate the LUDAS model - an agent-based model for community-landscape dynamics capturing adaptive households' decision-making.</p> <p data-bbox="524 1260 860 1385">(a) For the assessment of the impact of the women (and youth) empowerment and mainstreaming, the WEAI</p> |  |                          |

| Level | Level of organization within the CRP | Description of planned key activities at each level of internal organization  | Expected results of planned key activities | Planned Budget (\$ 000s) |
|-------|--------------------------------------|---|--|--------------------------|
|       |                                      | <p>(Women Empowerment Agricultural Index) will be used. This tool has been tested in different context and countries, not only by its creators (IFPRI, USAID and other) but also by development NGOs. (b)</p> <p>1.Sampling: a. Stratified purposive sampling; b. Selected Dryland Systems research sites in India; c. Validation of tools and protocols; 2. Data collection: real time data collection using mobile based technologies; video documentaries: a. Using the standardized methodology (called the GENNOVATE methodology) developed by the CG Gender Research Network team in consultation with the World Bank; b. Mixed method data collection – qualitative and quantitative methods – for the study on extension services and value chain research; 3. Data Analysis: a. Pre-coded data and analysis (using Nvivo) for the gender and social norms study; b. Descriptive analysis, statistical analysis, social network analysis (SNA) and study on gender and youth in</p> |  |                          |

| Level | Level of organization within the CRP          | Description of planned key activities at each level of internal organization  | Expected results of planned key activities                                  | Planned Budget (\$ 000s) |
|-------|---|---|---|--------------------------|
|       |   | <p>value chains</p> <p><b>Gender dimension:</b> Gender-related variables considered in the adoption analyses, making the research gender-responsive; This research is adequately linked to the Gender Strategy Objective Two (Women empowered within households &amp; communities) taking into account main systemic elements and external drivers and will add value to the existing research by answering key gender strategic research questions, that until now, have not got answers and will be embedded in the systemic context of the agri-livelihood system studied.</p> |   |                          |
| n-2   | 3.3 Improving Water Management and Allocation | <b>Not active in 2016 due to CO reduced budget communicated in Nov 2015</b>   | <b>Not active in 2016 due to CO reduced budget communicated in Nov 2015</b> | -                        |
| n-2   | 3.4 Achieving Land Degradation Neutrality     | <b>Not active in 2016 due to CO reduced budget communicated in Nov 2015</b>   | <b>Not active in 2016 due to CO reduced budget communicated in Nov 2015</b> | -                        |

| Level | Level of organization within the CRP  | Description of planned key activities at each level of internal organization   | Expected results of planned key activities   | Planned Budget (\$ 000s) |
|-------|---|--|--|--------------------------|
| n-2   | 4.1 Improving and Stabilizing System Productivity through Diversification and Intensification | Not active in 2016 due to CO reduced budget communicated in Nov 2015   | Not active in 2016 due to CO reduced budget communicated in Nov 2015   | -                        |
| n-2   | 4.2 Optimizing Economic, Social and Environmental Co-benefits and trade offs                  | <p><b>Objectives:</b> (1) To identify major household typologies that exist in the study area, (2) To assess resource use efficiency and opportunities for sustainable intensification differ across household typologies, (3) to identify combination of technological (variety, tillage, S&amp;W management etc.), social, economic, policy and institutional options lead to sustainable intensification under different climate change scenarios; <b>Women, Work and Wage Equity in the Agricultural Sectors of Morocco; Measure and understand underlying reasons for the gender wage gaps in agricultural labor. Migration, Gender, Decision-making Power and the Environment in the Saiss Region of Morocco: understand</b></p> | <p><b>Outputs:</b> Characterized smallholder farming system typologies and their resource use efficiencies (one paper submitted to ISI journal) [objective (1), (2)]; Scenarios of multidimensional drivers of small holders irrigated systems (technical report/paper draft)[objective (3)]; Dataset on system characterization (incl. typologies + resource use efficiencies) in Meknes [objectives (1), (2)]; Dataset on scenarios of multidimensional drivers of small holders irrigated systems in Meknes [objective (3)]; <b>papers on wage gap and migration; Raise awareness of relevant stakeholders (employers, scientists, development agencies and policy makers) with regards to addressing gender wage gaps in agriculture, improve working conditions and enabling environment for creating agricultural livelihoods.</b></p> <p><b>Outcomes:</b> The bio-economic modelling exercise will identify the combination of technological, social, economic, policy and institutional options that lead to sustainable intensification under different climate change scenarios (contribute to IDO 3.3. More sustainably managed agro-ecosystems); Model results will be used to influence policy changes that will lead to higher productivity, better managed resources and higher and sustainable income for the rural poor (contribute to IDO C.1: Enabling environment improved); <b>(1) Understanding created on how working conditions and sociocultural norms interact to shape the experiences of female and male agricultural labourers working under a variety of formal and informal, permanent and temporary terms and biophysical conditions in the agricultural sector of Morocco. (2) Understanding key intervention points allowing women and men to invest in their existence and livelihood in the rural areas and in agriculture, and not to migrate out of existential pressures.</b></p> | 60.00                    |

| Level | Level of organization within the CRP | Description of planned key activities at each level of internal organization  | Expected results of planned key activities | Planned Budget (\$ 000s) |
|-------|--------------------------------------|---|--|--------------------------|
|       |                                      | <p>reasons for migration to urban areas and describe key intervention options to create an enabling environment (e.g. economic, legal, land tenure, access to resources) for the rural population and farmers differentiated by gender and age;</p> <p><b>Location:</b> Morocco</p> <p><b>Methods:</b> (1) Principal component analysis and the Hierarchical Ascendant Classification (HAC) approaches will be considered for establishing farm typologies using variables which exhibit high variability among all households [objective (1)]; Comparisons on resource use efficiencies for water, land, labour and chemical inputs (such as fertilizers and pesticides) across different household typologies as the basis to identify associations that exist between certain variables characterizing household typologies and resource use efficiency [objective (2)]; Whole farm bio-</p> |  |                          |



| Level | Level of organization within the CRP | Description of planned key activities at each level of internal organization  | Expected results of planned key activities | Planned Budget (\$ 000s) |
|-------|--------------------------------------|---|--|--------------------------|
|       |                                      | <p>economic modelling (Dynamic Agricultural Household Bio-economic Simulation Model - DAHBSIM for scenarios analyses to identify best-bet combined interventions; Data was collected through qualitative research and a survey administered to 400 labourers to inform the study, using gender analysis, and logistic regression models framework. Data will also be segregated by age to enrich gender analysis of wage gap, migration, working conditions and control over assets and income.</p> <p><b>Gender dimension:</b> The development of household typologies will help in establishing the different social groups in the system. The farm typologies will then be used in the model for measuring the impacts of different interventions and climate change on the whole system in general and on the different social groups (men, women, youth, children, the poor, the rich, etc.) in particular; systemic</p> |  |                          |

| Level | Level of organization within the CRP          | Description of planned key activities at each level of internal organization  | Expected results of planned key activities                                  | Planned Budget (\$ 000s) |
|-------|---|---|---|--------------------------|
|       |   | context analysed in research, when identifying the origin of differences between female and male agricultural labourers; identification of measures to create an enabling environment for farmers and the rural population not to migrate analysis main systemic elements and drivers into account; |   |                          |
| n-2   | 4.3 Improving Water Management and Allocation | <b>Not active in 2016 due to CO reduced budget communicated in Nov 2015</b>   | <b>Not active in 2016 due to CO reduced budget communicated in Nov 2015</b> | -                        |
| n-2   | 4.4 Achieving Land Degradation Neutrality     | <b>Not active in 2016 due to CO reduced budget communicated in Nov 2015</b>   | <b>Not active in 2016 due to CO reduced budget communicated in Nov 2015</b> | -                        |

Table 2 – Planned CRP gender research budget: expected gender research results and associated budget

| Level | Level of organization within the CRP  | Expected Gender research results as described in Table 1   | Planned gender research budget (\$ 000s) |
|-------|---|--|--|
| n-1   | 1 Overarching Program<br>Type of expenses: No planned budget out of the CoA below due to CO reduced budget communicated in Nov 2015 | <p><b>Sub-IDO:</b> (B) Gender and youth (1) Equity and inclusion achieved (1) Gender-equitable control of productive assets and resources.<br/> <u>Progress:</u> 1 scientific paper sub-mitted to journal: 'Migration, Gender, Decision-making Power and the Environment in the Saiss Region of Morocco'<br/> <u>Indicators:</u> (1) Women receive equal amount of information on agriculture-related technologies, innovations and markets as men of their social group; (2a, 2b) Impact of empowerment interventions on gender-equitable and youth inclusive control of productive assets and resources known and interventions better targeted; (3a, 3b) Women perceive control of and decision-making on productive assets and resources in their households as gender-equitable; (4) Wage &amp; Working Conditions of female agricultural labourers improved;<br/> <u>Location:</u> Morocco, Burkina Faso, Mali, Niger, Nigeria, India</p> <p><b>Sub-IDO:</b> (B) Gender and youth (1) Equity and inclusion achieved (2) Technologies that reduce women's labour and energy expenditure developed and disseminated;<br/> <u>Progress:</u> in gender-mainstreamed biophysical research;<br/> <u>Indicator:</u> women report reduction in labour burden;<br/> <u>Location:</u> global</p> <p><b>Sub-IDO:</b> (B) Gender and youth (1) Equity and inclusion achieved (3) Improved capacity of women and young people to participate in decision-making.<br/> <u>Progress:</u> synthesis of DS research results started;<br/> <u>Indicator:</u> Women perceive a greater involvement in decision making at household and community level;<br/> <u>Location:</u> global</p> <p><b>Sub-IDO:</b> (1) Reduced Poverty (3) Increased incomes and employment (2) Increased livelihood opportunities;<br/> <u>Progress:</u> synthesis work book on this subject (perceived as overall goal integrating gender and youth goals) drafted; Research on aspirations of youth in rural areas in Morocco and recommendations for policy makers drafted; dissemination workshop with policy makers held;<br/> <u>Indicators:</u> (1) Access increased to market opportunities, knowledge and productive assets for women and youth; (2) Inclusion of women and youth in value chains achieved; (3) More youth engage professionally in agriculture and agricultural value chains (less youth migrate out for employment);<br/> <u>Location:</u> Morocco, global</p> <p><b>Sub-IDO:</b> (D) Capacity development (1) National partner and beneficiaries enabled (2) Enhanced</p> | -  |

| Level | Level of organization within the CRP  | Expected Gender research results as described in Table 1   | Planned gender research budget (\$ 000s) |
|-------|---|--|--|
|       |   | <p>institutional capacity of partner research organizations.</p> <p><u>Progress:</u> Tool 'Is your organization gender fit?' tested;</p> <p><u>Indicator:</u> NARS integrate gender and youth into their research;</p> <p><u>Location:</u> global</p>  |  |
| n-1   | <p>2 Pastoral and agro-pastoral systems</p> <p>Type of expenses: No planned budget out of the CoA below due to CO reduced budget communicated in Nov 2015</p> | <p><b>Sub-IDO:</b> (1) Reduced Poverty (3) Increased incomes and employment (2) Increased livelihood opportunities;</p> <p><u>Progress:</u> Research on aspirations of youth in rural areas in Morocco and recommendations for policy makers drafted;</p> <p><u>Indicators:</u> (1) Access increased to market opportunities, knowledge and productive assets for female and male youth; (2) Inclusion of female and male youth in value chains achieved; (3) More youth engage professionally in agriculture and agricultural value chains (less youth migrate out for employment);</p> <p><u>Location:</u> Morocco (agro-pastoral and rain-fed)</p>  |  |
| n-1   | <p>3 Rainfed systems</p> <p>Type of expenses: No planned budget out of the CoA below due to CO reduced budget communicated in Nov 2015</p>                    | <p><b>Sub-IDO:</b> (B) Gender and youth (1) Equity and inclusion achieved (1) Gender-equitable control of productive assets and resources.</p> <p><u>Progress:</u> impact research started, building on earlier WEAI studies;</p> <p><u>Indicators:</u> impact of empowerment interventions on gender-equitable and youth inclusive control of productive assets and resources known and thus interventions better targeted; Women perceive a gender-equitable control of productive assets and resources in their households</p> <p><u>Location:</u> Mali, India (Karnataka/Bijapur; Rajasthan/Jaisalmer, Chohtan, Jodhpur)</p> <p><b>Sub-IDO:</b> (B) Gender and youth (1) Equity and inclusion achieved (3) Improved capacity of women and young people to participate in decision-making.</p> <p><u>Progress:</u> research planned - due to start mid-2016;</p> <p><u>Indicator:</u> Women perceive a greater involvement in decision making at household and community level</p> <p><u>Location:</u> India (Karnataka/Bijapur; Rajasthan/Jaisalmer, Chohtan, Jodhpur)</p> <p><b>Sub-IDO:</b> (1) Reduced Poverty (3) Increased incomes and employment (2) Increased livelihood opportunities</p> <p><u>Progress:</u> research planned - due to start mid-2016;</p> <p><u>Indicator:</u> Access increased to market opportunities, knowledge and productive assets for women and youth;</p> <p><u>Location:</u> India (Karnataka/Bijapur; Rajasthan/Jaisalmer, Chohtan, Jodhpur)</p> | -  |
| n-1   | <p>4 Irrigated systems</p> <p>Type of expenses: No planned budget out of</p>  | <p><b>Sub-IDO:</b> (B) Gender and youth (1) Equity and inclusion achieved (1) Gender-equitable control of productive assets and resources.</p> <p><u>Progress:</u> research is currently carried out;</p>  | -  |

| Level | Level of organization within the CRP   | Expected Gender research results as described in Table 1   | Planned gender research budget (\$ 000s) |
|-------|--|--|--|
|       | the CoA below due to CO reduced budget communicated in Nov 2015              | <p><b>Indicators:</b> Wage &amp; Working Conditions of female agricultural labourers improved; Out-migration from rural areas reduced;</p> <p><b>Location:</b> Morocco</p> <p><b>Sub-IDO:</b> (1) Reduced Poverty (3) Increased incomes and employment (2) Increased livelihood opportunities</p> <p><b>Progress:</b> in 2015, 15% of target of 75.000 women (in 2018) achieved (W3 project with USAID) - research currently continues;</p> <p><b>Indicator:</b> inclusion of women and youth in value chains achieved (in 2018)</p> <p><b>Location:</b> Niger, Mali, Burkina Faso, Nigeria</p>  |  |
| n-2   | 1.1 Gender and Youth   | <p><b>Outputs:</b> 1 synthesis report and 1 policy brief on 'what works' in women and youth empowerment in drylands' livelihood systems; 2 Policy briefs on gender-responsive extension services and beneficial inclusion of women and youth in agricultural and agri-business value chains published; 1 Youth Study/1 Policy brief on how to motivate and engage youth in agriculture in collaboration with YPARD/HAFI; 1 test of and dissemination of Organisation analysis tool for NARS to facilitate integration of gender and youth concerns into their research; 1 blog on participatory systems analysis method; 3 dissemination of gender &amp; youth research of and by Gender Working Group (participation in conferences); Research coordination and gender mainstreaming resulting in inputs to CO gender mainstreaming efforts and gender-responsive research outputs in flagships;</p> <p><b>Outcomes:</b> Development partners informed on recommended interventions ('what works') to achieve gender equity and equality in agro-pastoral systems in drylands and recommended interventions; Pathways for the inclusion of youth in dryland's agriculture delineated;</p> | 65.16                                    |
| n-2   | 3.2 Optimizing Economic, Social and Environmental Co-benefits and Trade Offs | <p><b>Outputs:</b> (a) 1 report and 1 scientific article on impact regarding Women empowerment and youth inclusion; Options (tools/methods) for improving policies to be gender sensitive; Minimum standards checklist on gender equity for policy development and implementation; WEAI contextualized to the dryland system; Leaflet on the impact of gender mainstreaming and empowerment in the DS; (b) A research report on the gender and social norms study – a comparative analysis of the two case studies; One Policy brief on how to better include women and youth in value chains in a situation of growing feminization of agriculture; Video documentaries; Social network architecture on one rural community; Datasets; Posters and flyers based on the findings of the study;</p> <p><b>Outcomes:</b> (a) Understanding created of 'what works' for empowering and the beneficial inclusion of women and youth in value chains in agro-pastoral agricultural systems; (b) Information on how to create greater access to market opportunities, knowledge and productive assets for women and youth used by development partners.</p>                                      | 63.50                                    |
| n-2   | 4.2 Optimizing   | <p><b>Outputs:</b> 2 papers on wage gap and migration; Raise awareness of relevant stakeholders</p>  | 25.00                                    |

| Level | Level of organization within the CRP                          | Expected Gender research results as described in Table 1  | Planned gender research budget (\$ 000s) |
|-------|---|---|--|
|       | Economic, Social and Environmental Co-benefits and Trade Offs | (employers, scientists, development agencies and policy makers) with regards to addressing gender wage gaps in agriculture, improve working conditions and enabling environment for creating agricultural livelihoods.<br><b>Outcomes:</b> (1) Understanding created on how working conditions and sociocultural norms interact to shape the experiences of female and male agricultural labourers working under a variety of formal and informal, permanent and temporary terms and biophysical conditions in the agricultural sector of Morocco. (2) Understanding key intervention points allowing women and men to invest in their existence and livelihood in the rural areas and in agriculture, and not to migrate out of existential pressures. |  |
|       |   | <b>TOTAL GENDER BUDGET FOR THE CRP</b>  | 153.66                                   |



RESEARCH  
PROGRAM ON  
Dryland Systems

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

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

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

For more information, please visit

[drylandsystems.cgiar.org](http://drylandsystems.cgiar.org)

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