CGIAR

RESEARCH PROGRAM ON
Dryland Systems

Revised: JUNE 2015

2015 Plan of Work and Budget

Food security and better livelihoods for rural dryland communities

Table of Contents

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
POWB2015	Plan of Work and Budget for 2015
TF	Task Force
FIGS	Focused Identification of Germplasm Strategy

I. Introduction

The 2015 Plan of Work and Budget (POWB2015) of the CGIAR Research Program (CRP) on Dryland Systems (hereinafter referred to as Dryland Systems) was designed against a moving background of financial constraints that have seen the intended W1+2 budget fall from $17.0 million as envisioned at the start to 2014 to $10.3 million as determined by the Fund Council (FC) in November 2014. In addition, a 19% budget cut of W1+2 in early 2015 leaving the Program Director and Program Management Unit (PMU) with $ 8.6 million to deliver outcomes and impact committed in the program proposal. Furthermore, the extension proposal submitted in April 2014 was rejected with commentaries from CGIAR's Independent Science and Partnership Council (ISPC) and instructions from the FC and Consortium Board (CB) to:

1) implement major changes in the governance and management of the CRP and
2) establish an Independent Task Force (TF) whose main objective is to help improve the performance of the program during the extension, via identification of Mission Critical Areas for Drylands, and help develop a proposal for the 2nd call.

This version of the POWB2015 was revised not only to keep into consideration the 19% budget cut but also to consider the strengths, gaps and opportunities identified by Consortium Office (CO) and presented to the 13th Meeting of the Fund Council.

II. Science and Implementation meeting June 30-July 4, 2014

Partly in response to the comments received from the ISPC and in parallel with the intervention from the FC and CB indicated above, the CRP's Independent Scientific Advisory Committee called for a meeting to:

1) critically review progress to date against the objectives embedded in the Theory of Change and Intermediary Development Outcomes (IDOs);
2) identify impediments to more rapid progress towards CRP objectives and propose solutions towards greater impact to be included in a 2nd call for proposals;
3) develop an action plan for presentation to the program's Independent Steering Committee (ISC) and to inform the incoming Program Director on the priority actions required for the next three years.

The recommendations of the Science and Implementation meeting with considerations of CO and ISPC comments on the extension proposal were:

- An ***integrated systems approach*** that utilizes innovative science and inter-disciplinary teams is taken at all sites;
- A shift from descriptive research work to ***systems experimentation, analysis and modelling***;
- Increasing inclusiveness in partnerships including more than one CGIAR center and the development of innovation platforms;
- Clear linkages of research hypotheses to ***outputs, outcomes and IDOs***;
- Plausible outcomes identified including the identification of ***barriers to out-scaling*** of research outputs;
- ***Explicit linkages to other CRPs*** and especially those that link germplasm development to Natural Resource Management within a production systems context;
- ***Value chain focus*** complements on-farm focus;
- Increasing recognition of need for enabling institutions & governance greater social equity and gender considerations;
- ***Contested paradigms*** hard *versus* soft sciences; researcher *versus* farmer knowledge; Primary focus on agricultural livelihood system (pastoral, agro-pastoral, irrigated crop, intensive rain-fed and tree-based);
- ***Options x Context*** approach in research sites, research at scale of impact.

- More *emphasis on SRT 1 & 4* (better functioning innovation systems, measuring impacts and cross-regional synthesis);
- *Capacity development* needs to be built in emphasizing fit for purpose participatory approaches and made explicit with perhaps as much as 10-15% of the budget for identified capacity development needs.

Administrative/reporting guidelines

- Identify the *W3/Bilateral results that are mapped* to each activity cluster and ensure a clear reporting structure for bilateral projects exists;
- Consider that at least *10% of the budget* should be allocated to *Gender* research activities and integration;
- Consider that at least *10% of the budget* should be allocated for *Capacity Development*;
- Consider that at least 10% of the budget should be allocated for *Communications*;
- Consider that at least 1% should be used for *Monitoring and Evaluation (M&E)* activities with a further *1% for Risk Management*;
- Include in each activity a budget allocation for *Data Collection and Sharing* via GCIAR's Open Access system;
- Organize a *priority list of activities* and phase out those that are unlikely to adopt the system approach (i.e. they work independently). The integrated systems approach via interdisciplinary research teams should be clearly stated in each activity.

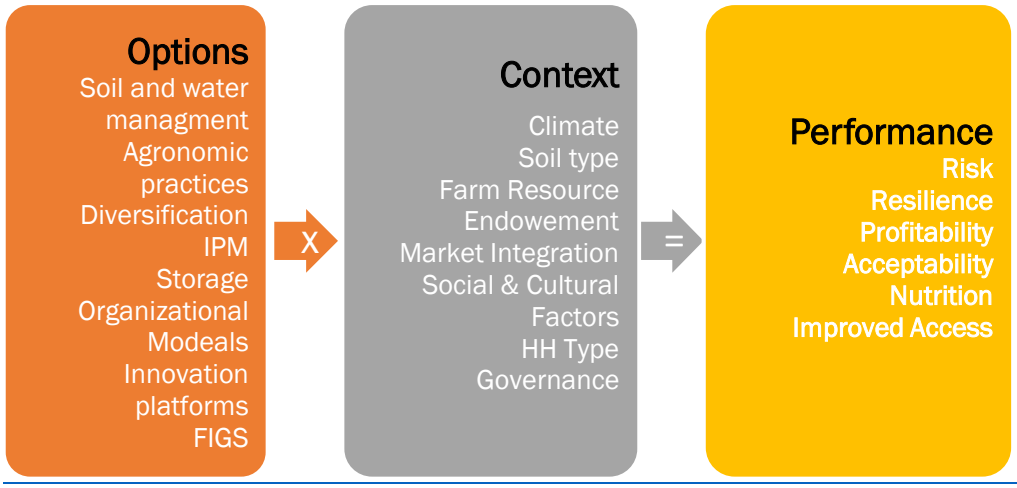
These recommendations were used as background to develop the POWB2015. Details of this key meeting can be found at the following link in the Dryland Systems website.

The key changes taken to design the POWB2015/16 have been the adoptions of a new impact pathway that reflects main pillars of integrated systems research, and the *Options x Context* approach that is more consistent with a systems approach.

This is represented below in comparison with the traditional approach to a CGIAR commodity program research.

Classical Approach: GxE = Production

Integrated Systems Approach: Options x Context = Performance



By examining a range of contexts for a particular intervention of option (e.g., technological, institutional, social or policy) the program aims to extract principles for achieving impact at scale.

III. Program Management

After the reorganization of the Program Management Unit (PMU) in the second half of 2014 and staffing of the office with a new Director, a Research Program Coordinator and a Communication Program Coordinator, the program has a structure consistent with the recommendations of the CRP external audit that was completed in 2014. The two vacant positions of Gender Program Coordinator and Systems Analysis Expert were also filled in January 201. In addition, the program has further developed and launched the pilot online Monitoring, Evaluation and Learning platform, which will enable results-based management of the program. In addition to the MEL platform, the program defined a 6 months review for its results and a risk management plan that will be updated twice a year. Thanks to the efforts of all Dryland Systems partners, the Program was the first CRP to develop specific guidelines for mapping bilateral projects. This document will be updated along the year in order to harmonize this process. The MEL platform will also help reduce transaction costs associated with reporting and knowledge sharing with regards to bilateral projects mapped to Dryland Systems.

In addition to the important processes established for 2015, the Program drafted a Capacity Development Strategy fully aligned with the CGIAR guidelines, which was approved by the ISC in April 2015. This strategy is also another first to be developed by a CRP. The strategy was prepared following in-depth consultation with strategic partners such as GFAR. The program will implement the strategy during 2015, mainstreaming its main objectives into all systems studied.

The Youth Strategy was also approved by the ISC in Dec 2014. Again, Dryland Systems is the first CRP to have a youth strategy in place. Moving forward to 2015, the program will start engaging strategic partners at flagship level to initiate collaboration and leverage resources and funding required for its implementation in order to compensate for budget reductions.

The program will operate under the current PIA until the end of 2015 and then present a revised approach for the implementation of the 2016 Plan of Work and Budget that will extend its operation until the 2 CRP phase.

IV. Organization of the POWB2015

The planning process for 2015/16 retained the original 5 Flagship Programs that were organized on a regional basis, namely:

- West Africa Sahel and Dry Savannas
- North Africa and West Asia
- East and Southern Africa
- Central Asia
- South Asia

The 2014 Extension Proposal suggested a re-organization of the flagships around a matrix of regions x the major agro-ecosystems and more specifically around five (5) major agricultural livelihood systems (ALS):

- Pastoral systems
- Agro-pastoral systems
- Intensive rain-fed systems
- Tree-based systems
- Irrigated crop systems

Recently, the Science and Implementation meeting April 8-9, 2015 aggregated these 5 ALS into three (3) main ALS:

- Pastoral and agro-pastoral systems

- Rainfed systems
- Irrigated systems

The latter two ALS include trees, and all ALS include a large component of livestock and water management. The meeting also recommended that in 2016 these three main ALS will be treated as the DS flagships, instead of the five regional flagship programs.

However with the rejection of the 2014 extension proposal and the reorganization of the PMU, the Program reviewed its organizational structure and at its RMC meeting Dec 9-10th, 2014 suggested to arrange system research activities around major challenges of drylands resulting in a region x thematic matrix with the following system performances/themes:

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

These four theme will be investigated across the three main ALS (agro-pastoral, rain-fed and irrigated systems), and underpinned by cross cutting activities that focus on gender and youth, knowledge synthesis and communications, capacity development, institutions and governance geo-informatics, systems analyses and modeling. Cross cutting activities are part of a newly established overarching flagship that collates and synthesizes program level information. It is envisioned that these changes would be gradually introduced during 2015/16 but are subject to change depending on the recommendations of the Task Force.

Given these substantial changes in the organization of the Program that will come into effect in 2015 and 2016, we emphasize that the CRP is undergoing a transitional phase that will require iterations and possible further modifications during the reporting period 2015 and 2016. We also emphasize that the W1/2 funds were cut by 50% and this required a reduction in the number of action sites from 23 to 13 in the five original regions and 43% reduction in the number of ALS studied across all 5-target regions. West Asia sites and one site in Central Asia were suspended and Interdisciplinary Research Teams (IRTs) consolidated sites in West African Sahel and Dry Savannas and East and Southern Africa.

In this plan of work we use the 2014 IDO's as submitted in the extension proposal:

- IDO 1. More resilient livelihoods for vulnerable households in marginal areas.
- IDO 2. More stable and higher per capita income for intensifiable households.
- IDO 3. Year-round access to greater quantity and diversity of food.
- IDO 4. More sustainable and equitable management of natural resources.
- IDO 5. Women and youth have better access to and control over productive assets.
- IDO 6. Increased capacity of rural communities to innovate.

The Plans of Work presented in this document are organized on the basis of the five (5) Flagship Regions plus the Overarching Flagship as the n-1 level, and as the major agricultural livelihood systems identified and worked on in each flagship region at the n-2 level.

We expect to modify these during 2015 as the new CGIAR Strategic Research Framework is finalized. At this stage we do not foresee any difficulties in undertaking such transition.

V. Expected outputs and outcomes

In 2015, we expect to achieve the following at the program or n-level:

- At least 20 innovation platforms involving multi-stakeholder partnerships and learning alliances engaging women and men established for different IDOs;

- Quantification of land use, land cover dynamics and land degradation for at least 2 target regions with assessment of yield gaps and decadal dynamics of the productivity of croplands and rangelands;
- At least 10% of engaged NARS and partners out scale gender equitable development interventions and adopt guidelines for empowering rural women;
- Systems approaches refined, including on social, economic and cultural aspects also pertaining to gender, and established with a CRP-wide community of practice in collaboration with the two other system CRPs;
- Toolkits on gender mainstreaming, gender analysis and gendered systems approach developed with the last one being tested in two (2) systems researches on gender dynamics in diversity management on smallholder farms and on improved livelihoods for women in crop livestock systems;
- More than 10 technical packages for improved agronomic management of production systems (e.g., irrigated systems, cattle feed guidelines, crop variety and soil fertility recommendations) used by several hundred households;
- Five (5) surveys and studies on ways to improve the gender-responsiveness of agricultural extension services and to address the gender wage gap, enhance working conditions, and increase control over income by female agricultural workers coordinated and carried out across five flagships;
- More than 10 reviews, peer referred publications, manuals and guidelines for use by different clients;
- At least five (5) media stories on successes distributed and engagement at strategic global events.

The tables that follow present the expected outcomes and outputs in the following order:

1. Budget Summary
2. Flagship Projects
3. Cluster of activities by Flagship
4. Gender (and Youth) activities and budget

Table 1 – Budget Summary

Level	Flagship/Management/Support	Cluster of Activities	Location	Budget (USD) by Type of Funds		
A	MANAGEMENT & SUPPORT			W1&2	W3	BILATERAL
0	Director's Office			974,336	-	-
0.1	Coordination	*Personnel and Operations of Program Management Office*		564,336	-	-
0.2	Research Support	*Meetings and Workshops*		335,000	-	-
0.3	Research Support	*M&E and Risk Management*		75,000	-	-
1	Evaluation and Task Force			1,000,000	-	-
1.1	Research Support	*CRP Commissioned External Evaluation*		250,000	-	-
1.2	Research Support	*CRP Commissioned Task Force*		750,000	-	-
2	Centers' Coordination			194,400	-	-
3	Contingency			282,450	-	-
			Sub-Total	2,451,186	-	-
B	FLAGSHIP PROJECTS					
0	OVERARCHING PROGRAM	Cluster of Activities	Location	1,416,328	-	-
0.1	System Research	*Gender and Youth*	**W1&2:** *Kano-Katsina-Maradi Transect (Mali and Niger); Saiss (Morocco); Nile Delta (Egypt); Chinyanja Triangle (Changara-Ntcheu/Dedza); Fergana Valley (Kyrgyzstan, Tajikistan and Uzbekistan); Jodhpur, Barmer and Jaiselmer districts, Rajasthan (India); Bijapur district, Karnataka (India); Anantapur and Kurnool districts, Andhra Pradesh (India);*	445,500	-	-
0.2	Research Support	*Geoinformatics, Data Management and Intellectual Property*	*Global*	333,909	-	-

0.3	**Research Support**	*Communication and Knowledge Sharing*	*Global*	249,669	-	-
0.4	**Research Support**	*Capacity Development*	*Global*	141,750	-	-
0.5	**System Research**	*Integrated System Analysis, Modelling and assessment*	*Global*	245,500	-	-
1	**WEST AFRICA AND DRY SAVANNAS**		**Location**	**1,008,948**	**3,558,000**	**3,831,908**
1.1	**Research Support**	*Local Partners meetings, research site coordination, support to cross-cutting issues and to W3/Bilateral projects*		243,000	-	-
1.2	**System Research**	*Agro-pastoral system interventions (testing, piloting and scaling up)*	**W1&2:** *Kano-Katsina-Maradi Transect (Nigeria and Niger);* **W3/Bil:** *Burkina Faso Mali, Niger*	501,753	3,050,200	2,054,000
1.3	**System Research**	*Rainfed System interventions (testing, piloting and scaling up)*	**W1&2:***Wa-Bobo-Sikasso Transect (Ghana, Burkina Faso, and Mali);* **W3/Bil:** *Niger, Nigeria, Mali, Mauritania*	264,195	454,450	981,954
1.4	**System Research**	*Irrigated crop System interventions (testing, piloting and scaling up)*	**W3/Bil:** *Niger, Nigeria, Mali, Mauritania*	-	53,350	795,954
2	**NORTH AFRICA AND WEST ASIA**		**Location**	**857,790**	**2,081,615**	**1,731,336**
2.1	**Research Support**	*Local Partners meetings, research site coordination, support to cross-cutting issues and to W3/Bilateral projects*		243,000		
2.2	**System Research**	*Agro-pastoral system interventions (testing, piloting and scaling up)*	**W1&2:** *Béni Khedache-Sidi Bouzid (Tunisia);* ***W3/Bil:*** *Morocco, Algeria, Tunisia, Libya, Egypt, Sudan, Djibouti, Somalia, Yemen, Jordan, Palestine, Lebanon, Syria, Iraq, Oman, Iran, Turkey*	204,930	435,102	292,833

2.3	System Research	*Rainfed System interventions (testing, piloting and scaling up)*	**W1&2:***Saiss (Morocco);* **W3/Bil:** *Mauritania, Morocco, Algeria, Tunisia, Libya, Egypt, Sudan, Djibouti, Somalia, Yemen, Jordan, Palestine, Lebanon, Syria, Iraq, Oman*	204,930	1,301,391	745,921
2.3	System Research	*Irrigated Crop Systems interventions (testing, piloting and scaling up)*	**W1&2:** *Nile Delta (Egypt);* **W3/Bil:** *Syria, Lebanon, Palestine, Jordan, Iraq, Yemen, Egypt, Tunisia, Algeria, Yemen, Iran, Morocco, Turkey*	204,930	345,122	692,582
3	EAST AND SOUTHERN AFRICA		Location	1,074,006	2,323,350	5,726,680
3.1	Research Support	*Local Partners meetings, research site coordination, support to cross-cutting issues and to W3/Bilateral projects*		243,000	-	-
3.2	System Research	*Agro-pastoral system interventions (testing, piloting and scaling up)*	**W1&2:** *Marsabit-Yabello-East Shewa Transect;* **W3/Bil:** *Ethiopia, Uganda, Kenya, Tanzania, Zambia, Mozambique, Zimbabwe, Sudan*	497,363	2,076,000	3,119,134
3.3	System Research	*Rainfed System interventions (testing, piloting and scaling up)*	**W1&2:** *Chinyanja Triangle (Changara-Ntcheu/Dedza) Transect;* **W3/Bil:** *Malawi, Tanzania, Zimbabwe, Eritrea, Ethiopia, Kenya, Sudan, Zambia, Lesotho*	333,643	123,675	2,021,501
3.4	System Research	*Irrigated Crop Systems interventions (testing, piloting and scaling up)*	**W3/Bil:** *Eritrea, Ethiopia, Kenya, Sudan, Tanzania, Zambia, Zimbabwe, Lesotho*	-	123,675	586,045
4	CENTRAL ASIA		Location	810,000	1,842,566	489,992
4.1	Research Support	*Local Partners meetings, research site coordination, support to cross-cutting issues and to W3/Bilateral projects*		243,000	-	-

4.2	System Research	*Agro-pastoral system interventions (testing, piloting and scaling up)*	**W1&2:** *Aral Sea Region (Turkmenistan, Uzbekistan and Kazakhstan);* **W3/Bil:** *Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan*	266,000	746,399	242,334
4.3	System Research	*Rainfed System interventions (testing, piloting and scaling up)*	**W3/Bil:** *Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan*	-	372,566	-
4.4	System Research	*Irrigated Crop Systems interventions (testing, piloting and scaling up)*	**W1&2:** *Fergana Valley (Kyrgyzstan, Tajikistan and Uzbekistan);* **W3/Bil:** *Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan*	301,000	723,602	247,659
5	SOUTH ASIA		Location	981,745	231,787	2,508,103
5.1	Research Support	*Local Partners meetings, research site coordination, support to cross-cutting issues and to W3/Bilateral projects*		243,000	-	-
5.2	System Research	*Agro-pastoral system interventions (testing, piloting and scaling up)*	**W1&2:** *Chakwal (Pakistan);* **W3/Bil***: India, Pakistan*	174,000	47,223	26,676
5.3	System Research	*Rainfed System interventions (testing, piloting and scaling up)*	**W1&2:** *Jodhpur, Barmer and Jaiselmer districts, Rajasthan (India); Bijapur district, Karnataka (India); Anantapur and Kurnool districts, Andhra Pradesh (India);* **W3/Bil:** *India, Pakistan*	564,745	61,200	1,495,543
5.4	System Research	*Irrigated Crop Systems interventions (testing, piloting and scaling up)*	**W3/Bil:** *India, Pakistan*	-	123,364	985,884
A			Subtotal	6,148,817		
GRAND TOTAL				8,600,003	10,037,318	14,288,018

Table 2. Flagship Projects

Table 2a. Overarching Flagship

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)
0.Overarching Program	Gender and Youth, Geoinformatics, Data Management, Intellectual Properties, Communications and Knowledge Sharing, Capacity Development, Integrated System Analysis and Modelling	**Progress towards CRP IDOs and indicators of progress** IDO1 & 2 • Justified entry points and integrative leverages for feasible transitions of major agricultural livelihood systems towards improved and stabilized food production and dryland livelihood (2016); • Accessible options-by-context for three major dryland ALS (2016) IDO3 • Assessment of the global pattern of major dryland ALS, their productivity gaps and decadal dynamics of the productivity of the croplands and grasslands in central Asian action sites (2015); • Consolidated system-whole and context-sensitive options for improving food security in major dryland ALS (2016); IDO4 • Quantification of land degradation pattern and hotspots for NARS, NGOs prioritize resources for development actions reversing land degradation (2016); • Justified leverages for improving multi-stakeholders' incentives to invest and adopt SLM practices aiming enhancing natural resource bases in dryland agro-ecosystems (2016) IDO5 • At least 10% (20% in 2016) of the NARS and Partners out-scale gender equitable development interventions regarding extension services and gender wage gap. (2015) • 10% of women in farming in the targeted areas report improved access to & scope of extension services (2016) • 10% increase in female and male youth in target areas aiming at a livelihood as professionals in agriculture (e.g. as commercial farmers, in agro-processing business, in agro-services) (2016) • 50% NARS and Partners in target areas informed about norms-based options to increase the equity of women and men in decision making especially on labour and on use of income, in access to resources such as knowledge and in	1,416.328

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)
		ownership of agricultural assets (2016) • Provision of information resources through CRP-DS web-based geo-to youths and women. ID06 • Research and educational capacities of relevant, junior scientists in NARS, Centres and their connection to international peer community improved.	

Table 2b. West African Sahel and Dry Savannas Flagship

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)
1	West Africa Sahel and Dry Savannas	**Agro-pastoral system interventions** (testing, piloting and scaling up): W1&2: Kano-Katsina-Maradi Transect (Nigeria and Niger); W3/Bil: Burkina Faso Mali, Niger **Rainfed System interventions** (testing, piloting and scaling up): W1&2:Wa-Bobo-Sikasso Transect (Ghana, Burkina Faso, and Mali); W3/Bil: Niger, Nigeria, Mali, Mauritania **Irrigated Crops System interventions** (testing, piloting and scaling up): W3/Bil: Niger, Nigeria, Mali, Mauritania **Collaboration with other CRPs:** CCAFS (policy linkages/climate smart technologies) DC (dual-purpose cereals) RTB (market diversification) WLE (integrated watershed management/ecosystem services/biomass production)	**Progress towards CRP IDOs and indicators of progress** IDO1 • Tree density reduction rates decreased by 20% in participating farms at field sites (2017) • 10 % increase in vegetable and tree products for target food-insecure households. (2017) IDO2 • 20% of women acquired knowledge through participatory evaluation of dual-purpose crops. (2017) • 50% increase in income of women through adoption of least cost feed rations for sheep fattening. (2017) • 5% of households (low income HH: 10%) increased their income at field sites. (2017) IDO3 • At least one women association trained in tree propagation techniques (2016) 10% of households improved their dietary scores at field sites. (2017) IDO4 • Skill of at least 20% of farmers at the action site is increased in innovative agro-forestry techniques. (2017) • 10% increase in water productivity of crops and livestock at participating farms in field sites (2017) • 10% increase in agricultural biodiversity maintained by participating farms at field sites (2017) • 10% increase in livestock performance at participating farms in field sites (2017)	8,398.856

			ID05 • 10% improvement in the sex ratio and age ratio of farmers adopting approaches promoted. (2017) ID06 • 120 progressive farmers and stakeholders trained on systems innovation and community based seed production for improved seed delivery. (2016) • At least 2 CBOs or boundary partners have adopted innovative organization approaches at each field site. (2017)	

Table 2d. North Africa and West Asia Flagship

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)
2	North Africa and West Asia	**Agro-pastoral system interventions** (testing, piloting and scaling up): W1&2: Béni Khedache-Sidi Bouzid (Tunisia); W3/Bil: Morocco, Algeria, Tunisia, Libya, Egypt, Sudan, Djibouti, Somalia, Yemen, Jordan, Palestine, Lebanon, Syria, Iraq, Oman, Iran, Turkey **Rainfed System interventions** (testing, piloting and scaling up): W1&2:Saiss (Morocco); W3/Bil: Mauritania, Morocco, Algeria, Tunisia, Libya, Egypt, Sudan, Djibouti, Somalia, Yemen, Jordan, Palestine, Lebanon, Syria, Iraq, Oman **Irrigated Crop Systems interventions** (testing, piloting and scaling up): W1&2: Nile Delta (Egypt): W3/Bil: Syria, Lebanon, Palestine, Jordan, Iraq, Yemen, Egypt, Tunisia, Algeria, Yemen, Iran, Morocco, Turkey **Collaboration with other CRPs:** WHEAT, DC, GL (crop rotation) WLE (water management)	**Progress towards CRP IDOs and indicators of progress** ID01 • Grazing lands productivity is improved by 20 % in communal rangelands under rest and managed by communities. (2017) • 5 % of HHs will have more secured food access. (2017) • Integrated crop-livestock: 10% of farmer communities in old land of Nile Delta adopted new feeding strategies. (2017) • Improved crop yield: 25% increase in wheat and faba bean yields at farm level will lead to increase food security at national level by 10%. (2017) • Climate change adaptation strategies: 2 climate change adaptation scenarios adopted by water planners. (2017) ID02 • Increased Income: 10% of low-income households in farmer communities increased their income by at least 20% after adoption of technologies introduced through the CRP-DS activities in 2015-2017. ID03 • 5 % of households improved their food access. (2017) • Women and children dietary improvement: 10 % of households improved their dietary scores at farm level due to dissemination and adoption of new technology packages including high yielding varieties and better farm management (soil, water and crop). (2017) ID04	4,670.740

			• 20 % increase in crops performance at participating farms in field sites. (2017). • Reduce land degradation by 30% due to the adoption of decision makers of well-understanding and better knowledge on salt dynamics, salt balance, possible build-up in the soil and water required for leaching; 10% of farmers adopted the best interventions identified by CRP-DS in salt-affected soils of the Nile Delta. (2017) • Improved water productivity of crops, trees and livestock: 25% increase in water productivity due to improved packages introduced and widely adopted by farmers. (2017) • Agricultural biodiversity: 10% change in levels of agricultural biodiversity maintained by households and uses derived from it due to intensification and diversification agro practices and anticipation of growing new crops (varieties). (2017) • Enhanced soil fertility: 15% increment in soil fertility due to diversification agro practices including cereal-legume crop rotation which improves the organic matter content that improves soil nutrient and water dynamics, soil structure and productivity subsequently reduce fertilizers application/cost and improve the farm revenue. (2017) • Best Management Practices adopted: 5% of farmers adopted cereal-legume crop rotation which improves soil nutrient status and productivity through use of fertilizer and nutrient best management practices (BMP). (2017) • Use or adopton of sustainable agro-ecosystem management: 25% irrigation water saving due to high adoption of sustainable agro-ecosystem management. (2017) ID05 • Number of scientists, NGOs, development agencies, and policy makers whose awareness has been raised with regards to 1-gender wage gaps in paid agricultural labor and 2-gender differentiated impacts of technologies. (2017) • Involvement of women and youth in the decision process improved through the creation of at least 3 women/youth associations in the field sites. (2017)	

			• Out-scaling gender equitable development interventions by NARS and partners: 20% improvement in the women-men ratio at farm level in adopting the introduced package to improve agricultural production system; 5% improvement on women access to technical support to their identified needs. (2017) • NARS and development partners adoption of guidelines for empowering rural women and increased gender equity: 10% improvement in institutionalizing of gender-equitable development interventions by involvement of women and youth in the decision making process. (2017) ID06 • At least 1 CBOs or boundary partners have adopted innovative organization approaches at each field site. (2017) • 2 innovation platforms established and operational and at least two communities' participatory development plans developed with all stakeholders. (2017) • Water and land policies analysed and documented; value-chains for sheep, olive, figs and cactus developed with the participation of all actors and stakeholders. (2017)	

Table 2c. East and Southern Africa Flagship

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)
3	East and Southern Africa	**Agro-pastoral system interventions** (testing, piloting and scaling up): W1&2: Marsabit-Yabello-East Shewa Transect; W3/Bil: Ethiopia, Uganda, Kenya, Tanzania, Zambia, Mozambique, Zimbabwe, Sudan **Rainfed System interventions** (testing, piloting and scaling up): W1&2: Chinyanja Triangle (Changara-Ntcheu/Dedza) Transect; W3/Bil: Malawi, Tanzania, Zimbabwe, Eritrea, Ethiopia, Kenya, Sudan, Zambia, Lesotho **Irrigated Crop Systems interventions** (testing, piloting and scaling up): W3/Bil: Eritrea, Ethiopia, Kenya, Sudan, Tanzania, Zambia, Zimbabwe, Lesotho **Collaboration with other CRPs:** CCAFS (provision of climate services); DC and GL (improved varieties); WLE (watershed approaches)	**Progress towards CRP IDOs and indicators of progress** ID01 • At least 100 ha well maintained area enclosure providing services to the communities and protecting their resources (2015) • 20% of households became resilient to vulnerability shocks such as rainfall variability, pest and diseases as their livelihoods have been improved. (2017) ID02: • A well-documented model for scaling up sustainable intensification approach by government and non-governmental organization (2016) • Over 500 households adopt sustainable intensification methods specifically on best-best soil and water management options (2016) • 50% of the intensifiable men and women have improved per capita income due to adoption of appropriate soil, water and crop management technologies (2017) • the major opportunities for and constraints to technology adoption and land use choice decision by small holder farmers (both men and women) understood for out-scaling (2015) ID03 • At least one micro-finance company providing access to capital (2015) • At least 200 target farmers in East Shewa have adopted and utilized synergies between various components of smallholder agricultural systems and increased their productivity and profitability by at least 25% (2016) • 20% the young and women have access to good quality and	9,124.036

			nutritious food as a result of improved pre- and post-harvest processing (2017) ID04 • Hotspot areas of land degradation identified and participatory and ex-ante analysis of best practices conducted (2016) • Sustainable and climate-smart land and water management options introduced on 10% of the action sites (2017) ID05 • Gender disaggregated data and results on resources endowment, decision making, technology adoption and involvement in ISFM and SLM practices available (2016) ID06 • One well-functioning multi-stakeholder platform to identify and address key constraints faced by farmers (2015) • 200 model farmers and 50 stakeholders trained on sustainable land management, systems innovation and participatory plot-farm-landscape management options and acquired the capacity to train other farmers and stakeholders (2016)	

Table 2e. Central Asia Flagship

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)
4	Central Asia	**Agro-pastoral system interventions** (testing, piloting and scaling up): W1&2: Aral Sea Region (Turkmenistan, Uzbekistan and Kazakhstan); W3/Bil: Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan **Rainfed System interventions** (testing, piloting and scaling up): W3/Bil: Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan **Irrigated Crop Systems interventions** (testing, piloting and scaling up): W1&2: Fergana Valley (Kyrgyzstan, Tajikistan and Uzbekistan); W3/Bil: Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan **Collaboration with other CRPs:** WLE (water management)	**Progress towards CRP IDOs and indicators of progress** IDO1 • 10% increase in productivity of winter wheat, potato, mung bean, chickpea, forages maintained by establishing a functional seed system platform and access to quality planting material of varieties in the field sites. (2015) • 10% Increase in livestock production performance achieved through participatory planning of interventions to increase feed production and value chain analysis in the field sites. (2015) IDO2 • 300 households increase their incomes through adoption of innovative technologies by farmers heading those households in the field site. (2015) IDO3 • 170 households improve their dietary scores in the field sites through better access and availability of quality wheat, mung bean, chickpea, potato and other crops. (2015) IDO4 • 10% increase in water use efficiency of crops through innovative technologies in irrigation and farming practices in the field site. (2015) IDO5 • 220 households improve their vital activity through enhancing their leadership skills in participatory planning and decision-making within their community-based interventions. (2015) IDO6 • At least three innovation platforms established within the action Sites for multi-stakeholder dialogue to address socio-economic, cultural, management and policy issues at farm/community level and congruent decision and participatory planning of interventions for development. (2015) • 10% of farmers, rural advisory services agents, agronomists, and representatives of local agricultural education and research institutions improve their understanding of Sustainable Land Management (SLM) practices through continued facilitation of dissemination (demo-sites) of SLM technologies and approaches. (2015)	3,142.558

Table 2f. South Asia Flagship

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)
5	South Asia	**Agro-pastoral system interventions** (testing, piloting and scaling up): W1&2: Chakwal (Pakistan); W3/Bil: India, Pakistan **Rainfed System interventions** (testing, piloting and scaling up): W1&2: Jodhpur, Barmer and Jaiselmer districts, Rajasthan (India); Bijapur district, Karnataka (India); Anantapur and Kurnool districts, Andhra Pradesh (India); W3/Bil: India, Pakistan **Irrigated Crop Systems** interventions (testing, piloting and scaling up): W3/Bil: India, Pakistan **Collaboration with other CRPs:** DC, CCAFS (Management blue and green water, diversification & intensification and dual purpose crops/hybrids)	**Progress towards CRP IDOs and indicators of progress** ID01 • Adaptation strategies for climate change (climate ready cultivars) based on climate variability risk analysis suggested/ implemented (400 farmers) 2015 • >400 on farm trials integrated crop management for enhancing yield and resilience-Increase in Yield of crops (>15%) & reduction in variability (2015) • Farm type specific diversification options for resilience building; integrating perennial component (40 farmers) ID02 • Area (>250 ha) and farmers (>300) covered by interventions: cropping intensity increase by 10%, Yield increase by >15-20% & intensification of short term fallows on participating HHs (2015) • >1500 rural households adopt improved rainwater management methods (2015) • Potato cultivation (tolerant cultivars) introduced in dryland agro-ecology (25 farmers) • Farm type specific diversification options with resource conservation and high value crops (horticulture & medicinal plants) - > 60 farmers ID03 • Development of value chain and market linkages result in viability of shankhpushpi (medicinal crop) cultivation as high value crop in Barmer (>100 farmers): farmers-industry • Small ruminant based value chain strengthened -increased price realization for participating women farmers by 15-20% - 2015 ID04 • Resource conservation methods (soil, water, biomass) used by >100 farmers and up scaled through state government programs (2015) • Resource conservation and institutional interventions increase biomass production and productivity by >20% from CPRs (2015)	3,721.635

			• Resource conservation (>2000 m3 blue water harvesting capacity generated) (2015) ID05 • Capacity of women and youth strengthened (>2500 farmers (25% women) (2015) • Capacity of women: 2 women SHGs formed on livestock and fodder value chains (2015) ID06 • New institutions and partnerships - 3 innovation platforms strengthened (5 workshops of I;) (2015) • New institutions and partnerships built/strengthened- one collective action group on management of CPRs facilitated to be formed & strengthened - >50 farmers (2015) • Village development committees strengthen for participatory management of villages resources and CPRs (6 villages)	

Table 3. Cluster of Activities by Flagship

Table 3a. Overarching Flagship – Cluster of Activities

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)
0.1	Gender and Youth	**Location:** Global (across the 5 Flagship regions of CRP-DS) **Objectives:** Extension services: Identify the differential challenges faced by female, male farmers and youths in accessing agricultural extension services; Identify entry points and options for gender-responsive agricultural extension approaches which address the specific requirements of female and male farmers as well as youth. Norms: Assess the differentiated labour and development opportunities that rural women and men of different ages and socioeconomic backgrounds have in their communities or abroad, given their new roles (male work migration) or existing roles (agricultural labourers) to measure, understand and develop suggestions for change regarding the gender gap; Identify social norms that allow	**Outputs:** (Kano-Katsina-Maradi Transect (Mali and Niger)) Constraints, opportunities for women (incl. women under 30 yrs.) in accessing and benefiting from extension systems; strengths and weaknesses in providing extension services to women identified with 400 farmers per site; Several workshops will be organized for extension staff (state, NGO and private sector) to share the research findings, jointly develop ideas for changes in the approach to agricultural extension, and to exchange first experiences with implementing these changes with the aim that these inform and transform the approach towards gender in extension; Contribution to systems methodology for gender-responsive research; first steps to comparative study with other Gender Strategic Research on extension services conducted in other DS sites. (Saiss (Morocco); Nile Delta (Egypt)) Closer description of the gender wage gap in agricultural labor disaggregated re gender and age and identifying the main drivers and constituting elements: informing 3-5 development agencies and/or NGOs and 5 policy-makers on addressing and closing the gender wage gap in agricultural labor in the action sites; Contribution to the literature (2 papers, 1 report) on the gender gap re labor and wage, and on more equitable development opportunities and migration policies; Contribution to systems methodology for gender-responsive research; (Chinyanja Triangle (Changara-Ntcheu/Dedza) Transect) Several workshops will be organised for extension staff (state, NGO and private sector in Ntcheu) to share the research findings, jointly develop ideas for changes in the approach to agricultural extension, and to exchange first experiences with implementing these changes with the aim that these inform and transform the approach towards gender in extension; Three international public goods: policy, brief, article in reviewed journal, reviewed research report; first steps to comparative study with other Gender Strategic Research on extension services conducted in other DS sites. (Fergana Valley (Kyrgyzstan, Tajikistan and Uzbekistan)) Based on the identification of the gender wage gap in agricultural labor, it is expected that despite of the budget cut at least 2 development agencies and policy-makers of Uzbekistan will be sensitized on addressing the gender wage gap in agricultural labor in the action sites and Central Asia more generally; (Rajasthan (India), Karnataka (India)) Constraints and opportunities for extension system improvement	445.450

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)
		perpetuating the gender gap and constraining factors to empower women and youth in the mixed dryland farming systems; Understand the aspiration of youth to advance agricultural entrepreneurship and innovative capacities of young women and men to strengthen their engagement in agriculture. Methods: Statistical exploratory methodologies; (household) surveys (one using mAgri™ agent network) combined with qualitative data collection (mostly through focus groups, also key informant interviews); Series of case studies and ethnographic research to design a survey questionnaires and deepen quantitative analysis; Framing analysis in GAAP, WEIA gender frameworks re development outcomes; Analysing decision making and transaction trajectories embedded in socio-economic, cultural systems analysis	identified by gender and age; Gender balanced capacity development strategies for extension professionals developed; Documentation of needs for extension services by gender; Contribution to the literature (1 report) on making extension services more gender-responsive; Contribution to systems methodology for gender-responsive research; first steps to comparative study with other Gender Strategic Research on extension services conducted in other DS sites. (**Youth & Gender across five DS regions**) Through a gender-responsive system approach, a thorough understanding of the situation, of needs and aspirations of young people in the target areas; Research that contains the real voices of young people on agriculture and rural livelihoods, technologies, innovations, ICT in agriculture and their suggestions for action; A sound basis on which to plan and develop programs to accurately target the needs and desires of young people; Documented studies that enable others to elaborate a capacity development plan for youth in agriculture (incl. online options) and advocate on behalf of youth in the CRP target areas, using sound data; 1 Publication on strategic gender research; 1 Guideline for gender-responsive research; 1 Toolkit on gender-responsive research and gendered systems research; 5 Gender & System workshops; 1 Gender Working Group meeting; Visibility activities on international women's day and rural women's day: **Outcomes:** (Kano-Katsina-Maradi Transect (Mali and Niger)) Extension, veterinary services and other agricultural service delivery systems adopted policies and programs to explicitly reach women and disaggregate the statistics of their outreach by sex; Women accessed and used agricultural innovations, information, finance and other inputs and services to increase production and productivity, value addition, and incomes; (Saiss (Morocco); Nile Delta (Egypt)) Policy reforms improving gender equity in in working conditions and wage for agricultural labor implemented; (Chinyanja Triangle (Changara-Ntcheu/Dedza) Transect) Policy reforms (first steps) improving gender equity in access to agricultural technology, assets, services and markets implemented; Extension, veterinary services and other agricultural service delivery systems adopted policies and programs to explicitly reach women and disaggregate the statistics of their outreach by sex and age; (Fergana Valley (Kyrgyzstan, Tajikistan and Uzbekistan)) Policy reforms (first steps) improving gender equity in access to agricultural technology, assets, services and markets implemented; (Jodhpur, Barmer and Jaiselmer districts, Rajasthan (India); Bijapur district, Karnataka (India)) First steps to the following outcomes: Policy reforms improving gender equity in access to agricultural technology,	

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)
			assets, services and markets implemented; Women accessed and used agricultural innovations, information, finance and other inputs and services to increase production and productivity, value addition, and incomes; Rural women have accessed markets, and innovations to improve their livelihood and the one of their family and community; Extension, veterinary services and other agricultural service delivery systems adopted policies and programs to explicitly reach women and disaggregate the statistics of their outreach by sex and age; (**Youth & Gender across five DS regions**) Obtained rigorous and up to date data disaggregated by sex on country and culturally variable drivers, aspirations and challenges of youth with respect to youth's engagement in agriculture; Enabled real youth representation as young representatives have concrete data to enable them to speak on behalf of the youth contingent; More targeted programs developed in the Dryland Systems CRP targeting the expressed needs of young farmers, entrepreneurs and professionals active in agriculture, e.g. in capacity development;	
0.2	Geoinformatics (GU) Data Management (DM) Intellectual Property (IP)	**Location:** Global (across the 5 Flagship regions of CRP-DS) **Objectives:** Development of the Geospatial Science, Technology and Application (GeSTA) in an integrated agro-ecosystem system research and outreach; Building a data sharing culture and publishing; Developing suitable processes, infrastructure and guidance that meet researchers' needs; drawing on existing center structures with respect to research data management and curation practices; Promoting the integration of center based Data Management systems with CRP Research Repository to show	**Outputs:** Mapping CRP DS Activities on the ground, site areas, and related data streamlining, online visualization, map servers, coordination activities with CO's CRP mapping tools; Maintenance of climate station, daily data collection and reporting, web-tools for Open Access; Data Storage and Archiving Systems; Geoinformatics Capacity and Support; GeoAgro Portal, in-house-support for M&E tool, Cyberinfrastructure facility for data archiving, processing and analysis; Development of satellite based algorithms, methods, datasets for mapping, monitoring and assessment of Agro-Ecosystems at farm to landscape scales (beta version for CA); Infrastructure (basic, physical storage) for hosting CRPDS database; GeoAgro portal for agro-ecosystems; Trainings and workshops with partners and NARS identifying data types, data quality issues, restrictions on their use and exchange, and mechanisms to store it; Online training courses and strategic guidelines and protocols for research data quality and research data management; Contractual tools; Trainings and workshops with partners and NARS to identify internal intellectual assets and create mechanisms that leverage collaboration strengths; Brands that build confidence as to products' quality; Stewardship of germplasm and pest control agents, privacy/political risks associated with sharing and distribution of some types of data, reputational risks, concerns about quality control along the entire value chain; **Outcomes:** Leveraging the role of the Geospatial Science, Technology and Application (GeSTA) in an integrated agro-ecosystem system; Better understanding of the spatial-temporal	333.909

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)
		clear and obvious links between research outputs and their underlying data; Promoting the uptake of best practices for research data management in all CRP funded projects Maximizing the distribution and impact of research products with the management of Intellectual Assets/Property including Open Access mechanisms; Ensuring compliance with international obligations on the use of genetic material Methods: An integrated Geoinformatics application in system research and modelling; Annual and seasonal dynamics and trend analysis in vegetation change and hotspot analysis (for CA); Geospatial modelling and monitoring of the agro-ecosystems at various spatio temporal scales (for CA); Full time Data Manager with the support of an IP Specialist; Participation to CGIAR-wide networks and Communities of Practice; Integration of Data Management into high level management of CRP;	dynamics of the land degradation pattern and productivity in 1 flagship and two action sites; Quantification of the land use and land cover dynamics in at least one flagship/regions and 2 action sites; Better understanding of the system approach at spatial scales from landscape level to farmscape; Improved integration and outscalling option for agricultural livelihood systems (ALS); Established linkages with NARS and Agro-ecosystem stakeholders in the region (CA); CRP wide mainstreaming of open access and best practices for research data management; Donors and partners using data generated by CRP DS Guidelines on data management, storing, and sharing for partners and NARS; Understanding of links between data, knowledge generation and the effectiveness of investments towards improving the food security and income of rural communities that live in dry areas by donors and partners; Templates, clauses, and drafting notes; Policies and Guidelines for collaborators/NARS; clear understanding of roles, rights, and responsibilities of each party; Production and sale of products for niche markets, at local, regional and international levels incentivizing local enterprise development; regular blog posts on updates and developments; Register of held on trust material and material received and modified;	

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)
		IP and legal specialist for the CRP DS; Participation to CGIAR-wide networks and Communities of Practice; Integration of IP Management into high level management of CRP;		
0.4	Communication and Knowledge Sharing	**Location:** Global (across the 5 Flagship regions of CRP-DS) **Objectives:** 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; **Methods:** 9-step Process of Communications Planning linking Research to Development Outcomes	**Outputs:** Establish Network of Communication Focal Points with ToRs and rotating leadership, with representation from each center and links to gender focal points and data manager focal points and other CRPs; Network of Comms Focal Points conducts situational analysis and outlines priority tasks for developing and implementing a strategy for Communications and Knowledge Management with wide participation from all centers; Create synergies with other CRPs; Dryland Systems is an active participant and contributor in the KM4CRPs initiative; Finalize and Implement Program Branding Guidelines; Dryland System brand is widely recognized and globally positioned; Identify new and/ or re-vamp existing tools for external and internal communication (i.e. website, shared collaboration spaces, social media, etc); Program website, Open Access knowledge repository, and social media tools widely used and updated by partner centers and other actors collaborating with the program; Develop and disseminate program-wide guidelines and templates for capturing information on research outputs and stories of impact; Annual calendar of external strategic side-events and program activities created and used widely throughout the program; E-Monthly Update-established 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; Various Branding, Communication and Reporting templates are created, disseminated and utilized successfully by all partner centers; Identify and utilize target knowledge multipliers to help disseminate research results and best practices more widely and connect to a wider multi-disciplinary audience; Created and disseminate standard package of program promotional materials as well as targeted communications materials to promote dryland issues to potential donors and investors(animation video, infographics, etc.); Provided support and guidance to 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	249.699

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)
			at global level; Define relevant targets and monitor and evaluate results for each stated indicator above. **Outcomes:** 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; 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; Dryland Systems activities and research results are effectively communicated in ways that will engage, influence and positively affect the behavior 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;	
0.5	Capacity Development	**Location:** Global (across the 5 Flagship regions of CRP-DS) **Objectives:** To develop the capacities of core individuals, organizations and systems through the dissemination and exchange of relevant quality knowledge and skills following systematic needs assessment; To maximize the potential impact of CD interventions by reaching out to stakeholders and meeting their needs through pertinent partnerships with international, regional, sub-regional and local organizations including public, private and non-governmental organizations and farmers and women associations in addition	**Outputs:** Needs assessment surveys from each site; Responses analyzed, synthesized to reflect the CD needs to achieve objective 1; Descriptions developed for all CD initiatives including goals and expected outcomes; ICT used in CD to respond to needs of remote stakeholders. At least one course of MOOCs on a theme identified in the needs assessment is piloted using internet and satellite broadcasting; Priority given to those who can transfer the knowledge and skills they acquire to further populations "train the trainer"; CD interventions developed, delivered to farmer communities (themes: Sustainable intensification and agro-biodiversity, nutrition & health, sustainable natural resources management, communication and negotiation skills, foresight studies, innovation platforms formation); Selected stakeholders participate in CD intervention allowing them to access and share available agricultural knowledge; Core CRP-DS scientists, center representatives and site coordinators participate in a minimum of three central-level interventions a year on the outlined subjects. Learning, documenting learning and sharing learning across teams is an integral part of the project cycle; QA and M&E Systems developed, piloted and approved for full application by the end of 2015; Common data base of beneficiaries developed and used for M&E follow ups and update on new initiatives using web-marking; Core local researchers, women and youth identified and join CD intervention on engendering research and communications; Core research and innovation coordinators identified and join CD	141.750

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)
		to alumni and beneficiaries of previous CD activities; To ensure sustainability of CD efforts through improved focus on resource mobilization at the international, regional and local levels, diversifying and funding modalities, and improving donor relations; **Methods:** Training needs assessment; Internal and external expertise and diversified tailored CD modalities and delivery mechanisms while applying quality assurance and monitoring and evaluation throughout the process; Participatory partnerships development analysis	intervention on ARI4D platforms formation; Core stakeholders identified to participate in the GCARD3 dialogue process and provide them with the necessary knowledge and skills preparation to effectively contribute to the process; Impacts' M&E mechanism developed at the CRP-DS central level to apply to system-level CD interventions; At least one course on a theme of shared importance; At least one example of collaboration with a university or informal learning center at local level; Existing private sector engagement analyzed and fruitful ones strengthened; Collaborate with GFAR Facility on CD in countries that are targeted by CRP-DS; At least one pilot intervention per site; Resource mobilization as relevant is included in the performance appraisal of CRP-DS staff members; **Outcomes:** Local stakeholders in each site including small-holder men and women farmers possess the needed knowledge, skills and attitudes that enable them to better discuss and decide their own agricultural futures with their research and policy making counterparts and shape CRP-DS pathways to achieve impact on the ground; Institutional policies at the local/national level have changed to further target the poor through policies such as including agricultural research and innovation as a priority in rural development agendas, improved land allocation and improved market systems; Accountability and impact in national research and innovation systems increased through development towards more strategic coherence & transparent stakeholder involvement; Mechanism for developing, maintaining and strengthening partnerships in CD is developed and applied; Collaborative initiatives strengthened to realize stronger capacities of local agricultural innovation systems empowering them to achieve impacts at scale; Investments in CD increased to better meet the needs of the local stakeholders.	
0.6	Integrated System Analysis and Modelling	**Location:** Global (across the 5 Flagship regions of CRP-DS) **Objectives:** To develop an up-to-date, effective framework for researching transitions of agricultural livelihood systems (ALS) capturing grand challenges in dryland development; To	**Outputs:** CRP-DS's Integrated Systems Analysis and Modelling Group (iSAMG) formulated (mandates, structure, functions, responsibilities, activities identified); Consolidated generic integrated systems framework for researching ALS transitions; One case study site in each DS study region identified for focal integrated system research. Narrative-based system analyses, and context-option matrices implemented in these sites. At least two sites applied quantitative integrated system modelling and provide pilot results; At least one CRP-level integrated systems research workshop organized and the results documented for support further research activities; Systems methods/tools used by partner centres/NARS coherently catalogued and reviewed for methodological	245.500

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)
		create a functioning, well-connected DS working group for enhancing co-learning and delivering IPG in integrated systems analysis and modelling; To improve systemic understandings and identify systemic intervention strategies for improving ALS performances; To provide guidelines for regional development of impact pathways, SLM options-by-context and system tool option-by-context matrices; To build research and educational capacities on integrated system research in CRP-DS's partners; **Methods:** Complex adaptive human-environmental system approach; Tool box approach that identifies, verifies relevant methods of systems analysis/modelling (ranging from narrative-based systems analyses to quantitative integrated systems modelling) and provides guidance of context-relevant, complementary uses; Context- SLM option matrix approach as a system method; Context - modelling tool matrix as a system method; standard protocols for comprehensive describing used systems methods/tools; System-	potentials, gaps across organizations and sites; List of individuals, groups in NARS identified for enhancing their systems research capacities; One CRP-level training of trainer (ToT) organized for relevant junior scientists (12-15) from partner centres and NARS; **Outcomes:** Adopted frameworks for guiding systems analyses and purpose-driven selection of system modelling methods/tools; Functioning iSAMG regarding effective co-learning and delivering IPG in integrated systems research; Systemic understandings and identify systemic intervention strategies obtained across CRP-DS's study regions towards achieving its IDOs; Accessible databases on SLM option-by-context and used systems methods/tools; Research and educational capacities of relevant, junior scientists in NARS, Centres and their connection to international peer community improved	

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)
		structured narrative synthesis framework for integrating impacts, lessons learned across CRP-DS Flagships.		

Table 3b. West African Sahel and Dry Savannas Flagship - Cluster of Activities

Please note:

- Blue indicates capacity development activities
- Red indicates gender-targeted activities

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)
1.1	Research Support	Local Partners meetings, research site coordination, support to cross-cutting issues and to W3/Bilateral projects **Partnership**: **CRP-DS CG Centres:** ICRAF, ICRISAT, ILRI, ICARDA, Bioversity **NGOs/CBOs**: 6 **NARS**: 5 **Private Sector:** 1 **Government Department**: 1 **Academia**: 2 **International Centers (NoCG):** 1 **CG Scientists:** 17	Organization of two IRT meetings (Burkina Faso and Mali) Flagship representation to the 2 RMC and annual S&IM Communication and dissemination of flagship product Data and information management for the flagship Flagship data analysis and system research design and modelling	243.000
1.2	System Research: Agro-pastoral system interventions (testing, piloting and scaling up)	**Location:** **W1&2**: Kano-Katsina-Maradi Transect (Nigeria and Niger); **W3/Bil:** Burkina Faso Mali, Niger **General objective:** To improve the multi-product productivity, stability and gender equity of agro-pastoral systems in West African Sahel by enhancing subsidiary linkages between annual crops, trees and livestock as well as promoting the use of indigenous	**Outputs:** **(ICRAF-1)** PRA conducted (report); Surveys on 220 farms conducted (report); 1 progress report on crowdsourcing local knowledge about tree integration at field, farm and landscape scales; **(ICRISAT-2)** 1 progress report on gender preference on local dual purpose crops and progress on field trials; **(ICRAF-4)** Adaptive properties to drought of a priority indigenous fruit tree investigated (report); Training provided to at least 150 farmers (men and women) on tree domestication and propagation techniques (report); **(Bioversity-5)** Survey report on local management of tree, crop and animal breeds; **(Bioversity-6)** Survey report on locally produced nutritious foods and imported foods; **(ICRISAT-7)** Tree crop management demonstration protocols developed and installation achieved; Report on demonstration installation produced; **(ICARDA-8)** Innovative platform model for promotion of	5,605.953

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)
		knowledge and resources. **Specific objectives:** To characterize and understand roles of local knowledge and female and male farmers' practice about integration of tree on farms and landscapes in contributing to semi-arid agricultural systems' productivity and stability; To assess factors influencing farmers' decisions to grow multi-purpose trees (MPTs) and extent to which MPTs provide the functions and characteristics desired by farmers (gender differentiated); To test and evaluate least cost feed rations based on locally available feed resources for improved livestock productivity (sheep fattening) and efficient livestock-mediated nutrient transfer; To improve integrated domestication and commercialization of indigenous fruit and nut tree crops (IFTs) for food security and income generation at the action site and beyond involving female and male stakeholders; To identify and promote nutrition rich local foods; To identify optimal combinations of crop-tree-livestock management options, yet and feasibly and relevantly, resulting in improved multi-product productivity of agro-pastoral systems; Assess the effects of intensification on local agro-biodiversity in areas with intensification potentials and the roles	improved and integrated technology transfer, seed delivery and stakeholders linkage along the value chain involving 540 men and women active in farming established and operationalized in 3 IP sites (Kadawa, Alkamawa, Bagwai) of Kano; 3 functional community based seed multiplication scheme established, each involving 50-60 trained farmers for supply of high quality wheat seed across the 3 IP sites; **(ICRAF–1)** 3 feed-back workshops in all sites where PRA organized (report); 1 full report on Factors Influencing Farmers' Decisions to Grow MPTs and practice FMNR produced; 1 draft manuscript; 3 media products on FMNR and MPTs developed (Popular newspaper, blog and video); **(ICRISAT–2)** 1 complete report on gender preference on crops along with evidence from laboratories for food-fodder trait analysis; Gender preferred local dual purpose crops seeds (Pearl Millet, Sorghum, Cowpea and Groundnut) for gene bank collected from 2 villages' farmers (Milli and Gourjia) and used for wider multiplication and fodder quality analysis (report); **(ILRI-3)** 1 full report on on-farm fattening experiments; Practical guidelines for livestock extension workers on least cost ration for sheep fattening (guidelines); **(ICRAF-4)** At least one women association trained in tree propagation techniques in Niger (report); 1 draft report on provenance variation in seed- and seedling-related traits in survival, growth and dry matter partitioning of Sclerocarya birrea, a potential agroforestry species, in response to water stress; 1 drraft manuscript on Tree domestication/ Income Generating Grafted Fruit Trees; **(Bioversity-5)** 1 report on options for improved management of tree, crop and animal breeds; 2 Technical Advisory Notes on better tree, crop and animal breeds management practices, for extension workers and farmers; **(Bioversity-6)** 1 report on recommended nutritious foods that are locally available across the year to improve diets; 1 Factsheets on nutritious local foods and their utilization; **(ICRISAT-7)** At least 1 optimal combination of crop variety and options of soil fertility management for optimal yield and efficient water use in parklands system identified in participatory trials with 180 men and women farmers (report); 1 video on precision agriculture developed; **(ICARDA-8)** 120 progressive farmers and stakeholders trained (gender disaggregated CD of women and youth) on system innovations and community based seed production for improved seed delivery and technology transfer to local circumstances (report); **(ICRAF–1)** 1 project inception report for expected results in 2015–2016; 3 characterization study reports for the project intervention sites; At least 1 report describing options for improved land and water management; At least 1 report describing implementation of land and water management activities; At least 1 report on the integrative approach taken	

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)
		of different stakeholders bringing about this effect; To strengthen female and male farmers' capacity in integrated management of tree (e.g. farmer-managed natural generation (FMNR) and MPTs), crop and livestock components in agro-pastoral system; To establish innovative platforms in a multi-stakeholders setting for promoting the out-and up-scaling of locally succeeded diversification/intensification options; **Methods:** Narrative-based system analysis of agricultural livelihood systems (including social-cultural (gender and youth) dimensions); Participatory Rural Appraisals (PRA) for domestication and commercialization analyses; Household-farm surveys (gender and age disaggregated); Gender analysis of systems targeted by research in 2015 (focus on transaction analysis); Participatory development of partnership models for technological transfers; Operational system modeling (TBD) **Gender dimension:** Understand gender preferred local dual purpose crops in mixed farming systems using field trials;	by the project and its implementation; 1 report describing the ME&IA framework of the project; Training of farmers in techniques to enhance food production through better management of soils as well as community mobilization and other integrative approaches with Inclusive approach to promote participation of different categories of farmers - male and female (at least 50%) and youth (report); **(ICRAF-2)** Capacity development interventions to disseminate the findings of the project towards beneficiaries; Information collected and disaggregated by gender (dataset); **(ICRAF - 3)** New and/or strengthened village-based extension approaches implemented for increased/wider use of context-specific climate-smart tree-crops systems and agroforestry practices (2015); Improved agroforestry seeds and seedlings (incl. vegetatively propagated plantlets) produced, distributed and commercialized (report); Tree seed and seedling systems sustainably managed with 512 lead producers (2015); Diversified market opportunities created for a range of high-quality tree products value chains with high market potential (including organizing agroforestry nursery groups of 30 members in each project site, training of trainers on commercialization techniques; Improved management of wild and domesticated fruit trees with specific aim of providing nutrients during the famine periods conservation methods for highly nutritional tree products (incl. leafy vegetables) for human and livestock transferred to 3,675 individuals (50% women) including indirect beneficiaries) (report) (2015); Demand-driven short-term training courses (1 per project site) targeting support institutions (including extension services and local NGOs), national students internships, and key value chain actors (including women and youth, and training-of-trainers sections) in developing and disseminating agroforestry technologies and practices, as well as their health/nutritional values, and income generating activities through multi-stakeholders Innovation Platforms (report); **(ICRAF - 4)** Tree-crop interactions evaluated and reported on-farm using different tree (accessions and) species and cereal varieties (2015); 1 new agroforestry technology/practice aiming at improving biomass production evaluated (2015); At least 75 farmers (30% women and youth: gender, social stratification, education, age, wealth, ethnicity will be considered for selecting the participants) and 1 student per country will benefit from training activities: learning by doing during and formal training sessions (2015); **(ICRISAT-7)** 5,176 men and 4,394 women received training in global climate change adaptation (report); 2,667 hectares under improved techniques or technologies (report);	

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)
			Outcomes: **(ICRAF-1)** Skills and knowledge of least 150 farmers (50% female), strengthened through practical farmer to farmer training and learning sessions on MPTs and FMNR (report); **(ICRISAT-2)** 200 women acquired knowledge through participatory evaluation of dual purpose crops (report); **(ILRI-3)** At least 100 farmers' skills enhanced in profitable sheep fattening and 50% increase in income (about 100 USD per HHs) of women participating in the sheep fattening scheme (report); **(ICRAF-4)** At least 150 farmers' skills (50% women) enhanced in use of tree domestication and propagation techniques (report); (**Bioversity-5)** 18 HHs applied better tree, crop and animal breeds management practices and 5% increased income from local crops (millet, tiger nut, leafy vegetables, etc) and small ruminants for marginal groups (women, elderly people) (report); **(Bioversity-6)** 18 HHs use improved combinations of locally available foods, changes in nutritional state of mothers and children and 5% increased demand for locally produced foods (report); **(ICRISAT-7)** At least 20 farmers increased their knowledge in use of improved combination of crop varieties and soil fertility management (report); HHs income increased by 15% through farm product sale of participating farmers (report); **(ICARDA-8)** Innovative partnership models for improved seed delivery, technology transfer and market linkage fully adopted by farmers and stakeholders within the three IP sites (report); **(ICRAF -3)** Local communities participate (through 1 survey and 1 focus group discussions per project site) in co-design and co-implement village-based extension approaches to scale-up and out of proven agroforestry technologies (2015); 525 Farmers developed diversified market opportunities for tree products with high nutritional and economic value (2015); Rural communities (3,150 individuals) consume more of tree-based nutritious tree products and have improved their food and nutritional security status (2015); Farmers (3,150 individuals) are more resilient to climate change extremes and disasters (2015); Capacity of key stakeholders (600 individuals) in rural poor communities strengthened and their participation in agroforestry tree product value chains improved (report) (2015); **(ICRAF - 4)** 150 farmers of the two countries are using improved crop/livestock/tree management practices to increase their millet and sorghum farming productivity and to improve their livelihoods (report); 150 smallholder farmers of the two countries are using market information systems, financial services and value addition opportunities to increase income from whole farm production (report); **(ICRISAT-7)** 205,229 men and 266,566 women increased knowledge of climate change impacts and	

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)
			response options (report); 9.128 men and 9,344 women implementing risk-reducing practices/actions to improve resilience to climate change (2015); 150,909 men and 212,476 women use climate information in their decision making (2015); 66 institutions with improved capacity to address climate change adaptation (report);	
1.3	System Research: Rainfed System interventions (testing, piloting and scaling up)	**Location:** **W1&2:**Wa-Bobo-Sikasso Transect (Ghana, Burkina Faso, and Mali); **W3/Bil:** Niger, Nigeria, Mali, Mauritania **General objective:** To improve food productivity, benefit sharing equity (including gender and youth aspect) of WASDS intensive rain-fed systems whilst minimize agriculture-induced land degradation and climate-driven vulnerability **Specific objectives:** To identify household-preferred, gender-relevant multi-purpose trees (MPTs) (multi-purposes: improved nutrition, livestock feed, minimized or reversed land degradation); To assess in a gender-sensitive manner factors influencing farmers' decisions () to grow MPTs and extent to which MPTs provide the functions and characteristics desired by farmers (also gender-sensitive); Explore the use of dual-purpose crops and post harvest mechanization for intensified stover and crop residue production; To map land holdings with clarified holders (gender-disaggregated) over diverse agricultural landscape mosaics smallholders;	**Outputs:** **(ICRISAT-1)** Establishment of one biophysical monitoring network across CRB-equipped/control field pairs sampling 3 catena positions, 3 household types and 4 crop types in Kani site (report); Initial crop model parameterization for local agronomic practices, germplasm and CRB effect on soil water dynamics (report); Initial TOA-MD model parameterization based on HH survey data, and ex-ante simulation of CRB adoption (report); Initial report on perceived bottlenecks to CRB adoption (biophysical, economic, customary, etc.); **(Bioversity-2)** Multi-purpose tree diversity and distribution assessment (report); **(ICRISAT-3)** Field visits to identify participating farmers (report); 2 composting training videos screening events and demos organized at Yagtuuri site in Ghana and Mahon site in Burkina Faso, directly reaching at least 200 farmers and collecting their feedback (report); Dissemination of technical sheet in best soil conservation technology at each site (Technical Sheets and Report); **(ICRAF-4)** PRA conducted at WBS Yagtuuri field site (report); Survey administered on 200 farms across the WBS transect (report); Progress report on local knowledge about tree integration at field, farm and landscape scales; **(ICRISAT-5)** First yield results from dual-purpose crops trials in 2014 (report); Set up of 2015 feeding trials (with stover harvested from farmers in 2014); Demonstrations of fodder chopper at Yagtuuri site (report); **(ILRI-6)** Analysis of existing local conventions governing natural resource management (report); **(ICRISAT-7)** Technologies and practices promoted are ranked by smallholder community representatives involved in 2 district-level Transformative Scenario Planning (TSP) processes initiated at Lawra and Koutiala and other preferred technologies and practices are identified by TSP stakeholders (Report); **(ICRAF-8)** Updated report on analysis of HH survey highlighting the characteristics of the agricultural systems including Burkina Faso sites; **(ICRISAT-1)** Community-level stock-taking activity on outputs from in-vivo and in-silico CRB experiments (report); Final crop model outputs highlighting performance of CRB (sole, bundled with other practice) across space, time and HH endowments (report); Final trade-offs analysis results showing socially differentiated opportunity costs for CRB (sole, bundled) adoption (report); CRB (sole, bundled) business model development	1,700.599

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)
		Analyze and document existing local, gender-relevant conventions governing NR management in mixed crop-livestock systems and identify interventions to strengthen them; Jump-start orange-fleshed sweet potato in West Africa through diversified markets to improve nutritional status; To assess ecological (soil/water conservation) and gender-relevant socio-economical (income and food security) tradeoffs and synergies driven by different technological options (among intensification and diversification options (CRB and other soil, crop, tree management practices), governance and market alternatives with respect to farm productivity, profitability, natural resources and social equity (including gender and youth aspects); To promote the dissemination of least-regret local and exogenous land restoration (e.g. most suitable Farmer Managed Natural Restoration (FMNR) techniques and processes from hotspots of practice to new, degraded frontier areas) through providing appropriate training on land restoration techniques and management involving both genders and youth; To promote the current regional science-policy platforms to catalyze systems change towards sustainable intensification and reduced vulnerability; **Methods:**	workshop organized for NGOs and local private sector (report); Evidence from simulated and real-world CRB experiments is disseminated to national stakeholders by at least 3 district-level platforms and 1 parliamentary event (report); Peanut, as a women's crop, is involved in the set of 4 crops investigated for response to CRB and bundled practices (report); **(Bioversity-2)** Compendium of locally recommended multi-purpose trees species for food, feed and medicine; Technical advisory notes on better management practices of multipurpose trees are disseminated directly to extension workers and will benefit farmers (report); 100 HHs are aware of the role of multi-purpose trees to improve nutritional quality of food and feed (report); **(ICRISAT-3)** Yearly report providing all data related to soil physico-chemical properties, water dynamics, farmers compost quantities and quality and crop performance; Composting training videos customized to fit local preferences/conditions at two field sites; At least 50 participants (young and women) are trained on soil restoration techniques (report); Report on women and young farmers involvement in composting activities and provide new insights on the production process, and use (particularly for high-value, garden cropping); **(ICRAF-4)** 2 feed-back workshops in all sites where PRA was organized (report); A full report on factors influencing farmers' decisions to practice FMNR; FMNR introduced in 2 communities (Yagturi and Zinkaa) with PRA and two community workshops on FMNR and needs assessment (report); Learning visit organized for 20 community members to Kanpour in Lawra district, and 6 members to Talensi-Nabdam in UER on FMNR in partnership with World Vision (report); Annual report, peer reviewed publications & data collected archived & publicly available in open access to 300 beneficiaries (report and dataset); 3 dissemination products on FMNR developed (1 popular newspaper, 1 policy brief and 1video); At least 150 farmers are trained on FMNR (report); **(ICRISAT-5)** First results from the 2015 feeding trial (report); 2015 mother-baby trials on improved dual-purpose crops (peanut, sorghum, sweet potato) conducted by farmers (report); At least 2 trainings involving 40 participants on crop-livestock integration and crop residues management conducted (report); **(ILRI-6)** Draft manuscript on participation in decentralized management of natural resources; 2 trainings involving about 50 participants on conflict management over natural resource use conducted (report); One report on women's role in elaboration and implementation processes of local conventions; **(ICRISAT-7)** Preliminary results and learnings from the TSP process are published in a joint CCAFS-DS working paper to guide future WBS transect developments, scale up (tune down) of higher (lower) priority activities at the	

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)
		Participatory Appraisal Research (PAR) method: Participatory development of expected future-actions matrixes for different purposes; High-resolution remote sensing and GIS analysis for accurate land tenure mapping; Participatory Rural Appraisals (PRA) for domestication and commercialization analyses; Household-farm surveys (gender and age disaggregated); Gender analysis of systems targeted by research in 2015 (focus on transaction analysis); Empirical (ex-post) statistical analysis, including social, cultural, economic factors (6) Whole farm bio-economic modelling and landscape-level multi-agent system modelling (TBD); Participatory development of partnership models for technological transfers; Gendered baseline and impact studies **Gender dimension:** Gender is mainstreamed in the above research ensuring the equitable participation of women, youth and disadvantaged groups additionally to men in research, technology and evaluation, and knowledge creation; aiming at economic empowerment.	community level; At least one training event is organized for stakeholders by the district-level platform to learn about the content of one national agricultural policy instrument (report); **(ICRAF-8)** Full analytical report completed and aggregated for the 5 WAS&DS countries; At least 250 farmers and their households participate in the HH survey and inform on relevant constraints and opportunities on resource endowment, land productivity, HH income, vulnerability and copping strategies (report); Indicators for ex ante and ex post impact disaggregated by gender and the contribution of the different technologies quantified by different household member categories (report); **(ICRISAT-5)** Multispectral imagery acquired over at least 200,000 ha, analyzed and shared with partners (images); at least 40 stakeholders trained in the use of VHR imagery for agricultural smallholder decision support (2015); at least 100 farmers are actively contributing to the development of imagery-based agricultural management support services (2015); **(ICRISAT-6)** Institutes i who are drivers of change in the project sites identified (2015); Options to improve off-farm and on-farm land, soil and water resources management and use identified considering both men and women and disadvantaged groups in research and technology evaluation, considering their different preferences and knowledge (2015); **(ICRISAT-7)** 1,294 men and 1,098 women received training in global climate change adaptation (report); 667 hectares under improved techniques or technologies (report); **(ICARDA-21)** Wheat Value Chain analysed in Nigeria; 1 CA package developed; 1 Crop-Rotation Package developed; 4,500 farmers and stakeholders (at least 30% women) (progressive farmers, extension agents local input providers and NGOs) involved in technology promotion and capacity development (Farmers Field Schools: pre-season, in-season and post-season);; 4 Innovation Platforms for Nigeria, Mali, Mauritania, Niger established and operationalized (2015). Wheat Seed System analyzed, developed and institutionalized in Nigeria (2015); **Outcomes:** **(ICRISAT-1)** At least 36 farming HHs provide actively involved and provide guidance in the performance evaluation of CRB (sole or bundled) and for addressing bottlenecks towards CRB (sole or bundled) adoption and dissemination (report); At least 10 private sector actors, NGOs and CSOs develop skills related to CRB business models (report); At least 1 private sector partner, NGO or CSO engages farmers to commit resources towards 2016 CRB setup (report); At least 5,000 men and female farmers are exposed to, and learn from the results of the	

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)
			simulated and real-world experiments through their respective FOs (report); **(Bioversity-2)** 100 marginalized smallholder farming HHs have access to additional sources of nutritious food and feed for better livelihood (report); **(ICRISAT-3)** At least 20 farmers implementing the technology at each DSCRP field site of WBS, with 20% yield increase (report); Communities aware of benefits of composting have provided guidance on how to deploy technology on a larger scale (report); Stakeholders involved in production of training videos (e.g. Access Agriculture) have integrated learnings and products in their video portfolio, for further dissemination (report); **(ICRAF-4)** Capacity of 150 (50% women), including poor rural communities organizations is strengthened through collective actions, practical farmer to farmer training and learning processes on FMNR (report); **(ICRISAT-5)** Local communities and individual farmers work with improved crop for dual purpose (peanut, sorghum, sweet potato) and intend to use the stover for their livestock (report); **(ILRI-6)** Oral local conventions in one community formalized and validated (report); **(ICRISAT-7)** District-level science-policy platforms initially focused on climate change adaptation now start influencing national policy design in the larger context of agricultural intensification and vulnerability reduction (report); Stakeholders and Scale actors collaborate to visualize coordinated pathways for agricultural intensification across the entire transect (report); Stakeholders' understanding of national agricultural policy instruments (and their strengths and weaknesses) has improved (report); Stakeholders are engaging the district-level science-policy platforms to advocate for policy instruments that favour their priorities and interests (report); Women and youth groups are communicating their priorities to policy makers via their involvement with the district-level platforms (report); **(ICRAF-8)** at least 400 farmers (200 men and 200 women) are aware on the role and importance of gender in extension systems and the women decision power over agricultural (and non-agricultural) labour are assessed (report); **Outcomes:** **(ICRISAT-5)** 50,000 farmers (20% women) registered in a land tenure information service receive benefit from this tool (2015); **ICRISAT-7)** 51,307 men 66,641 women increased knowledge of climate change impacts and response options (2015); 2,282 men 2,336 women implement risk-reducing practices/actions to improve resilience to climate change (2015); 37,727 men and 53,319 women use climate information in their decision making (2015); 66 institutions with improved	

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)
			capacity to address climate change adaptation (2015); **(ICARDA-21)** 100% of target farmers adopt the wheat based technologies on 33,000 ha (2015); Project wheat based technologies promoted by target beneficiaries to 70,000 indirect beneficiaries in 2015;	
1.4	System Research: Irrigated crop System interventions (testing, piloting and scaling up)	**Location:** **W3/Bil:** Niger, Nigeria, Mali, Mauritania **General objective:** To achieve sustainable increase of wheat productivity and production for enhanced food security, economic growth and poverty alleviation. **Specific objectives:** To increase on-farm wheat productivity and production for food security; To optimize the management of scarce natural resources; To enhance the capacity of the NARES to conduct needed research for development **Methods:** Innovation platform development process; Food value chains analysis and development (gender-disaggregated); community-based seed system analysis and assessment; agroecological similarity mapping, technology packages development; **Gender dimension:** Research results of gender strategic research on gender-responsive extension services disseminated to researchers and practitioners through training;	**Outputs:** **(ICARDA-21)** Integrated Pest and Crop Management (IPCM) package (2015); Short in country training (13 participants in each country - at least 30% women) on wheat production package for researchers and extensions (2015); 6 similarity maps at country, countries and continental level, developed; **(ICARDA-21)** 100% of target farmers adopt the wheat based technologies on 133,000 ha (2015);	849.304

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)
		Women's empowerment through increase in knowledge and options in food and seed value chains;		

Table 3c. East and Southern Africa Flagship - Cluster of Activities

Please note:

- Blue indicates capacity development activities
- Orange indicates gender-targeted activities

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)
3.1	Research Support	Local Partners meetings, research site coordination, support to cross-cutting issues and to W3/Bilateral projects **Partnership**: **CRP-DS CG Centres:** ILRI, ICRISAT, CIAT, ICARDA, Bioversity, ICRAF, IWMI **NGOs/CBOs**: 4 **NARS**: 5 **Private Sector:** 1 **Government Department**: 3 **Academia**: 4 **International Center (Non-CG):** 1 **CG Scientists:** 23	Research activities, partner workshops, and reports coordinated and reported on time. Cross-learning events (between centres within an action site) facilitated through data analysis and experience learning workshops. Joint work plans integrating activities by diverse group of partners developed and their implementation monitored. Data and information sharing and joint evaluation and monitoring of progress facilitated. Experience sharing, capacity building on integrated systems analysis, research design and modelling	243.000
3.2	System Research: Agro-pastoral system interventions (testing, piloting and scaling up)	**Location:** **W1&2:** Marsabit-Yabello-East Shewa Transect; **W3/Bil:** Ethiopia, Uganda, Kenya, Tanzania, Zambia, Mozambique, Zimbabwe, Sudan **General objective:** To improve productivity, profitability and resource use efficiency of pastoral and rainfed agricultural systems through sustainable intensification and enhanced capacity of female and male farmers and other stakeholders (e.g. policy decision-makers) to cope with challenges posed by variable and changing	**Outputs:** **(ILRI-2)** 1 Map of land use and land cover changes in relation to key resource areas; **(ICARDA-4)** 1 IP established (gender-disaggregated report); 5-6 trials conducted for food and forage crops (report); Data on agronomic traits collected (dataset); One field day organized for 75 female and male farmers (report); **(ICARDA-5)** Goat selection scheme designed and market linkage established (gender-disaggregated report); **(ICRAF-6)** 1 gender-disaggregated Report describing the beneficiaries and benefits of tree species on a range of ecosystem services and a description of the use and management of these tree species and the effect of this on the above benefits and beneficiaries; **(ICRISAT-7)** One multi-stakeholder platform established as measured by the # of	5,692.497

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)
		climates and/or uncertain contextual changes **Specific objectives:** To assist female and male stakeholders identifying promising interventions around land and resource management by using participatory inclusive causal system modeling; To assess heterogeneity in distribution of biophysical systems, productivity and ecosystem services and health, and changes in these, in rangelands at the Action Site; To analyze the institutional, political and management challenges and dynamics of NRM in developing country rangeland settings in a gender-differentiated manner, and to identify gender-responsive concepts and principles for the development of appropriate NRM, land tenure and land use planning policies and frameworks; To introduce high yielding and drought tolerant barley and food legumes with associated crop management practices in the lowlands of East Shoa involving female and male stakeholders; To develop extra early genotypes with associated agronomic practices for diversification and intensification; To integrate small ruminant and crops production to improve productivity and income of female and male farmers on sustainable basis; To understand determinants of tree distribution across landscape, roles of tree on farms, on farm performance and household welfare (including gender equity) and alternatives; To form and operate multi-stakeholder platform that serves as broad coalition with a common goal of achieving sustainable intensification by pooling their knowledge, resources and expertise; To further systems model-based ex-ante assessment of identified interventions on system performance;	participating institutions and their contributions to implement the POWB (report); **(ICRISAT-8)** Dataverse Database of climate, crop soil and management as required to calibrate and validate the models (dataset); **(ICRISAT-9)** Field testing of intensification options initiated (report); **(ILRI-1)** 1 Causal model of system including gendered analysis developed with stakeholders; 2 local partners trained in systems analysis (report); 1 Report analyzing utility of systems analysis tools for stakeholder engagement; **(ILRI-2)** Validated methodology for rangeland condition assessment (manual); Management methodologies assessed (report); **(ILRI-3)** Policy/land use framework including gender analysis assessed (report); **(ICARDA-4)** 1 variety/crop identified for further scaling out with good agronomic practices (report); One field days organized for irrigated wheat and forage crops in East Shoa (100 people attending including farmers; researchers, Policy makers); 50 farmers (20 women) trained in crop production (report); 20 extension staff, 10 young researchers and research technicians trained in crop management (gender-disaggregated report); 10-15 female and male farmers trained in quality seed production (report); **(ICARDA-5)** At least 2 technologies on feeding and goat selection validated (report); 2 Best bet technologies on goat management and goat fattening demonstrated (report); Goat producers linked to at least one abattoir or other buyer (report); 40 farmers trained on improved goat production (gender-disaggregated report); 5 Farmers trained on fattening technology (report); 6 NARS staff trained on smart feeding, breeding and marketing (gender-disaggregated report); **(ICRAF-6)** 1 gender-disaggregated Report on farmer led research on optimization of the use and management of trees; One research paper; Gender and youth disaggregated data on the use and benefits from trees (dataset); **(ICRISAT-7)** 1 active IP involving a minimum of 10 organizations (gender-disaggregated report); A report on planned and implemented interventions; Insights into gender responsiveness of various options leading to identification of gender friendly practices (report); **(ICRISAT-8)** A report on ex-ante assessment of potential options for productivity, profitability and sustainability; 15 women farmers tested different intensification options (report); One journal Article submitted for publication; **(ICRISAT-9)** First year report on tested options; **(ICRAF –1)** 1 project inception report for expected results in 2015–	

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)
		To make comprehensive assessment of sustainable intensification options for their contribution to productivity, profitability and resource use efficiency of smallholder rain-fed systems in the face of uncertainty; To create climate-smart landscapes through implementing integrated land and water management options. **Methods:** Different types of gendered systems modelling (participatory causal system model, crop-soil simulation model, bio-economic model); Qualitative regional analysis for identifying policy, institutional and management constraints and opportunities in a gender-differentiated manner; Ex-ante gender analysis of the socio-economic and cultural system (e.g. pastoralists) targeted by research; **Gender dimension:** Research to improve productivity, profitability and resource use efficiency of pastoral communities and capacity to cope with risks is gender-mainstreamed.	2016; 3 characterization study reports for the project intervention sites; At least 1 report describing options for improved land and water management; At least 1 report describing implementation of land and water management activities; At least 1 report on the integrative approach taken by the project and its implementation; 1 report describing the ME&IA framework of the project; Training of farmers in techniques to enhance food production through better management of soils as well as community mobilization and other integrative approaches with Inclusive approach to promote participation of different categories of farmers - male and female (at least 50%) and youth (report); **(ICRAF-2)** Capacity development interventions to disseminate the findings of the project towards beneficiaries; Information collected and disaggregated by gender (dataset); Nested communities of practice with refined tools methods and guidelines take land restoration to scale; **(ICRAF-5)** 1 project inception report for expected results; Report describing implementation of agroforestry interventions; Final report outlining project outcomes; Government, NGO extension officers and farmers (50% women and youth) trained on agroforestry techniques; Community level farm input traders - Agro-dealers (50% women and youth) trained on handling agroforestry tree seed and basic principles of agroforestry practices; **(ICRISAT-2)** 3 draft journal papers (2015); 3 technical briefs (2015); **(ICRISAT-4)** 500 households with improved legume production; velvet bean, and improved groundnut varieties, integrated with livestock production; **(ILRI-1)** 3 counties for which IBLI contract is implemented (2015); 2 peer reviewed papers published (2015); 3 knowledge products published (2015); 3 policy and academic workshops held (2015); 2 proposals for advancing related research and policy agenda submitted (2015); ICT used to improve IBLI extension and training as well as monitoring (2015); Development of instructional design curriculum for standardized IBLI extension (2015); Crowd Sourcing of Rangeland Conditions to generate real-time information of rangeland from pastoralists (2015); 1 paper on gender differentiated adoption of IBLI in Borana (2015); 1 paper on gender differentiated access and demand for credit in Marsabit (2015); **(ILRI-2)** 900 hectares of improved fodder under sustained production (2015); 42 fodder groups trained; 12 fodder groups linked to steer fattening and 10	

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)
			groups sell during the drought; 25 Livestock Marketing Associations established and trained; Six policy briefs. (2015); 450 women engaged in camel milk cooperative (2015); **(ILRI-3)** 1 effective M&E framework in Kenya and Ethiopia: development and application of methodologies, tools and approaches to support evidence-based decision-making and investment prioritization to enhance resilient development trajectories in Horn of Africa (2015); 3 MSc theses published evaluating three case studies;**(ICARDA-15):** 1 PhD student enrolled (2015) **Outcomes:** **(ILRI-1)** CG and non-CG partners have experience with the ESA systems approach (report); **(ILRI-2)** NGO partners in Yabello and Marsabit understand impact of interventions on ecosystem health and have an ecosystem health framework (report); **(ILRI-3)** Two communities understand NRM governance and have initiated NRM governance processes (report); **(ICARDA-4)** At least one variety/crop species that fits the need of female farmers adopted; 30-50 farmers adopt the new variety/crop species and agronomic practice (gender-disaggregated report); knowledge and skills of 20 Female and 30 youths in non-traditional crop production improved (report); **(ICARDA-5)** NARS and 200 farmers (30% women) work together and adapt diagnostic and systematic research approaches to promote improved goat production, fattening and marketing (report); **(ICRAF-6)** 50 Farmers attained increased awareness that optimal benefits in tree based landscapes requires careful planning and negotiation of tree management (gender-disaggregated report); **(ICRISAT-7)** 50 Smallholder farmers benefitted by improved access to improved technologies as measured by the number of farmers accessing new technologies (gender-disaggregated report); **(ICRISAT-8)** All project partners accessing and using the database (Report); **(ICRISAT-9)** 50 female and male farmers benefitted by testing the options (gender-disaggregated report); **(ICRISAT-2)** Improved motivation and knowledge of farmers to invest in agricultural production through participation at IPs and implementation of participatory trials (2015); increased engagement in development of marketing arrangements, stakeholder aware of market opportunities and increased benefits for women and female headed households to access	

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)
			knowledge, participate in markets (2015); **(ICRISAT 4)** Greater understanding by farmers, support services and the private sector of the value of market based systems development (2015); Greater adoption of legumes in mixed systems, not only as a cash crop but also integrated in rotation with cereals to improve household nutrition and to increase environmental sustainability; **(ILRI-1)** 4 organizations providing some IBLI-related service (sales, regulatory, information etc) (2015); 40 % of clientele with understanding of the role and value of IBLI (2015); (2015); Informed pastoralists purchasing IBLI products (4000 clients paying some amount for IBLI) provided by a capacitated insurance industry (3 types of IBLI related products on offer) within a supportive policy and institutional environment (2015); **(ILRI-2)** 20% increase in volume of camel milk sold and 20,000 households have improved incomes as result of three interventions: market infrastructure; fodder groups; women's milk cooperative (2015); **(ILRI-3)** Over 500,000 pastoralists in ASAL areas benefitting from investments being made by governments, NGOs and donors which have been specifically targeted for maximum impact with respect to enhanced resilience (2015); The national agency in Kenya (NDMA) and Ethiopia (Min of Agriculture) staff are able to implement the M&E framework and report impact of investments on resilience to donors (2015);	
3.3	System Research: Rainfed System interventions (testing, piloting and scaling up)	**Location:** W1&2: Chinyanja Triangle (Changara-Ntcheu/Dedza) Transect; W3/Bil: Malawi, Tanzania, Zimbabwe, Eritrea, Ethiopia, Kenya, Sudan, Zambia, Lesotho **General Objective:** To improve profitability, resource use efficiency and benefit sharing equity (including of gender and the young) of intensive rainfed landscape through innovative, context-relevant sustainable land management (SLM) options (including integrated soil fertilizer management - ISFM) and female and male stakeholders' capacity for managing systems transition into sustainable intensification	**Outputs:** **(CIAT-1)** ISFM options tested on over 50 farmers (>50% women) (report); **(CIAT-2)** Data collected and ready for analysis (dataset); **(Bioversity-3)** Database created, data analyzed, data shared and made public (dataset); **(IWMI-4)** Water management options identified for testing (report); **(ICRISAT-5)** 1 guide for dryland systems research on implementing IPs (report); 1 tool on assessing the influence of IPs on livelihoods and resilience (IP evaluation report for Changara); **(ICRISAT-6)** Feedback on food feed crop demonstrations (report); **(ILRI-7)** 1 draft report from Zimbabwe's Mashonaland East Province defining research entry points and outlining the effect of integrated crop-livestock interventions on soil, crop, livestock productivity and household income and livelihoods; **(ILRI-8)** Protocol for setting up, facilitating and documenting gender-balanced IPs (protocol); Stakeholder, institutions and network analysis (gender-disaggregated report); technical workshop	2,478.819

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)
		Specific Objectives: To create databases of (i) all the collected data (ii) current SLM (including ISFM) practices, (iii) integrated interventions to be tested by consulting multiple female and male stakeholders (farmers, NARS, NGOs, etc.); To identify and characterize typical smallholder farm types regarding resource endowments and socio-economic and cultural (gender) context; To identify SLM (incl. ISFM) options being best fit to, or highly adopted by, smallholder groups (including gender differentiation); To identify social, cultural, economic and ecological determinants of SLM/ISFM adoptions, including the gaining of clarity on why female and male farmers feel reluctant to adopt some technologies; thereby to develop gendered, group-specific strategies for facilitating SLM/ISFM transfers and packaging up- and out-scaling model; To identify critical areas of soil loss that require prior management intervention by model the spatial distribution of spatially-explicit soil erosion modeling; To identify entry points for introducing agricultural water management options, including potential for scaling out based on the gender-disaggregated baselines that were conducted in 2014; To identify institutional set up of the IP functioning as mechanisms for facilitating transitions in farming systems and enhance capacities of gender-responsive farmer-extension-NARs in the process; To identify/revise development pathways and associated high- potential value chains, barriers to and solutions for systems improvement in a participatory manner with female and male stakeholders; To develop and use tools for	convened to set up the IPs, including gender sensitive development pathways, identification and monitoring challenges and solutions, mode of IP operation and communications, flexible organizational structure(report); 1 report on the functioning of innovation platforms crops x livestock systems in four districts of Zimbabwe; **(ILRI-9)** Sites for piloting interventions assessed (report); **(CIAT-1)** Guidance and report on ISFM technology implementation; Training (at least 100 households about 50% of them women) on integrated soil fertility management (report); **(CIAT-2)** One report on determinants of technology adoption across gender groups; 5 extension agents, 3 development workers and 2 stakeholders trained on processes of better targeting households for improved technology adoption (report); Socio-ecological typology of households developed (report); **(Bioversity-3)** Agro-biodiversity (ABD) and Dietary Diversity (DD) assessment guideline/manual produced; Gender differences in the use, access, management and control of ADB identified and documented; **(IWMI-4)** Documentation of farmer responses to water management options; Gender differences in extension, adoption and intervention preferences tested (report); **(ICRISAT-5)** Stakeholders engaged in reconnaissance survey to explore market opportunities (report); 1 Comprehensive analysis on using IPs for strengthening capacity and building resilience, exploring local development pathways and associated value chains, resilience levels and farm profiles, IP process and achievements, women involved at IP forums, challenges and opportunities for women and men farmers to engage in IPs identified, capacity development priorities for women and men farmers (report); 2 IPs functional, with buy in from stakeholders at local, district and provincial levels (1 IP legalized as association; 1 IP evaluation report for Manica); 1 data set (Farm typologies and associated resilience levels); **(ICRISAT-6)** Review and stakeholder feedback to inform 2015/16 crops and trial design (report); **(ILRI-8)** Stakeholders engaged in reconnaissance survey to explore market opportunities, resource bottlenecks, capacity development needs and options to address these (report); Quick wins that respond to stakeholder priorities identified and used to inform technology options and structures for knowledge sharing (report); Participatory M@E framework for assessing systems change (report); Women engaged at IP	

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)
		improving self-organization and multi-level learning in and across IPs; Generate gendered lessons and data with farmers and extension services through trials that demonstrate yields of different food and fodder crops and forage legumes, and feeding experiments to women and men; Enhance partner capacity on gender-responsive crop x livestock integration; Pilot key interventions (gender-responsive) with partners (dry season feeding, improve quality of crop residues, formulate better rations); **Methods:** Landscape-level narrative-based analysis (including context-option matrix characterization); Gendered household/farm typology analysis; Adoption analysis methods (multivariate statistics, participatory appraisals, gender-differentiated); Landscape-level soil erosion modelling; Gendered stakeholder network analysis; Gender-mainstreamed integrated system modelling (e.g. multi-agent system and bio-economic models TBD); Gender-mainstreamed value chain analysis; On-farm trials/experiments **Gender dimension:** To identify the differential challenges faced by female, male farmers and youths in accessing agricultural extension; To identify entry points for gendered agricultural extension approaches, which address the specific requirements of female and male farmers as well as youths.	forums, challenges and opportunities for women and men farmers to engage in IPs and associated value chains identified, capacity development designed for women and men farmers (report); 2 IPs functional, with buy in from stakeholders at local, district and provincial levels (report); 2 journal papers drafted; 1 book chapter drafted; **(ILRI-9)** 1 report short-listing best-bet wet/dry season feed formulations and interventions that will be further evaluated in 2016; 1 report defining gender relationships (roles and priorities) in intra-household decision-making for different typologies of Chinyanja crop-livestock farmers - with particular reference to commercial beef and small stock production; Number of options piloted and capacitation of NARS in Chinyanja Triangle to customize SI options to local conditions (gender-disaggregated report); **(CIAT-1)** Performances of five beans varieties in relation to inputs and management practices tested with over 200 farmers evaluated and reported (2015); Constraints to and opportunities for technology adoption understood and documented for out-scaling (2015); Over 100 households trained on weed and disease management (2015); **(CIAT-2)**; Over 30 extension agents and lead farmers trained on integrated landscape planning and management (2015); Women's needs and preferences related to varieties (crops, trees) and breeds evaluated and reported (2015); perceptions of gender groups about critical areas of land degradation and corresponding 2-3 contextual best-bet SLM practices identified and reported (2015); **(ILRI-4)** Base line survey (2015); 1 report on identification of entry in crops x livestock integration in the Chinyanja Triangle (Ncheu/Dedza, Angonia and Changara) (2015); 1 report on use of simulation modeling to identify priority interventions in mixed crops - livestock systems (using dairy as an example) in Zimbabwe (2015); 1 report on analysis of whole farm activities and how they affect household income and livelihoods in Zimbabwe based on data from 80 farmers (2015); 2 Draft reports from Zimbabwe outlining the effect of integrated crop-livestock interventions on soil, crop, livestock productivity and household income and livelihoods from 480 households in Zimbabwe (Mashonaland and Matabeleland) and defining research entry points (2015); 1 report that identifies technical and institutional interventions that improve farmer's access to inputs, services and markets in in four target districts of	

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)
			Zimbabwe (covering targeted value chains of maize, sorghum, groundnut, and livestock value chains) (2015); 1 report on the functioning of innovation platforms crops x livestock systems in four districts of Zimbabwe (2015); 3 communities and 12 individual forage seed multiplication plots (best-bet interventions test) established in 2 districts of Mashonaland East Province (Zimbabwe) (2015); 200 Farmers trained in crops and livestock marketing, winter feeding strategies and application of conservation agriculture (CA) practices; 20 research and extension staff trained crops-livestock integration for enhanced food and feed production, crops and livestock marketing, winter feeding strategies, application CACA practices, on farm research methodologies, research methods (2015); At least 2 crop and 2 livestock profitable value chains managed by women/youth and which employ SI options identified (2015); **(ICARDA-10)** 1 regional gender training workshop with at least 15 participants (2015); **(ICARDA-21)** Wheat Value Chain analysed in Sudan and Ethiopia; 1 CA package developed; 1 Crop-Rotation Package developed; 4,500 farmers and stakeholders (at least 30% women) (progressive farmers, extension agents local input providers and NGOs) involved in technology promotion and capacity development (Farmers Field Schools: pre-season, in-season and post-season); 2 PhD (NRM, breeding) and 2 MSc enrolled in Sudan, Ethiopia, Zimbabwe (2015); **(ICARDA-22)** 1 Publication on optimizing different agricultural management practices for increasing crop yield of selected crop varieties; At least 1 peer reviewed publication (2015); 1 Publication on proper livestock management (2015); 1 climate change adaptation workshop for NARS (5-10 participants) (2015); 1 climate change adaptation workshop including farmers from the watershed (2015); 1 SWAT modelling workshop for NARS (1-2 participants) (2015); 2 PhD student (NARS employee) enrolled at University Vienna (2015); 10 landless women trained in making fuel saving stoves; **(ICARDA-23)** At least 1 malt barley, 1 food barley and 1 faba bean cultivar identified for main season production and seed multiplied (farmer and industry preferred) (2015); At least one food barley variety identified for small rain season (2015); At least 100 farmers (40 women) and development agents trained in improved crop technologies in the 4 Africa Rising action sites (2015);	

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)
			(ICARDA-24) Development of at least 4 supplementary packages to improve the nutritive value of crop residues (2015); At least 1 publication on crop residue utilization in mixed crop-livestock systems in Ethiopia (2015); At least 2 publications on supplementation options to improve nutrition of small ruminants (2015); At least 200 smallholder farmers (15% women) receive understanding and awareness of the impacts of improved crop residue quality and ration supplementation (2015) through 8 field demonstrations; **(ICARDA-25)** Clean sets of instruments and farm HH level data on adoption and impact of improved food legume technologies (2015); 1 MSc Thesis Report (2015); 1 report on adoption and impact of food legume technologies (2015); Clean sets of instruments and farm HH level data on economic impact of market facilities (2015); 1 MSc female and 1 PhD received a scholarship; 12 researchers from the NARS trained on CAPI based data collection; 10 market shades, water troughs, and scales established in 10 local markets; 12 researchers from the NARS trained on CAPI based data collection; Gender differentials in adoption and impact of food legume technologies documented and communicated to research, development, and policy makers; **Outcomes:** **(CIAT-1)** At least 100 local farmers (50% Women) become aware of the benefits of ISFM options and understood relevant agronomic practices that can increase yield (report); **(CIAT-2)** 3 local partners devise improved adoption and dissemination approaches (gender-disaggregated report); **(Bioversity-3)** CGIAR centers and local partners (50-100 female and male farmers and 3-5 Institutions) identify entry points: effective crop diversification pathways for improving household dietary quality and income and, improved system productivity and resilience (report); Capacity of partners/stakeholders in assessing ADB and DD enhanced through adoption and use of the manual/guidelines (report); **(IWMI-4)** Farmers and extension using agricultural water management findings (gender-disaggregated report); 2 Msc Students on gender and institutions, Extension officials in Ntcheu have a better gender understanding; **(ICRISAT-5)** National partners and NGOs buy in to further develop and promote the concept of enhancing resilience and profitability through stakeholder engagement and Innovation Platform	

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)
			approaches and design technology packages and interventions for scaling out (gender-disaggregated IP workshop report); **(ICRISAT-6)** National partners promote food feed crops as critical adaptation in drought prone environments of Mozambique; **(ILRI-7)** Better targeting of integrated crop-livestock research activities by R&D teams (report); **(ILRI-8)** Improved understanding on stakeholders and networks, leverage points in the system, market opportunities and value chains, associated gaps in service delivery (gender-disaggregated report); **(ILRI-9)** Adoption of appropriate SI options for crop-livestock systems by 250-core farmers in Mashonaland, Zimbabwe (report); **(ILRI-4)** Entry points used for interventions by NARS and development partners in Chinyanja Triangle to better target improved intensification options for at least 1000 HH (2015); Value chain members understand priority interventions for their respective value chains and share them with Government and NGO community to better target development activities in Zimbabwe and other countries in the Chinyanja triangle (2015); Adoption of appropriate Sustainable Intensification (SI) options for crop-livestock systems by 480 core farmers in Zimbabwe; NARS capacity developed in Chinyanja Triangle to customize the SI options to local conditions (2015); **(ICARDA-10)** At least 10% Increase in the income of small-scale producers (200-500 HH per country) (2015); **(ICARDA-21)** 100% of target farmers adopt the wheat based technologies on 134,000 ha (2015); Wheat Seed System analyzed, developed and institutionalized in Sudan; Wheat productivity increased by 20% (2016); Beneficiaries income increased by 30% (2016); Project wheat based technologies promoted by target beneficiaries to 70,000 indirect beneficiaries in 2015; 1 similarity map within each partner country and 1 similarity map across partners countries; **(ICARDA-22)** Income opportunities for 10 young landless women generated; **(ICARDA-23)** About 50 farmers/Africa Rising site adopt/grow the selected crop varieties (2015); **(ICARDA-24)** At least 50 farmers undertake improved feeding strategies for their livestock (2015); **(ICARDA-25)** 15% Increase in adoption of improved food legume technologies, 10% Increase in farm productivity, 15% decline in the proportion of mono-cropping and 20% increase in market participationin Bale highlands among the sample population;	

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)
3.4	System Research: Irrigated Crop System interventions (testing, piloting and scaling up)	**Location:** **W3/Bil:** Eritrea, Ethiopia, Kenya, Sudan, Tanzania, Zambia, Zimbabwe, Lesotho **General objective:** To achieve sustainable increase of wheat productivity and production for enhanced food security, economic growth and poverty alleviation of smallholder farmers in irrigated farming systems in ESA region. **Specific objectives:** To increase on-farm wheat productivity and production for food security; To optimize the management of scarce natural resources; To enhance the capacity of the NARES to conduct needed research for development; to develop profitable and climate change-proof packages/models of tested and proven technology options; to facilitate improved institutions and policy environment for an accelerated scaling up of these technologies. **Methods:** Innovation platform development process; Food value chains analysis and development; community-based seed system analysis and assessment; agroecological similarity mapping, climate-smart integrated technology packages development; **Gender dimension:** NARS capacity developed to develop gender-responsive policies	**Outputs:** **(ICARDA-10)** 1 regional gender training workshop with at least 15 participants (2015);**(ICARDA-21)** Integrated Pest and Crop Management (IPCM) package (2015); 1 MSc enrolled in, Zimbabwe (2015); Short in country training (13 participants in each country - at least 30% women) on wheat production package for researchers and extensions (2015); 1 week travelling workshops Kenia, Tanzania, Zambia, Zimbabwe and Lesotho) in Ethiopia for 12 participants - at least 30% women (report); **Outcomes:** **(ICARDA-10)** At least 10% Increase in the income of small-scale producers (200-500 HH per country) (2015);	709.720

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)
		Research results of gender strategic research on gender-responsive extension services disseminated to researchers and practitioners through training; Women's empowerment through increase in knowledge and options in seed value chains;		

Table 3d. North Africa and West Asia - Cluster of Activities

Please note:

- Blue capacity development activities
- Orange indicates gender-targeted activities

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)
2.1	Research Support	Local Partners meetings, research site coordination, support to cross-cutting issues and to W3/Bilateral projects **Partnership**: **CRP-DS CG Centres:** ICARDA, IWMI, ICRISAT, ICRAF **NGOs/CBOs**: 5 **ARIs**: 1 **NARS**: 8 **Private Sector:** 2 **Government Department**: 6 **Academia**: 2 **International Center (Non-CG):** 2 **Development Projects**: 2 **Scientists**: 27	Annual report of the NAWA Flagship. 2 IRT meetings. Follow-up on the progress of the 2015 workplan across NAWA action sites Identify the gaps of capacity development and design/contribute to designing key activities: a training course will be organised on Integrated crop-livestock feeding in favourable and resilient agro-ecosystems (September 2015), Ad-Hoc meeting (May 2015) to discuss the organisation of an international advanced course on conservation agriculture that will be co-organised by IAMZ-Spain, ICARDA and FERT-France on April 4-9, 2016. Contribute to fund raising to strengthen research activities in the NAWA flagship Capacity building (training workshops at different level) on integrated, gendered systems analysis, research design and modelling (1 week in Tunisia, May 2015; 2 weeks in Cairo, August-September 2015) Organise online discussions between researchers on gender & youth research approaches, and on synthesising results on same research topics (norms, labour)	243.000
2.2	System Research: Agro-pastoral system interventions (testing, piloting and scaling up)	**Location:** **W1&2**: Béni Khedache-Sidi Bouzid (Tunisia); **W3/Bil**: Morocco, Algeria, Tunisia, Libya, Egypt, Sudan, Djibouti, Somalia, Yemen, Jordan, Palestine, Lebanon, Syria, Iraq, Oman, Iran, Turkey **General objective**: To improve	**Outputs:** **(ICARDA-3)** 1 draft of the Bioeconomic and or multi-agent model developed and discussed with stakeholders including women and youth (report); **(ICARDA-5)** Collect documentation on existing pastoral laws and codes from drylands in developing countries (bibliography); **(ICARDA-6)** Inventory of the already undertaken research works (papers, books, scientific reports, etc.) and studies related to impacts of soil and water conservation techniques finalized (report); **(ICARDA-8)** 60 ha of no-till barley, vetch and vetch-barley mixture at on-farm level with or without cactus-based alley cropping systems implemented in Zoghmar (report); 2 Local plants collected and their	932.865

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)
		agricultural livelihood assets and resilience in marginal drylands **Specific objectives**: To raise the awareness of major program's stakeholders (including policy decision-makers and development organizations) on importance of conserving agro-biodiversity, gender and youth equities and chances of out-scaling innovations; To identify potential options of technological (e.g. post-harvesting), economic (input/output markets' links) and institutional (community-based organizations) interventions to enhance impact; To assess possible effects climate change on household welfare and natural dryland resources (soil, water and biodiversity); To assess likely impacts of the policy, institutional and technological interventions on agricultural productivity, household welfare, gender and youth equity and livelihood system resilience in the face of unexpected climate and other global change; To identify optimal, relevant policy interventions regarding improving marginal dryland's livelihood assets, impact and resilience. **Methods:** Social-ecological context similarity analysis and mapping to guide data	Anthelmintic *in vitro* activity tested (report); **(ICARDA-1)** Report on the process of the innovation platform initiative catalysed through CRP-DS funding in 2014 which highlights key lessons learned and short term outcomes achieved; **(ICARDA-2)** 2 scientific papers on sheep and olive value chains submitted for publication; **(ICARDA-3)** 1 Model calibrated, Scenarios simulated/identified, and results analyzed (report); 1 scientific paper published; **(ICARDA-4)** Assessment report on soil and water conservation practices and natural resources management implemented by DG ACTA; Role of women and youth in degradation and conservation of natural resources analyzed, reported and used in the planning process (report); **(ICARDA-5)** 1 multi-stakeholders and decision makers (15 person) workshop on developing pastoral code for governing communal rangelands in Tunisia with emphasis on woman's role organized (report); **(ICARDA-6)** Report on 'Integrated impacts of soil and water conservation techniques' produced; 3 PhD students and 1 researcher involved in a 3-days workshop on the use of a watershed-based soil and water model and in research activities on the impacts of SWC (report); **(ICARDA-7)** Status and trends of agro-biodiversity and its threats assessed, monitored and reported; Impact of climate change on rangeland plant community evaluated using ecological modelling (report); Non-destructive technique for estimating rangeland vegetation cover and biomass developed (report); 2 factsheets of key rangeland species published on CRP DS website;3 scientific papers submitted for publication; **(ICARDA-8)** 60 ha under zero tillage system combined or not with alley cropping monitored and evaluated (report); Current feeding calendar and gaps for nutrient deficiency analyzed (report); 4 major nutrient deficiencies identified (report); Small ruminant Water footprint assessed in Zoghmar (report); Fattening practices monitored and evaluated (report); Ethno practices of the natural vegetation resources on health status assessed (report); In vitro anthelminthic potential of some herbal medicines studied, documented and distributed; Small ruminant flock management package fine-tuned, documented and published (booklet); Livestock management guidelines under low input production systems developed; The role of women and youth in livestock activities assessed and awareness raised on the need for better equity in sharing responsibilities and benefits (report); 3 PhD and 2 master students enrolled in livestock activities (report); 2 field days organized for 50 farmers (50% women); 1 farmer travelling workshop in connection with CANA-CLCA (at least 20 participants), held (report); 1 training course on CA for 20 farmers and extension agents held (report);	

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)
		sampling/collection and scaling-out; Farm-household surveys for building integrated, spatially explicit database for system analysis and modelling; Multivariate statistics analysis for identifying typology of smallholder agricultural livelihood systems (incl. socio-cultural system elements); Narrative-based human-environment system (HES) analysis of agricultural livelihood system dynamics (at two interlinked scales: farm and landscape) using both collected database and transaction analysis of female and male stakeholders; Bio-economic modelling; Multi-agent system modelling; Complementary use of bio-economic and multi-agent system models to generate future scenarios of land uses, livelihood outcomes in response to different policy, institutional and technological options/interventions; Comparative analysis of these generated scenarios for assessment trade-offs, synergies; Multi-stakeholder workshops for participatory appraisals of problems and risks, identification of scenarios and trade-offs, and options for coping with trade-offs. **Gender dimension:** To understand how vulnerabilities are different between men and women farmers (gender-explicit vulnerability);	**Outputs in 12 months (W3/Bil):** **(ICARDA-1)** 4 papers published in national and international journals (2015); 1 technician trained on Post-harvest marketing, packaging and transport (2015); **(ICARDA-2)** Ex-ante evaluation for Conservation Agriculture based technologies in CWANA, drafted (2015); Report and publication on Enhanced crop-livestock integration in CA through optimized stubble grazing strategies and increased fodder availability from forages or fodder shrubs.(2015); Site-specific conservation agriculture technology packages fine-tuned and disseminated among 200 famers for enhanced farm productivity (2015); 3 training courses (one for each target country) for farmers (100), technicians (20) and extension people (10) on zero-tillage practices and integrated crop –livestock under CA. (2015); 2 PhD and 2 BSc students enrolled (2015); **(ICARDA-7)** Site specific adaptation of water saving technology packages established in the three production systems (4 sites in 2 countries) to provide options for improved water use efficiency (2015); 1 training for 10 women on dairy processing and marketing (2015) organized; 4 technicians trained in Cost Benefit Analysis and Economics of Natural Resources Management for WLI technologies (2015); 5 technicians trained in post-harvest processing technologies (2015); At least 4 training courses held by National Partners involving 4 participants each (2015); **(ICARDA-11)** Improving productivity of animal feed resources in KRB in Karkheh River basin (2015); **(ICARDA-13)** Inception workshop organized involving the 3 participating countries (2015); Questionnaire survey developed in partnership with NARS (2015); 2 group training courses for 5 participants organized (2015); 2 factsheets on the main indigenous species published (2015); **(ICARDA-14)** New accessions of Triticum durum (2), Hordeum vulgare (7), and Aegilops (3) collected and conserved ex-situ in the National Gene Bank of Tunisia (2015); On-farm conservation of 5 durum and 2 barley landraces in 3 governorates of Tunisia involving 14 lead farmers (2015); 5 field days/meetings for farmers in Tunisia for the participatory selection and on-farm conservation (2015); At least 11 students trained in PGR conservation (2015); **(ICARDA-15)** 1 MSc and 3 PhD students enrolled (2015); **(ICARDA-16)** 1 Policy Briefs (2015); 2 ongoing Working papers (2015); 2 scientific papers submitted for publication (2015); **(ICARDA-18)** Baseline assessment report published and disseminated; Monitoring and evaluation plan designed; Capacity and needs assessment of the 17 CBOs carried out; 42 demonstration sites selected in the project area (10 micro catchment water harvesting systems, 20 demonstrations on conservation agriculture, two hydroponic pilot stations, 10 demonstrations on crop residues and agricultural by-products); 10 demonstrations	

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		To assist rural women and men in developing and acting on their own livelihood improvement options through collective action, based on improved understanding of roles of women and men in conserving agrobiodiversity; To support the elaboration of policies to offer opportunities to women and youth to participate in a self-determined manner in sustainable agricultural production conserving agro-diversity and in the post-harvest value chain.	for micro catchment water harvesting systems established in five locations and reported; 20 demonstrations of conservation agriculture established in 20 locations and reported; 2 hydroponic pilot stations established for intensive fodder production and reported; 10 crop residue and by-product piles in 10 locations established and reported; 30 training days held for the 51 CBO members; 51 learning exchange visits carried out (3 visits per CBO), covering learning aspects under ER 1, 2 and 3; 50 rainwater harvesting cisterns rehabilitated and constructed; 1 Evidence-based advocacy plan developed; Up to 4 short policy briefings published nationally and internationally; 2 days training course conducted, involving 15 members of the consortium and 34 representatives of the 17 CBOs; Four sets of multimedia case studies created and distributed nationally and internationally; 16 centralised training sessions (4 modules at 4 days each) implemented for 51 leading livestock holders from 17 CBOs and follow up support to implement best practices; 16 training sessions (4 modules at 4 days each) implemented in three different locations to cover a total of 450 livestock holders from the 17 CBOs and follow up support provided; 450 barns rehabilitated and equipped with necessary accessories; 4 lead livestock holders of the 17 CBOs provided with 68 rams; Farm log book-keeping kits distributed to 2,000 livestock holders; At least 40,000 colored ear tags distributed to 2,000 livestock holders; 17 CBOs and 450 livestock holders provided with basic tools for milk collection; 2,000 livestock holders received veterinary services through 1,440 visits; 10,000 copies of educational material distributed; Linkages to MoA and private service providers established; 2 model livestock field school farms established (one upgraded and one constructed); Cluster-based and participatory sheep and goat market system assessment (incl. gender analysis) conducted and reported; 4 dissemination workshops held on project technologies with the participation of ICARDA Country manager, CARE implementing teams, Livestock holders and decision makers (75 Participants for each workshop); Capacity and needs assessment of seven CBOs/SMEs/social enterprises conducted; 7 business plans developed; Capacity-development packages designed and delivered to each of the seven CBOs/SMEs/social enterprises; Value chain inputs provided to the seven CBOs/SMEs/social enterprises (potentially three SMEs and four CBOs); Customized training for 50 women on entrepreneurship and marketing conducted for each cluster; Business plans designed for 10 women groups; Small grants provided to two women groups; **(ICARDA-19)** 5 field days organized (2015); CA manual for Middle East developed (2015); Provide technical support and training for Palestinian research and	

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			extension staff including training seminars with at least 20% women (2015); Supply 50 CA manuals (2015). **Outcomes:** **(ICARDA-3)** Modeling work results used by decision makers to tackle the issue of trade-offs and to build appropriate strategies for sustainable development of dry areas and adaptation strategies to chocks (report); **(ICARDA-4)** National development agencies (DG ACTA and CRDAs) adapt their strategies for an enhanced efficiency to control natural resources degradation (report); Methodology to review and assess the impact of PRODESUD 1 experience and national program on soil and water adopted by stakeholders including IFAD, DG ACTA and Ministry of Agriculture (report); **(ICARDA-5)** Awareness on sustainable communal rangeland management and governance increased among all concerned stakeholders including agro-pastoralists, local authorities and national decision makers (report); **(ICARDA-6)** Water productivity in farmers' fields in Zoghmar site improved up to 15% (report); **(ICARDA-7)** Awareness about negative impact of climate change highlighted; More accurate, faster and non-destructive techniques developed for monitoring and assessing rangeland condition (2 manuals); **(ICARDA-8)** Land degradation and energy saving decreased up to 10% through the use of no-till practices and shrub/cactus planting (report); Feed and food availability in the site is sustainably increased up to 10% by planting shrub/cactus (report); Crop yield and WUE (water use efficiency) improved by 10%, soil fertility restoration increased by 0,2% yearly, fuel consumption decreased by 20% in farmers' fields in Zoghmar (report); **(ICARDA-1)** NARS capacity increased to advise their government on water scarcity in Agriculture (2015); Adoption by Tunisian Government of science based water management options on utilizing scares water resources (2015); **(ICARDA-7)** NARS capacities built to estimate future climate impacts on production (2015); Enhanced livelihood of WLI targeted community members (2015); Women groups in target countries are empowered by adopting WLI recommended value chain approaches for cheese production (2015); **(ICARDA-16):** Increased knowledge of the Extension Services (2015); **(ICARDA-18)** At least 75% of male and female livestock holders have access to water (2015); The size of grazing land under collective management has increased by 25% (2015); At least 50% of male and female livestock holders have sustainably increased their fodder production by 15% (2015); At least 75% of male and female livestock holders have access to veterinary and extension services (2015); At least 50% of male and female livestock holders have	

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			increased their dairy production by at least 15% (2015); Abortion and death rate of newly born sheep and goats has decreased by at least 20% (2015); At least 75% of male and female livestock holders have access to livestock market information (2015); 7 CBOs/SMEs/social enterprises are applying their business plans and have increased their net income by at least 10% (2015); Improved capacity of 7 CBOs/SMEs/social enterprises to provide tailor made marketing services, access to relevant local and national markets and ability to appropriately respond to market opportunities (2015); At least 10 women groups are applying their business plans and have increased their net income by at least 10% (2015); High yielding vetch, wheat and barley seeds adopted and planted in 200 hectares (2015); **(ICARDA-19)** Greater awareness and knowledge of ZT, early sowing and CA, leading to improvements in crop productivity, profitability, and reduced soil degradation in Palestine (2015).	
2.3	System Research: Rainfed System interventions (testing, piloting and scaling up)	**Location:** **W1&2**: Saiss (Morocco); **W3/Bil**: Mauritania, Morocco, Algeria, Tunisia, Libya, Egypt, Sudan, Djibouti, Somalia, Yemen, Jordan, Palestine, Lebanon, Syria, Iraq, Oman **General objective:** To improve the productivity, economic-ecological efficiency and stability of the intensive rain-fed farming systems in North Africa by intensification and diversification options **Specific objectives:** To assess the effects of different conservation agricultural technologies (ranging from zero/minimal tillage, soil/fertilizer nutrient management, water management to improved seeds and IPM) on crop productivity and resource use efficiency; To establish baseline settings of the socio-	**Outputs:** **(ICARDA-1)** 1 Survey (database); **(ICARDA-2)** 3 on-farm demonstrations established on conservation agriculture on 6 ha (report); **(ICARDA-3)** 2 on-farm trials with the introduction of food legume crops and phosphorus fertilizer management plants installed and managed (report); 1 field visit to trials on food legumes and soil fertility held for 30-40 targeted farmers (report); **(ICARDA-4)** 3 Trials on IPM options established and data collected on disease, insect pests, weeds and effectiveness of the interventions (report); **(ICARDA-5)** 6 trials established on irrigation management of different crops (wheat, olive trees, potatoes, onion) and data collected and 1 field visit held for 40-60 targeted farmers (report); **(ICARDA-6)** Analysis of water productivity of meat and milk production in cattle (partial data)**; (ICARDA-9)** Data collected on the differentiated impacts of labor opportunities on gender in the action site collected and analysed (report); **(ICARDA-1)** 1 Survey database completed (report); **(ICARDA-2)** 3 on-farm demonstration trials established and implemented and data on biomass, soil characteristics collected (report); **(ICARDA-3)** Best bet package of phosphorus management and improved varieties demonstrated to 30-40 farmers and technicians (report); **(ICARDA-4)** At least 2 IPM options for wheat and faba bean be developed (report); About 20-30% yield increase due to applications of IPM options on farm and on-station (report); **(ICARDA-5)** 2 on-farm demonstration trials implemented in 2 sites on the response of wheat to supplemental irrigation package and data collected and analyzed (report); 1 field day involving 30-40 farmers (report); 1 experiment implemented on the effect of different levels of supplemental irrigation on different varieties/lines of durum wheat and data collected and analyzed (report); 3 trials	2,252.242

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)
		economic and biophysical performance indicators for further integrated impact assessments of interventions inclusive of all stakeholders; To evaluate the effectiveness of social group-specific knowledge on the improvement of collective management of tree (olive) resources for enhance farm system's stability and viability in the face of water scarcity; To determine the causes of system vulnerability and local coping mechanisms, and evaluate the feasibility of technologies, and monitor their adoption/Continue to monitor the development of the learning alliances initiated in all of the sites in 2013/14, which legitimated and defined the contextual entry point for an innovation platform to be initiated within each site; To identify the most optimal technology options (of intensification and/or diversification strategy) by means of bio-economic modelling, and socially, economically feasible pathways of out- and up-scaling of the defined options; To identify relevant human actors from the learning alliance for creating more gender-balanced working committees for facilitating the delivery of technological and institutional innovation; Establishment of working innovation platforms at sub-national	implemented on Deficit SI of olive trees (1), potatoes (1) and onion (1) in 0.25 ha each and data collected and analyzed (Report); **(ICARDA-6)** Report on water use in cattle production and on meat and milk water productivities; **(ICARDA-7)** 1 innovation platform established (report); Specific needs for technology, best practice, social or institutional intervention clearly identified by members within the agricultural innovation platform (report); New and more contemporary forms of social and economic organization piloted, in line with the Green Morocco Plan, and aimed at engagement in the areas of (i) effective access to technical information and improved primary inputs, (ii) cooperative options for more profitable marketing, reduction in post-harvest loss and sustainable natural resource management (report); **(ICARDA-8)** Literature review on bio-economic modeling completed and characterization report produced; Data and information gaps identified and primary and secondary data collected (Report); Simulation models to fill the gap and shared with all stakeholders for comments generated (report); **(ICARDA-9)** 1 report of findings and way forward agreed on by stakeholders; 1 workshop held for 15 participants with the relevant development organizations, policy makers, and NGOs to relay findings and co-identify means to address gender wage gap in agriculture (report); Gender wage gap in agricultural labor identified and it is expected that 3-5 development agencies and/or NGOs and 5 policy-makers be sensitized on addressing the gender wage gap in agricultural labor of Morocco (report); **Outputs in 12 months (W3/Bil):** **(ICARDA-1)** 2 papers published in national and international journals (2015); Climate change model downscaling (2015); Adaptation, calibration and validation of regional models using local datasets and international tools (FAO-Aquacrop, USDA/TA&M SWAT and USDA/WSU CropSyst) – 2015; 1 technician trained on Post-harvest marketing, packaging and transport (2015); **(ICARDA-3)** 3 value chains analyzed (chickpea, lentil, faba bean) (2015); Baseline data for 1,500 HH analyzed (2015); 3 Village Based Seed Enterprises (VBSE) - 20% women established and operational (2015); Final product (Faba Bean processing into "Bisara") processed, packaged and tested for marketing (2015); 3 agronomic packages for food legume production tested and validated at community level (2015); 5 Innovation Platforms - 20% women fully operational (2015); 4 PhD initiated and 10 MSc completed – 20% women (2015). 2 ICT based knowledge sharing platform at community level developed (2015); **(ICARDA-4)** 1 scientific paper published (2015); 250 target beneficiaries trained on CA practices (2015) 3 PhD	

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		level in five sites across the considered countries **Methods:** Participatory process of development of innovation platforms for promoting sustainable intensification and/or diversification; Landscape-level narrative-based system analysis of favourable farming systems; Social-economic, agronomic data collection; Multivariate statistical analysis for defining farm-household typology (incl. socio-cultural system elements/institutions); Crop simulation modelling (select one among available model and calibrate it); Bio-economic modelling; Model-based ex-ante assessments of intensification options (technical, policy and institutional aspects); Multi-stakeholder participatory workshops **Gender dimension:** To measure and understand underlying reasons regarding gender wage gaps in agricultural labor; To train women and men farmers for (i) improving their understanding of wheat production issues outside of their direct contribution to the wheat production chain, (ii) allowing them to pass on the knowledge to other women such female farm workers, and (iii) fulfilling non-traditional roles in	theses initiated (2015); **(ICARDA-5)** Data set on water application, soil moisture, crop growth and development reported (2015); Guidelines for the use of supplemental irrigation developed (2015); 25 to 30 farmers, technicians and engineers trained during 2 field days through on the job training (2015); 4-5 engineers (50% men and 50% women) trained on supplemental irrigation management (2015); **(ICARDA-6)** 3 new models of low cost zero tillage drill prototyped and manufactured with the private sector (2015); 5000 stakeholders aware of CA (2015); **(ICARDA-7)** Site specific adaptation of water saving technology packages established in the 3 production systems (5 sites in 3 countries) to provide options for improved water use efficiency (2015); 1 training session for 25 women on dairy processing and marketing (2015); 6 technicians trained in Cost Benefit Analysis and Economics of Natural Resources Management for WLI technologies (2015); 11 technicians trained in post-harvest processing technologies (2015); At least 7 training courses held by National Partners involving 7 participants each (2015); **(ICARDA-11)** Genetic improvement of winter barley for cold and drought environments, durum wheat for cold and mild-cold drylands, bread wheat for development of drought tolerant and yellow rust resistant varieties adapted to dryland in Iran (2015); Development and application of physiological and biochemical indices for screening cold and drought tolerant chickpea landraces, cold and Ascochyta blight tolerant chickpea cultivars for autumn planting in Highlands in Iran (2015); Improving forage legumes and associated production technologies for winter planting in cold highlands in Iran (2015); Development of high yielding spring wheat cultivars tolerant to terminal drought and heat stresses in irrigated southern warm and dry zones (2015); Development and production of salt tolerant wheat varieties (2015); Development of pre-breeding materials for resistance to Ascochyta blight and Fusarium wilt in chickpea and lentil resistance to fusarium wilt in lentil (2015); Evaluation and development of pre-breeding Wheat materials for resistance to Wheat Rust (2015); 2 workshops (Innovation Platform and Sustainable intensification) 25 participants each. (2015); 6 field days for 120 farmers (2015); **(ICARDA-12)** At least 8 accessions of forage and pasture legumes identified as potential cover crop species (2015); 1 MSc student enrolled (2015); **(ICARDA-14)** ~25 local landraces of faba bean collected for ex-situ conservation and at least 70 accessions of local landraces of faba bean will be deployed for on-farm conservation and farmers participatory on-farm conservation (2015); 4 field day for farmers in Morocco for the participatory selection and on-farm conservation (2015); 3 MSc students (1 women) completed their thesis (2015); **(ICARDA-15)** 1 MSc and 3 PhD	

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		wheat production with improved techniques	students enrolled (2015); **(ICARDA-19)** 10 ZT farmer demonstrations in Jenin and 9 in Tubas – completed (2015); 14 field days organized (2015); Training seminars in Jenin completed (2015); CA manual for Middle East (2015); Supply 50 CA manuals (2015); **(ICARDA-20)** 1 improved production package with several technologies adapted to rainfed conditions disseminated in four pilot demonstration sites in Morocco (Saiss) (2015); 4 pilot demonstrations implemented in farmers' fields in Meknes area (2015); 1000 farmers, technicians and extension agents (20% women) exposed each year to new technologies through various methods of dissemination (farmers' fields schools, field days, national travelling workshop…etc.); 2 extension agents trained under ToT program on wheat production platform approach; 2 Young agricultural scientists trained in 2015 in specific topics of wheat technologies and improvement. **Outcomes:** **(ICARDA-2)** Most of the 60 targeted farmers adopt introduced conservation agriculture package, and increase in awareness on diversification and crop rotation (report); **(ICARDA-4)** At least 50 farmers apply IPM technology (report); **(ICARDA-5)** At least 60 farmers apply supplemental irrigation packages developed by the program on wheat (report); **(ICARDA-9)** Awareness of relevant development agencies, NGOs and policy makers rose (report); **(ICARDA-1)** NARS capacity increased to advise their government on water scarcity in Agriculture (2015); Adoption by Tunisian Government of science based water management options on utilizing scares water resources developed by the project (2015); **(ICARDA-3)** 3,000 farmers (on 10,000 ha) – 20% women - use the packages developed to enhance food legumes in the wheat based systems in Morocco (2015); 5,000 farmers' capacities (20% women) are improved in enhancing food legume production in wheat based systems (2015); **(ICARDA-5)** Guidelines for the use of supplemental irrigation adopted at the governorate level (Khemis Miliana); **(ICARDA-6)** 500 farmers tested and adopted CA options with an increase of production by 30% and reduction of fuel consumption of 40% and related 15% increased income (2015); Increase in CA area by 6,000 hectares (2015); Government provides subsidies to farmers to purchase ZT drill (2015); **(ICARDA-19)** Greater awareness and knowledge of ZT, early sowing and CA, leading to improvements in crop productivity, profitability, and reduced soil degradation in Palestine (2015); **(ICARDA-20)** 150 farmers in 2015 adopted improved wheat production packages with average on-farm yields increased by 10%; Increased knowledge of the Extension Services (2015).	
2.4	System	**Location:**	**Outputs:**	1,242.634

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)
	Research: Irrigated crop System interventions (testing, piloting and scaling up)	**W1&2**: Nile Delta (Egypt); **W3/Bil**: Syria, Lebanon, Palestine, Jordan, Iraq, Yemen, Egypt, Tunisia, Algeria, Yemen, Iran, Morocco, Turkey **General objective:** To improve household welfare, its stability and equity, and to protect soil-water resources from degradation in irrigated farming systems in North Africa dryland, and to provide science-based support to policy decision-making towards achieving this development goal. **Specific objectives:** To assess livestock (esp. buffalos) production gaps (current productivity compared to potential) and opportunity for reducing the gaps; To assess economic-ecological efficiency and productivity induced by different technological options (e.g. water-saving irrigation, groundwater water uses, new planting options, mechanized raised-bed planting, soil amendments for minimizing salinity); To evaluate farms' adoption of these technological options and key social, cultural, human capacity, economic and policy/institutional drivers of adoption; To establish baseline data on the socio-economic and biophysical indicators for further integrated impact	**(ICARDA-1)** Monitoring process in place (report); 1 survey on production systems developed with collection of 25 samples (report); **(ICARDA-2)** 2 raisedbed machines purchased and delivered (report); Implementation of 50 demonstration fields targeting a minimum of 150 farmers (report); 2 Faba bean varieties with high yield and pest resistance identified (2 elite lines each of characteristics); new pesticide for 1 IPM option and 2 elite lines each of wheat with high yield and pest resistance identified (report); **(ICARDA-4)** 1 interim report produced on salt dynamics under contrasting irrigation and cultivation practices; At least 20 field trails of winter season implemented (data collected); **(ICARDA-6)** Comprehensive analysis of production systems, livelihood opportunities and constraints produced (report); Relevant data collected (dataset); **(ICARDA-7)** Data analysed and workshop presented on gender-specific needs in extension advice for integration into NARS (ARC) programming (report); **(ICARDA-1)** Data collected and 50 samples on production systems analysed (report); 1 report on the role of livestock in Nile delta farming systems; The role of women in terms of time and local knowledge in milk processing in Nile delta identified and reported; 10 farmers trained on integrated crops livestock system approach (report); **(ICARDA-2)** 1 report on adoption of mechanized raisedbed technology includes yield and water consumption comparing to the traditional farmer practices; 1 brochure on mechanized raisedbed implementation in Nile Delta developed and distributed to at least 200 recipients (farmers and technicians); Report on the role of women in scaling out and adopting of new farming systems produced; 50 farmers and 5 extensionists trained on raisedbed planting (report); 10 farmers trained in fababean cultivation under raisedbed and IPM technologies (report); 10 farmers Trained in wheat cultivation under raisedbed and IPM technology (report); **(IWMI-3)** Technical report on the use of shallow ground water in the Nile Delta (GIS analysis of well density in the project area); Gender dimensions will be identified and reported through the field work for future follow up; At least 2 master students trained on the field surveys (report); **(ICARDA-4)** 3-5 biophysical scientists involved in the project include gender-differentiated impact analysis in their technology development (Report); 15 farmers trained on the new proposed technologies (report); **(ICARDA-5)** A report on entry points for an innovation platform identified in 2014 are better articulated and substantiated through evidence (qualitative and quantitative); 1 innovation platform is struck; at least 1 funding proposal is prepared and submitted to national and international sources in order to support the platform (report); **(ICARDA-6)** 1 baseline survey report; 1 report on climate change historical impact on agriculture in the Nile delta; 1 report on climate change	

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		assessments of policy-technological interventions as well as of climate change; To develop capacity of farmers and extension services in efficient, flexible uses of improved technologies in adapting to climate change; To establishment of innovation platforms at sub-national level for promoting the out-and up-scaling of innovations; **Methods:** Participatory (multi-stakeholders) process of development of innovation platforms for promoting sustainable intensification; Landscape-level narrative-based system analysis of agricultural system analysis (incl. socio-cultural system elements); Social-economic, agronomic data collection; GIS analysis of well density; Field-based soil degradation assessment; Hydrological analysis of shallow water dynamics; Multi-stakeholder participatory workshops **Gender dimension:** To understand the role of gender differences in benefitting from agricultural innovation (technological, social, and institutional) in irrigated areas, and how socio-economic, political-legal and cultural systems determine them; To improve policies, development interventions and	future impact on agriculture in the Nile delta;10 stakeholders trained on the developed climate change adaptation strategies for Nile Delta (report); Gender disaggregated data collected (dataset); Biophysical scientists involved in the project include gender-differentiated impact analysis in their technology development (report); **(ICARDA-7)** Increased awareness of 3-5 policy-makers, 60 extension agents, and other relevant officials on role that gender has in innovation adaption and adoption in irrigated agriculture through agricultural extension (workshop report); At least 2 students trained on qualitative research in examining gender issues in irrigated agriculture (report); 1 workshop on perceptions and strategies to cope with climate change held with at least 50 farmers and stakeholders (report); 1 workshop to present findings to the national policy makers (report); 2 follow up workshop on gender empowerment through innovations in irrigated agriculture held with policy makers, extension agents and other relevant officials along with media presence (report); 1 training on participatory facilitation provided to all national focal points (report); **Outputs in 12 months (W3/Bil):** **(ICARDA-1)** 2 papers published in national and international journals (2015); Climate change model downscaling (2015); Adaptation, calibration and validation of regional models using local datasets and international tools (FAO-Aquacrop, USDA/TA&M SWAT and USDA/WSU CropSyst) (2015); 2 technicians trained on Post-harvest marketing, packaging and transport (2015); **(ICARDA-2)** Resource use efficiency and profitability (2015); 2 BSc students enrolled (2015); **(ICARDA-5)** Data set on water application, soil moisture, crop growth and development reported (2015); Guidelines for the use of supplemental irrigation developed (2015); 25 to 30 farmers, technicians and engineers trained during 2 field days through on the job training (2015); 4-5 engineers (50% men and 50% women) trained on supplemental irrigation management (2015); **(ICARDA-7)** Site specific adaptation of water saving technology packages established in the 3 production systems (4 sites in 2 countries) to provide options for improved water use efficiency (2015); 4 technicians trained in Cost Benefit Analysis and Economics of Natural Resources Management for WLI technologies (2015); 5 technicians trained in post-harvest processing technologies (2015); At least 4 training courses held by National Partners involving 4 participants each (2015); **(ICARDA-8**) Literature review and technical report about: Geoinformatics and modern technology for more sustainable agriculture management to mitigate the current and potential climate change impact (Report); Report on year calibrated AquaCrop & CROPWAT models for	

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)
		agricultural extension services on the basis of this understanding;	crop-water function and productivity simulation under different weather conditions in three agro-ecological zones (AEZs); Report on calibrated and validated models for crop-water functions, irrigation scheduling, and agriculture management; 1 training course for the benefit of 25 participants (20% are female) from 10 countries held on the topic "Farm management strategies to improve crop-water productivity using AquaCrop"; 60 trained farmers and agriculture engineers on field management (4 field days); 8 NARS researchers trained on soil profiling and sampling; Report on the identification of the proper irrigation management and planting methods for recent wheat varieties in old lands; **(ICARDA-9**) Detailed technical report on saline soil management (2015); Technical report on water and salts balance at meso scale (2015); Soil amendments package to combat salinity (2015); 25 junior researchers and extension officers trained on the management of salinity (2015); 2 training programs organized for 40 farmers (2015); 1 PhD and 6 Masters students (2 women) enrolled (2015); Report on the Role of women in water resources management; **(ICARDA-10)** 1 regional gender training workshop with at least 15 participants (2015); **(ICARDA-11)** Integration of soil and water-related factors to sustain crop production in Honam subcatchment of Karkheh River Basin; **(ICARDA-12)** 1 MSc student enrolled (2015); At least 8 accessions of forage and pasture legumes identified as potential cover crop species (2015); **(ICARDA-15)** 1 MSc and 3 PhD students enrolled (2015); **(ICARDA-16)** 2 ongoing Working papers (2015); 1 Methodological Guideline Report on "Approaches to Total Factor Productivity (TFP) Measurements in the Agriculture Economy" used as supporting and reference material for the Agricultural Economics Students at Zagazig University – Egypt (2015); 1 scientific papers submitted for publication (2015); **(ICARDA-20)** 1 improved production package under irrigated conditions disseminated to increase and stabilize wheat yield in at least 200 (2015) farmers' fields in Egypt (Dakahlia); 3 trials established in farmers' fields under saline conditions to customize improved options for wheat yield intensification under marginal irrigated conditions; 1-2 promising wheat lines released for salinity tolerance; at least 200 demonstrations in farmers' fields created; 2000 farmers, technicians and extension agents (20% women) exposed each year to new technologies through various methods of dissemination (farmers' fields schools, field days, national travelling workshop…etc.); 4 Young agricultural scientists trained in 2015 in specific topics of wheat technologies and improvement; **Outcomes:**	

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)
			(ICARDA-1); 10 farmers involved in the project adopt the recommendation on livestock role in the farming system and increase their profit up to 15% as compared to baseline data (report); **(ICARDA-2)** At least 300 farmers in the Nile Delta have adopted the raisedbed technology (report); 300 farmers adopting proposed technologies receive the following benefits: crop yields increased by 20%, faba bean yields increased by 30%, pesticides costs are reduced up to 25%, wheat yield gaps reduced by 20%, irrigation water saved by 20% (report); **(ICARDA-4)** Information generated on salt dynamics on maintaining the optimum depths of drains adopted by decision makers (report); 50 farmers involved in field demonstration days, acquired knowledge on the new proposed technologies (report); **(ICARDA-6)** National partners use the results of livelihood and production systems analysis in their formulation of options to address constraints (report); Coping mechanisms for system vulnerability are adopted by decision makers (report); **(ICARDA-7)** 3-5 decision-makers sensitized and engaged in dialogue on gender empowerment approaches in irrigated agriculture (report); NARS (ARC) adopts identified gender empowerment approaches (report); **(ICARDA-1)** NARS capacity increased to advise their government on water scarcity in Agriculture (2015); Adoption by Tunisian Government of science based water management options on utilizing scares water resources developed by the project (2015); **(ICARDA-5)** Guidelines for the use of supplemental irrigation adopted at the governorate level (Khemis Miliana); **(ICARDA-7)** Palestinian Policy Makers adopt WLI recommendation for water shed design (2015); Women groups in target countries are empowered by adopting WLI recommended value chain approaches for cheese production (2015); **(ICARDA-8)** Expected increase of farmers' income by minimum 5% and water productivity by 10% thanks to integrated package for better on-farm management to the selected and tested wheat varieties (2015); **(ICARDA-9**) Improved equity of water distribution on 400 feddan (2015); Improved water and salt management in the aquaculture farms (2015); Soil amendments adopted on 50 feddan (2015); **(ICARDA-10)** At least 10% increase in the income of small-scale producers, 200-500 HH per country (2015); **(ICARDA-12)** Enhanced information on cover crop species; **(ICARDA-20)** A functional and efficient extension service supported to enhance the adoption of the proven improved wheat based technologies established in Egypt (2017); Increased knowledge of the Extension Services (2015);	

Table 3e. Central Asia Flagship – Cluster of Activities

Please note:

- Blue indicates capacity development activities
- Orange indicates gender-targeted activities

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)
4.1	Research Support	Local Partners meetings, research site coordination, support to cross-cutting issues and to W3/Bilateral projects **Partnership**: **CRP-DS CG Centres:** ICARDA, IWMI, Bioversity **NGOs/CBOs**: 12 **NARS**: 18 **Government Department**: 2 **Academia**: 3 **International Center (Non-CG):** 3 **CG Scientists: 22**	Research activities, partner and interdisciplinary research workshops, and reports coordinated and reported on time. Cross-learning events over partner centres and sites. Joint work plans integrating activities by diverse group of partners developed and their implementation monitored. Data/information/tool sharing and joint evaluation and monitoring of progress facilitated. Experience sharing, capacity building on integrated systems analysis, research design and modelling, innovative platform development and gender analysis.	243.000
4.2	System Research: Agro-pastoral system interventions (testing, piloting and scaling up)	**Location:** **W1&2:** Aral Sea Region (Turkmenistan, Uzbekistan and Kazakhstan); **W3/Bil:** Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan **General objective**: To increase production stability and social equity of intensive rainfed farming systems in Aral Sea region and reserve/restore agriculture-induced land and water degradation through promoting context-relevant SLM practices, technological development platforms and inclusive food value chains.	**Outputs:** **(ICARDA-1)** Long term weather data gathered, last ten year monthly average climate data calculated and used to plot Walter graphs (dataset and maps); Object-based agricultural land use data using Landsat images (dataset and maps); Distance and density of the agricultural infrastructure will be calculated for each crop field and given weightage per criteria in order to find a suitability level of crop fields (report) **(ICARDA-2)** List of agencies involved in seed chain of crops prepared (report); **(ICARDA-3)** 2 on-farm demonstration (15 ha) established (report); Identify alternative crops for double cropping under no-till (report); 1 field day for 50 participants (20% female) on spring crop planting under no-till organized (report); **(ICARDA-4)** Review and assess reports and organize seed production of agricultural crops (report); **(IWMI-5)** Trial on assessing impact of conservation agriculture on WUE is established (report); **(ICARDA-6)** Networking with national partners and policy makers (contact list established with 30 participants from 10 institutions) to develop a basis for institutional support for	1,254.732

		Specific objectives: To improve understanding of strengths, opportunities and weaknesses, constraints of existing seed systems (including social systems and gender dynamics) with respects to seed needs by the transition of current intensive rainfed crop production systems to more conservation; To identify - jointly with multiple stakeholders –gendered technical, management, and capacity building options for improving seed systems towards enhancing the availability, stability of seed/germplasm resources and equal accessibility to qualified seeds/germplasm. The focus will be major annual crops' seeds and fruit trees' planting materials, as well as improved income for female and male farmers who produce seeds/germplasm; To identify in a gender-responsive manner crop and tree varieties best fit to conservation-oriented management of intensive rainfed farms (e.g. agroforestry, cost-effective and farmer-motivated multi-cropping practices) for improving and stabilizing farm productivity and incomes, and conserving soil, water and local seed/germplasm resources; To increase the productivity of the livestock component and its synergistic links to other components of the irrigated farming landscape through applying context-relevant gendered technical/management options (e.g. alternative regulation of herd-rangeland management); To identify major	long-term salinity management strategies (gender-disaggregated report); **(ICARDA-7)** Review on successes and failures of feed production on saline land in the Aral Sea Basin, Uzbekistan (2015); At least 10 households engaged in testing forage options for saline lands in Karabuga village and neighbouring villages (2015); **(ICARDA-8)** Field-tested toolkit for rapid small-ruminant value chain analysis (VCA) in SR VCA in Uzbekistan (Central Asia) available for other institutions; **(ICARDA-10)** One baseline survey (Gender disaggregated) template developed (template); **(ICARDA-1)** 1 Fully-calibrated model for different wheat cultivars (model); A map of evapotranspiration losses from agro-pastoral lands of Arab Sea Basin highlighting hot spots; (2) Basic, functional DSSAT crop model for wheat and barley crops under conservation agriculture practices using existing data from previous ICARDA projects for estimate benefits in terms of soil-water conservation and improvement in soil health **(ICARDA-2)** 1 stakeholders workshop on seed system, involving at least 50 representatives organized with at least 10% women and 10% youth participants (report); List of available infrastructures and additional requirements for functional seed systems prepared (report); 1 training seminar (20 farmers, 20% female) conducted on seed multiplication of dual purpose crops and fodder shrubs at Karabuga Farm (gender-disaggregated report); **(ICARDA-3)** Evaluation of current status of cropping system (report); 1 assessment of the economic implications of introduced salt-tolerant and drought resistant crops (report); 2 on farm sites established in Qorao'zak district completed (report); Data on biomass, soil characteristics etc. collected (dataset); **(ICARDA-4)** Preliminary assessment of seed production of agricultural crops (report); 1 training course for 30 participants (20% female) on seed production of agricultural crops under no-till organized (report); **(IWMI-5)** Farmer field day organized for 40 farmers (20% female) (report); Analysis of the family budgets in degraded areas (report); **(ICARDA-6)** Development of field-based management strategies within the broader regional salinity management strategy developed in cooperation with the CRP WLE (report); 1 report on "research for development" vision for Aral Sea Basin; Improved gender aggregated data for communities living in the Aral Sea Basin and expected impact of interventions on salinity management and marginal lands (dataset); **(ICARDA-7)** Report on survey of feeding systems in 8 target villages (2015); At least two gender-sensitive training courses (50 persons) on utilization and adoption of biosaline forage production from saline environments conducted (2015); Handbook on forage potential and nutritional characteristics of non-conventional forage crops prepared (2015); At least 2 promising options for feed production in Karabuga and neighbouring village with interested farmers identified, tested and evaluated (2015); **(ICARDA-8)** 1 qualitative value chain analysis (VCA), gender disaggregated, for the action site, including: marketing	

		bottlenecks/challenges of meat value chains and relevant (incl. gender) technical, institutional interventions for improving the value chain performance; To achieve widespread understanding and application of SLM practices through continued facilitation of dissemination (demo-sites) of SLM technologies and approaches through supporting existing agricultural service systems with newly accessible gender-responsive technological, system-based knowledge, data and tools, together with the development of management systems for transferring innovative technologies to local organizations (e.g. Water Users' Association -WUA). **Methods:** Regional-level seed systems analysis in linking to farming livelihood systems (gender-sensitive); GIS-based land degradation and/or restoration assessment; Spatially explicit context-option matrix approach applied for seed management and SLM for reversing land degradation; Multi-level surveys for assessing seed needs; Bio-economic modelling; Meat value chain analysis and modelling; Participatory technology development methods **Gender dimension:** Roles and responsibilities of men and women in livestock, tree and fruit, mung bean, forage crops, seeds and conservation related activities translated in gender-responsive	channels fully understood and bottlenecks addressed through gender sensitive intervention plans (report); Report on current practices and flock performance for 9 target villages (2015); **(ICARDA-9)**; At least 2 improved practices tested and evaluated with interested livestock keepers at the action site (report); Livestock keepers (total of 10 male herders) at one action site engaged in the activities (report); HH members' roles and responsibilities in livestock related activities translated in targeting intervention and trainings (report); **(ICARDA-10)** 1 gender-disaggregated database established for agropastoral system in selected research site (database); **(ICARDA-34)** Web database of collected SLM published in English and Russian on www.cacilm.org (2015); 1 Educational and Promotional video infographics about selected SLM published on www.cacilm.org (2015); 1 National level similarity/suitability map completed for selected SLM (2015); Training for 8 national staff (30% women) on analytical tools (2015); At least 5 farmer field-days (30% women) organized; **(ICARDA-35)** 1 Recommendation for Policy Makers on better land use; 3 Publications (national and regional study); 5 Surveys prepared; 1 Stakeholders map prepared; 2 National country reports on cost-benefit analysis with recommendations; 1 Publications with infographics; 1 training-workshops (inception and final) reported; **(ICARDA-A)** At least 200 improved germplasm of different crops (cereals, legumes, vegetables, potato, fruit trees, forages) evaluated for stress (salinity, frost, heat, drought and diseases) tolerance (2015); 1 training courses organized for 10 young researchers (80% male, 20% female) on scientific management of experiments (2015); 2 farmers field days organized to demonstrate performance of stress tolerant varieties of crops (2015); 20 improved varieties of different crops superior to the locally grown varieties identified (2015); At least 20 farmers (2 women) better informed about new varieties through field evaluation and demonstration trials and gained information on relative performance of varieties(2015); **(ICARDA-B)** 1 Training for university students (at least 4 women) on state of the art tools (2015); 1 Training for farmers to manage agriculture production on marginal lands (2015); Training for local authorities for marginal lands management at mesoscale (2015); **(ICARDA-C)** Conjunctive water management strategies for dryland ecosystems of central Asia documented (2015); Calibrated and validated SWAP model for conjunctive water management strategies (2015); 1 Training for university students on state of the art tools (2015); 1 Training for farmers to manage surface and drainage water (2015); 1 Training for local authorities on marginal lands management at mesoscale (2015); Role of women in managing irrigation and drainage systems documented (2015); Areas where women can participate actively for improving the water productivity under saline environment documented (2015); **(ICARDA-E)** **Sogd Province, Tajikistan**: Goat meat value chains assessed and marketing	

		interventions, involvement in farm trials, stakeholder platforms and networks, and training sessions	channels fully understood and bottlenecks addressed through gender sensitive intervention plans for the three target communities in Sogd Province, Tajikistan (2015); At least 10 pilot livestock keepers in the target communities engaged in testing and adopting improved herd management practices in Sogd Province,Tajikistan (2015); Report on traditional goat milk processing methods in three target communities in Sogd Province including entry points for low-cost improvements (2015); three women groups involved in improved goat milk processing (report, 2015); **Aral Sea and Sogd Province:** Logframe, results pathway and work-plan for the rangeland land tenure study established with special emphasis on women's role in decision making processes (report, 2015); Regulations for access to rangelands (private, pastoral and forest) documented (2015); First set of maps on status and utilization produced for target villages and communities (2015); Gender-disaggregated report on rangeland land tenure changes and access to rangeland produced (2015); Toolkit for scaling rangeland monitoring developed (2016); at least 50 Livestock keepers engaged in designing and adopting rangeland utilization and rehabilitation strategies (2015); **(ICARDA-I)** At least 2 demonstration established (2015); Review and assess report and identify alternative crops for double cropping under no-till (2015); 1 report on assessing current status of seed production of forage crops (2015); 1 report on assessing the roles of men and women in all farm and HH activities (2015); **(ICARDA-L)** 1 document on expert's view produced on overall status of seed system (2015); Strength and weakness of the seed system identified and reported (2015); List of agencies involved in seed chain of crops identified (2015); Varietal catalogue developed (2015); Varietal catalogue produced and distributed to at least 500 (50 women) farmers (2015); **(ICARDA-M)** 1 report on gender-disaggregated data set analysis of agopastoral system in selected research site (2015); **Outcomes:** **(ICARDA-1)** Filling of knowledge gap of Uzbek researchers on difference between actual, achievable and potential yields of different popular crops under local climatic and landscape conditions; 10% saving of water for 20-30 farmers in the participating WUA by means of higher WUE; Development of remote sensing-based maps of evapotranspiration for Identification of hot spots having high evapotranspiration losses to help manage them **(ICARDA-2)** Prevalent seed system analyzed and requirements for a functional seed system identified; At least 20 farmers (men and women) strengthened their capacity in sorghum , pearl millet, legumes, triticale and fodder perennial shrubs seed production (report); **(ICARDA-3)** 10 farmers' awareness on conservation agriculture increased (gender-	

			disaggregated report); Capacity of national partners and farmers (80 total, 20% female) will be strengthened through short and long term training measures and full involvement in the design and implementation of the project activities (gender-disaggregated report); **(ICARDA-4)** 10 farmers' awareness on seed supply and on agricultural crops under no-till increased (report); **(IWMI-5)** Farmers (40 total, 20% female) will improve their knowledge on irrigation of salt tolerant and drought resistant crops (gender-disaggregated report); National staff (40 total, 20% female) improve their knowledge on WUE of new crops (report); **(ICARDA-6)** Policy makers in the region increase interaction with CRP DS on salinity management (report); **(ICARDA-34)** Increased awareness in the region on SLM and web-based knowledge platform measured through number of attendees (34 in total) and web analytics (target website visitors 100/month), respectively (2015) **(ICARDA-35)** Sound knowledge and Information about the Economics of Land Degradation and Sustainable Land Management Practices for Public and Private Decision Makers (2015); **(ICARDA-A)** At least 80 farmers participated in 2 field days and learned about newly released stress tolerant varieties of different crops (2015); **(ICARDA-B)** The potential of the selected technologies has been acknowledged by the policy makers and is adopted by at least 2 farmers (2015); Tools, methods, processes and capacity of NARS to create and customize improved resilience options to local circumstances across scaling domains improved and at least 50 women will get benefit (2015); **(ICARDA-C)** Involvement of women in managing canal water and groundwater in an optimum way and their role has been accepted by the policy makers and relevant authorities (2015); **(ICARDA-E)** Capacity of the Tajik national partner institute for conducting value chain analysis increased (2015); **(ICARDA-I)** 25 farmers adopted introduced technology on 10 ha with 2 crops (2015); Forage crops seeds growers network established and reported (2015);	
4.3	System Research: Rainfed crop System interventions (testing, piloting and scaling up)	**Location:** **W3/Bil**: Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan **General objective:** To attain a system-level integrated, systemic understanding of application of Sustainable Land Management (SLM) Practices and support decision-making promoting SLM. **Specific objectives:** To synthesize	**Outputs:** **(ICARDA-34)** 1 National level similarity/suitability map completed for selected SLM (2015); Training for 8 national staff (30% women) on analytical tools (2015); At least 5 farmer field-days (30% women) organized; **Outcomes:** **(ICARDA-34)** Increased awareness in the region on SLM and web-based knowledge platform measured through number of attendees (33 in total) and web analytics (target website visitors 100/month), respectively (2015);	372.566

		current knowledge and generate SLM practices; to package and disseminate knowledge in SLM practices in coping with diverse types of stakeholders; and to use the synthesized and generated knowledge to support policy dialogue towards enhancing SLM adoption at scale. **Methods:** Context similarity mapping; SLM suitability mapping; SLM database cataloguing; web-based knowledge platform; trainings (formal and field-based); multi-media knowledge disseminations; multi-stakeholder workshop at different levels. **Gender dimension:** Female researchers and farmers targeted with capacity development actions.		
4.4	System Research: Irrigated crop System interventions (testing, piloting and scaling up)	**Location:** **W1&2:** Fergana Valley (Kyrgyzstan, Tajikistan and Uzbekistan); **W3/Bil**: Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan **General objective:** To improve food productivity, quality, profitability, stability and benefit-sharing equity of favorable irrigated farming systems in Central Asia, as well as minimize agriculture-driven negative impacts on natural resources through innovative changes in intensification-diversification practices and value chain management.	**Outputs:** **(ICARDA-1)** Field trials for mung bean and winter wheat designed, site selected, soil analysis conducted, and raised bed furrows prepared for mung bean trial (dataset and report); **(ICARDA-2)** Weather station network-based cropping and water advisory system for all three participating WUAs established (report); Survey for 100 HH (70% women) in 3 villages (dataset and report); 1 Draft Paper on "Gender roles and implications for water management in agriculture"; **(ICARDA-3)** Experimental site selected (report); **(ICARDA-4)** Field day organized for 50 farmers and stakeholders (at least 10% women and 10% youth) organized to demonstrate high yielding wheat crop varieties and seed multiplication plots (report); **(Bioversity-7)** 30 Farmers (10 women and 20 men) selected for production of quality planting material of local fruit trees varieties (report); **(IWMI-8)** 1 model of predicting of WUE for winter wheat; **(IWMI-9)** 1 International Conference and 1 National Conference presentations on CRP DS presented on institutional analysis of water resources management; Survey data collected for 3 Case-study pilot WUAs of Ferghana Valley; **(ICARDA-10)** Baseline study, including socio-economic, gender, youth, capacity building, extension aspects conducted in at least one	1,272.260

		Specific objectives: (1) To improve gender-differentiated understanding of strengths, opportunities and weaknesses, constraints of existing seed systems with respects to seed needs by irrigated crop production systems in Central Asia; (2) To identify - jointly with multiple stakeholders - technical, management, and capacity building options for improving seed systems towards enhancing the availability, stability of seed/germplasm resources and equal accessibility to qualified seeds/germplasm. The focus will be major annual crops' seeds and fruit trees' planting materials, as well as improved income for female and male farmers who produce seeds/germplasm will be among the foci.; (3) To identify crop and tree varieties best fit to integrated management of irrigated farms (e.g. multi-cropping, soil/water conservation practices) for improving and stabilizing farm productivity and incomes, and conserving soil, water and local seed/germplasm resources; (4) To increase the productivity of the livestock component and its synergistic links to other components of the irrigated farming landscape through applying context-relevant technical/management options (e.g. improved feeding in winter, alternative rangeland management regulation); (5) To identify major	Action Site covering 100 HHs (dataset and report); ToR to identify research niches to ensure a system approach (documentation); ToR for data collection for Comparative inventory of agronomic, socio-economic and institutional settings of farming systems agreed between local, national and regional partners; **(IWMI-11)** 6 months report including gender aspects of Water Use Efficiency at HH level in Toshloq district; **(IWMI-13)** Field activities report; **(ICARDA-1)** 1 Mung bean trial completed with expected increased yield (10%), water productivity (20%), reduced cost of cultivation, water saving (20%) observed (report); Winter wheat trials implemented (report); Reveal gender sensitivity and responsiveness to currently applied and newly implemented technologies (report); **(ICARDA-2)** 2 International conference and 1 journal article will be submitted; 100 Handbooks for farmers on recommended land and water management practices to maximize WUE developed; 4 presentations at national or international conference; Report on irrigation advisory system potential and challenges; 100 Manuals for farmers on improving WUE for winter wheat and mungbean; Test and reveal gender sensitivity and responsiveness to currently applied and newly implemented technologies as well to current water resource uses and management within the households (report); **(ICARDA-3)** 1 early maturing variety of mung bean grown successfully, 2 yellow rust resistant winter wheat varieties planted (report); **(ICARDA-4)** 1 training course for 20 seed producers (10%women and 10% youth) organized (report); **(ICARDA-5)** Document prepared for seed storage system with the participation of at least 5 farmers (20% women and 20% youth); **(ICARDA-6)** At least 5 farmers (20% women and 20% youth) involved in production of high quality seed of mungbean (at least 2 ton) and winter wheat (at least 50 ton) (report); **(Bioversity-7)** At least 20 farmers (20% women) are trained and involved in production of quality planting material of fruit trees (report); **(IWMI-8)** 2 farmer field days targeting 100 farmers (at least 25% women) organized (report); **(IWMI-9)** Working paper on impact of establishing WUAs on WUE; **(ICARDA-10)** Gender disaggregated database established for research site in Kyrgyzstan part of Fergana Valley action site (dataset); Gender disaggregated database established for research site in Tajikistan part of Fergana Valley (dataset); **(ICARDA-12)** 1 report on the economics of mung bean cultivation and gender impact of seed multiplication and marketing; **(IWMI-13)** 1 journal paper on water and energy productivity for double crops (submitted); **Outputs in 12 months (W3/Bil):** **(IWMI – 1)** Upscale and dissemination of generated knowledge (Guidelines, manuals and brochures) and experience in the region: Andijan, Ferghana, Samarqand Provinces of Uzbekistan, Andijan and Samarkand Agricultural	

		bottlenecks/challenges of meat value chains and relevant gendered technical, institutional interventions for improving the value chain performance; (6) To achieve widespread understanding and application of SLM practices by the facilitation of dissemination (demo-sites) of SLM technologies and approaches through supporting existing agricultural service systems with newly accessible technological, gendered system-based management knowledge, data and tools (e.g. gender-mainstreaming), together with the development of management systems for transferring innovative technologies to local organizations (e.g. Water Users' Association -WUA). **Methods:** (1) Regional-level gendered seed systems analysis linked to farming livelihood systems (2) Spatially explicit context-option matrix approach applied for seed/germplasm management and SLM. (3) Multi-level gendered surveys for assessing seed needs (4) Bio-economic modeling (4) Gendered value chain analysis and modeling (6) Participatory technology development methods, equally involving men and women **Gender dimension:** To identify the new allocation of labor within the various	Institutes (2015); Around 80 stakeholders participated in the teleconference between Andijan and Samarkand Provinces including 30 farmers, scientists and researchers (2015); **(ICARDA-34)** 1 book compilation of 90 promising SLM technologies both English and Russian (2015); Web database of collected SLM published in English and Russian on www.cacilm.org (2015); 2 Educational and Promotional video infographics about selected SLM published on www.cacilm.org (2015); 2 National level similarity/suitability map completed for selected SLM (2015); 1 Policy brief (2015); Training for 8 national staff (30% women) on analytical tools (2015); At least 5 farmer field-days (30% women) organized; **(ICARDA-35)** 3 Publications (national and regional study); 5 Surveys prepared; 3 National country reports on cost-benefit analysis with recommendations; 1 Publications with infographics; 1 training-workshops (inception and final) reported; **(ICARDA-A)** At least 50 improved germplasm of different crops (cereals, legumes, vegetables, potato, fruit trees, forages) evaluated for stress (salinity, frost, heat, drought and diseases) tolerance (2015); 1 farmers field days organized to demonstrate performance of stress tolerant varieties of crops (2015); 1 new crop rotation with two crops successfully demonstrated (2015); 1 training course organized for home gardeners on the role of vegetables in improved human nutrition (2015); **(ICARDA-B)** 1 Training for university students (at least 4 women) on state of the art tools (2015); 4 Training for farmers to manage agriculture production on marginal lands (2015); 9 Training for local authorities for marginal lands management at mesoscale (2015); **(ICARDA-C)** Conjunctive water management strategies for dryland ecosystems of central Asia under different options demonstrated through a field day/workshop with irrigation officials and documented (2015); Calibrated and validated SWAP model for conjunctive water management strategies (2015); 1 Training for university students on state of the art tools (2015); 1 Training for farmers to manage surface and drainage water (2015); 9 Training for local authorities on marginal lands management at mesoscale (2015); Role of women in managing irrigation and drainage systems documented (2015); Areas where women can participate actively for improving the water productivity under saline environment documented (2015); **(ICARDA-D)** 2 Farmer field days targeting 200 farmers (60 women) (2015); 1 report on irrigation advisory system-potential and challenges (2015); Calibrated crop models 1 for wheat and 1 for cotton (2015); Report on filling of knowledge gap on difference between actual, achievable and potential yields of different popular cotton and 3-5 wheat cultivars under local climatic and landscape conditions (2015); **(ICARDA-F)** 1 manual on processing and using CORDEX climate change data and crop models for assessment of climate change impact on crop productivity published and disseminated (2015); Calibrated crop model for cotton	

		types of household, farm and water management as result of male migration in rural communities of Fergana Valley, Uzbekistan.	and wheat conditions in Uzbekistan (2015) **(ICARDA-G)** At least 1 international conferences/proceedings (2015); Spatio-temporal dynamics of croplands and grasslands condition assessed (2015); **(ICARDA-H)** Development of the vegetation phenology products from 2000-2013 (2015); 1 field survey and ground truthing for classification and validation of land use and land cover (2015); Geospatial portal for data visualization and sharing (2015); At least 1 international conferences/proceedings (2015); 1 high impact journal article (2015); 6Web apps and data visualization tools (beta) for the managing the natural resources and land degradation established (2015); Technical Report on quantification of the spatio-temporal dynamics of land use, land cover, and productivity of croplands and grasslands (2015); ;**(ICARDA-I)** At least 2 demonstration established (2015); Review and assess report and identify alternative crops for double cropping under no-till (2015); 1 report on assessing current status of seed production of forage crops (2015); 1 report on assessing the roles of men and women in all farm and HH activities (2015); **(ICARDA-L)** 1 document on expert's view produced on overall status of seed system (2015); Strength and weakness of the seed system identified and reported (2015); List of agencies involved in seed chain of crops identified (2015); Varietal catalogue produced and distributed to at least 500 (50 women) farmers (2015); At least 1 2-wheel tractors and associated seeder for small farms procured to strengthen seed system facilities purchased (2015); 1 workshop on seed systems with at least 50 participants (5 women) organized (2015); Varietal catalogue produced and distributed to at least 250 (25 women) farmers (2015); **(ICARDA-M)** 1 gender-disaggregated database established for irrigated system in selected research site (2015); 1 report on gender-disaggregated data set analysis of irrigated system in selected research site (2015); **Outcomes:** **(ICARDA-1)** WUAs and farmers' capacity development through organizing observation field days of on-farm demonstration of package of improved crop management practice (report); 2 WUAs adopt raised bed furrow irrigation method; **(ICARDA-2)** Filling of knowledge gap on difference between actual, achievable and potential yields of different popular crops under local climatic and landscape conditions (report); 20% saving of water and 15% increase in income for 50 farmers in the participating WUAs by means of higher WUE (report); knowledge and practical skills of local communities increased on improving and applying new water and energy efficiency raising and small scale gardening technologies (report); 25 farmers will start applying irrigation based on recommendation from irrigation advisory system (report); 50 farmers will improve their knowledge on	

			irrigation of winter wheat, mungbean and potato (report); 6 WUAs will formalize informal institutions for improvement their operation as well as its governance operation (report); **(ICARDA-6)** At least 5 Farmers successfully produced high quality seed of wheat (at least 50 ton) and mungbean (at least 2 ton) (report); Capacity of at least 20 farmers strengthened in seed production (report); **(Bioversity-7)** 20 Farmers' knowledge and skills increased (20% women) resulting in production of quality planting material of fruit trees adapted to water scarce environment of farming systems in Fergana (report); **(IWMI-8)** 50 farmers will improve their knowledge on irrigation of winter wheat, mungbean; **(IWMI-9)** Governance bodies (20% women members) of each pilot 3 WUAs are operational, aware on improved institutional interventions, and it contributes to improve water allocation and management; **(IWMI-11)** WUA staff and water managers will improve their knowledge on gender specifics of current practices; **(ICARDA-12)** 20 Women introduced to mung beans as an alternative crop express increased levels of empowerment through greater income sources and access to employment opportunities (report); **(IWMI-13)** Policy makers will improve their knowledge on energy expenses for different crops and potential to reduce energy losses; **(IWMI – 1)** Cost-effective irrigation practices and water management technology for increased water use efficiency are practiced by 30 potato farmers in Andijan, Ferghana and Samarkand provinces enhancing women's incomes (2015); Over 40 farmers improved their knowledge in potato irrigation in Andijan and Ferghana Provinces (2015); **(ICARDA-34)** Increased awareness in the region on SLM and web-based knowledge platform measured through number of attendees (33 in total) and web analytics (target website visitors 100/month), respectively (2015) **(ICARDA-35)** Sound knowledge and Information about the Economics of Land Degradation and Sustainable Land Management Practices for Public and Private Decision Makers (2015); **ICARDA-A)** At least 55 farmers (5 women) participated in 2 field days and learned about newly released stress tolerant varieties of different crops (2015); **(ICARDA-B)** Tools, methods, processes and capacity of NARS to create and customize improved resilience options to local circumstances across scaling domains improved and at least 50 women will get benefit (2015); **(ICARDA-C)** Involvement of women in managing canal water and groundwater in an optimum way and their role has been accepted by the policy makers and relevant authorities (2015); **(ICARDA-D)** 10% water saving and 10% increase in income for farmers in the participating WUAs by means of higher WUE (2015); 25 farmers will start applying irrigation based on recommendation from irrigation advisory system (2015); 250 farmers will improve their knowledge on irrigation of winter wheat, mung bean and potato (2015); **(ICARDA-G)** At least 30 farmers participated in 1 field days and learned about newly released varieties of different	

			crops (2015); At least 40 home gardeners learned about importance of vegetables in human nutrition (2015); **(ICARDA-H)** Improved knowledge base for the WUAs and institutions engagement in Geoinformatics science, technology and application (GeSTA) for better management of the integrated agro-ecosystems (2015); Strengthen the Geoinformatics capacity and geospatial database of the stakeholders through data exchange and technical back stopping and onsite demonstration (2015); 25 farmers adopted introduced technology on 10 ha with 2 crops (2015); Forage crops seeds growers network established and reported (2015); **(ICARDA-I)** 50 farmers adopted introduced technology on 30 ha with 3 crops (2015); Forage crops seeds growers network established and reported (2015).	

Table 3f. South Asia - Cluster of Activities

Please note:

- Blue indicates capacity development activities
- Orange indicates gender-targeted activities

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)
5.1	Research Support	Local Partners meetings, research site coordination, support to cross-cutting issues and to W3/Bilateral projects **Partnership**: **CRP-DS CG Centres:** ICRISAT, CIP, ICARDA, ILRI, IWMI **NGOs/CBOs**: 5 **NARS**: 11 **Private Sector: 1** **CG Scientists:**	Research activities, partner and interdisciplinary research workshops, and reports coordinated and reported on time. Cross-learning events over partner centres and sites. Joint work plans integrating activities by diverse group of partners developed and their implementation monitored. Data/information/tool sharing and joint evaluation and monitoring of progress facilitated. Experience sharing, capacity building on integrated systems analysis, research design and modelling Regular online discussions between researchers across action sites on gender & youth research approaches, and on synthesising results on same research topics (extension services, norms, labour)	243
5.2	System Research: Agro-pastoral system interventions (testing, piloting and scaling up)	**Location:** **W1&2:** *Chakwal (Pakistan)*; **W3/Bil***: India, Pakistan* **General Objective:** To improve food security, natural resource base, social equity, hence socio-ecological resilience of agropastoral livelihood systems in SA dryland in the face of unexpected climate change. **Specific objectives:** To identify sources of food and nutrition for women and children's: To assess the availability and alternative sources of food supply and; to assess the vulnerability of women and children; To analyze climate variability risk analysis based on historical as well as future	**Outputs:** **(ICARDA-1)** Well-calibrated and validated model (wheat) for opportunities to improve WUE and diversification options (report); **(ICARDA-2)** All data for model calibration and validation collected, model calibrated and validated for control and treatment (SLM practice) (1 dataset); **(ICARDA-3)** Organize 1 field day on cactus targeting 30 farmers (5 women) and 2 local agri. extension staff (report); Introduce cactus as a multi-purpose crop (5 private farmers) under intensive production system (report); **(ICARDA-4)** 2 field days conducted comprising of 50 farmers (10 women) (report); 3 promising variety (Wheat, Chickpea and lentil) selected based on farmers evaluation and data analysis (report); **(ICARDA-5)** Data compilation of green fodder and dry matter yield from 6 validation plots (Farmer vs improved variety)of oats (report); 4 farmers (2 women) trained in informal seed production and processing of oats (report); 2 tons of improved variety of oat produced and distributed in 50 acres (report); **(ICARDA-6)** Identification of locally active NGOs willing to work with the	247.899

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)
		climate change scenarios and to develop crop model for supporting in planning for improved resilience and sustainable use of natural resources; To quantify livestock feed resources in the agro-pastoral systems towards sustainable livestock production of the smallholders; To validate promising options for system intensification and improved income; To develop option for improved resilience and sustainable use of natural resources; To increase resilience and improved use of marginal lands of agropastoral production system; To develop alternative farm enterprise options for diversification and livelihood security; To ensure gender mainstreaming in farm enterprises and value addition; Capacity development to innovate, improve efficiency and diversify income generation options; To assess the need and current level of value addition at household level and support women for active involvement in value addition and food preservation for improved food availability at household level; To assess the technologies in terms of system compatibility and farm resources and to provide feedback to scientists for improved planning and implementation of project activities; To assess the processes of capacity building and dissemination activities and to provide feedback to scientists for improved planning and implementation of project activities; To develop sustainable seed	project team (report); 20 master trainers from locally active NGOs trained on 2-3 fruits and vegetables that are available at a low price during the season (report); Production of teaching material (recipes, tutorial videos, etc.) for master trainers to use in conducting training with the local communities (documentation); **(ICARDA-7)** 1 questionnaire on participatory evaluation for 2 technologies tested at farmers field (Questionnaire); 1 questionnaire for participatory evaluation of 1 training on value addition developed (Questionnaire); Data collected for 2 technologies involving 8 farmers (report); **(ICARDA-1)** Calibration and validation of crop model for lentils (report); Setting up and simulation of scenarios for analysis under which crops sustain stable production during an abnormal years (report); **(ICARDA-2)** SWAT model results are out scaled to a larger area (1,300,000 ha) to cover two districts (Chakwal and Attock) of semi-arid Pakistan (report); Hot spots are identified and presented as GIS maps where suitable LM practices should be targeted (maps); Land degradation neutralization recommendation is developed for approx. 100,000 ha area by targeting SLM based on land cover and biophysical characteristics (report); **(ICARDA-3)** 1 blog on the introduction of cactus pear to Pakistan published on CRP DS website; 1 factsheet on the use of cactus as forage for livestock developed in local language; 1 factsheet on silvipasture practices developed in local language; Evaluation (preliminary results) about the impact of grazing on rangeland productivity (report); 1 field day on silvipasture organized for 25 farmers (report); **(ICARDA-4)** 2 farmers trained in informal seed production (report); 2 farmers' enterprises establish seed increase plots of one selected variety each of Wheat (3 acres), Chickpea (2 acres) and Lentil (1 acre) (report); Involvement of 10 rural women in varietal selection encourage females participation in field activities (report); **(ICARDA-5)** 1 improved variety of maize, guar and millet evaluated at 4 farmers' fields (report); Maize silage tested at 2 male farmers' fields for 3 large animals with each farmer (report); Data collection on fodder yield completed (dataset); Data analysis finalized (report); 4 farmers (2 women) trained in informal fodder seed production and processing (report); **(ICARDA-6)** Training on value addition to locally available 2-3 fruits and vegetables for 400 women of	

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)
		supply mechanism and to promote adoption of modern varieties at farmers field; **Methods:** Narrative-based system analysis; Context-option matrix; On-farm experiment; Household surveys; Adoption analysis; Participatory technology development; Gender analysis **Gender dimension:** To identify sources of food and nutrition for women and children; To assess the availability and alternative sources of food supply and to assess the vulnerability of women and children.	farming communities from 41 villages (10% of 410 villages in Chakwal area) (report); 50 rural women trained in value addition and food preservation of 6 products (report); **(ICARDA-7)** Data collected for 1 training (20 Participants) on participatory evaluation (dataset); data analysis and reporting of results for 1 training on value addition and 2 technologies tested at 8 farmers (dataset); Recommendation for improvement in the technology validation and capacity development activities (report); 2 scientists (1 women) trained in assessment of multidisciplinary on-farm trails (report); **(ICARDA-26)** Technical report on sustainable intensification of silvopasture systems and potential use of cactus pear in low rainfall regions of India (2015); 2 field days organized on cactus and silvi-pasture management for at least 30 farmers (2015); 1 factsheets (agro-forestry, cactus) developed in 2015 **ICARDA 30)** 6 ha demonstrations for 4 improved forage varieties with high yield potential in Chakwal (2015); Seed production for oats and barley under irrigation implemented in two villages in Chakwal (2015); 5 ha marginal land rehabilitated with cactus and *Leucaena leucocephala* in two villages in Chakwal (2015); 25 ha grazing land under protection at each village in Chakwal owned by a total of 12 families (2015); At least 3 Training on SR VCA for 225 NARS officers in 3 Provinces (KPK, Balochistan, Sindh); 3 training sessions to neighbouring framers on fodder production in Chakwal (2015); Tested feeding strategies disseminated to an additional 1000 livestock keepers (2015); Rangeland improvements and proper utilization of rangeland disseminated to cover additional 20 communities for 500 ha of rangeland (2015); **Outcomes:** **(ICARDA-1)** Policy-makers and farmers provided with two sets of recommendations (one for wheat and one for lentils) for climate informed decision-making which are taken up for dissemination by the government (report); **(ICARDA-3)** Feed gap alleviated by 10% due recovery of rangeland from overgrazing (report); **(ICARDA-4)** 2 farmer enterprises start seed production business of Wheat, Chickpea and Lentil (report); Knowledge of 50 farmers (10 women) improved about new varieties of wheat, chickpea and lentil (report); Knowledge and	

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)
			skills of 2 farmers enterprises upgraded in seed production and processing (report); **(ICARDA-5)** Improved green fodder by 20% at participating farmer fields with better quality fodder for animals managed by women in at least 12 HH; **(ICARDA-6)** Master trainers from local NGOs are able to train 400 women from farming communities on value addition to locally available fruits and vegetables (report); **(ICARDA-7)**; Feedback from 20 participating women and youth helped to sensitize partners for encouraging higher women participation in project activities (report);	
5.3	System Research: Rainfed System interventions (testing, piloting and scaling up)	**Location:** **W1&2:** Jodhpur, Barmer and Jaiselmer districts, Rajasthan (India); Bijapur district, Karnataka (India); Anantapur and Kurnool districts, Andhra Pradesh (India); **W3/Bil:** India, Pakistan **General objectives:** Identify the niches and potential for technology adoptions for sustainable intensification and systems resilience for improving agricultural livelihoods; Improve the targeting of technologies and institutional interventions; Enhance biomass productivity & systems resilience through appropriate integration of crops, tree and livestock using improved technologies, climate informed decisions and natural resource management; Strengthen formal and informal institutions & social capital especially women and communities and stakeholders convergence for enhancing equitable and sustainable use of natural resources and improve delivery system & value chains and that encourage national partners to develop their problem-solving	**Outputs:** **(Bioversity-A1)** 1 Baseline survey across all sites in India completed and data analysed (report); **(ICRISAT-A2)** 1Framework for resilience quantification and identifying data sources developed (report); **(ICRISAT-A3)** Derivation and validation of representative HH (report); **(ICRISAT-A4)** Layout of field trials prepared (report); **(ILRI-A5)** 3 sites and 30 HH selected and trials planned (report); **(Bioversity-A6)** Interventions plans for three action villages prepared (report); **(IWMI-A7)** Layout of field 4 trials prepared (report); **(ICRISAT-A8)** Construction of water recharging/harvesting structures (4 farmers) and identify sites for insitu moisture conservation (report); **(ICRISAT-A9)** Participatory plan for implementing farm mechanization (custom hiring) options in place (report); **(ICRISAT-A10)** Training Sessions for 300 farmers (10% women) conducted (report); **(ICRISAT-A11)** IP Meetings conduced (report); **(ICRISAT-B1)** On participatory implementation plan for 300 trials developed (report); **(ICRISAT-B2)** ~10 water harvesting structures for implementation identified with participatory approach (report); **(IWMI-B3)** ~6 farmers and at least 3 crops identified with participatory approach (report); **(ICRISAT-B4)** NRM and planting/maintaining fodder grasses/trees implementation planned with participatory approach (report); **(ICRISAT-B5)** Sowing mechanization options implementation planned with participatory approach (report); **(ICRISAT-B6)** Crop diversification options implementation planned with participatory approach (report); **(ICRISAT-B7)** 8-10 farmers identified for the activity and baseline data collected (report and open access dataset); **(ICRISAT-B8)** ~12 trainings for farmers (~300 farmers; at least 20% women) conducted (report); **(IWMI-B9)** 4 trainings/exposure visits for 200	2,121.488

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)
		skills in finding solutions to drylands (innovation platform). **Specific objectives:** Site similarity mapping of all the CRP1.1 action sites using satellite images and climate data; Assess climate variability risk analysis based on historical as well as future climate change scenarios; Understand the gender roles and identify options to improve women's livelihood in small-scale crop-livestock systems; Measure household's resilience and influencing factors and quantify the implications and tradeoff of technology and resource constraints at household level; Evaluate High yielding and dual purpose cultivars (pearl millet, sorghum, pigeon pea, groundnut, cluster bean, moth bean, moong bean, chick pea , etc) and context specific integrated crop management as part of intensification and resilience building; Strengthen blue and green water resources for intensification and shifting to high value agriculture and improved livelihoods. Farm typology specific diversification options with resource conservation, enhanced water use efficiency and high value crops for income and nutrition; Assess NRM and institutional options for sustainable management community silvi-pasture systems for enhanced biomass productivity, biodiversity & livestock production; Testing new practices with Micro irrigation in selected	farmers conducted on improved technologies (report); **(IWMI-B10)** ~50 lead farmers identified with participatory approach (report); **(ICRISAT-C1)** Data collected for model building (dataset); **(ICRISAT-C2)** A plan and layout of >200 field trials prepared (plan); **(ICRISAT-C3)** rainwater harvesting, indigenous irrigation methods in 40 farmers' fields evaluated and monitored (report); **(ICRISAT-C4)** Report on species monitoring and soil and water conservation intervention in silvi-pasture in participatory mode prepared; **(ICARDA-C4a)** One awareness event organized with local communities (100 participants (50% women); 1 blog on silvipasture posted on CRP DS system website; 1 factsheet developed on silvipasture practices; **(CIP-C5)** Baseline survey, involving gender participation in data collection, to characterize the environment, farming system and social system for introducing potato as sustainable conducted (dataset); **(ICARDA-C6)** Demonstration of improved chickpea and barley varieties; **(CIP-C7)** Focus groups and interviews with men and with young girls (separated) on conducted activities and effects of introducing potato (report); **(Bioversity-C8)** Baseline survey completed and data analysed (open access dataset and report); **(ICRISAT-C9)** Trainings for 350 farmers (100 women) (report); **(CIP-C10)** Farmers' meeting organized in Mansagar to discuss on-farm potato introduction, water saving technologies, capacity building and identification of 30 farmers (report); **(ICRISAT-C11)** 2 SHGs (20 women and 20 men) trained on gum inducing technology and goat value chain (report); **(ICRISAT-C12)** Data collection on 50 HHs (dataset will be made open access after analysis); focus group discussions on CPRs management (report); **(ICRISAT-C13)** Data analysis on shakhpushpi (medicinal plant) cultivation and site selection (report); **(ICRISAT-C14)** site selection and sampling plan finalized, observation points identified, soil profile analysis completed (report); **(ICRISAT-C15)** 1 Innovation Platform meeting (>60 stakeholders) organized (report); **(CIP-C16)** Private sector (McCain and PepsiCo) signs contracts with farmers (both women and men) to purchase potatoes (report); **(Bioversity-A1)** Intervention plans for crop diversification finalised for implementation (report); 4 self-help groups organized with at least 50 women involved (report); **(ICRISAT-A2)** 1 Paper on identified livelihood strategy; 1 Seminar for 50 participants; **(ICRISAT-A3)** Whole farm analysis completed (report); 1 training on	

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)
		sites; Understand if the existing diversity is sufficient to empower farmers for climate change adaptation for house hold food and nutrition security; Plan intervention for genetic base-broadening of farming system for resilience agricultural production; Assessment of potato crop as diversification strategy in dry areas; Develop small khadins as integrated farm systems- water ponding, contour bunding, crops & trees and crop planning of traditional khadins; Gender inclusive capacity strengthening of individuals, community and institutions; Pilot women group based production & marketing of small ruminant and high value commodities; To promote efficient ways of farm operations and reduce drudgery particularly of women; Drivers for sustainable management of common property resources and explore innovative options of collective action and governance; Develop sustained value chain of medicinal plant- Convolvulus pluricaulis in Rajasthan; Assessment of soil profile moisture under khadin systems for optimizing cropping systems and assess impact of landscape level NRM interventions; Strengthening convergence with govt. departments for participatory learning and institutionalizing R for D. **Methods:** Context Similarity mapping and context-option matrix approach; Context-option	whole farm analysis to scientist and Scientific officers for 12 participants (25% women); **(ICRISAT-A4)** Impact of improved cultivars and integrated management practices analysed for rainy season crops and field trials planned for post rainy(report); 200 Farmers (25 women) trained to take climate informed production decisions and best fit practices (report); Options addressing women food preferences, drudgery reduction are promoted for more than 50 women (report); **(ILRI-A5)** 30 trials implemented and tradeoffs analysed (report); Dual crops are chosen by women (report); Results are shared through innovation platform among more than 50 persons (report); **(Bioversity-A6)** Intervention plans at project sites in place and intervention activities initiated for 180 farmers (report); Results shared through innovation platform (report); **(IWMI-A7)** Economics of new interventions/adaptation methods (report); 1 training for more than 50 farmers (report); **(ICRISAT-A8)** Benefits due to moisture availability and intensification analysed (report); 1 seminar on typology building approaches for 30 male and 15 female participants (report); **(ICRISAT-A9)** Small farmers linked farm machinery custom hiring center: Framework for prepared and center initiated(report); **(ICRISAT-A10)** On-farm trainings, 4 field days, 1to1 interactions, and exposure visits for more than 500 farmers (20% women) (report); **(ICRISAT-A11)** 2 workshops of IP and 10 meetings with stakeholders organized and convergence among the major stakeholders facilitated through IP (report); **(ICRISAT-B1)** ~200 crop cutting experiments conducted in 300 farmers' fields (with at least 20 women involved), data collected and synthesized (dataset and report); **(ICRISAT-B2)** ~20 water harvesting structures (blue and green water) implemented and additional ~1000 m3 of blue water available for intensification (report); ~20 women farmers enabled to implement intensification and interventions like kitchen gardening/vegetables production, composting (report) **(IWMI-B3)** ~6 farmers' fields equipped with drip/sprinkler irrigation system through participatory approach (report); ~6 women farmers trained on maintenance of drip system and enabled to shift to high value agriculture and to undertake other allied enterprises (report); **(ICRISAT-B4)** 10 farmers' fields and common properties planted with high yielding fodder grasses/trees (report); Women-centric institution	

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)
		matrix; On-farm experiment; Household surveys and PRAs; Adoption analysis; Participatory technology development; Gender analysis; Multivariate analysis, economic modelling; Vulnerability analysis, climate analysis; Multi-stakeholders innovation platform; Collective action for common property resource management. **Gender dimension:** Gender disaggregated analysis of data; Understand the gender roles and identify options to improve women's livelihood; Pilot women group based production & marketing of high value commodities; Gender inclusive capacity strengthening of individuals, community and institutions	established (report); **(ICRISAT-B5)** 100 farmers involved in planning and implementation of mechanization (sowing/interculture/harvesting/ threshing) options (report); **(ICRISAT-B6)** 100 farmers involved in kitchen gardens/vegetable production (report); **(ICRISAT-B7)** Hydrological model based on data on aquifer and user's preferences and demands developed (report); Participatory exercise of collective evaluation and planning of crops and groundwater by the user group (report); **(ICRISAT-B8)** ~20 trainings (~500 farmers; at least 20% women) and 4 field days (>200 farmers with at least 20% women) organized for farmers (report); **(IWMI-B10)** 50 farmers actively participated in the implementation of weather-index insurance for fodder (report); **(ICRISAT-C1)** Climate variability risk analysis based on the generated data completed (report); Options shared with stakeholders (150 persons) through the innovation platform (report); **(ICRISAT-C2)** 235 on farm trials conducted and data on crop intensification options for 140 khaif trials collected (dataset and report); Farmers (225 farmers, 15% women) trained to take climate informed production decisions and best fit practices (report); Options (dual purpose crops & mechanization) addressing women food preferences, drudgery reduction are promoted for more than 50 women (report); **(ICRISAT-C3)** Irrigation methods (rainfed agro-horticulture systems) evidences and survivability assessed (report); **(ICRISAT-C4)** Dataset on Biomass productivity, species diversity assessment and livestock linked fodder harvesting and utilization collected (dataset and report); 1 blog posted on the web; 3 village communities (>100 farmers) participate and capacitated on sustainable CPRs management having women as part of a subcommittee for harvesting and sharing (report); **(ICARDA-C4a)** 2 focus group meetings organized; 1 report on ex-ante assessment of silvipasture on private lands submitted; Set of recommendation to improve adoption and dissemination of silvipasture technology made available to stakeholders (report); 50 farmers trained on silvipasture improvement and management (report); **(CIP-C5)** 1 working paper published; **(ICARDA-C6)** Yield advantage with improved varieties and farmers' response to the crops documented (report); At least 100 farmers trained on improved practices and on pre and post-harvesting (women farmers focus); **(CIP-C7)** More than 200	

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)
			stakeholders, both men and women, (researchers, extension workers, farmers and traders) trained on potato improved production and post-harvest technologies (report); Exposure visit for 30 farmers to potato growing areas (report); **(Bioversity-C8)** Intervention plans for crop diversification finalised (report); At least 4 self-help groups formed with at least 50 women involved (report); **(ICRISAT-C9)** On-farm trainings and exposure visits for 800 farmers (35% women) (report); **(CIP-C10)** Locally adapted varieties and water saving efficiency technologies introduced and demonstrated to improve livelihood of 200 small and marginal farmers, both men and women, at 30 farmer's fields (report); Technical bulletin developed for extension workers (bulletin); **(ICRISAT-C11)** Evidence generated on innovations in goat marketing and enhanced gum production by women for two 2 SHGs (report); **(ICRISAT-C12)** Data analysed on drivers of management of CPRs and khadin system (report and news story); Farmers facilitated to form 1 collective action group to manage khadin (report); Women increased participation in operational management of common silvi-pastures (report); **(ICRISAT-C13)** Farmers linked to industry in medicinal plans value chain (report); At least 15 women trained on medicinal plant cultivation (report); **(ICRISAT-C14)** Soil profile moisture and impact parameters produced monitored in khadins (report); 1 dataset shared with scientists and stakeholders through IP meetings (report); **(ICRISAT-C15)** 2 workshops and 10 meetings (>100 stakeholders) organized for the Innovation Platform with increased participation of women (report); **(CIP-C16)** Private sectors, policy makers and stakeholders meet (workshop in Jodhpur) and shared their innovative ideas to implement farmer's potato value chain and improve framer's income (report); **(Bioversity-1)** Assessment and deployment of agro-biodiversity for reducing vulnerability and promoting sustainable intensification across dryland systems of India (2015); **(ICARDA 28)** 8 Farmers day (500 farmers attended) organized (2015); 1 professional training for 20 participants organized (2015); Sets of informative extension new technologies disseminated in English, Urdu, Pushto and Sindhi languages (2015); 3 professionals trainings for 70 farmers and agriculture service providers on various technologies related to soil fertility and health (2015); 12 field days organized for 800 farmers	

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)
			(2015); 80 women trained 6 training courses organized for 80 women (2015); Websites, radio or video segments, or text messages developed (2015); **(ICARDA 29)** More than 25 promising water and land management practices and technologies established and maintained on-the-ground at the partner agricultural research institutes, stations, and associated farmer fields in a manner that enables dissemination through training and information visits by farmers and extension agents, business people and academics, as well as enables dissemination through other means (2015); Websites, radio or video segments, or text messages with useful information on the demonstrated practices and technologies (2015); Report of discussions and interviews with farmers, extension agents, and others to find out which practices and technologies they find most attractive and why (2015); 1 data and analyses on selected practices and technologies (2015); 3 well trained professionals for each of 10 partner institutes (2015); 2,000 trained professionals from various departments (2015); 6,000 farmers trained on various water management technologies (2015); At least 25 professional training courses targeting 600 professionals (2015); At least 40 farmer days targeting 2000 farmers (2015); Sets of informative extension materials in hard-copy and electronic form on the demonstrated practices and technologies (2015); 145 women trained (2015); **(ICARDA 30)** Rapid Small ruminants value chain assessment in Punjab completed (2015); 3 reports: one each for the low and medium rainfall sites in Chakwal, and for the desert site in Balhawalpur; 2 multi-stakeholders workshops on VCA findings in Chakwal and Bahawalpur with about 60 stakeholders and 3 Site specific lists of prioritized best 2 interventions to enhance SR productivity tested with at least 10 farmers at one site in Chakwal and 2 sites in Bahawalpur (2015); 2 training sessions on rangeland management for NARS and extension agents (one in Punjab and one in Balochistan); At least 3 sets of extension material prepared for livestock extension workers on different aspects of SR management practices (2015); **(ICARDA – 31)** 8 village seed hubs developed including 25% women (2015); **(ICARDA – 32)** 1 feasibility study to identify new projects (2015);	

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)
			Outcomes: **(Bioversity-A1)** At least 50 farmers agreed to maintain/use/increase diversity of indigenous crops/tree species and to become members of Farmers Experimental Network (report); **(ICRISAT-A2)** Participating HHs (300 farmers) adopt the processes, methods for enhancing resilience (report); **(ICRISAT-A4)** Local extension and 300 farmers choose options for enhancing resilience and intensification (report); **(ILRI-A5)** At least 50 farmers choose evaluated options for enhanced resilience (report); **(Bioversity-A6)** At least 180 farmers maintain and use an increased availability to diversity of indigenous crops/tree species which enhances adaptation, resilience and improves income generation opportunities; **(IWMI-A7)** NARS adopts the processes, methods and evaluated options for enhanced resilience of production system in a water scarce environment (report); At least 40 women capacity strengthened (report); **(ICRISAT-A8)** At least 50 participating farmers adopts the processes, methods and evaluated diversification options for enhanced resilience under water scarce rainfed environment (report); **(ICRISAT-A9)** Enhanced efficiency (+100%) of operations and reduced (halved) drudgery particularly for women for participating HHs (report); Awareness and skill development in efficient farm mechanization through hands on training and exposure visit (report); **(ICRISAT-A10)** Farmers (at least 100 women) capacity strengthened results into productivity enhancement (10-15%) for participating HHs; **(ICRISAT-A11)** Platform is used for structuring initiatives and convergence among stakeholders (report); **(ICRISAT-B1)** Enhanced crop yields by >20% in participating 300 farmers' fields, and at least 300 farmers improved their skills in soil fertility and improved varieties management; At least 300 women farmers (indirectly) aware of sustainable crop management (report); **(ICRISAT-B2)** At least 20 farmers improved their skills in harvesting rainwater for intensification and livelihoods improvement (report); **(IWMI-B3)** Water use efficiency enhanced by > 25% (report); At least 6 farmers improved their capacity in implementing drip/sprinkler irrigation technology (report); **(ICRISAT-B4)** Enhanced fodder productivity in participating farmers' field by 0.5 t/ha (report); Awareness and skills in common property natural resource management improved for CPRs at village level (Report); At	

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)
			least 10 farmers improved their capacity in growing high yielding fodder grasses/trees (report); Strengthened livestock related enterprises thru enhanced fodder which are in the domain of women (report); **(ICRISAT-B5)** Enhanced efficiency of operations and reduced drudgery (30% time saving) particularly for women (report); At least 100 farmers improved their capacity in in efficient farm mechanization (report); **(ICRISAT-B6)** Improved nutrition for participating farmers including increased source of income for women (report); At least 100 women farmers improved their skills in successfully diversifying to high value crops (report); ~100 trained women farmers promoted crop diversification (report); **(ICRISAT-B7)** User group developed rules for conservation and sharing of water (report); At least 10 farmers improved their skills in efficient resource use management (report); **(ICRISAT-B8)** ~700 farmers (at least 20% women) improve their awareness and skills on management techniques (report); At least 100 farmers (at least 10% women) adopt improved management techniques; **(IWMI-B9)** Enhanced awareness and skills of farmers and stakeholders on improved technologies (~200; at least 10% women); **(IWMI-B10)** 50 farmers (10% women) awareness increased on risk aversion methods and secured from losses through vagaries of weather (report); **(ICRISAT-C1)** Participating farmers adopts Climate informed decisions (report); **(ICRISAT-C2)** Enhanced crop yields by >15% in participating farmers' fields (300), and at least 300 farmers improved their skills in soil fertility and improved varieties management; At least 200 women farmers (indirectly) aware of sustainable crop management (report); **(ICRISAT-C3)** 1000 HHs adopts the processes, methods and evaluated diversification options for enhanced resilience under water scarce rainfed environment (indigenous technologies and modern science integrated); 20 women adopt agri-horti kitchen gardens for nutrition enhancing their role in HH systems diversification (report); **(ICRISAT-C4)** Community have hands on practice and change their perception of NRM to improve productivity & ecosystem services for sustainable management of common silvi-pasture, which has potential of upscaling to more than 800,000 ha area in arid Western Rajasthan (report); **(ICARDA-C4a)** Targeted women gain more knowledge and awareness about potential positive impact of	

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)
			silvipasture on their livelihood (report); **(CIP-C5)** 30 farmers introduce potatoes in the farming system (report); **(ICARDA-C6)** At least 50 direct farmers (including women) will follow recommended practices and other farmers (indirect) will follow and adopt crop diversification approach (report); **(Bioversity-C8)** At least 100 farmers agreed to maintain and use an increased availability to diversity of indigenous crops/tree species which enhances adaptation, resilience and improves income generation opportunities and form one Farmers Experimental Network (report); **(ICRISAT-C9)** Capacity strengthening on improved technologies and institutions results into productivity enhancement by 15-20% by the 300 participating HHs/Women (report); **(CIP-C10)** Water conservation technologies for potato crop introduced in the system enhanced 20% farmer's income and livelihood (report); **(ICRISAT-C11)** At least 30 women and 100 men farmers benefit from improved livestock value chain and agro-forestry (report); 40 men and empowered women used improved system of marketing of small ruminants (report); **(ICRISAT-C12)** Stakeholders in panchayats adopt the proposed strategy for sustainable management of common property resources (report); **(ICRISAT-C13)** At least 100 farmers adopt medicinal plant (shankhpushpi) cultivation and value chain (report); **(ICRISAT-C15)** Platform is used for developing structured initiatives and convergence among stakeholders; **(CIP-C16)** Income of small and marginal farmers increased by 20% through introducing potato in the farming system (report); **(ICRISAT – 1)** Improved productivity and incomes by >14% for ~2.5 million farming families in Karnataka, increasing 10% women empowerment, through implementation of participatory trials (2015); **(ICARDA 28)** 120 farmers adopted technology based on demonstrations and disseminations (2015);	
5.4	System Research: Irrigated crop System interventions (testing, piloting and	**Location:** **W3/Bil:** India, Pakistan **General objective:** To improve food productivity, resources (water and mineral nutrients) use efficiency, social acceptance and	**Outputs:** **(Bioversity-1)** Assessment and deployment of potato in the system for promoting sustainable intensification across dryland systems of India (2015); **(ICARDA 27)** Well-calibrated crop models for 6 different popular crops (2015); **(ICARDA 28)** 11 Farmers day for 725 farmers organized (2015); 2 professional training for 30 participants organized (2015); Sets of informative extension new technologies will be disseminated in English, Urdu, Pushto and Sindhi languages (2015); 4 professionals	1,109.248

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)
	scaling up)	transferability of improved technologies, thereby enhancing the sustainability of irrigated farming and livelihood systems in SA dryland. **Specific objectives:** To identify constraints and opportunities for agriculture improvement and water management study regions; to quantification of rice fallows for agricultural intensification and diversification in India; to improve water and land productivity through better water management, appropriate cropping patterns and optimal cultural practices; to control salinity and water-logging through new options for drainage and improved water management; to increase surface irrigation efficiency through better land preparation and improved system parameters and design; to develop high yielding early bulking abiotic and biotic resistant varieties; to introduce farmer based sustainable seed system in plateau region, to intensify potato in cereal based system in North- Bengal to improve livelihood of farmers; To improve human capacity of local researchers and technicians; to develop and disseminate agricultural extension messages, information, improved materials and innovative tools to be used in Punjab, Sindh and elsewhere in Pakistan for building SOM, improving soil health, applying the "4Rs" (right type of fertilizer applied in the right amount, at the right	training for 119 farmers and agriculture service providers organized on various technologies related to soil fertility and health (2015); 1200 farmers trained through 19 field days (2015); 120 women trained through 6 training courses (2015); Websites, radio or video segments, or text messages developed in 2015; **(ICARDA 29)** More than 15 promising water and land management practices and technologies established and maintained on-the-ground at the partner agricultural research institutes, stations, and associated farmer fields in a manner that enables dissemination through training and information visits by farmers and extension agents, business people and academics, as well as enables dissemination through other means (2015); Websites, radio or video segments, or text messages with useful information on the demonstrated practices and technologies developed (2015); Report of discussions and interviews with farmers, extension agents, and others to find out which practices and technologies they find most attractive and why (2015); 1 data analysis on selected practices and technologies (2015); 2 well trained professionals for each of 10 partner institutes (2015); 1,000 trained professionals from various departments (2015); 4,000 farmers trained on various water management technologies (2015); At least 15 professional training courses targeting 400 professionals (2015); At least 35 farmer days targeting 2000 farmers (2015); Sets of informative extension materials in hard-copy and electronic; 95 women trained in 2015; **(ICARDA 30)** 1 report for the irrigated site in Balhawalpur, 1 site-specific list of prioritized best bet interventions for the Punjab target sites; 1 intervention to enhance SR productivity tested with at least 10 farmers at 1 site in Chakwal or Bahawalpur; **(ICARDA – 32)** 1 feasibility study to identify new projects (2015); **(ICARDA – 33)** Quantification of the rice fallows for crop intensification and diversification (2015); At least five key maps and geodatabase on the dynamics of the rice areas, fallows, intensity and duration (2015); 1 Technical Report rice fallow for crop diversification and intensification (2015); 1 international conferences/proceedings (2015); ; Demonstrated the Geoinformatics technology for the agricultural intervention (2015); **(CIP-1)** Assessment and deployment of potato in the system for promoting sustainable intensification across dryland systems of India (2015);	

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)
		time and in the right place) and balanced fertilizer application; To mainstream the conservation and use of agricultural biodiversity for resilient agriculture and sustainable production to improve livelihood of small and marginal farmers under rain-fed conditions. **Methods:** Crop system modelling for yield gap analysis and water use efficiency assessment; similarity mapping for outscaling; on-farm trails, demonstrations and trainings; participatory appraisals; value chain analysis; analyses relationship between feeding systems and crop/livestock production systems; innovation systems (platforms) analysis and development; household livelihood system analysis and modeling; spatio-temporal analysis for identifying hotspots and their clusters; geoinformatic demonstrations and hand-on trainings. **Gender dimension:** Targeted approaches to include women in knowledge creation and exchange processes (e.g. on seeds, water, and on-farm biodiversity management), and allow them to benefit from their involvement in agricultural production value chains (e.g. 'women crops & livestock') socially and economically.	**Outcomes:** **(ICRISAT – 1)** Improved productivity and incomes by >6% for ~0.9 million farming families in Karnataka, increasing 10% women empowerment, through implementation of participatory trials (2015); **(ICARDA 28)** 180 farmers adopted technology based on demonstrated and dissemination (2015); **(ICARDA 29)** Partner institutions incorporate five selected practices into their regular demonstration activities (2015); **(ICARDA – 33)** Geoinformatics capacity and geospatial database of the stakeholders strengthened through data and information exchange and technical back stopping (2015);	

Table 4. Gender (and Youth) Research Budget

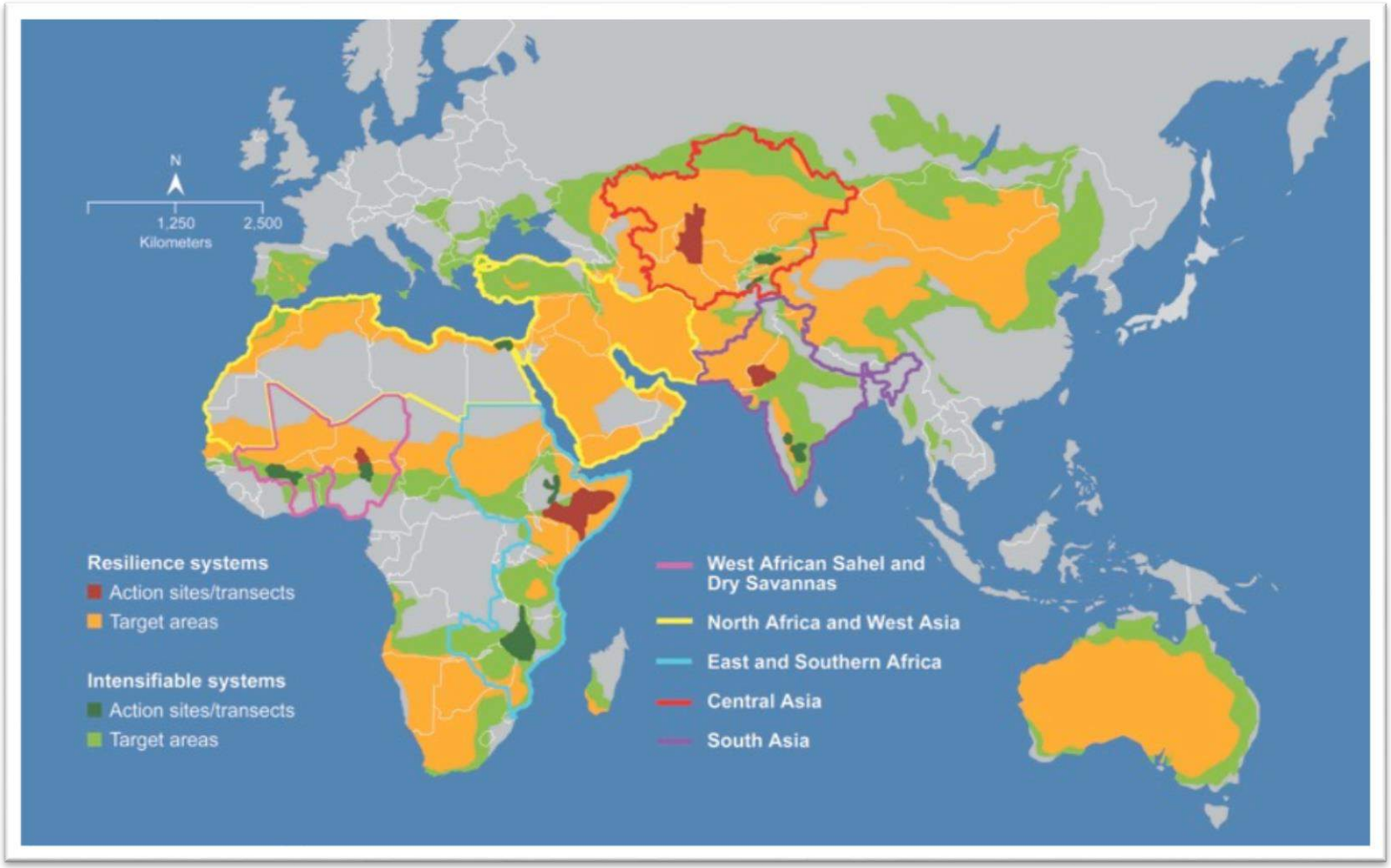
2015 Gender Activities	Amount (US$)
Gender Mainstreaming Activities	**2,365,869$**
Gender Research Activities 1. Gender Strategic Research 2. Gender Tools Development (from systems perspective) 3. Gender Quality Assurance 4. Gender Knowledge Creation	**445,500$**
Total 2015 Gender Budget	**2,811,369$**

Gender concerns are mainstreamed into all aspects of 2015 research and work plans of Dryland Systems in order to ensure that all stakeholder and actor relevant activities are gender-responsive and gender-sensitive. This will enhance the quality and development impact of research activities as the perspectives of all stakeholders, including women and men, the young and the old, are taken into consideration and the participation of all, women, men, young and old youth in research, trials, innovation and policy planning is ensured. Ultimately, the aim is to ensure equitable access to the benefits generated through Dryland Systems research and interventions into value chains and agricultural livelihood systems to both women and men, in order to improve gender equality and contribution to overall development goals, such as poverty reduction. Where possible, the innovative capacity and livelihood aspirations of youth will be harnessed as part of the gender research, by including young women and men in relevant biophysical research projects, and by carrying out youth-specific research in agricultural livelihood systems.

Specific gender research activities have been designed in order to achieve gender-specific IDOs and related outcomes, as well as activities to define methods and approaches of gender analysis from a systems perspective including social, economic and cultural systems. Gender specialists at the five Drylands Systems flagships in collaboration with the Gender Expert Coordinator at Overarching program level coordinate activities amongst themselves to conduct research on a number of issues, such as gender-responsive agricultural extension services, gender norms affecting the gender wage gap and youth aspirations, decision making, etc.. In 2015, three (3) policy briefs, two (2) databases, three (3) papers, four (4) reports and one approach will be the international public goods output of this research.

Due to a budget cut in March 2015, the preparation and testing of approaches of gender-responsive systems research in pilot research studies will take place in 2015, with a view to full implementation of successful approaches in 2016.Activities for gender knowledge creation and sharing are also budgeted in order to ensure high quality of gender research work across Dryland Systems. Gender will be a key subject in work of all Interdisciplinary Research Team (IRT) and other relevant coordination bodies. It will also be a focus of five (5) gender-specific training events, and it will receive specific attention in all virtual and physical meetings of the Dryland Systems Gender Working Group.

Map 1. Dryland Systems Flagships



CGIAR

RESEARCH PROGRAM ON
Dryland Systems

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

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

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

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