

Outputs/Activities	Projects (on-going, pipeline, new) (timeline)	Region/location	Deliverables (milestones)	Time table			Budget (2013-2015)
				2013	2014	2015	
Theme 2. Reducing vulnerability and managing risk in the dryland systems in Central Asia and the Caucasus							
Output 2.1. Innovation knowledge platform for integrated land conservation, watersheds management is established and operational in Rasht and Kyzyl-Suu Valleys and Aral Sea region							
Activity 2.1.1: Knowledge synthesis, generation, packaging and dissemination (knowledge platform) of Sustainable Land and Water Management practices in the Aral Sea Basin (Central Asia)	Pipeline (IFAD/ CACILM II under ICARDA; minor activities currently ongoing also under IWMI)	CAC-wide	Number of improved technologies and management options adopted by participating farmers and end-users. Number of national policy-makers, scientists and other stakeholders who are using the knowledge platform.	xxx	xxx	xxx	\$2,500,000
Activity 2.1.2: Understanding land conservation and soil fertility in the degraded environment of Rasht and Kyzyl-Suu Valleys: establishing practices aiming at a sustainable land conservation and improvement of soil fertility.	New	Rasht and Kyzyl-Suu Valleys	Knowledge of farmers on land conservation and soil fertility is increased; The practices aiming at a sustainable land conservation and improvement of soil fertility in the Rasht and Kyzyl-Suu Valleys established.	xxx	xxx	xxx	
Activity 2.1.3: Integrated Management approaches to provide multiple land use options in wheat-cotton–rice – pastures and livestock production systems through	New	Aral Sea Region	Knowledge of farmers on options for reducing soil salinity is increased. Income of farmers in salt affected areas is increased.	xxx	xxx	xxx	

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				2013	2014	2015	
organizing a Learning Alliance between farmers, agro-pastoralists, markets and decision-makers.							

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				2013	2014	2015	
Output 2.2. Improved institutional functioning to address constraints for enhanced performance of rangelands and irrigated agriculture in the upper reaches of Amudarya river (Rasht Valley) and lower reaches of Amudarya and Syrdarya rivers (Aral Sea Region)							
Activity 2.2.1: Improvement of institutional functioning and participatory planning in multi land use through establishment of collaborative networking among research institutions, Government, NGOs, local communities; knowledge-sharing platform on irrigated agricultural and pasture ecosystems services	Ongoing (ICBA and ICARDA)	Muynak Forest Department, Chimbay province (Kazakh darya community based approach)	Institutional framework couple with farmer participatory approach is promoted; public awareness to monitor agrobiodiversity conservation, wild species and cultivated agricultural fields is increased. In situ conservation and promotion of biodiversity use in different agro-ecological zones of the desert margins are implemented.	xxx	xxx	xxx	
Activity 2.2.2: Improved management and fiber processing options for range-based sheep and goat production systems in marginal areas	Ongoing (ICARDA grant from IFAD)	Northern Tajikistan, Gorno-Badakhshan, Kyrgyzstan (Naryn)	Improved fiber production from sheep and goats through breeding and capacity building; Improved market access for quality fiber and fiber products through the establishment of a sustainable market chains (both 2013)	xxx			\$150,000
Activity 2.2.3: Implementation of dryland forestry and agroforestry coupled	New	Aral Sea Region: Karakalpakstan (Chimbay region, Kazakh darya Farm);	Most promising options for improving rural livelihoods in water scarce areas are	xxx	xxx	xxx	

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				2013	2014	2015	
<i>with rangelands participatory management strategies (trees and perennial desert shrubs in combination with arid fodder, medicinal, aromatic, technical species and neglected agricultural crops) for the remediation, conservation and use of wastelands and saline water resources in the Aral Sea Region</i>		<i>Muynak Forest Department</i>	<i>identified and tested through randomized control trials. Integration of alley cropping systems (perennial desert shrubs and other crops).</i>				
<i>Activity 2.2.4: Integrating and improving institutional framework and access to inputs and quality seeds for farmers of adapted to stress-prone environments non-traditional and local varieties of agricultural crops (cereals, legumes, fruits trees, underutilized, medicinal) and rangelands fodder plants.</i>	<i>New</i>	<i>Aral Sea Region</i>	<i>Quality seeds of stress-tolerant and early, mid-early bulking varieties for diversified cropping systems produced, tested and disseminated to farmers (including participatory yield experiments, small bag distribution and demonstration plots). Smallholders planting improved varieties of cereals, legumes, potato, fruits and vegetables.</i>	<i>xxx</i>	<i>xxx</i>	<i>Xxx</i>	
<i>Activity 2.2.5: Evaluation and introduction of</i>	<i>New (minor activities currently</i>	<i>Aral Sea Region (currently restricted</i>	<i>Integrated technologies of mineralized water</i>	<i>xxx</i>	<i>xxx</i>	<i>xxx</i>	

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				2013	2014	2015	
<i>sustainable land, water and livestock management system for improved livelihoods of rural communities under saline desert environments in southern Aral Sea Region</i>	<i>ongoing under ICBA/NIFF collaboration)</i>	<i>to Dashauz province, Turkmenistan)</i>	<i>utilization and rangelands productivity tested and introduced. Fodder grazing capacity and storage of forage resources improved. Options for involving decision-makers and desert communities in water and rangelands management.</i>				

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				2013	2014	2015	
Activity 2.2.6: <i>Establishing public-private partnerships to develop, advice and support multiplication of potato, grains and planting materials as components of seed systems in Rasht and Kyzyl-Suu Valleys</i>	New	Rasht and Kyzyl-Suu Valleys	<i>Production of potato parental materials established and assessed as source of seed in niche areas of central Asian highlands (2013); Positive selection benefits and feasibility in farmer-based system to maintain and increase potato seed quality determined (2014); Speed up diffusion and uptake of improved varieties and TPS (True Potato Seed) materials through the farmer-based seed system using the Quality Declared Seed Systems approach (2015)</i>	xxx	xxx	xxx	
Output 2.3. Capacity of stakeholders and partners in innovation system enhanced (all stakeholders along impact pathway)							
Activity 2.3.1: <i>Building capacities of farmers and other stakeholders in production, storage and commercialization of quality seed and planting materials for target crops</i>	New	Aral Sea Region and Rasht and Kyzyl-Suu Valleys	<i>Number of partners and stakeholders trained in production of quality seed and planting materials.</i>	xxx	xxx	xxx	
Activity 2.3.2: <i>Application of Geographic Information Systems (GIS) and Remote</i>	New	Khorezm and Chimbay (Aral Sea Region)	<i>Workers of local agricultural offices/ rural advisory services trained on application</i>	xxx	xxx	xxx	

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				2013	2014	2015	
Sensing (RS) on assessment and sustainable management of soil, water and rangelands resources under saline-prone environments			<p><i>of GIS techniques to IWRM in the rangelands.</i></p> <p><i>Sampling protocols for rangeland monitoring & assessment developed.</i></p> <p><i>Early warning system developed.</i></p> <p><i>Contribution of rangelands to livestock feeding assessed.</i></p> <p><i>Spatial and temporal rangeland condition mapped.</i></p>				
Activity 2.3.3: Improve national capacity in conducting Impact evaluation of natural resources and rangelands management by using rigorous designs and data analyses based on mixed methods	New	CAC-wide	<p><i>Government agencies and/or universities identified in each country.</i></p> <p><i>Relevant staff of key national government agencies are trained in designing impact evaluation using experimental (RCT), quasi-experimental and mixed methods designs.</i></p>	xxx	xxx	Xxx	
Activity 2.3.4: Analyzing status of pasturelands and rangelands subject to degradation: making inventory and maps of	New	Rasht and Kyzyl-Suu Valleys	Status of pasturelands and rangelands subject to degradation analyzed; inventory and mapping of	xxx	xxx	xxx	

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				2013	2014	2015	
<i>surfaces of pastures and rangelands, calculating stocking rates, and proposing a methodology for pasturelands and rangelands improvement.</i>			<i>surfaces of pastures and rangelands are completed; stocking rates calculated and a methodology for pasturelands and rangelands improvement proposed.</i>				
Activity 2.3.5: Developing partnerships for dissemination of knowledge to farmers on potato-vegetable-fruit production, postharvest technologies and nutritional value	New	Rasht and Kyzyl-Suu Valleys	Partnerships for dissemination of knowledge to farmers on potato-vegetable-fruit production, postharvest technologies and nutritional value developed Farmers trained on potato-vegetable-fruit production, postharvest technologies and nutritional value.	xxx	xxx	Xxx	
Output 2.4. Improved practices for integrated water and land resources management are adopted to mitigate soil salinity and waterlogging in cotton-wheat-rice-livestock production system in Aral Sea Region							
Activity 2.4.1: Integrated approaches for sustainability of agri-silvi-horticultural and silvi-pastoral systems to	Ongoing (USAID Project under ICBA, KRASS, until 2013)	Aral Sea Region	Biodiversity products/ halophytes for forage and bioenergy production developed; technical, medicinal	xxx			\$100,000

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				2013	2014	2015	
<i>control salinity(root zone salt accumulation); better leaching practices and bio-drainage effect on water table management</i>			<i>plants and other underutilized plant resources developed promoted in order to improve the livelihoods of the pastoral communities.</i>				
Activity 2.4.2: Evaluation of the effect of modern irrigation technologies on salinity management and increasing crop yields in the Aral Sea Region	New	Lower Amudarya (Turkmenistan and Uzbekistan) and Syrdarya (Uzbekistan and Kazakhstan) Rivers	Report on the synergistic effect of improved on-farm irrigation technologies and management practices for salinity management and increasing crop yields.	xxx	xxx	Xxx	\$750,000
Activity 2.4.2.1: Phytoremediation (phyto-melioration) sustainable arid livestock-forage-based production to improve rangelands (sowing pastures) productivity , pasture rotation, livestock controlled grazing and livestock feeding systems Activity 2.4.2.2. Improving livestock herds (small ruminants, cattle, camel, horses) through artificial insemination, modern	New (minor activities currently ongoing under ICBA); ICARDA	Lower Amudarya (Turkmenistan and Uzbekistan) and Syrdarya (Uzbekistan and Kazakhstan) Rivers Khorezm and Chimbay Rasht and Kyzyl-Suu Valleys	Native and exotic forage/rangeland including shrub/tree species collected, established evaluated and disseminated. Sustainable supply of quality forage/rangeland seed for rangeland rehabilitation established. Availability of improved forage/rangeland seed increased through the interaction with Village	xxx	xxx	xxx	

Outputs/Activities	Projects (on-going, pipeline, new) (timeline)	Region/location	Deliverables (milestones)	Time table			Budget (2013-2015)
				2013	2014	2015	
<i>selective breeding and adapted feeding ratios with particular emphasis on winter feeding for wool, meat and milk production.</i>			<i>(community) Based Seed Enterprise.</i>				
<i>Activity 2.4.3: Promotion of alternative irrigation sources such as treated sewage effluent, drainage water, thermal, and shallow saline groundwater on agroforestry, halophytic pastures and irrigated salt-drought and heat tolerant crops for the benefits of all users</i>	<i>Pipeline (ICBA) in collaboration with KRASS)</i>	<i>Kyzylorda region (Kazakhstan); Khorezm region; Kazakh darya (Karakalpakstan) Dashauz province (Turkmenistan)</i>	<i>Key forage species for alleviating gap in feed resources identified (including forage value and palatability) and multiplied.</i> <i>Integration of alley cropping systems (agroforestry) using alternative irrigation sources evaluated and promoted.</i>	<i>xxx</i>	<i>xxx</i>	<i>Xxx</i>	
<i>Activity 2.4.4.1: Identifying and introducing stress-tolerant, high-yielding and improved quality varieties of wheat, barley, legumes, potato and forage crops in pure and mixed plantations through on-farm adaptive trials</i> <i>Activity 2.4.4.2: Increasing sustainability of marginal lands by</i>	<i>New (activities ongoing for wheat supported by BMZ-GIZ project, until March 2013, minor activities ongoing under ICARDA)</i>	<i>Aral Sea Region</i>	<i>Number of improved germplasm of wheat, barley, legumes, sorghum, pearl millet, fruit crops, vegetables, potato, forages and rangelands species evaluated and adopted.</i> <i>Income generation potential of rural people living in the environmental disaster</i>	<i>xxx</i>	<i>xxx</i>	<i>xxx</i>	

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				2013	2014	2015	
<i>using non-conventional water for irrigation (drainage, contour irrigation, water harvesting, takyr surface rainfall water, artificial pods with slight salinity, underground water), adoption of innovative small-scale irrigation technologies and introduction of crop diversity adapted to soil salinity, heat and drought to farmer and agro-pastoral communities</i>			<i>area is increased through dissemination of efficient water use techniques. Sustainable intensification of production systems (multi-purpose species and forage production).</i>				
Activity 2.4.5: Promoting barley, legumes, sorghum, pearl millet and vegetables for crop diversification, improved crop-livestock productivity and farmers livelihoods in Aral Sea Region	New (activities currently ongoing for sorghum and pearl millet under ICBA/ICARDA/ICRISAT, until 2014)	Aral Sea Region (currently Karakalpakstan, Kyzylorda and Dashauz provinces)	Improved crop rotations identified.	xxx	xxx	xxx	
Activity 2.4.6: Identifying improved varieties and management practices for dual (grain and grazing) purpose wheat and barley for improving forage supply for livestock and maximizing	New	Aral Sea Region	Dual purpose wheat and barley varieties identified, and management practices developed	xxx	xxx	Xxx	

Outputs/Activities	Projects (on-going, pipeline, new) (timeline)	Region/location	Deliverables (milestones)	Time table			Budget (2013-2015)
				2013	2014	2015	
return							
Output 2.5. Improved options for integrated water and land resources management to mitigate inequity in resource use are established and operationalized with users							
Activity 2.5.1: Evaluation of the effect of conjunctive use of canal and drainage waters, different cropping patterns, and improved irrigation practices on control of salinity and waterlogging in the upper part (Khorezm region) of the lower Amudarya Basin, detection of the most efficient water management and agronomic practices	New	Khorezm and Karakalpakstan	Improved water management and agronomic practices to mitigate the effect of salinity and waterlogging on crop production, and in saving water in the upper part of the Amudarya Basin for alleviating water scarcity in the lower Amudarya Basin.	xxx	xxx	Xxx	\$2,000,000
Activity 2.5.2: Evaluation of existing farmer focused organizations (WUAs) on multiple uses and users of water	New (minor activities currently ongoing under IWMI)	Fergana Valley	Assessment of interventions on all users within WUAs in existing projects, specifically to subsistence water users (home gardens). Identification of alternative options of priority setting in WUAs. Testing of integrated governance options in WUAs for improving	xxx	xxx	Xxx	

Outputs/Activities	Projects (on-going, pipeline, new) (timeline)	Region/location	Deliverables (milestones)	Time table			Budget (2013-2015)
				2013	2014	2015	
			allocation and access rights				
Output 2.6. Improved options for mixed production system integrating potato, horticulture, grain crops, medical and aromatic species, agro-forestry, livestock and bee-keeping developed and promoted in Rasht Valley.							
Activity 2.6.1: Improving water use efficiency through innovations in irrigation and cultural practices in potato, vegetable and fruit crops.	New (activities ongoing for potato under CIP supported by BMZ-GIZ)	Jirgatal district in Rasht Valley	Pilot plots demonstrating the advantages of contour line cultivation, mulching, Partial root-zone drying irrigation technique, established in farmers' fields (2013); soil, water supply and yield assessed to certify advantages of such practices in farmers' fields (2014); diffusion of the improved cultural practice in farmers' fields documented (2015) Improved early maturing vegetable varieties adapted to heat and drought and efficient water use for sowing as repeated crops after wheat. Increased diversity of heat and drought resistant fruit crops requiring no water in water-hot season.	xxx	xxx	Xxx	

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				2013	2014	2015	
Activity 2.6.2: Strengthening mixed cropping systems through adaptive demonstration trials of wheat, barley, legumes, potato, vegetables and underutilized crops; seed multiplication of released varieties and out-scaling of best practices in different agro-landscape production system	New (minor activities ongoing under ICARDA, CIP, AVRDC)	CAC-wide	Area under cultivation by improved varieties of cereals, legumes, potato and vegetables.	xxx	xxx	xxx	
Activity 2.6.3: Improving livestock herds (small ruminants, cattle, yaks, horses) through artificial insemination, modern selective breeding and adapted feeding ratios with particular emphasis on winter feeding for wool, meat and milk production	New	Rasht and Kyzyl-Suu Valleys	Livestock herds (small ruminants, cattle, yaks, horses) improved through artificial insemination, modern selective breeding and adapted feeding ratios with particular emphasis on winter feeding for wool, meat and milk production	xxx	xxx	xxx	

Outputs/Activities	Projects (on-going, pipeline, new) (timeline)	Region/location	Deliverables (milestones)	Time table			Budget (2013-2015)
				2013	2014	2015	
Activity 2.6.4: Increasing vegetable production and market supply that lead to improved diets of the local population	New	Rasht and Kyzyl-Suu Valleys	Varietal trials of nutritious vegetable varieties with valuable traits for sowing at spring and summer time installed and planting material disseminated.	xxx	xxx	xxx	\$200,000
Activity 2.6.5: Reducing malnutrition by conducting baseline surveys of local food systems and introducing biofortified and highly nutrient candidate crop varieties in the diet.	New	Rasht and Kyzyl-Suu Valleys; Fergana Valley	Selection plots established in target communities with early to mid-early elite potato clones with high bio-available Fe and Zn and retention of vitamin C. They will combine resistance to viruses and tolerance to drought for the main and double cropping systems of Central Asia's highlands and lowlands.	xxx	xxx	xxx	
Output 2.7. Options for value addition and market access developed and disseminated in Rasht and Kyzyl-Suu Valleys.							
Activity 2.7.1: Participatory Value Chain Analysis of different products (raw and processed) aimed at reducing barter trade and improving farmers' access to markets	New	Rasht and Kyzyl-Suu Valleys	Participatory Value Chain Analysis of different products (raw and processed) accomplished and results shared with decision makers	xxx	xxx	xxx	
Activity 2.7.2: Market value chain analysis of	New	Aral Sea Region	Constraints to market access evaluated for	xxx	xxx	xxx	

Outputs/Activities	Projects (on-going, pipeline, new) (timeline)	Region/location	Deliverables (milestones)	Time table			Budget (2013-2015)
				2013	2014	2015	
<i>commodities to improve small scale farmers access to market</i>			<i>men and women farmers. Different options for linking smallholder men and women farmers to markets evaluated and disseminated. Value addition opportunities increasing men and women farmers' income evaluated.</i>				
<i>Activity 2.7.3: Small-scale post-harvest handling (including certification) and processing of agricultural products to meet international standards of food security and quality</i>	<i>New</i>	<i>Rasht and Kyzyl-Suu Valleys</i>	<i>Small-scale post-harvest handling (including certification) and processing of agricultural products to meet international standards of food security and quality introduced and operational</i>	<i>xxx</i>	<i>xxx</i>	<i>xxx</i>	
Output 2.8. Analysis of trade-offs of different scenarios and optimal use of farm and rangeland resources completed							
<i>Activity 2.8.2: Evaluating the impacts of collective action, land tenure and property rights (policies) on pastoralists livelihoods and rangeland ecosystem maintenance</i>	<i>New</i>	<i>Aral Sea Region and Rasht and Kyzyl-Suu Valleys</i>	<i>Inventory and analysis of existing institutional arrangements (including grazing rights) and policies that govern the use, access and rights of common grazing areas.</i> <i>Inventory and analysis</i>				

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				2013	2014	2015	
			<p><i>of property rights.</i></p> <p><i>Overlaps of boundaries (rangelands, water administrative) identified.</i></p> <p><i>Collective action for communal resource management through participatory approaches and with equitable benefit sharing.</i></p> <p><i>Viable land use options that sustain productivity and halt land degradation.</i></p> <p><i>Impacts of collective action on common grazing areas management and on household livelihoods established through randomized control trials (experimental economics)</i></p>				
Activity 2.8.3: Modeling short-medium-long term scenarios for resource management by different stakeholders.	New	Rasht and Kyzyl-Suu Valleys	Models for short-medium-long term scenarios for resource management developed and applied	xxx	xxx	xxx	

Outputs/Activities	Projects (on-going, pipeline, new) (timeline)	Region/location	Deliverables (milestones)	Time table			Budget (2013-2015)
				2013	2014	2015	
			by different stakeholders				
Output 2.9. System analysis-based strategies and policies for up- and out-scaling of improved options developed and disseminated in Rasht Valley and Aral Sea Region							
Activity 2.9.1: Modeling to understand soil erosion, landslides, mud-flows and floods in marginal croplands and to evaluate watershed management and crop production stability in view to establish an Early Warning System for risk reduction.	Pipeline (ICBA, IWMI)	CAC-wide	Models to understand soil erosion, landslides, mud-flows and floods in marginal croplands developed Early Warning System for risk reduction established	xxx	xxx	xxx	
Activity 2.9.2: Development of strategies for sustainable management of land and water, based on study and identification of social, technical and economic factors influencing success of multiple land use (crops, trees, pasturelands) for the benefit of all users.	New	Rasht and Kyzyl-Suu Valleys	Socio-economic factors increasing the sustainability of natural resource management are identified and out-scaling strategies are implemented in cooperation with local partners.	xxx	xxx	xxx	

Outputs/Activities	Projects (on-going, pipeline, new) (timeline)	Region/location	Deliverables (milestones)	Time table			Budget (2013-2015)
				2013	2014	2015	
Output 2.10. Impact of improved natural resources management and diversification options on soil and environmental health, water productivity, agriculture productivity, human nutrition and rural employment in the Aral Sea Basin evaluated and communicated.							
Activity 2.10.1: Model-based assessment of the impacts of climate change and the effects of adaptation technologies on crop water availability and productivity and farmers livelihoods	Ongoing (activities currently ongoing under ICARDA; linkage with CRP7, Activity 1.2.1, until 2014)	CAC-wide	Report on the effect of climate change on productivity of wheat in Central Asia (2012); Report on potentials for adaptation to climate change by water management; case study wheat in Central Asia; bio-physical model calibrated to the major barley, cotton and food-legume varieties grown in Central Asia (2013); Report on the effect of climate change on productivity of other major crops (barley, legume-crops and cotton); final report on the impacts of climate change on crop profitability and farmer income in Central Asia (2014).	xxx	xxx		
Activity 2.10.2: Establishing the baseline and monitoring change on the basis of socio-economic and biophysical indicators	New	Rasht Valley and Aral Sea Region	Watershed map; Maps of WUAs and rangeland boundaries; Inventory of stakeholders and institutions; Database on natural resources.	xxx	xxx	xxx	\$2,000,000

Outputs/Activities	Projects (on-going, pipeline, new) (timeline)	Region/location	Deliverables (milestones)	Time table			Budget (2013-2015)
				2013	2014	2015	
			<i>Baseline indicators of natural resources management, biodiversity, soil and environment health, water productivity, agricultural productivity, human nutrition, farm income and livelihoods, gender equity, market systems and rural employment in Rasht Valley and Aral Sea analyzed and communicated.</i>				
<i>Activity 2.10.3: Model-based assessment of the effects of technologies on crop water availability and productivity and soil fertility</i>	<i>New</i>	<i>Rasht Valley, Aral Sea Region</i>	<i>Collection of soil, crop, meteorological data on demonstration sites for calibration of CropSyst model for various crops and varieties cultivated. CropSyst model calibrated for different crops and varieties. Effects of different technologies on crop water availability and productivity and soil fertility are assessed. Capacity of young researchers increased in field plot experimentation,</i>	<i>xxx</i>	<i>xxx</i>	<i>xxx</i>	

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				2013	2014	2015	
			<i>modeling, analysis of the results and impact assessment.</i>				
<i>Activity 2.10.4: Bio-economic modeling of farming systems, technological options for natural resources management under different scenarios of the state of natural resource base, market conditions and policies for determining optimal use of resources, and assessing the economic, social and environmental consequences on target population</i>	<i>New</i>	<i>Aral Sea Region</i>	<i>-Operational bio-economic models developed and available</i> <i>-Different natural resources, technologies, market and policy scenarios developed with stakeholders</i> <i>-Optimal use of available farm resources developed and conditions for such optimal conditions identified</i> <i>-Policies for creating enabling environment for more sustainable land use options developed</i> <i>-Post graduate and postdoctoral students trained in bio-economic modeling</i>	<i>xxx</i>	<i>xxx</i>	<i>xxx</i>	

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				2013	2014	2015	
Theme 3. Sustainable intensification for more productive, profitable and diversified dryland agriculture with well-established linkages to markets in Central Asia and the Caucasus							
Output 3.1. Innovation knowledge platform for addressing constraints in agricultural production aimed to institutional functioning and increase livelihoods established and operational in action site and region							
Activity 3.1.1: Development of ICT technology for dissemination of knowledge on water and land productivity improvement to farmers after thorough baseline survey (including impact assessment of existing projects)	New	Fergana Valley	Institutional setup for irrigation extension services to farmers in Fergana Valley. Sustainability of the innovative public-private partnership for irrigation extension evaluated.	xxx	xxx	xxx	\$1,000,000
Output 3.2. Capacity of stakeholders and partners in innovation system enhanced (all stakeholders along impact pathway)							
Activity 3.2.1: Improving access of smallholder farmers to new potato varieties adapted to stress-prone environments	Ongoing (CIP supported by BMZ-GIZ project)	Fergana Valley	Quality seed of abiotic stress-tolerant and early, mid-early bulking varieties for diversified cropping systems produced and disseminated to farmers (including participatory yield experiments, small bag distribution and demonstration plots) (2013); Training in positive and negative selection to maintain the quality of seed for longer periods and reduce the dependency	xxx	xxx	xxx	

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				2013	2014	2015	
			<i>of having to buy new seed every season (2014); Participants acquainted with a semi-structured methodology of Participatory Varietal Selection based on the Mother & Baby trials design. Dialogue among stakeholders, particularly field staff initiated (2015).</i>				
Activity 3.2.2: Pilot testing of ICT technology for dissemination of knowledge on water and land productivity improvement to farmers in areas where all data is available.	New	Fergana Valley	ICT technology for dissemination of knowledge on water and land productivity improvement to farmers is tested.	xxx	xxx	xxx	
Activity 3.2.3: Building capacity of farmers in quality seed production and storage of agricultural crops	New	Fergana Valley	Partners and stakeholders trained in production of quality seed and planting materials.	xxx	xxx	xxx	
Activity 3.2.4: Increasing the capacity of young researchers in field plot experimentation.	New	Fergana Valley	Capacity of young researchers in field plot experimentation increased.				
Activity 3.2.5: Developing partnerships for dissemination of knowledge to agricultural	New	Fergana Valley	Public-private partnership improvement evaluated and approaches for	xxx	xxx	xxx	

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				2013	2014	2015	
<i>producers on vegetable production, postharvest technologies, nutritional value and marketing of agricultural crops</i>			<i>strengthening of extension services are developed.</i>				
Output 3.3. Modified national-level policies for Fergana Valley to address land tenure of agricultural producers, improved access to market, information, technologies developed and promoted							
Activity 3.3.1: Evaluating efficiency of implemented and ongoing land and water management reforms since independence, disseminate findings in knowledge platforms	New (minor activities currently ongoing under IWMI)	Fergana Valley	Mapping land and water management reforms since independence. Analysis of policies driving the land and water management reforms. Inventory of results of reforms on rural livelihoods (including part-time farming and male outmigration), crop production, water efficiency, investments in land and water management improvement and willingness for collective action. Recommendations for governments and extension services for better targeting of agricultural innovations based on the results of reforms.	xxx	xxx	xxx	

Outputs/Activities	Projects (on-going, pipeline, new) (timeline)	Region/location	Deliverables (milestones)	Time table			Budget (2013-2015)
				2013	2014	2015	
Output 3.4. Integrated policy, institutional and technological approaches aimed to optimize water and land productivity and equitable allocation developed and implemented							
Activity 3.4.1: Improving water use efficiency in potato under the double cropping system of the lowlands	Ongoing (BMZ-GIZ)	Fergana Valley	Effects of different levels of moisture stress on crop yield under furrow irrigation are evaluated (2013); Performance of different irrigation systems on potato yield (2014); Decision support system to help users determine water deficits (2015).	xxx	xxx	xxx	
Activity 3.4.2: Developing and implementing IT-based irrigation scheduling services to water users (including mahalla-level)	Pipeline (USAID under IWMI proposal)	Fergana Valley	Proven methodology for implementation of Web-SMS for irrigation scheduling is developed.	xxx	xxx	xxx	\$750,000
Activity 3.4.3: Evaluating the impact of technical and institutional interventions on reliability and efficiency of water delivery to water users (including mahalla)	Pipeline (IWMI)	South-western Kazakhstan (middle Syrdarya basin)	Improved performance of Makhtarl irrigation project	xxx	xxx	xxx	\$2,000,000
Activity 3.4.4: Evaluating the uptake and constraints of uptake of single (technical and institutional) and multi centered (technical and institutional)	New (minor activities currently ongoing under IWMI)	Fergana Valley	Assessment of current interventions on all stakeholders within WUAs in cross section of existing projects. Identification of reciprocal relationships	xxx	xxx	xxx	

Outputs/Activities	Projects (on-going, pipeline, new) (timeline)	Region/location	Deliverables (milestones)	Time table			Budget (2013-2015)
				2013	2014	2015	
<i>interventions at WUA level</i>			<i>between technical and institutional interventions enhancing or hindering optimal uptake. Lessons learned from best practice and recommendations for improved interventions communicated.</i>				
<i>Activity 3.4.5: Evaluating risks and dependencies of rural livelihoods on the past and current technical innovations for expanding irrigated agriculture after independence and within the new economic and political setting</i>	<i>New (minor activities currently ongoing under IWMI)</i>	<i>Fergana Valley, Rasht Valley, lower Amudarya</i>	<i>Inventory of past technologies (lift irrigation – ground and surface water, water transfers, dams) and the created dependencies (maintenance, subsidies, ability to operate) as well as areas supplied and affected people. Analysis of past policies and socio-economic environmental drivers of agricultural expansion. Risk analysis and analysis of possible sustainable alternatives for past technologies.</i>	<i>xxx</i>	<i>xxx</i>	<i>xxx</i>	
<i>Activity 3.4.6: Improving</i>	<i>New</i>	<i>Fergana Valley</i>	<i>Improved early</i>	<i>xxx</i>	<i>xxx</i>	<i>xxx</i>	<i>\$500,000</i>

Outputs/Activities	Projects (on-going, pipeline, new) (timeline)	Region/location	Deliverables (milestones)	Time table			Budget (2013-2015)
				2013	2014	2015	
<i>water and land use efficiency of fruit and vegetable crops</i>			<i>maturing fruit and vegetable varieties adapted to heat and drought and efficient water use for sowing as repeated crops after wheat.</i>				
<i>Activity 3.4.7: Evaluating irrigation water requirements of major agricultural crops, improve irrigation practices.</i>	<i>New</i>	<i>Fergana Valley</i>	<i>Accurate estimation of crop water requirements of cotton, fruit and vegetable crops for WUE.</i>	<i>xxx</i>	<i>xxx</i>	<i>xxx</i>	<i>\$750,000</i>
Output 3.5. Improved production options for diversifying cotton-wheat-livestock production system of Fergana valley developed and promoted							
<i>Activity 3.5.1: Identifying new improved varieties of cereals (wheat and barley) legumes (chickpea, lentil) and fodder (alfalfa) to fit into the prevalent cropping pattern on the basis of adaptive trials</i>	<i>New</i>	<i>Fergana Valley</i>	<i>Improved varieties of wheat, barley, chickpea, and lentil identified.</i>	<i>xxx</i>	<i>xxx</i>	<i>xxx</i>	

Outputs/Activities	Projects (on-going, pipeline, new) (timeline)	Region/location	Deliverables (milestones)	Time table			Budget (2013-2015)
				2013	2014	2015	
Output 3.6. Improved production options for diversifying vegetable-horticultural-potato production system of Fergana Valley developed and promoted							
Activity 3.6.1: Increasing year-round (greenhouse and open field) vegetable production and market supply that lead to improved diets of the local population	New	Fergana Valley	Varietal trials of nutritious vegetable varieties with valuable traits for sowing at spring and summer time are established and planting material is disseminated.	xxx	xxx	xxx	\$200,000
Output 3.7. Postharvest and processing technologies improved and value added options increased							
Activity 3.7.1: Improvement of agricultural crops storability by phenotyping and improving local storage methods	New	Fergana Valley	Potato storage losses and dormancy period estimated and their causes recorded with the description of management practices (2013); Storage practices studied at farmer level (2014); Influence of abiotic stress and storage methods on subsequent potato crop performance assessed (2015).	xxx	xxx	xxx	
Activity 3.7.2: Inventory and evaluation of postharvest technologies currently used for vegetable crops and introduction of improved practices for vegetables storage and processing	New	Fergana Valley	Postharvest technology options evaluated and improved technology adopted	xxx	xxx	xxx	\$200,000

Outputs/Activities	Projects (on-going, pipeline, new) (timeline)	Region/location	Deliverables (milestones)	Time table			Budget (2013-2015)
				2013	2014	2015	
Output 3.8. Optimal scenarios for trade-off resolution and up- and out-scaling in similar production systems of the Region developed and implemented.							
Output 3.9. Impact of improved production options on increased food and nutrition security and livelihoods of rural women and men in Fergana Valley measured, analyzed and communicated.							

Outputs/Activities	Projects (on-going, pipeline, new) (timeline)	Region/location	Deliverables (milestones)	Time table			Budget (2013-2015)
				2013	2014	2015	
Activity 3.9.1: Model-based assessment of the impacts of climate change and the effects of adaptation technologies on crop water availability and productivity and farmer livelihoods	Ongoing (activities currently ongoing under ICARDA; linkage with CRP7, Activity 1.2.1, until 2014)	Region-wide	See Activity 2.10.1.	xxx	xxx		
Activity 3.9.2: Model-based assessment of the effects of technologies on crop water availability and productivity and soil fertility	New	Fergana Valley	Collection of soil, crop, meteorological data on demonstration sites for calibration of CropSyst model for various crops and varieties cultivated. CropSyst model calibrated for different crops and varieties. Effects of different technologies on crop water availability and productivity and soil fertility are assessed. Capacity of young researchers increased in field plot experimentation, soil and crop modeling, analysis of the results and impact assessment.	xxx	xxx	xxx	
Activity 3.9.3: Reducing malnutrition in potato-based food systems in	New	Fergana Valley	Selection plots established in target communities with early	xxx	xxx	xxx	

Outputs/Activities	Projects (on-going, pipeline, new) (timeline)	Region/location	Deliverables (milestones)	Time table			Budget (2013-2015)
				2013	2014	2015	
<i>temperate agro-ecologies through biofortified candidate varieties</i>			<i>to mid-early elite clones with high bio-available Fe and Zn and retention of vitamin C. Resistance to viruses and tolerance to drought for single and double-cropping systems (2015)</i>				
Activity 3.9.4: Impact assessment of all projects regarding agriculture and water	New	Fergana Valley	Impact assessment is carried out and results communicated.	xxx	xxx	Xxx	