IWMI
2015 Annual Report

December 2015

Food security and better livelihoods for rural dryland communities

The CGIAR Research Program on Dryland Systems aims to improve the lives of 1.6 billion people and mitigate land and resource degradation in 3 billion hectares covering the world's dry areas. Dryland Systems engages in integrated agricultural systems research to address key socioeconomic and biophysical constraints that affect food security, equitable and sustainable land and natural resource management, and the livelihoods of poor and marginalized dryland communities. The program unifies eight CGIAR Centres and uses unique partnership platforms to bind together scientific research results with the skills and capacities of national agricultural research systems (NARS), advanced research institutes (ARIs), non-governmental and civil society organizations, the private sector, and other actors to test and develop practical innovative solutions for rural dryland communities.

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

For more information please visit:

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SUGGESTED CITATION

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This document was prepared by Everisto Mapedza (IWMI Focal Point), Akmal Karimov, Krishna Reddy Kakumanu, Edwin Rap and Oyture Anarbekov of International Water Management Institute (IWMI) as an annual report for the CGIAR Research Program on Dryland System (DS). The views expressed in this document do not necessarily reflect the views of IWMI.

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List of Acronyms

AWM: Agricultural Water Management

CCAFS: Climate Change, Agriculture and Food Security

CIAT: International Center for Tropical Agriculture

DCL: Dryland Cereals and Legumes

DS: Dryland Systems Program

GILIT: Gender in Irrigation Learning and Improvement Tool

ICRISAT: International Crops Research Institute for the Semi-Arid Tropics

IDOs: Intermediate Development Outcomes

IFAD: The International Fund for Agricultural Development

ILRI: International Livestock Research Institute

IWMI: International Water management Institute (IWMI)

TLC: Total Land Care

WUA: Water User Association.

SECTION I – Key MESSAGES

a. Synthesis of Progress and Challenges (1 ½ page)

The International Water Management Institute (IWMI) managed to progress in 2015 in terms of researching on evidence for agricultural water management within the context of a systems approach. Water is one of the key enablers within the holistic agricultural livelihoods. The research focussed in Chinyanja Triangle (Ntcheu District) in Malawi, South Asia, Central Asia and Nile Delta, Egypt. The research from IWMI contributed to the poverty related Intermediate Development Outcomes (IDOs) Increased resilience of the poor to climate change and other shocks and (1.1) and increased productivity (1.4), Natural Resource Management IDOs such as: More sustainably managed agro-ecosystems (3.3). Under the Cross Cutting IDOs, Equity and inclusion achieved (B.1) and National partner and beneficiaries enabled (D.1).

In February 2015 IWMI met with other Dryland Systems (DS) participating centres in Lilongwe to further map up collaboration and consolidate a systems approach to our research. IWMI and CIAT agreed to further work together and the DS System Analyst Dr Quang Bao Le has been offering assistance and promised to support our systems research in 2016. The work in 2016 will further ground a systems approach which we believe will contribute towards the Dryland Cereals and Legumes (DCL) research under the new merged CRP. A systems perspective will bring an integrated approach in the second phase of CRPs. The ongoing CGIAR reform process has also acknowledged the fact that the fisrt phase of CRPs has offered an opportunity to conducting collaborative research bring different expertise from different centres to address the holistic livelihoods challenges of the farmers.

In 2015 through involvement in the Internal Task Force's Mission Critical Research questions also influenced IWMI's research to look at a broader systems perspective where water plays a key role. In the Chinyanja Triangle the IWMI research has engaged with the World Bank and Government of Malawi's Shire River Basin Project with the intention of informing and influencing the investment decisions being made especially on gender inclusion. This was conducted as part of the DS and Water Lands and Ecosystems (WLE) co-funded activity of pilot testing the Gender in Irrigation Learning and Improvement Tool (GILIT). The Shire River Basin program will be implementing integrated development for which irrigation is one of the components. This program was launched in 2012 and is expected to take 12-15 years at an initial budget of about USD145 million. One of the discussions was how the GILIT Tool could be used to take into account gender in the design and planning of the irrigation schemes. The program mentions that by the end of the program, they would like 50 percent of the beneficiaries to be women. So it has gender as one of its monitoring and evaluation indicators.

IFAD requested IWMI to contribute towards the institutional aspects of their work in Malawi. Whilst IWMI was not able to attend the IFAD Mission visit to Malawi due to other commitments, IWMI has agreed to advise on institutional input for sustainable agricultural water management interventions for poverty alleviation.

One of the partners in the DS Program in East and Southern Africa (ESA) Total Land Care has also requested IWMI to explore cooperation on the gender aspects of their recently

approved project on solar powered irrigation and how men and women could benefit from the sustainable irrigation pumping technology.

In South Asia IWMI and partners have managed to engage the private sector namely Jain Irrigation System Limited (Ltd). and Bajaj Allianz an insurer for smallholder farmers. IWMI sees this as addressing the gap of engaging the private sector to help improve the resilience and livelihoods of smallholder farmers in the Dryland Systems (IDO 1.1). An engagement workshop is planned for March 2016 to try and bring more insurance companies so that they can try to use the same model for improving small holder farmers' resilience in the dryland areas. We hope to have outcome stories on this once other insurance companies are scaling out our original efforts. Some of the work on Weather Index Insurance for Livestock fodder in Dryland Systems – Kharif 2014 and 2015 was published (Krishna et al. 2015 http://mel.cgiar.org/uploads/reporting/p6rxlYeUbrYYT3o2WVGZiDB8qjkljv.pdf). This report demonstrates the opportunities which insurance can play in the context of dryland systems resilience and livelihoods.

The study on farm pond integration with micro-irrigation system in the dryland areas was also conducted and focused on enhancing both livestock and crop productivity (Krishna et al. 2015). A journal manuscript entitled 'Assessment of risk premium with farm technology adoption to climate change in dryland systems of India' was submitted to the International Journal of Climate Change Strategies and Management: Krishna et al. 2015).

In Central Asia the research looked at Comparative Assessment of Water User Associations Governance role on efficient use of water resources in Ferghana Valley. This research addressed key institutional issues that affect efficient water use which is a key issue within the Dryland systems looking at ways of making every drop count in the water scarce drylands. A Doctor of Philosophy thesis by Oyture Anarbekov will be ready for examination by the end of 2016.

In Egypt the research was on groundwater dynamics which is a key component of the Dryland Systems in Egypt. The benefits of groundwater have to be understood in light of the risks such as sea water intrusion (Al-Agha et al. 2015).

b. Significant Research Achievements (1 page)

I. As part of your center's annual reporting, you are required to submit a minimum of **five** (for the major centres, ICARDA ICRISAT, ILRI, ICRAF) and **two** (for smaller centres, Bioversity, CIP, CIAT IWMI,) **key research outcomes stories** that highlight the greatest outcome /impact achievements in 2015 (including gender disaggregation where pertinent) accomplished as a result of your center's activities under the framework of Dryland Systems with clear links to research evidence, publications and other supporting materials. These outcomes stories should be developed in collaboration with your center's communication focal point for Dryland Systems.

- For each story, please complete the outcome story template in **Annex 1** with clear references to associated research evidence and html links to blogs and other supporting materials. Please follow the Outcome Story Toolkit and Guidelines (as hyperlinked) to develop and submit well-written and evidence-based research outcome stories, which will feature in the CRP's annual report and social media. We encourage you to work with your centre's communications focal point to ensure your stories are edited and polished to high standard.
- In this section, please provide **the synthesis/abstract only of the five (for bigger centres) and two (for the smaller centres)** research outcomes stories submitted by your center.

Outcome Story 1.
IWMI through WLE and DS collaboration has been pilot testing the Gender in Irrigation Learning and Improvement Tool (GILIT) in Malawi and Uzbekistan. Whilst pilot testing it in Malawi, Total Land Care one of the partner NGO requested to use the tool in their programs in order to integrate gender in agricultural water management.

Outcome Story 2.
The second outcome story is about the insurance scheme research in India. This will document how IWMI and other Dryland Research partners and the private sector have developed an insurance scheme for the smallholder farmers in order to increase resilience for smallholder livelihoods. This is an early report of an emerging outcome story.

c. Financial Summary (1/2 page)

IWMI had a total allocation in 2015 of USD290,346 across the four Flagships. This section will be updated after the end of April 2016 when the 2015 accounting has been finalised.

SECTION II– IMPACT PATHWAY AND INTERMEDIATE DEVELOPMENT OUTCOMES (IDOS)

a. Progress Along the Impact Pathway (1/2 page)

- Each Centre should complete Table 1, in Annex 1 and provide a narrative (C.1 to C.3), referring to those indicators from the table in Annex 1 that are relevant to the CRP.

Meanwhile,

- The narrative of progress towards outputs, towards achievement of research outcomes and IDOs and by Region/ALS and towards impact should be structured by Region/Agricultural Livelihood systems as indicated below and include links to clear research evidence, publications and other supporting materials.

- Please delete the Region/ALS combinations that are not relevant for your centre and report only on region/ALS where your centre's activities are focused.

b. NAWA/ Irrigated

I. Progress towards outputs (2 pages)

The research in the Nile Delta, Egypt jointly conducted with Water Management Research Institute has been successful in delivering an output despite very limited resources allocated to this activity. The DS resources were complemented with bilateral resources in order to deliver the output. The research focussed on the underground water in the Nile Delta which is key to supplementing the declining surface water source of the Nile http://mel.cgiar.org/uploads/reporting/PYu3gAudyOHaMRYSxrDMWNwTyD1Eub.pdf. This piece of work highlights an important element of water resources that one needs to have a systems perspective by making connections between the different types of water resources that need to be holistically managed in order to promote and enhance livelihoods in the dryland areas. The Nile Delta Aquifer is one of the largest aquifers in Egypt. Progress towards the achievement of research outcomes and IDOs (2 pages)

Summarise major successes in the progress towards research outcomes and IDOs. Refer to relevant indicators from Table 1, where relevant and to the indicators of progress towards the CRP's IDOs .

Water Research is of central importance to policy makers. IWMI decided to work with Water Management Research Institute in order to influence policy within the Government of Egypt. Key messages from the final report will be shared with policy makers in order to take into account the research output from this activity. The Egyptian Government sees water resources and water security issues as very important and the research outputs will contribute towards policy engagement and dialogue.

II. Progress towards Impact (1/2 page)

If/when relevant major contributions towards understanding impact and impact per se should be summarized, with a web link to more detailed documents.

The plan is that the findings will be taken up by policy makers and result in more efficient conjunctive surface and ground water use. One of the expected impacts is that farmers and water managers will be better informed on the linkages between surface and ground water and the dynamics between the two. The choice of partners such as Water Management Research Institute was carefully made so that research outputs would lead to uptake and lead to impact in the long term.

III. Unexpected Outputs, Outcomes and or Impact

Please summarise any unexpected outputs and outcomes that contributed to impact and progress towards IDOs and Impact. Please include links to relevant documents and research evidence.

c. ESA/Irrigated

I. Progress towards outputs (2 pages)

Summarize major successes in producing outputs; provide links to additional descriptions of these achievements. Refer to indicators from Table 1, as relevant.

The research on Agricultural Water Management was conducted in the Chinyanja Triangle in 2015 with partners who include Total Land Care, University of Malawi's Chancellor College and University of Kwazulu-Natal in South Africa. The aim of the research was to finalise most of the key data collection so that 2016 would focus on entrenching the systems research aspects and synthesising and writing up the data that has been collected so far.

One of the key outputs was on the bright spots for agricultural water management (Senzanje, A. 2015. Agricultural Water Management Interventions (AWMI) for Sustainable Agricultural Intensification (SAI) in the Chinyanja Triangle mel.cgiar.org/uploads/reporting/RDbiXAHcXd.zip). This technical report sought to identify a suite of SAI technologies which have worked within the broader Chinyanja Triangle. Such technologies would help improve rural livelihoods in a gendered manner.

Whilst agricultural water management technologies help improve lives, the gender aspects have to be interrogated so that there is a better understanding of whose poverty was being alleviated bringing in an important gender dimension. In this respect the research also produced an output (Tagutanazvo, E. and Mapedza, E. 2015) http://mel.cgiar.org/uploads/reporting/9W90YabLJwDrLsAfUXDVvuSGp1UeX0.docx. The Dryland Systems Program which uses a systematic approach is best placed to look at gender issues which transcend the different livelihood options that the household might want to explore. The research found out that extension biases were further disadvantaging women from further benefiting from agricultural water management technologies such as irrigation. Gender solutions, based on the research in the Chinyanja Triangle require holistic solutions which addresse not only access to the technology, but also addresse the barriers that make it difficult for women and men to be more productive even after accessing the technology.

Agricultural Water Management has to be understood in the interconnectedness of decisions made and how decisions made upstream will also affect downstream uses. In this case a broader Shire River Basin water governance was looked at and a policy brief was finalised (Lautze, J. 2015 http://mel.cgiar.org/reporting/report/id/146). Policy Brief on fit-for-purpose institutional development at the appropriate transboundary scale, IWMI, Policy Brief).

The link between gender and tenure remains one of the key levers which can unlock productivity in the dryland areas. The research looked at land tenure within the matrilineal society of Ntcheu District. The preliminary findings were shared at the Association of American Geographers (AAG) in Chicago as well as the WaterNet/Warfsa/GWP-SA Symposium in Mauritius in October 2015. In both events an interesting discussion and feedback was generated.

Though the support of Drylands Program a journal article based on past work in South Africa has also been published (Mapedza, Everisto et al. 2015 http://mel.cgiar.org/reporting/report/id/2807). A book chapter also based on the same irrigated agriculture in the dry parts of South Africa is Limpopo Province was also published (Van Koppen et al. 2015 http://mel.cgiar.org/uploads/reporting/kQhJEBPSKKJPbZl44zwxZcAK25oCOX.pdf).

II. Progress towards the achievement of research outcomes and IDOs (2 pages)

Summarise major successes in the progress towards research outcomes and IDOs. Refer to relevant indicators from Table 1, where relevant and to the indicators of progress towards the CRP's IDOs .

One of the major successes of our research was the request by IFAD to advise them on the small holder irrigation work in Malawi on institutional and governance issues. These are similar to the aspects we have been working on as part of the Drylands Research Program.

We have also had discussions with the World Bank's Shire Program in Malawi where the GILIT would be used in the planed irrigation schemes as part of the Shire River Basin Development Plan. This means that the tool will be able to influence more agricultural water management interventions beyond the DS research in the Chinyanja Triangle. The World Bank and the Government of Malawi are also setting gender indicators where they expect of the program beneficiaries being women. An NGO namely Total Land Care plans to use the GILIT tool as well.

III. Progress towards Impact (1/2 page)

The Dryland Systems research is very clear that we are not conducting research for the sake of research. Our research in the Chinyanja Triangle is premised on finding solutions which would improve the livelihoods of poor men and women within the dryland areas. The way we have been conceptualizing this in our research is to look at the reverse impact pathway. We started by thinking at what is the impact we are aiming for and then move backwards to look at how agricultural water management interventions could contribute towards such an impact.

IV. Unexpected Outputs, Outcomes and or Impact

IWMI has been able to identify synergies across the different CRPs and tried to make the most of the limited resources. Within Malawi, as in the rest of the Southern Africa region, drought is being experienced. Ironically, Malawi, Zimbabwe and Mozambique also experienced flooding for part of the season and human lives, livestock and crops were destroyed. This also increased the call for improved water management through dams so that water can be used for irrigation during the dry spells. Agriculture Water Management is on the agenda for Malawi as well as other southern African countries. Africa Dialogue program on Channel Africa interviewed IWMI researchers on how the drought is affecting the southern Africa region https://intranet.iwmi.org/iwmi-comments-on-the-drought-in-southern-africa-on-national-radio.aspx.

Please summarise any unexpected outputs and outcomes that contributed to impact and progress towards IDOs and Impact. Please include links to relevant documents and research evidence.

d. Central Asia/ Irrigated

I. Progress towards outputs (2 pages)

Summarize major successes in producing outputs; provide links to additional descriptions of these achievements. Refer to indicators from Table 1, as relevant.

IWMI-Central Asia Office has been involved in number of activities in the Ferghana Valley Action Site of Central Asia Flagship. Below is given the progress on each activities within the Ferghana Valley Action site:

Among them: Activity: 5.1 Enhancing Water User Association (WUA) role in water allocation and management via institutional interventions, cluster: System Sustainability Enhancement.

Within CRP DS activities in Ferghana Valley, there has been done in-depth analysis of water governance situations at WUA level in two countries of Ferghana Valley: Tajikistan and Uzbekistan. This research helped to identify what are the major factors and determinants that impede collective action in the level of WUA in order to improve operation and maintenance of on-farm irrigation and drainage systems. The approach to conduct research was based on qualitative as well as quantitative data analysis. Initially, in-depth survey as well as focus group discussions with key informants have been conducted in 2014. However, the process of cross-checking results have been done in 2015 on findings of the 2014 research findings. The research activity has shown that it is important because leading Swiss Institutes, German Institutes and Multinational Development Banks such as World Bank also concentrating their projects to find out what are the obstacles and hindrances to make viable operations of WUAs which have been created more than ten years ago. Taking into consideration our research findings, key-note presentation as well as extended abstract of the paper has been published in the International Forum titled: “Agriculture and climate change in transition economies”. Session B1: Climate change, water resources and agricultural development in Central Asia on June 16-19, 2015 at Leibniz Institute of Agricultural Development in Transition Economies (IAMO), Halle, Germany. The program of the Forum is at: http://projects.iamo.de/fileadmin/veranstaltungen/iamo_forum/2015/IAMO_Forum_2015_Detailed_program_11_06_2015.pdf and abstracts with presentations at http://projects.iamo.de/forum/2015/abstracts-and-presentations.html

Anarbekov and Mukhamedova, Nozila. 2015. URL: http://projects.iamo.de/fileadmin/veranstaltungen/iamo_forum/2015/Presentations/IAMO_Forum_2015_B1_3_Mukhamedova.pdf

Research findings have been contributed in the discussion of the Policy workshop of the InDeCa project of the Volkswagen Foundation program: "Between Europe and the Orient - A Focus on Research and Higher Education in/on Central Asia and the Caucasus". In addition on May 20, 2015 by the request of Tashkent Institute of Irrigation and Melioration and InDeCA research, project staff has provided presentation on importance of institutional innovation in agricultural extension for the improvement of water productivity at plot level. Presentation has been prepared based upon submitted paper More details of the event you can find at http://www.indeca-project.de/index.php?page=news_events. Project staff has actively participated in the consultation workshop organized by World Bank Office in Tashkent on a recent assessment of the quality of irrigation water management in Uzbekistan on December 09, 2015.

Final Research report has been finalized by first decade of December, 2015 and uploaded to http://mel.cgiar.org/.

Among them Activity: 4.1 improved irrigation system/Growing wheat-mung bean, cluster: System productivity improvement

Initially we planned to conduct 2 farmer field days but due to budget constraints two farmer field days have been combined into one farmer field day which covered winter wheat and mungbean crops cultivation of irrigation technologies.

Short summary report is available and it's uploaded to www.mel.cgiar.org

The following experiments have been conducted within the research project in K. Umarov Water Consumer Association, Tashlak District of Ferghana Province in Oct 2014. Three types of the winter-wheat varieties were cultivated in Gulamjon Mashrab Ugli farmer's 1,3 ha of land. These three types are: a) winter variety Nota from Russia; b) new variety Elomon; c) new variety Hisorak. The new varieties of winter wheat have been obtained from Institute of plant science of Republic of Uzbekistan. Three types of winter-wheat experiments have been conducted with application of three types of irrigation technologies: farmer practice (control); cut back furrow irrigation and alternate furrow irrigation.

Total irrigation application rate was 3683 m^3/ha under conventional irrigation, 2632 m^3/ha under cutback irrigation, and 3011 m^3/ha under alternate furrow irrigation. Highest yield was recorded for Elomon variety using cutback furrow irrigation, 6.3 t/ha; yield of Hisorak variety was 5.6 t/ha and yield of Nota was 4.5 t/ha under cutback furrow irrigation. Introducing new variety of winter wheat and cutback furrow irrigation increased irrigation water productivity from 1.25 kg/m3 to 2.38 kg/m3, or almost doubled. Energy productivity is increased from 0.26 to 0.33 kg/MJ.

In June, 2015 winter wheat was harvested, afterwards there have been cultivated mung-bean as the second crop after winter wheat in the area of 0,7 ha. These experiment has been done jointly with AVRDC who provided a new variety of mung-bean crop "Durdona". Three types of irrigation technologies have been applied in the process of cultivation of winter-wheat. Mung-bean harvested in Oct 2015. In both experiments, cut back furrow irrigation has shown its advantages in comparison to other irrigation technologies. Mungbean sown after harvesting of winter wheat and received pre-sowing irrigation and one more irrigation during cropping season produced additional 1.6 t/ha of grain. Total water productivity is increased from 2.38 to 3.5 kg/m3 and energy productivity from 0.33 to 0.5 kg/MJ.

Need to mention that it was farmer interest to be part of the project because he got new varieties of winter wheat as well as mung-bean crops plus learned the different irrigation techniques to get more yields by applying different irrigation technologies. Overall, one female farmer and 17 house keeper females participated and observed all farming practices of cultivation of mungbean. During the farmer field day, two other female, staff of local authority 'Mahalla' joined the event. Whilst the project aimed for 30% of the participants to be women, in practice this was not met all the time due to gendered power imbalances which deny women access to means of agricultural production.

There have been involved three consultants in the experiment: Khabibullo Umarov – agronomist, Botir Abdurakhmanov – water/energy productivity and Matazimov Abdurasul – soil moisture/field water specialist.

Among them Activity 7.1 Gender study on household policy analysis

Cluster: Socio-economics and policy

In 2015, this activity has also shifted towards the proof of concept of the research phase. During the meetings of Interdisciplinary Research Team meetings in Tashkent and Ferghana (May 12-15, 2015), it has been decided that this activity should be incorporated into the cluster: "Socio-economics and policy" based on System Approach in the CRP POWB of Irrigated Systems ALS. This activity is conducted in Ferghana Valley Action Site as was planned initially before the budget cuts. Need to mention that due to budget cuts, it has affected planned activities in the beginning of 2015, specifically to carry out Gender Strategic Research on DS. Therefore, this activity has fully changed it scope from carrying out Gender Strategic Research on labor migration towards understanding and reporting gender aspects of Water Use Efficiency at household level. During the half year reporting, it has been agreed to submit report which provides analysis of Gender aspects of Water Use Efficiency at household level in Toshloq district of Ferghana Province, Uzbekistan. Due to project budget cuts, it has been agreed with ICARDA focal point that this year there will not be carried out any activities with regard to Gender Strategic Research furthermore, IWMI's Central Asia Gender focal point got an offer to carry out her PhD studies at German Research Institute IAMO. She left to IAMO this May for studies.

Among them Activity 9.1 Assessment of water and energy productivity

Cluster: System interactions (internal & external)

This activity is closely linked with Activity: 4.1.

During the 2015, water and energy productivity has been calculated with experiments in Activity A4.1. Drafted journal paper on water and energy productivity for double crops http://mel.cgiar.org/uploads/reporting/eQ31Fu6qgQ.docx.

Among them mapped bilateral project of IWMI: Improved potato varieties and water management technologies to enhance water-use efficiency, resilience, cost effectiveness and productivity of smallholder farms in stress-prone Central Asian environments.

On 20 February 2015, International Water Management Institute (IWMI) Central Asia Office in collaboration with International Potato Center (CIP) organized the teleconference on "Water saving techniques and cultivation of new varieties of potato crop in conditions of Samarkand Province and Fergana Valley". The teleconference linked scientists and farmers from Fergana valley and Samarkand region. The event was organized in collaboration with Andijan Agricultural Institute and Samarkand Agricultural Institute. Potato growing farmers, including 10 female farmers, and scientists from both regions, total 80, participated in the event. Samarkand province is the major producer of potato crop in Uzbekistan. The objective of the event was to share findings of the 'Improved potato varieties and water management technologies to enhance water-use efficiency, resilience, cost effectiveness and productivity of smallholder farms in stress-prone Central Asian environments' project funded by BMZ/GIZ with end users.

The event raised interesting discussion around potato crop with focus on water saving, planting material issues, quality and market. The researchers highlighted a potential for significant reduction of irrigation applications to get the same yields of potato crop grown in summer after winter wheat harvesting. Several farmers including 10 female farmers shared their experience on

growing potato in Samarkand and Andijan. Professor Ostanakulov Rector from Samarqand Agricultural Institute expressed importance a collaboration with IWMI and CIP in future and conducting potato research in Samarkand region. The event has been also broadcasted in Diyor programme of Samarkand Provincial Television and radio broadcast channel on 23.02.2015.

II. Progress towards the achievement of research outcomes and IDOs (2 pages)

Summarise major successes in the progress towards research outcomes and IDOs. Refer to relevant indicators from Table 1, where relevant and to the indicators of progress towards the CRP's IDOs .

All activities in Ferghana Valley have contributed to achieve IDO2 and 4.

On 09 June 2015, IWMI Central Asia office organized a famer field day on the above mentioned site, gathering around 60 participants, including 20 females in two sessions, including farmers, Water User Association personnel, representatives of district and province water departments, mahalla local governance officials and other interested stakeholders.

Based on the recommendations, farmers started cultivating mung-bean after harvesting winter-wheat. With the mung-bean as second crop it generates a good income and helps to increase land productivity, soil fertility and efficient water application.

More than 15 farmers, including 1 female, committed to apply mung-bean after winter wheat in the wider area for the next years cultivation

During the period of 2014-2015, simultaneously with data collection, there have been done activities directed towards capacity building of case-study WUAs Governance bodies. In each case-study WUA, members of the WUA Council passes trainings and proposed the improvement of the composition of WUA Council with at least 20% of women members. Out of 5 case-study WUAs today, 3 WUAs adhere to the proposed contribution from the research project. Almost all 5 WUAs governance bodies understood the essence and necessities to operationalize the work of WUA Council. WUAs have understood without proper public participation in the process of water allocation, it is impossible to achieve equitable, reliable and adequate water distribution inside WUA. Clear recommendations have been designed inside the country contexts as well as on the regional level.

The research study on assessment of water and energy productivity has concluded that the aim of any agricultural practice is to achieve maximum profit. However, the viability of a production system does not depend solely on crop yield, but also on its efficiency in the use of available resources.

III. Progress towards Impact (1/2 page)

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The major impact of the work was that other on-farm irrigation development project hasn't addressed water governance issues at WUA level. WUA Governance is not operational not due to lack of WUA employees capacities but it is an issue within the institutional and economic environment where WUAs are operating under. Most of the Donor project underestimate the presence of indigenous knowledge in the places with application of irrigation technologies and role of informal institutions within the rural societies.

In all three countries of Ferghana Valley there is indigenous knowledge as well as informal institutions that are more active and helpful versus official formal ones. Among such structures in Kyrgyzstan is Court of Aqsakals, in Tajikistan Djamoats, in Uzbekistan Qishloq Fuqaroral Yigini. It is clear that there are institutional aspects which could be exchanged and learned between WUAs in the region such as collective action of Kyrgyz WUAs, State support and state positive interference of Uzbek WUAs and from Tajik WUAs setting the irrigation service fee. In all countries, there is required to improve water accounting on the boundaries of Rayvodkhozes, Canals and WUAs.

IV. Unexpected Outputs, Outcomes and or Impact

Please summarise any unexpected outputs and outcomes that contributed to impact and progress towards IDOs and Impact. Please include links to relevant documents and research evidence.

e. South Asia/Rainfed

I. Progress towards outputs (2 pages)

Summarize major successes in producing outputs; provide links to additional descriptions of these achievements. Refer to indicators from Table 1, as relevant.

IWMI-South Asia (India) has been involved in various activities in rain-fed and irrigated system in India. The progress achieved towards the rain-fed action site is given below:

Activity: Weather index insurance for livestock fodder

Managing the risks associated with increasingly variable climate is key to successfully adapting agriculture, and to reducing the vulnerability and dependence brought about by climate-related risks and consequently the poverty. Innovations in climate risk management offer win-win opportunities that contribute immediately to agricultural development and improving food security, while building agricultural resilience to changing climates. These include adaptive management in response to seasonal climate forecast, weather index insurance, and improved early warning and early response systems along with other practices.

In view of tiny and scattered landholdings in India, index based crop insurance is considered to be the most effective tool to minimize losses in the event of climatic variability. Over the years, a number of agricultural insurance products were developed and promoted by the government. In recent years, private sector and non-governmental organizations were also engaged in agricultural insurance sector. Despite concerted efforts by the public and private sector, agriculture insurance is not as attractive and successful as general, life and health insurance. Lack of location specific insurance contracts, very little awareness, absence of transparency, and delay in getting claims are being cited key obstacles in large-scale acceptance of agricultural insurance by the famers. On the other hand, livestock fodder is affected with the scarce rainfall in the arid and semi-arid districts, which is not considered by the insurance companies. Hence, a pilot program is planned to address the livestock fodder in the dryland systems under rain-fed conditions.

In delivering the output, IWMI has worked out with different partners (Farmers, Bajaj Allianz: underwriting partner and eemausam: capacity building partner) to lead the activity. The activity was implemented in Kharif 2014 and 2015. A total of 50 farmers (45 men and 5 women) were enrolled for piloting the livestock fodder insurance. In Kharif 2014, cumulative rainfall (<360 mm) was considered in the term sheet for livestock fodder insurance. In Kharif 2015, term sheet was revised for implementation from cumulative rainfall to phase-wise cumulative rainfall. This is because the phase-wise cumulative rainfall structure could be better to assure well distributed

rainfall and in-turn will help in continuity of fodder availability. Eight steps are followed in implementing the activity viz., monitoring and evaluation to revise the contract, contract pricing, development of contract administration tool kit, client education, farmer recruitment, risk transfer, contract monitoring, and claim process.

The contract revision (phase-wise) and drought conditions in the action sites has given pay-out of Rupees 1500-3350 per acre in the action sites. Hence, it is observed from the present study/activity that the phase-wise cumulative rainfall helped the farmers to manage the risk.

Activity report is uploaded to the individual reporting section in dryland system website.

I. Progress towards the achievement of research outcomes and IDOs (2 pages)

Summarise major successes in the progress towards research outcomes and IDOs. Refer to relevant indicators from Table 1, where relevant and to the indicators of progress towards the CRP's IDOs .

The weather index insurance product developed for the livestock fodder from the activity has led to the implementation through dryland system program. The awareness programs helped to target men and women farmers and improved their knowledge for participatory approach. The output has to be submitted/published in the public forum or workshops during 2016 to achieve the upscaling process.

II. Progress towards Impact (1/2 page)

If/when relevant major contributions towards understanding impact and impact per se should be summarized, with a web link to more detailed documents.

III. Unexpected Outputs, Outcomes and or Impact

Please summarise any unexpected outputs and outcomes that contributed to impact and progress towards IDOs and Impact. Please include links to relevant documents and research evidence.

f. South Asia/Irrigated

I. Progress towards outputs (2 pages)

Summarize major successes in producing outputs; provide links to additional descriptions of these achievements. Refer to indicators from Table 1, as relevant.

The activities taken-up in the irrigated system by IWMI, India is a) Testing of new practices on micro irrigation, b) piloting of drip irrigation with selected crops under PPP mode and c) capacity building on drip irrigation.

The earlier studies from IWMI-TATA program has found that very few farmers had the knowledge on the drip operation, maintenance and fertigation practices. It was also revealed that the drip

fertigation with proper system maintenance resulted in yield increase in various crops to an extent of 6-8 %. Considering the importance of drip maintenance practices, drip irrigation capacity building and management initiative for maximizing productivity and income was conceived and implemented in Andhra Pradesh and Karnataka States under Dryland System Program during 2015.

Implementation of drip irrigation to various crops (chilli, Tomato, onion, Brinjal, castor, etc) was initiated during 2015 in Indian action sites. Ananthapur and Kurnool districts from Andhra Pradesh state, Bijapur district from Karnataka state were identified as action sites for capacity building and implementation of activities.

The content of the training program is to mainly focus on operation and maintenance of drip irrigation system beside irrigation and fertigation scheduling. This helps farmers in a bigger way to learn the drip and fertigation technology along with the periodical maintenance. A series of training programs were conducted in the action sites during June, August and September 2015. The training programs were focused on drip system maintenance, water and fertigation scheduling. Women farmers are also targeted in implementation and training programs.

The new energy efficient and resource use practices viz., solar irrigation pumping, farm pond integrated with drip kit and water budgeting and fertigation scheduling with drip system for various crops are implemented during the year. The main objective of the piloting/demonstrations is to improve the crop water use efficiency with efficient irrigation and fertigation scheduling. Jain irrigation system Ltd (JISL) was involved on a public private partnership (PPP) mode for installation and training programs. Many of the farmers in the study regions are aware of the micro irrigation and benefits but do not schedule irrigation and fertigation for efficient resource management. Hence, initiatives were taken on the development of package of practices, irrigation scheduling with drip and fertigation. Farmers have also come forward to take the initiative on participatory approach. The results have shown significant impact in improving the water use efficiency through drip irrigation water scheduling with suggested operational time http://mel.cgiar.org/uploads/reporting/DMJBMEFacYVgRkfhfOO1k2nQy48BTv.pdf.

II. Progress towards the achievement of research outcomes and IDOs (2 pages)

Summarise major successes in the progress towards research outcomes and IDOs. Refer to relevant indicators from Table 1, where relevant and to the indicators of progress towards the CRP's IDOs.

The activities have created awareness to male and female farmers on the importance of water budgeting, fertigation and system maintenance. Water budgeting and fertigation according the plant growth status was suggested on the innovation platform workshops to the stakeholders. This has created awareness to the farmers, NGOs, scientists and horticultural department officials.

The results/output from the activities has developed evidence base knowledge on climate smart adaptation practices for sustainable energy efficient technologies and practices such as solar irrigation pumps integrated with micro irrigation.

The research on insurance has brought in Bajaj Allianz which is private sector and will most likely continue to insure small holder farmers beyond the lifespan of the DS Program. In March 2016 a workshop has already been planned to try and bring in more insurance companies so that they can learn about the model implemented with Bajaj Allianz. The idea is to have more insurance

companies in India up taking the current insurance model so that more farmers are insured for climate variability and minimise the negative impacts on the livelihoods.

III. Progress towards Impact (1/2 page)

If/when relevant major contributions towards understanding impact and impact per se should be summarized, with a web link to more detailed documents.

The research in South Asia is already on schedule to achieving impact. The planned workshop in March 2016 is one of the steps planned to make sure that the envisaged impact at the planning stage materialise.

IV. Unexpected Outputs, Outcomes and or Impact

Please summarise any unexpected outputs and outcomes that contributed to impact and progress towards IDOs and Impact. Please include links to relevant documents and research evidence.

SECTION III – CROSS-CUTTING ISSUES

a. Gender Research Achievements (1 page)

This section has to be developed jointly with your Center's Gender Focal Point

I. Please describe the key Dryland Systems gender research achievements in 2015 with reference to the specific CRP's outputs and outcomes to which they contributed, with clear web links to gender research evidence, publications and other supporting materials.
II. Please describe key challenges encountered in mainstreaming gender into Dryland Systems research and any mitigation actions taken to address the challenges.
III. Please use the process indicators specified in the CRP Gender Strategy to assess the effectiveness of gender research mainstreaming in 2015.

IWMI has participated and led the Strategic Gender Research in Chinyanja Triangle. The strategic research focussed on gender and agricultural extension. The research sought to understand how agricultural extension was meeting the requirements of both men and women. The outputs (Tagutanazvo, E. 2015 http://mel.cgiar.org/uploads/reporting/ONd2E5hy41EMVBWryfeIMY7mZdIAYY.docx; Tagutanazvo, E. 2015b http://mel.cgiar.org/uploads/reporting/9W90YabLJwDrLsAfUXDVvuSGp1UeX0.docx). The extension research looked at how gender and extension could be addressed. This was based on a sharing of the focus on extension across the different flagships especially West Africa and Sahel and South Asia. More of the cross flagship synthesis is expected in 2016.

One area where gender was key was the complementary support of WLE and DS towards the pilot testing of the Gender in Irrigation Learning and Improvement Tool (GILIT). The pilot testing of the GILIT was conducted in Uzbekistan and Malawi. This tool offered an opportunity to engage partners

who could then uptake and use it more widely. Total Land care and the World Bank's Shire River Program have indicated that they will use the tool to engender their agricultural water management interventions within Malawi.

One of the collaboration was the fact that the department of agricultural extension with the support of United Nations Women (UN Women) and Food and Agricultural Organization (FAO) had approved a Gender Policy which was supportive of increasing attention to gender from training of extension staff and also introducing reporting on gender sex-disaggregated data for all extension training and activities.

In South Asia offers more opportunity for increasing the gender participation of female farmers. The current challenge is that the cultural practices which inform gender are more engrained a lot which poses a high obstacle to change of social relations and roles of women and men as compared with other flagships. This calls for a more concerted effort in order to change the gender power relationships which are also intertwined with caste. Through our insurance schemes we were looking for the role of more women to participate. We were working with government and the private sectors. So we hope that gender considerations will also be entrenched in their future activities.

One of the key gender achievements is that through the training on non-gender researchers as part of the gender training activities this has brought awareness among natural scientists contributing to the drylands. Whilst gender is not perfectly being addressed by natural scientists, they have started appreciating its importance and now know when to ask for assistance. This is a positive development since even some of the non-social science researchers are appreciating why gender matters.

In Central Asia, more and more female farmers are given opportunity to participate in the Governance as well as Management of water management organizations. It is also the policy of the State to encourage female participation in the decision making process. In the Ferghana Valley gender is an important aspect of understanding agricultural production. The GILIT was also pilot tested in the Ferghana Valley as well as in the Chinyanja Triangle. The data collection entailed female only and mixed as well as males only focus group discussions. One of the general observations was that the former socialist countries such as Uzbekistan are increasingly experiencing feminization of agriculture with men migrating to urban areas and Russia to look for employment opportunities (Mukhamedodova and Wegerich 2014).

b. Partnerships Building Achievements (1 page)

- Please describe the key partnership building achievements (if any new ones since last year) and associated strategic partnership issues, including public- private partnerships where relevant with clear links to research evidence, publications and other supporting materials.
- Please include a brief description of mechanisms designed to align CRP with priorities in national, regional bodies etc.
- Please describe CRP research outputs and outcomes are being used by partners
- Please describe strategic interactions with other CRPs and their effectiveness.

IWMI in the Chinyanja Triangle has established partnerships with NGOs such as TLC and universities such as University of Malawi's Chancellor College. Our key partner has also been the Government of Malawi in order to be able to engrain the changes and uptake of our research findings to policy level. We also worked with agricultural extension staff as part of the research team so that we could influence how they operated even after the DS Program has come to an end. We also made linkages with IFAD and the World Bank. We also linked with the Japanese Tobacco Company.

IWMI-Central Asia have concluded a number of Partnership to carry out activities within CRP DS in Ferghana Valley Action site. In particular, in Uzbekistan we worked with the Institute of Plant Science, specifically in obtaining the new varieties of winter wheat. AVRDC for the experimentation for new varieties of mung-bean under different irrigation technologies. Water Consumer Association (WCA) K. Umarov in Tashlak district of Ferghana Valley was responsible for field experiments and for case-study WUA for assessing the water governance on-farm level;

WCA Tomchi-Kuli in Markhamat District, Andijan Province as well as WCA Qodirjon-A'zamjon in Kuva district, Ferghana Province have been chosen for assessing the water governance on-farm level.

in Tajikistanlocal partners are as follows: Sughd Basin Water Management Organization, Jabbor Rasulov District Water Management Authority and Water User Association (WUA) Obi Ravoni Ovchi-Qalacha in B. Ghafurov District and X. Olimov in J. Rasulov District.

There has been also achieved Strategic partnership with regional and international players, in particular: IWMI has been able to associate PhD studies of Mr Oyture Anarbekov at University of Bern, Switzerland with the CRP DS on activity 5.1 Enhancing WUA role in water allocation and management via institutional interventions, cluster: System Sustainability Enhancement. 2015 field activities in Sughd Province has been supported within Oyture's PhD studies at University of Bern, Switzerland. There is a mutual interest to continue partnership in common pool resource management topic.

IWMI signed an MoU with Leibniz Institute of Agricultural Development in Transition Economies (IAMO), Halle, Germany, specifically to pursue research on improvement of common pool resource management.

IWMI also engaged regional players such as: the Executive Secretariat of the International Fund for Saving Aral Sea (EC-IFAS) in particular, linking CRP DS research activities with the priorities of PBAM-3 program of IFAS.

Synergies were also forged with CRP 5, Water Land and Ecosystems.

In southern Asia linkages were made with CCAFS.

In the process of implementation and capacity building various partnerships were concluded:

- Public Private Partnership was established with Jain Irrigation System Ltd (JISL) for designing the drip system and technical support during the implementation.
- Established partnership with the Bajaj Allianz for undertaking the insurance products developed
- Partnering with Eemausam for training the stakeholders on weather index insurance products

c. Capacity Building Achievements (1 page)

This section has to be developed jointly with your Center's CapDev Focal Point

Capacity development was conducted at different levels.

- 2 Masters Students were funded under the DS Program from University of Malawi's Chancellor College. Their dissertations are expected in the first half of 2016.
- On the ground capacity development. This was conducted through working jointly with agricultural extension staff so that there is co-ownership of research results which is most likely going to lead to outcomes without further explanations. This has been important especially for issues such as gender. Working with some extension staff they began to realise the importance of taking gender into account as they plan their extension work in Malawi.
- Field training of farmers on agricultural water management. This was also done focussing on better organizational management for the Water User Association.
- More than 60 farmers, of whom 20 were females, learned application of different irrigation technologies for cultivation of different varieties of winter wheat and mung-bean.
- More than 20 scientists of whom 40% were female whose age ranged from 22 to 50 years from Andijan and Samarkand Agricultural Institutes as well as 60 farmers of Andijan and Samarkand Provinces exchanged views, experience and knowledge on application of different irrigation techniques to cultivate potato varieties;
- Seven WUAs have increased their capacity in water governance.
- 50 farmers (45 men and 5 women) are taking part in the weather indexed insurance for livestock fodder.

Series of awareness/training programs are conducted during the implementation.

- Trained 210 farmers on energy efficient methods (solar), water and fertigation scheduling with drip system through field trainings and innovation platforms.
- Created awareness to 50 farmers on the weather index insurance product for livestock fodder and suggestions were taken from farmers to revise the product from cumulative rainfall to phase-wise cumulative rainfall.
-

I. Please provide a synthesis of key achieves/outcomes related to CD activities and highlights/summary of trainings outputs and outcomes with clear links to research evidence, publications and other supporting materials.

II. Please use indicators from Table 1, as appropriate to indicate levels of CD outreach.

d. Risk Management (less than 1/2 page)

Please list at least three major risks that hindered the expected delivery of results by the CRP and describe the mitigation actions taken to manage these risks.

The main uncertainty for the CRP was the continuously changing funding. This made planning of the research more difficult. IWMI pre-financed some of the activities but further reductions had to

be addressed through cost saving measures and synergies across different CRPs. Some envisaged activities were postponed to 2016.

Reputational risk was one of the main risks as a result of the reduction in funding. Some of the partners whom we wanted to work with felt let down when some of the activities could not be conducted due to lack of funds. One of the activities IWMI had promised to fund was repairing a small part of the irrigation water reticulation and increasing the height of the weir so that more land could be irrigated. This was no longer feasible after funding reduction. The little amount of investment could have increased productivity of the irrigated area in the Kandeu Irrigation scheme in Malawi.

The research area was flooded and during the time of the floods all research activities were re-scheduled in order not to interfere with the relief effort taking place in Malawi. In India delayed monsoon and drought condition during the year, poor response from micro irrigation companies on installation of system delayed the demonstrations and implementation of farm pond integration with drip kit were some of the risks faced

The problem of continuous power cuts for operating the drip system also affected the onion crop in Bijapur district.

e. Lessons Learned (1 page)

I. Please describe the key Lessons Learned during the course of implementing Dryland Systems research activities in 2015, by evaluating the key indicators of progress in terms of quantitative and qualitative achievements.

II. If applicable, please describe the reasons why certain research avenues/activities did not produce the expected results and provide actions – taken or recommended – to adjust and/or develop new research activities in line with expected outputs and outcomes.

One of the key lessons drawn from implementing the research in 2015 was how central the systems perspective is in addressing the human livelihoods. In this view plans for the research activities proposed for 2016 brings together both CGIAR and non-CGIAR partners to be able to propose holistic solutions as opposed to single solution approaches. This needs to be sustained through looking at potential future funding sources to maintain the momentum and collaborative spirit that had been established.

Whilst the importance of gender in the Dryland Systems has always been understood, through the use of tools such as GILIT and strategic gender research has clearly helped to illustrate that there is still a lot of work that still needs to be done in terms of gender within the households as well as among the agricultural extension staff. Within our centres, more still needs to be done so that all researchers have a common understanding on gender. The training conducted for non-gender researchers was a very good start. Beyond the training, we need more gender specialists to assist in instances where support is required by biophysical and other non-gender researchers.

Whilst literature and the DS Program notes the central role that youths play in sustainable intensification in agriculture some of the study areas such as Chinyanja are facing huge outmigration by youths to the neighbouring South Africa for better employment opportunities. This is worsened by even agreements as far back as the 1970s for Malawi to provide labour for the

mining areas and the commercial farms in South Africa. One of the opportunities for Malawi would be offer those youths who want to stay in the Chinyanja Triangle an alternative livelihood option.

The other lessons drawn from the 2015 research activities are that the Dryland Systems Program through working with development partners such as Total Land Care has catalysed future collaborative efforts which go beyond the Drylands Program. Through the DS Program implementation in 2015 we have also developed stronger ties with research institutions such as universities such as Malawi's Chancellor College and University of Kwazulu-Natal in South Africa. These partners were implementing partners who contributed specific activities and outputs. Two MSc students were also supported through Chancellor College of University of Malawi.

When we irrigated wheat and mung-bean water and energy productivity performance have been assessed. Different technology applied there have been seen the influence under different technology application.

Looking to water-energy productivity, it allowed to choose appropriate irrigation technologies.

The phase-wise weather index insurance for livestock fodder will have a win-win situation to manage the risk due to climate variability. This has improved the pay-out to the farmers due to the delayed monsoons and drought conditions.

The new research initiatives on efficient energy use (solar irrigation pumps) with micro irrigation can give improved income with timely supply of scheduled irrigation in an environmentally friendly manner.

The inadequate rainfall increased the spread of aphid and virus transmitters, which are controllable, which reduced the chilli yield below the expected harvest.

f. CRP Financial Report

This section will be completed when your centre will close the accounting books in 2016.

IWMI had a total allocation for 2015 amounting to USD290,346 through Windows 1 and Window 2. In Central Asia's Ferghana Valley about USD6,702 bilateral funding mapped to the Drylands. IWMI covered four Flagships namely Central Asia, Ferghana Valley (about 33% of the budget), East and Southern Africa's Chinyanja Triangle (about 45% of the budget), South Asia (about 15% of the budget), North Africa and West Asia, in the Nile Delta of Egypt ((about 7% of the budget), The detailed project expenditure will be shared with the DS Program Office once the accounting has been completed.

SECTION IV - RESEARCH OUTCOME STORIES

Note: Please repeat the following template for each individual story submitted as part of your centre's 2015 annual report!

OUTCOME STORY 1

OUTCOME STORY 2

OUTCOME STORY 3

OUTCOME STORY 4

OUTCOME STORY 5

OUTCOME STORY Template

This template is intended for use of Dryland Systems scientists and partners to identify and highlight outcomes of their research activities funded by and/or mapped to the program. Each section in the template is followed by a self-check, which outlines criteria relevant to that section. The maximum number of word required to fill this template is 1450- 1500.

Name of research activity/project title:	WLE and DS
Flagship:	ESA
Geographical region:	Chinyanja Triangle
Name and email of Activity Lead:	Everisto Mapedza e.mapedza@cgiar.org
Name and email of Outcome Story Lead:	GILIT Tool
Activity Lead Center:	IWMI
Activity Partner Center(s):	TLC
Activity Partner CRPs:	WLE

1. Outcome Story Headline:

Guidance:

TLC Requests Gender in Irrigation Learning and Improvement Tool (GILIT)

SELF-CHECK – Have you:

☐ *Captured the overall message of the outcome story?*

☐ *Included an action verb?*

☐ *Captured the reader's attention?*

2. Outcome Story Abstract

As part of the WLE and DS collaboration on pilot testing the Gender in Irrigation Learning and Improvement Tool (GILIT) in Malawi one of the Directors, Mr Zwide Jere requested the GILIT for use in some of their projects to address gender issues. The tool was seen as key in helping them practically include gender issues in their programs.

Word limit: 200 words

SELF-CHECK – Have you:

☐ *Summarized the problem, program/activity, and outcomes?*

☐ *Provided a summary with specific measurable outcomes that avoids broad, sweeping statements such as "There was a noticeable increase in healthy eating habits"?*

3. Problem/Challenge Overview:

Some guidance:

Start with the issue, challenge, problem or opportunity that Dryland Systems has aimed to address. This should relate to one of the IDOs (resilience, wealth and wellbeing, food access, natural resources management, gender empowerment, capacity to innovate).

Clarify who this outcome story is about (e.g., farmer, scientist, community, research partner, policy maker, etc.) by adding a human interest angle. Who is/was experiencing this problem/challenge and how would they benefit if it was solved? What are the opportunities and what is at stake for a person, community or other group of people?

Word limit: 150 words

SELF-CHECK – Have you:

☐ *Described the issue(s), challenge(s), problem(s), opportunities being addressed and why are these important?*

☐ *Used data to frame the problem, including the social and economic costs?*

☐ *Specified the affected dryland population(s)?*

☐ *Specified the affected dryland area (in hectares)*

4. What are the main research activities:

Some guiding questions:

Please describe the main research question(s), activities, strategy and timeline.

What did you do to address the aforementioned challenge(s) and make the most of the opportunities available?

How were different research users engaged in or consulted in the research process?

How do you think this made your research better?

Word limit: 150 words

SELF-CHECK – Have you:

- ☐ *Described your approach of designing and implementing the research?*
- ☐ *Identified the various research users involved at different stages of the research process?*
- ☐ *Identified any major shifts or changes to the research activities and approach?*

5. What are the main Outcomes of your research?

An outcome is generally defined as the short-term and medium-term effect of an intervention's outputs, such as change in knowledge, attitudes, beliefs, behaviors.

TLC promised to use the tool to address gender concerns in their programs (see email).

Bearing this definiton in mind, please provide a short description of the actual changes that occurred as a result of your research activities and outputs. How are different users utilizing your research outputs? what has changes in their practice, policy and/or investment? How and why did they take up the research outputs? What are the key milestones in the timeline of change that occurred? What is the potential for scaling the outcome up and out?

Word limit: 200 words

SELF-CHECK – Have you:

- ☐ *Described actual changes that occurred as opposed to desired or anticipated changes in your initial research proposal?*
- ☐ *Identified any outcomes that you did not intend or anticipate? How are these justified and/or attributed to your activities?*
- ☐ *Demonstrated the scalability of the outcomes for greater reach and impact (in terms of both dryland communities and land area?*

6. What are the main research Outputs that resulted in the outcome(s)?

Gender in Irrigation Learning and Improvement Tool (GILIT)

Outputs are generally defined as the tangible products or direct deliverables of your research activities, such as research papers, publications, policy recommendations, models, on-farm trials, methodologies, technologies, assessments, improved seeds, increased yields, hectares of degraded land restored, quantity of natural resources

management, efficiency gains, new institutional arrangements made, participatory research actions, innovation platforms, trainings, etc.

Bearing this definition in mind, please list the main research outputs of your research that led to the outcomes reported above.

Word limit: 150 words

SELF-CHECK – Have you:

- ☐ *Identified all types of outputs delivered and observed?*
- ☐ *Included facts and figures to demonstrate the strength and outreach of your research outputs?*
- ☐ *Avoided vague output statements such as "farmers benefited from increased food security as a result of our assessments of crop varieties."*

7. Who were the intermediary and direct users of your research outputs and what role did they play in achieving the outcome:

Guidance:

TLC an NGO in Malawi

Please list the main intermediary and direct users of your research and indicate the role they played in achieving the reported outcomes

For example:

X partners were the intermediary users of the research outputs for dissemination of the technology/tool/practice

Y partners were the intermediary/direct users of research outputs for formulation of policy or development project

X number of farmers in X area were are the direct users of the technology/tool/practice

Word limit: 100 words

SELF-CHECK – Have you:

- ☐ *Clearly identified all users and distinguished between intermediary and direct users of your research?*
- ☐ *Described their specific related role in terms of research, development, technology dissemination, policy formulation, adaptation, adoption, etc.?*
- ☐ *Used facts and figures to strengthen your statements?*

8. How were your research outputs used (will be used in the future):

The tool will be used to check how the irrigation schemes being implemented by TLC are addressing gender issues. IWMI had even been requested to help support one of their newly approved project on solar powered irrigation in Malawi.

Describe how your research output was used and what changes occurred? How did these changes set the stage for the achievements of the outcomes reported above? Where there any research activities and changes you did not anticipate, and if so, how did you

adjust? What steps did each user take to adopt, scale out or scale up the results of your research outputs? What are the follow up actions to ensure sustainability?

Word limit: 150 words

SELF-CHECK – Have you:

- ☐ *Described actual changes that occurred during or immediate after the release of your research outputs?*
- ☐ *Identified how the use of research outputs set the stage for achieving the outcomes?*
- ☐ *Identified steps and actions for ensuring sustainability?*

9. What is the Evidence of Your Research Outcomes:

Provide solid evidence for this outcome (Document, news article, impact assessment, etc.) in terms of actions and changed behaviour of users and beneficiaries of your research. How can these changed actions and behaviours be sustained in the long run?

Word limit: 150 words

SELF-CHECK – Have you:

- ☐ *Identified how the actions and behaviours of key stakeholders have now changed?*
- ☐ *Identified how these changes will be sustained?*

10. Testimonials:

Will email the TLC Director (see email)

Testimonials are written or recorded statements that support program credibility and level of expertise. They also strengthen our reputation by expressing the trust that other people have in the program and its offerings. They are a wonderful way to help us to attract a deeper interest from existing and prospective stakeholders. Testimonials are the holy grail of marketing and advertising. Marketing Experiments demonstrate that testimonials can work wonders. For example, a written testimonial can increase customer conversion by 25%; video testimonials on the other hand, can increase the conversion rates increased by a whopping 201%!

- ☐ Testimonials from Beneficiaries (quote, video, letter, interview, survey, etc.)
- ☐ Testimonials from Partners (quote, video, letter, interview, survey, etc.)

SELF-CHECK – Have you:

- ☐ *Included the name, position, organization and location of person giving the testimonial?*
- ☐ *Included a testimonial that clearly identifies a direct benefit to a person/community/organizations, as opposed to vague general praise for the program activity?*
- ☐ *Included a testimonial that captures the beneficiary's strong emotion stemming from the outcome of your activities in his/her life, community, organization, etc.?*

☐ *Ensured each quote is no more than 2-3 lines.*

11. Lessons Learned:

The process from output to outcomes is not necessarily a linear one. We were in the process of consulting partners as part of pilot testing of the Gender in Irrigation Learning and Improvement Tool (GILIT) and TLC having gone through the tool with us then said they wanted to use the tool in their programs as gender was one of the areas they had not been able to effectively address.

Lessons learned are usually defined as generalizations based on the evaluation of programs, interventions or policies that abstract from the specific circumstances to broader situations. Frequently, lessons highlight strengths or weaknesses in preparation, design, and implementation that affect performance, outcome, and impact.

Some guiding questions:

What did you learn in this process?

What was difficult or challenging?

How did you overcome the challenges faced?

How did you engaged or worked with partners successfully?

If you were to start over, what would you do differently?

Word limit: 200 words

SELF-CHECK – Have you:

☐ *Identified both challenges/weaknesses and successes/strengths?*

☐ *Identified what you might have done differently to ensure a better outcome or greater impact?*

☐ *Identified who/what other organization/canter/CRP can potentially benefit from these lessons?*

12. Full reference citations and URL link to published research work.

For all research publications and other types of research outputs (data, tools, guidelines etc.) associated with this outcome story, please include below:

Gender in Irrigation Learning and Improvement Tool (GILIT) soft copy provided.

13. Please check any of the following that are being submitted to complement your outcome story:

☐ Quality Photo(s) (of landscape, beneficiaries and activities) with appropriate captions and credit

☐ Testimonials from Beneficiaries (quote, video, letter, interview, survey, etc.)

- ☐ Testimonials from Partners (quote, video, letter, interview, survey, etc.)
- ☐ Full reference citations and URL hyperlinks to published research work
- ☐ Blog and/or other website stories with URL links
- ☐ Newspaper Articles (print or electronic)
- ☐ Communication (non-scientific) Materials Produced (brochure, poster, press release, etc.)
- ☐ Supporting Materials (presentations, workshop reports, activity reports, donor reports)
- ☐ Video/Audio Clips
- ☐ Other (please explain: _____)

14. Final Checklist

Please use the following checklist to ensure your outcome story is ready for sharing.

No.	Question to consider	Yes	No
1	Does the story describe the outcomes the research produced and the people who are benefitting? What changes–in skills, knowledge, attitude, practice, or policy–has the research brought, and who is benefitting from these changes?		
2	Does the story capture outcomes from an interesting angle (possibly a human angle) that would captivate the attention of the target audience?		
3	Does the story explain what new insights the research brings? Does the story describe a key insight on what works and what doesn't and something that future research could build on.What are the main lesson learned?		
4	Does the story make a compelling point that people will remember? Does the story show how the research makes a difference to improving livelihoods and reducing poverty?		
5	Does the story provide interesting facts that people will remember?		
6	Does the story explain in clear and measurable ways the kind of impact - beyond the level of the reported outomces - could be achieved if the research outputs scaled out and up?		
7	Does the story show which partners contributed and how?		
8	Does the story include quotes from scientists, partners and/or beneficiaries?		
9	Have I provided links to other media (journal articles, website news, newsletter, blogs, annual reports of other CGIAR centres, CRPs) that also feature this story?		
10	Have I provided the contact details of people who can provide more information?		

OUTCOME STORY 2

OUTCOME STORY Template

This template is intended for use of Dryland Systems scientists and partners to identify and highlight outcomes of their research activities funded by and/or mapped to the program. Each section in the template is followed by a self-check, which outlines criteria relevant to that section. The maximum number of word required to fill this template is 1450- 1500.

Name of research activity/project title:	DS and CCAFS
Flagship:	South Asia
Geographical region:	South Asia
Name and email of Activity Lead:	Everisto Mapedza e.mapedza@cgiar.org
Name and email of Outcome Story Lead:	Insurance scheme for resilience livelihoods
Activity Lead Center:	IWMI, ICRISAT, ILRI
Activity Partner Center(s):	Bajaj Allianz
Activity Partner CRPs:	CCAFS,

15. Outcome Story Headline:

Guidance:

Private sector engagement in small holder farmer insurance in Dryland areas

SELF-CHECK – Have you:

- ☐ *Captured the overall message of the outcome story?*
- ☐ *Included an action verb?*
- ☐ *Captured the reader's attention?*

16. Outcome Story Abstract

The private sector has come on board to provide insurance and technical guidance for small holder farmers in dryland areas.

Word limit: 200 words

SELF-CHECK – Have you:

- ☐ *Summarized the problem, program/activity, and outcomes?*

☐ *Provided a summary with specific measurable outcomes that avoids broad, sweeping statements such as "There was a noticeable increase in healthy eating habits"?*

17. Problem/Challenge Overview:

Some guidance:

Smallholder farmers are often perceived to be too risk to insure by most of the private sector insurance companies.

Start with the issue, challenge, problem or opportunity that Dryland Systems has aimed to address. This should relate to one of the IDOs (resilience, wealth and wellbeing, food access, natural resources management, gender empowerment, capacity to innovate).

Clarify who this outcome story is about (e.g., farmer, scientist, community, research partner, policy maker, etc.) by adding a human interest angle. Who is/was experiencing this problem/challenge and how would they benefit if it was solved? What are the opportunities and what is at stake for a person, community or other group of people?

Word limit: 150 words

SELF-CHECK – Have you:

☐ *Described the issue(s), challenge(s), problem(s), opportunities being addressed and why are these important?*

☐ *Used data to frame the problem, including the social and economic costs?*

☐ *Specified the affected dryland population(s)?*

☐ *Specified the affected dryland area (in hectares)*

18. What are the main research activities:

Some guiding questions:

Please describe the main research question(s), activities, strategy and timeline.

What did you do to address the aforementioned challenge(s) and make the most of the opportunities available?

How were different research users engaged in or consulted in the research process?

How do you think this made your research better?

Word limit: 150 words

SELF-CHECK – Have you:

☐ *Described your approach of designing and implementing the research?*

☐ *Identified the various research users involved at different stages of the research process?*

☐ *Identified any major shifts or changes to the research activities and approach?*

19. What are the main Outcomes of your research?

An outcome is generally defined as the short-term and medium-term effect of an intervention's outputs, such as change in knowledge, attitudes, beliefs, behaviors.

Bearing this definiton in mind, please provide a short description of the actual changes that occurred as a result of your research activities and outputs. How are different users utilizing your research outputs? what has changes in their practice, policy and/or investment? How and why did they take up the research outputs? What are the key milestones in the timeline of change that occurred? What is the potential for scaling the outcome up and out?

Word limit: 200 words

SELF-CHECK – Have you:

- ☐ *Described actual changes that occurred as opposed to desired or anticipated changes in your initial research proposal?*
- ☐ *Identified any outcomes that you did not intend or anticipate? How are these justified and/or attributed to your activities?*
- ☐ *Demonstrated the scalability of the outcomes for greater reach and impact (in terms of both dryland communities and land area?*

20. What are the main research Outputs that resulted in the outcome(s)?

Outputs are generally defined as the tangible products or direct deliverables of your research activities, such as research papers, publications, policy recommendations, models, on-farm trials, methodologies, technologies, assessments, improved seeds, increased yields, hectares of degraded land restored, quantity of natural resources management, efficiency gains, new institutional arrangements made, participatory research actions, innovation platforms, trainings, etc.

Bearing this definition in mind, please list the main research outputs of your research that led to the outcomes reported above.

Word limit: 150 words

SELF-CHECK – Have you:

- ☐ *Identified all types of outputs delivered and observed?*
- ☐ *Included facts and figures to demonstrate the strength and outreach of your research outputs?*
- ☐ *Avoided vague output statements such as "farmers benefited from increased food security as a result of our assessments of crop varieties."*

21. Who were the intermediary and direct users of your research outputs and what role did they play in achieving the outcome:

Guidance:

Please list the main intermediary and direct users of your research and indicate the role they played in achieving the reported outcomes

For example:

X partners were the intermediary users of the research outputs for dissemination of the technology/tool/practice

Y partners were the intermediary/direct users of research outputs for formulation of policy or development project

X number of farmers in X area were are the direct users of the technology/tool/practice

Word limit: 100 words

SELF-CHECK – Have you:

- ☐ *Clearly identified all users and distinguished between intermediary and direct users of your research?*
- ☐ *Described their specific related role in terms of research, development, technology dissemination, policy formulation, adaptation, adoption, etc.?*
- ☐ *Used facts and figures to strengthen your statements?*

22. How were your research outputs used (will be used in the future):

Describe how your research output was used and what changes occurred? How did these changes set the stage for the achievements of the outcomes reported above? Where there any research activities and changes you did not anticipate, and if so, how did you adjust? What steps did each user take to adopt, scale out or scale up the results of your research outputs? What are the follow up actions to ensure sustainability?

Word limit: 150 words

SELF-CHECK – Have you:

- ☐ *Described actual changes that occurred during or immediate after the release of your research outputs?*
- ☐ *Identified how the use of research outputs set the stage for achieving the outcomes?*
- ☐ *Identified steps and actions for ensuring sustainability?*

23. What is the Evidence of Your Research Outcomes:

Provide solid evidence for this outcome (Document, news article, impact assessment, etc.) in terms of actions and changed behaviour of users and beneficiaries of your research. How can these changed actions and behaviours be sustained in the long run?

Word limit: 150 words

SELF-CHECK – Have you:

- ☐ *Identified how the actions and behaviours of key stakeholders have now changed?*
- ☐ *Identified how these changes will be sustained?*

24. Testimonials:

Testimonials are written or recorded statements that support program credibility and level of expertise. They also strengthen our reputation by expressing the trust that other people have in the program and its offerings. They are a wonderful way to help us to attract a deeper interest from existing and prospective stakeholders. Testimonials are the holy grail of marketing and advertising. Marketing Experiments demonstrate that testimonials can work wonders. For example, a written testimonial can increase customer conversion by 25%; video testimonials on the other hand, can increase the conversion rates increased by a whopping 201%!

- ☐ Testimonials from Beneficiaries (quote, video, letter, interview, survey, etc.)
- ☐ Testimonials from Partners (quote, video, letter, interview, survey, etc.)

SELF-CHECK – Have you:

- ☐ *Included the name, position, organization and location of person giving the testimonial?*
- ☐ *Included a testimonial that clearly identifies a direct benefit to a person/community/organizations, as opposed to vague general praise for the program activity?*
- ☐ *Included a testimonial that captures the beneficiary's strong emotion stemming from the outcome of your activities in his/her life, community, organization, etc.?*
- ☐ *Ensured each quote is no more than 2-3 lines.*

25. Lessons Learned:

Lessons learned are usually defined as generalizations based on the evaluation of programs, interventions or policies that abstract from the specific circumstances to broader situations. Frequently, lessons highlight strengths or weaknesses in preparation, design, and implementation that affect performance, outcome, and impact.

Some guiding questions:

What did you learn in this process?

What was difficult or challenging?

How did you overcome the challenges faced?

How did you engaged or worked with partners successfully?

If you were to start over, what would you do differently?

Word limit: 200 words

SELF-CHECK – Have you:

- ☐ *Identified both challenges/weaknesses and successes/strengths?*
- ☐ *Identified what you might have done differently to ensure a better outcome or greater impact?*
- ☐ *Identified who/what other organization/canter/CRP can potentially benefit from these lessons?*

26. Full reference citations and URL link to published research work.

For all research publications and other types of research outputs (data, tools, guidelines etc.) associated with this outcome story, please include below:

27. Please check any of the following that are being submitted to complement your outcome story:

- ☐ Quality Photo(s) (of landscape, beneficiaries and activities) with appropriate captions and credit
- ☐ Testimonials from Beneficiaries (quote, video, letter, interview, survey, etc.)
- ☐ Testimonials from Partners (quote, video, letter, interview, survey, etc.)
- ☐ Full reference citations and URL hyperlinks to published research work
- ☐ Blog and/or other website stories with URL links
- ☐ Newspaper Articles (print or electronic)
- ☐ Communication (non-scientific) Materials Produced (brochure, poster, press release, etc.)
- ☐ Supporting Materials (presentations, workshop reports, activity reports, donor reports)
- ☐ Video/Audio Clips
- ☐ Other (please explain: _____)

28. Final Checklist

Please use the following checklist to ensure your outcome story is ready for sharing.

No.	Question to consider	Yes	No
1	Does the story describe the outcomes the research produced and the people who are benefitting? What changes–in skills, knowledge, attitude, practice, or policy–has the research brought, and who is benefitting from these changes?		
2	Does the story capture outcomes from an interesting angle (possibly a human angle) that would captivate the attention of the target audience?		
3	Does the story explain what new insights the research brings? Does the story describe a key insight on what works and what doesn't and something that future research could build on.What are the main lesson learned?		
4	Does the story make a compelling point that people will remember? Does the story show how the research makes a difference to improving livelihoods and reducing poverty?		
5	Does the story provide interesting facts that people will remember?		

6	Does the story explain in clear and measurable ways the kind of impact - beyond the level of the reported outomces - could be achieved if the research outputs scaled out and up?		
7	Does the story show which partners contributed and how?		
8	Does the story include quotes from scientists, partners and/or beneficiaries?		
9	Have I provided links to other media (journal articles, website news, newsletter, blogs, annual reports of other CGIAR centres, CRPs) that also feature this story?		
10	Have I provided the contact details of people who can provide more information?		

SECTION V – LIST OF 2015 PUBLICATIONS AND SCIENTIFIC OUTPUTS

In 2015, IWMI produced under the framework of the CGIAR Research Program on Dryland Systems a total of 28 reports and articles (2 indexed by ISI), books, and several policy and technical briefs. As seen from the outputs below, IWMI has a lot of manuscripts which will see a number of journal publications and synthesis writing in 2016. The two students M.Sc. dissertations have not been included in the outputs as they were delayed due to closure of the University for some time in 2015. The two student dissertations (gender and institutions) are now expected in the first half of 2016 due to the delay beyond their control.

The synthesis and planned 2016 activities are clearly grounded on the systems perspective and the DS Systems expert is assisting in this endeavor in collaboration with participating centers such as CIAT. The systems thinking will also be engrained to the national partners, development partners, Non-Governmental Organizations (NGO), and universities through MSc student supervision to encourage a systems thinking as opposed to a disciplinary approach. The livelihoods of the men and women within the dryland areas will be effectively addressed through a holistic (systems) approach.

The following represents a summary of all 2015 publications and research outputs produced by IWMI under Dryland Systems by Region/ALS Flagship, including full and correct citation of all publications, weblink and categories of scientific output marked with the following codes to indicate:

- (S) = multidisciplinary/system research
- (M) = mono-disciplinary research
- [X.XX]= ISI Impact Factor[1]
- (O) = Open Access

*IMPORTANT NOTE": All listed publications must clearly acknowledge the research was conducted under the framework of CGIAR Research Program on Dry and Systems and include the appropriate acknowledgment statement as suggested in the Guidance on Dryland Systems Acknowledge and Disclaimer (see link).

[1] *For ISI, the JCR Impact Factor List for 2013 has used (https://www.360researchpapers.com/resources/impact-factor, accessed 6 July 2015). For journals not listed, the website of that journal was checked and if it lists an* Region *ISI factor, this was recorded.*

Table 1. Summary of all ISI publications

Region/ALS	ISI Factor [range of ISI scores]	ISI Open (% of ISI articles)	ISI Monodisciplinary (% of ISI articles)	ISI Multidisciplinary (% of ISI articles)
WAS/				
NAWA/				
ESA/	1.477**i**	No		
CA/				
SA/	3.444**i**	No		
TOTAL	2			

Table 2. Summary of Non-ISI Publications

Region/ALS	Non-ISI Articles	Book Chapters	Technical Reports & Working Papers	Proceedings	Datasets	Other
WAS/						
NAWA/			1			
ESA/	1 published and 2 (manuscripts)	1	6	2	1	1
CA/			4		1	
SA/	1					
TOTAL	**4**	**1**	**16**	**2**	**2**	**1**

Please list in alphabetical order, full citation, weblink and codes as applicable for all publications as shown in the examples below under each category of research output.

ISI Journal Articles (2)

1. (S) Amare H, Craufurd P, Thiagarajah R, Kumar S, Whitebread A, Rathor A, Blummel M, Ericsson P, Kakumanu K R. 2015. Empirical evaluation of sustainability of divergent farms in the dryland farming systems of India. Ecological Indicators 60: 710-723.

Non-ISI Journal Articles and Theses (5)

1. Tagutanazvo, Emelder; Dzingirai, Vupenyu, Mapedza, Everisto and Van Koppen, Barbara (2015). Gender Dynamics in Water Governance Institutions: The case of Gwanda's Guyu-Chelesa Irrigation Scheme in Zimbabwe. wH2O Journal of Gender and Water, 4: 1, 55-64. Accessible on: http://wh2ojournal.com/current-issue/ I
2. Tagutanazvo, E., Mapedza, E. and van Koppen, B. (2015 manuscript) Gender and sustainable increase in production through irrigation: The Case of Ntcheu District, Malawi.
3. Tagutanazvo, E. and Mapedza, E. (2015 manuscript). Gender, intensification, extension and the "missing link" in Ntcheu District of Malawi.
4. Wenchao, W. and Xueliang, C. (2015 manuscript) Role and Potential of Small Storages for Rural Water Resources Development: the Case of Southern Malawi.
5. Senzanje, A., Mapedza, E., Lautze, J. and van Koppen, B. (2015 manuscript). Agricultural water management interventions (AWMI) for sustainable agricultural intensification (SAI) in the Chinyanja triangle area of Malawi, Mozambique and Zambia.
6. (S) Kakumanu K. R, Palanisami, K, Ranganathan C R, Shalander K, Haileslassie, A. Assessment of risk premium with farm technology adoption to climate change in dryland systems of India. Under Review: submitted to the International Journal of Climate Change Strategies and Management (2015 manuscript)

1. Anarbekov, Oyture [IWMI]; Mukhamedova, Nozila [IWMI-IAMO] 2015. "Water Users' Associations in Central Asia: Opportunities and challenges for development". [Submitted only Abstract]. IAMO (Leibniz Institute of Agricultural Development in Transition Economies) 2015 Annual Forum: Agriculture and climate change in transition economies. Dates: 17. – 19. June 2015 | Halle (Saale), Germany. URL: http://projects.iamo.de/fileadmin/veranstaltungen/iamo_forum/2015/Presentations/IAMO_Forum_2015_B1_3_Mukhamedova.pdf

2.

Books (total count)

Book Chapters (total count)

1. Van Koppen, Barbara; Tapela, Barbara and Everisto Mapedza (2015) Gender, Rights, and the Politics of Productivity: The Case of the Flag Boschielo Irrigation Scheme, pp535 – 574. Chapter 16 in Anne Hellum, Patricia Kameri-Mbote and

Barbara van Koppen, Water is Life: Women's human rights in national and local water governance in Southern and Eastern Africa, Weaver Press, Harare, Zimbabwe.

Technical Reports and Working Papers (15)

1. Palanisami K, Kakumanu K R, Ranganathan C R, Amare H and Wani S P. 2015. Mapping of household vulnerability and identification of adaptation strategies in dryland systems of South Asia. Research Report No. 67, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Research Program-Resilient Dryland System, Patancheru, Telangana, India.
2. Palanisami K, Amare H, Kakumanu K R, Ranganathan C R, Wani S P, Craufurd P and Kumar S. 2015. Climate change, gender and adaptation strategies in dryland systems of South Asia: A household level analysis in Andhra Pradesh, Karnataka and Rajasthan states of India. Research Report No. 65, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Research Program-Resilient Dryland System, Patancheru, Telangana, India.
3. Palanisami K, Amare H, Kakumanu K R, Ranganathan C R, Wani S P, Craufurd P and Kumar S. 2015. Quantification of risk associated with technology adoption in dryland systems of South Asia: a household level analysis in Andhra Pradesh, Karnataka and Rajasthan states of India. Research Report No. 66, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Research Program-Resilient Dryland System, Patancheru, Telangana, India.
4. Van Koppen, B. 2015. GIS map of matrilineal societies in the Chinyanja triangle/Malawi.
5. Tagutanazvo, E. 2015. Gender and Agricultural Extension Services in Ntcheu District of Malawi, Research Report.
6. Tagutanazvo, E. 2015b. Gender and Irrigation: its implications on sustainable agriculture intensification. The case of Ntcheu District of Malawi.
7. Lautze, J. 2015. Policy Brief on fit-for-purpose institutional development at the appropriate transboundary scale, IWMI, Policy Brief.

8. Senzanje, A. 2015. Agricultural Water Management Interventions (AWMI) for Sustainable Agricultural Intensification (SAI) in the Chinyanja Triangle. A Discussion of Potentially Applicable AWMI and Other General 'Brightspots', Technical Report.
9. Mulwafu, W.O. 2015. Gendered land tenure and water infrastructure in the Chinyanja Triangle: the case of Chauluka and Kamwaza villages in Kandeu, Ntcheu, Malawi. A Report.
10. Al-Agha, D.E., Closas, A. and Molle, F. 2015. Dynamics of Groundwater use in the central part of the Nile.
11. Kakumanu K R, Amerasinghe P, Raman S, Palanisami K (2015). Manual on Micro Irrigation for Capacity Building and Development for Andhra Pradesh and Karnataka, CRP-Dryland system, IWMI Hyderabad.
12. Anarbekov, Oyture [IWMI]. 2015. CRP DS: Technical Report: Survey data collected for at least from three Case-study pilot WUAs of Ferghana Valley. Tashkent, Uzbekistan. URL: mel.cgiar.org
13. Anarbekov [IWMI]. 2015. Comparative assessment of WUAs Governance role on efficient use of water resources in Ferghana Valley. URL: mel.cgiar.org
14. Anarbekov, Oyture [IWMI], 2015. IWMI's experience and activities in institutional aspects of water management in Uzbekistan. Presentation has been done in the Policy workshop of the InDeCa project of the VolksWagen Foundation program: "Between Europe and the Orient - A Focus on Research and Higher Education in/on Central Asia and the Caucasus", May 19, Tashkent, Uzbekistan
15. Anarbekov, Oyture [IWMI], Kakhramon Jumaboev, 2015. Irrigation Extension development for improving water productivity in Ferghana Valley of Central Asia. Presentation has been presented on May 20, 2015 at Tashkent Institute of Irrigation and Melioration (TIIM) by the request of TIIM and InDeCA research project, Tashkent, Uzbekistan.
16. Kakumanu K R, Economics of new energy efficient methods with micro irrigation in dryland system. Report.

Proceedings (3)

1. Mapedza, E., Tagutanazvo, E., Manyamba, C. And van Koppen, B. Understanding the gendered tenurial niches in the informal irrigation in the Kandeu area of Malawi. Paper presented at the Association of American Geographers (AAG) in Chicago, USA, April 2015. http://meridian.aag.org/callforpapers/program/AbstractDetail.cfm?AbstractID=67785
2. Mapedza, E., Tagutanazvo, E., Manyamba, C. And van Koppen, B. Understanding the gendered tenurial niches in the informal irrigation in the Kandeu area of Malawi. Paper presented at WaterNet/WARFSA/GWP-SA Symbposium, Mauritius, October 2015.
3. Oyture, A. And Mukhamedova, N. Water Users Associations in Central Asia: Opportunities and challenges for development. Leibniz Institute of Agricultural Development in Transition Economies 2015 Annual Forum: Agriculture and climate change in transition economies, Halle, Germany. June 2015. URL: http://projects.iamo.de/fileadmin/veranstaltungen/iamo_forum/2015/Presentations/IAMO_Forum_2015_B1_3_Mukhamedova.pdf.

Factsheets (2)

1. Contribution to the This monthly electronic newsletter provides a snapshot of some of the current work of the Regional Program for Sustainable Agricultural Development in Central Asia and the Caucasus, supported by the Consultative Group for International Agricultural Research (CGIAR).
2. Provided News article on Teleconference on Improved irrigation methods for potato crop cultivation by Oyture Anarbekov and Kamola Mirzanazarova

Data sets (total count)

1. Oyture, A. 2015. Survey data on “Enhancing WUA role in water allocation and management via institutional interventions”

Other publications (total count)

Annex 1: CRP indicators of progress, with glossary and targets

This table will be automatically generated by Dryland Systems' Monitoring, Evaluation and Learning (MEL) platform. However, it is recommended that you fill the tables to ensure accuracy of reporting and accountability.

Indicator	Description of Activities and Products measured by Indicator	Deviation narrative (+/- 10%)	2015 Actual	2016 Target
KNOWLEDGE, TOOLS, DATA				
1. Number of "products" produced by the Center	Glossary: These are frameworks and concepts that are significant and complete enough to have been highlighted on web pages, publicized through blog stories, press releases and/or policy briefs. They are significant in that they should be likely to change the way stakeholders along the impact pathway allocate resources and/or implement activities. They should be products that change the way these stakeholders think and act. Tools, decision-support tools, guidelines and/or training manuals are not included in this indicator. Specify what type of products, from above glossary, you have included in the number indicated under 2013; if relevant specify geographic locations		23	25
2. Number of products produced that have explicit target of women farmers/NRM managers	Glossary: The web pages, blog stories, press releases and policy briefs supporting indicator #1 must have an explicit focus on women farmers/NRM managers to be counted Provide concrete examples of what you include in this indicator		9	12
3. Number of products produced that have been assessed for likely gender-disaggregated impact	Glossary; Reports/papers describing the products should include a focus on gender-disaggregated impacts if they are to be counted Provide concrete examples of what you include in this indicator		9	10
4. Number of "tools" produced by the Center	Glossary: These are significant decision-support tools, guidelines, and/or training manuals that are significant and complete enough to have been highlighted on web pages, publicized through blog stories, press releases and/or policy briefs. They are significant in that they should be likely to change the way stakeholders along the impact pathway allocate resources and/or implement activities. Based on the glossary, describe the types of outputs you include in this indicator		1	1

5. Number of tools that have an explicit target of women farmers	Glossary: The web pages, blog stories, press releases and policy briefs supporting indicator #4 must have an explicit focus on women farmers/NRM managers to be counted			
Indicator	**Description of Activities and Products measured by Indicator**	**Deviation narrative (+/- 10%)**	**2015 Actual**	**2016 Target**
KNOWLEDGE, TOOLS, DATA				
6. Number of tools assessed for likely gender-disaggregated impact	Glossary: Reports/papers describing the products should include a focus on gender-disaggregated impacts if they are to be counted		1	1
7. Number of open access databases maintained by Center	Indicate the type of data bases (e.g., socio-economic survey data; crop yields in field experiments…) you are reporting on in the following columns		20	
8. Total number of users of these open access databases		-	TBC	
9. Number of publications in ISI journals produced by Center	Please indicate total number and complete in detail Section V of the annual report		5	10
10. Number of strategic value chains analyzed by Center	Clearly indicate the type of value chains you are reporting on in the next columns		2	2

11. Number of targeted agro-ecosystems analysed/ characterised by Center	Specify the type of system, using its main products as descriptors (e.g., mixed crop, livestock system; monoculture of XX; agroforestry with maize, beans, etc..; mixed cropping with upland rice, cassava, etc...)by geographical location and agroecological zones (FAO typology)		2	2
Indicator	**Description of Activities and Products measured by Indicator**	**Deviation narrative (+/- 10%)**	**2015 Actual**	**2016 Target**
KNOWLEDGE, TOOLS, DATA				
12. Estimated population of above-mentioned agro-ecosystems			100,000	100,000
CAPACITY ENHANCEMENT AND INNOVATION PLATFORMS				
13. Number of trainees in short-term programs facilitated by Centre (male)	Glossary: The number of individuals to whom significant knowledge or skills have been imparted through interactions that are intentional, structured, and purposed for imparting knowledge or skills should be counted. This includes farmers, ranchers, fishers, and other primary sector producers who receive training in a variety of best practices in productivity, post-harvest management, linking to markets, etc. It also includes rural entrepreneurs, processors, managers and traders receiving training in application of new technologies, business management, linking to markets, etc., and training to extension specialists, researchers, policymakers and others who are engaged in the food, feed and fiber system and natural resources and water management. Include training on climate risk analysis, adaptation, mitigation, and vulnerability assessments, as it relates to agriculture. Training should include food security, water resources management/IWRM, sustainable agriculture, and climate change resilience Indicate, from the above list, the general subject matters in which training was provided.		100	150
14. Number of trainees in short-term programs facilitated by Centre (female)	(see above, but for female)		60	80

15. Number of trainees in long-term programs facilitated by Center (male)	Glossary: The number of people who are currently enrolled in or graduated in the current fiscal year from a bachelor's, master's or Ph.D. program or are currently participating in or have completed in the current fiscal year a long term (degree-seeking) advanced training program such as a fellowship program or a post-doctoral studies program. A person completing one long term training program in the fiscal year and currently participating in another long term training program should be counted only once. Specify in this cell number of Master's and number of PhD's		2	2
16. Number of trainees in long-term programs facilitated by Center (female)	(see above, but for female)		5	20
Indicator	**Description of Activities and Products measured by Indicator**	**Deviation narrative (+/- 10%)**	**2015 Actual**	**2016 Target**
CAPACITY ENHANCEMENT AND INNOVATION PLATFORMS				
17. Number of multi-stakeholder R4D innovation platforms established for the targeted agro-ecosystems by the Center	Glossary: To be counted, a multi-stakeholder platform has to have a clear purpose, generally to manage some type of tradeoff/conflict among the different interests of different stakeholders in the targeted agro-ecosystems, and inclusive and clear governance mechanisms, leading to decisions to manage the variety of perspectives of stakeholders in a manner satisfactory to the whole platform. Indicate the focus of each platform in this cell, including geographical focus		7	37
TECHNOLOGIES/PRACTICES IN VARIOUS STAGES OF DEVELOPMENT				

18. Number of technologies/NRM practices under research in the Center (Phase I)	Glossary: Technologies to be counted here are agriculture-related and NRM-related technologies and innovations including those that address climate change adaptation and mitigation. Relevant technologies include but are not limited to: • Mechanical and physical: New land preparation, harvesting, processing and product handling technologies, including biodegradable packaging • Biological: New germplasm (varieties, breeds, etc.) that could be higher-yielding or higher in nutritional content and/or more resilient to climate impacts; affordable food-based nutritional supplementation such as vitamin A-rich sweet potatoes or rice, or high-protein maize, or improved livestock breeds; soil management practices that increase biotic activity and soil organic matter levels; and livestock health services and products such as vaccines; • Chemical: Fertilizers, insecticides, and pesticides sustainably and environmentally applied, and soil amendments that increase fertilizer-use efficiencies; • Management and cultural practices: sustainable water management; practices; sustainable land management practices; sustainable fishing practices; Information technology, improved/sustainable agricultural production and marketing practices, increased use of climate information for planning disaster risk strategies in place, climate change mitigation and energy efficiency, and natural resource management practices that increase productivity and/or resiliency to climate change. IPM, ISFM, and PHH as related to agriculture should all be included as improved technologies or management practices. New technologies or management practices under research counted should be only those under research in the current reporting year. Any new technology or management practice under research in a previous year but		2	2
19. Number of technologies under research that have an explicit target of women farmers	The papers, web pages, blog stories, press releases and policy briefs supporting indicator #x must have an explicit focus on women farmers/NRM managers to be counted		1	1
Indicator	**Description of Activities and Products measured by Indicator**	**Deviation narrative (+/- 10%)**	**2015 Actual**	**2016 Target**
TECHNOLOGIES/PRACTICES IN VARIOUS STAGES OF DEVELOPMENT				

20. Number of technologies under research that have been assessed for likely gender-disaggregated impact	Reports/papers describing the products should include a focus on gender-disaggregated impacts if they are to be counted		1	1
21. Number of agro- ecosystems for which CRP has identified feasible approaches for improving ecosystem services and for establishing positive incentives for farmers to improve ecosystem functions as per the CRP's recommendations	Use the same classification of agro-ecosystem as for indicator 11 above, including geographical location and agro-ecological zone		3	3
22. Number of people who will potentially benefit from plans, once finalised, for the scaling up of strategies	Indicate the potential number of both women and men			50,000
Indicator	**Description of Activities and Products measured by Indicator**	**Deviation narrative (+/- 10%)**	**2015 Actual**	**2016 Target**
TECHNOLOGIES/PRACTICES IN VARIOUS STAGES OF DEVELOPMENT				
23. Number of technologies /NRM practices field tested (phase II)	Glossary; Under "field testing" means that research has moved from focused development to broader testing (pilot project phase) and this testing is underway under conditions intended to duplicate those encountered by potential users of the new technology. This might be in the actual facilities (fields) of potential users, or it might be in a facility set up to duplicate those conditions. Clearly identify in this cell the type of technology and the geographical locations of the field testing/pilot projects reported in next columns		2	2

24. Number of agro-ecosystems for which innovations (technologies, policies, practices, integrative approaches) and options for improvement at system level have been developed and are being field tested (Phase II)	Clearly identify in this cell the type of technology and the geographical location of the field testing/pilot projects, and use the same classification of agroecosystem as for indicator 11, specifying the type of agroecosystems in which field testing is taking place		2	2
25. Number of above innovations/approaches/options that are targeted at decreasing inequality between men and women	Throught the GILIT Tool and AWM management.		2	2
Indicator	Description of Activities and Products measured by Indicator	Deviation narrative (+/- 10%)	2015 Actual	2016 Target
TECHNOLOGIES/PRACTICES IN VARIOUS STAGES OF DEVELOPMENT				

26. Number of published research outputs from CRP utilised in targeted agro-ecosystems			23	25
27.Number of technologies/NRM practices released by public and private sector partners globally (phase III)	Glossary: In the case of crop research that developed a new variety, e.g., the variety must have passed through any required approval process, and seed of the new variety should be available for multiplication. The technology should have proven benefits and be as ready for use as it can be as it emerges from the research and testing process. Technologies made available for transfer should be only those made available in the current reporting year. Any technology made available in a previous year should not be included. Clearly identify in this cell the technologies/practices thus released (scale up phase), the geographical areas concerned		0	0
POLICIES IN VARIOUS STAGES OF DEVELOPMENT				
28. Numbers of Policies/ Regulations/ Administrative Procedures Analyzed (Stage 1)	Number of agricultural enabling environment policies / regulations / administrative procedures in the areas of agricultural resource, food, market standards & regulation, public investment, natural resource or water management and climate change adaptation/mitigation as it relates to agriculture that underwent the first stage of the policy reform process i.e. analysis (review of existing policy / regulation / administrative procedure and/or proposal of new policy / regulations / administrative procedures).Please count the highest stage completed during the reporting year – don't double count for the same policy. Clearly identify in this cell the type of policy, regulations, etc. from the above list Irrigation and gender integration		2	2
Indicator	**Description of Activities and Products measured by Indicator**	**Deviation narrative (+/- 10%)**	**2015 Actual**	**2016 Target**
POLICIES IN VARIOUS STAGES OF DEVELOPMENT				

29. Number of policies / regulations / administrative procedures drafted and presented for public/stakeholder consultation (Stage 2)	....that underwent the second stage of the policy reform process. The second stage includes public debate and/or consultation with stakeholders on the proposed new or revised policy / regulation / administrative procedure. Clearly identify in this cell the type of policy, regulations and so on, and the geographical location of the consultations		0	0
30. Number of policies / regulations / administrative procedures presented for legislation(Stage 3)	: ... underwent the third stage of the policy reform process (policies were presented for legislation /decree to improve the policy environment for smallholder-based agriculture.) Clearly identify in this cell the type of policy and the country/region concerned		0	0
31. Number of policies / regulations / administrative procedures prepared passed/approved (Stage 4)	: ...underwent the fourth stage of the policy reform process (official approval (legislation/decree) of new or revised policy / regulation / administrative procedure by relevant authority). Clearly identify in this cell the type of policy and the country/region concerned		0	0
Indicator	Description of Activities and Products measured by Indicator	Deviation narrative (+/- 10%)	2015 Actual	2016 Target
POLICIES IN VARIOUS STAGES OF DEVELOPMENT				

32. Number of policies / regulations / administrative procedures passed for which implementation has begun (Stage 5)	: ...completed the policy reform process (implementation of new or revised policy / regulation / administrative procedure by relevant authority) Clearly identify in this cell the type of policy and the country/region concerned Just procedures for assessing gender in agricultural water management through the use of the GILIT		1	1
OUTCOMES ON THE GROUND				
33. Number of hectares under improved technologies or management practices as a result of CRP research	Clearly identify in this cell the geographic locations where this is occurring and whether the application of technologies is on a new or continuing area Better an integrated water resource management which incorporates gender in Malawi..		1	1
34A. Number MALE of farmers and others who have applied new technologies or management practices as a result of CRP research	Clearly identify in this cell the geographic location of these farmers and whether the application of technologies is on a new or continuing area and indicate: Better water management practices in Chinyanja, Egypt, and Fergana Valley		100	120

34B. Number of FEMALE farmers and others who have applied new technologies or management practices as a result of CRP research	Clearly identify in this cell the geographic location of these farmers and whether the application of technologies is on a new or continuing area and indicate: In Chinyanja there are more female famers than male farmers. Challenge is in South Asia (India) where female farmers are the minority under the insurance scheme.		50	100

Annex 2: Performance indicators for gender mainstreaming with targets defined

Please delete the part not achieved by your centre and add details. Most are done but more emphasis and increased resource allocation needs to be done.

Performance Indicator	CRP performance approaches requirements	CRP performance meets requirements	CRP performance exceeds requirements

1. Gender equality targets defined	Sex-disaggregated social data is being collected and used to diagnose important gender-related constraints in at least one of the CRP's main target populations	Sex-disaggregated social data collected and used to diagnose important gender-related constraints in at least one of the CRP's main target populations And The CRP has defined and collected baseline data on the main dimensions of gender inequality in the CRP's main target populations relevant to its expected outcomes (IDOs)	Sex-disaggregated social data collected and used to diagnose important gender-related constraints in at least one of the CRP's main target populations. Partially done. Some non-social scientists did not produce good sex- disaggregated data. And The CRP has defined and collected baseline data on the main dimensions of gender inequality in the CRP's main target populations relevant to its expected outcomes (IDOs) And CRP targets changes in levels of gender inequality to which the CRP is or plans to contribute, with related numbers of men and women beneficiaries in main target populations
2. Institutional architecture for integration of gender is in place	- CRP scientists and managers with responsibility for gender in the CRP's outputs are appointed, have written TORS. - Procedures defined to report use of available diagnostic or baseline knowledge on gender routinely for assessment of the gender equality implications of the CRP's flagship research products as per the Gender Strategy -CRP M&E system has protocol for tracking progress on integration of gender in research	- CRP scientists and managers with responsibility for gender in the CRP's outputs are appointed, have written TORS and funds allocated to support their interaction. Partial - Procedures defined to report use of available diagnostic or baseline knowledge on gender routinely for assessment of the gender equality implications of the CRP's flagship research products as per the Gender Strategy -CRP M&E system has protocol for tracking progress on integration of gender in research And A CRP plan approved for capacity development in gender analysis	CRP scientists and managers with responsibility for gender in the CRP's outputs are appointed, have written TORS and funds allocated to support their interaction. Funds not adequate in the context of budget reductions. - Procedures defined to report use of available diagnostic or baseline knowledge on gender routinely for assessment of the gender equality implications of the CRP's flagship research products as per the Gender Strategy -CRP M&E system has protocol for tracking progress on integration of gender in research And A CRP plan approved for capacity development in gender analysis And The CRP uses feedback provided by its M&E system to improve its integration of gender into research

ANNEX 3: List of Centre Research Staff contributing to Dryland Systems

Please provide list and relevant information of all research staff in your centre involved in Dryland Systems research from all Windows of funding by completing the attached excel document and submitting it separately as an attachment to the annual report.

Everisto Mapedza (PhD)

Barbara van Koppen (PhD)

Jonathan Lautze (PhD)

Nicole Lefore (PhD)

Emelder Tagutanazvo (MSc)

Cai Xueliang (PhD)

Francois Molle (PhD)

Edwin Rap (PhD)

Doaa Al-Agha (PhD)

Krishna Reddy, Kakumanu (PhD)

Palanisami K (PhD)

Akmal Karimov (PhD)

Oyture Anarbekov (PhD Candidate)

Nozilakhon, Mukhamedova, (PhD Student)

CGIAR

RESEARCH PROGRAM ON
Dryland Systems

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

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

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

For more information, please visit

drylandsystems.cgiar.org

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CENTRO INTERNACIONAL DE LA PAPA
CIP

World Agroforestry Centre

ILRI
INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE

IWMI
International Water Management Institute