Global Water Initiative East Africa (GWI EA)

March 2015: Final Program Report

CARE International

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Global Water Initiative
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Acronyms and Abbreviations:

AgWA	Partnership for Agricultural Water for Africa
ASDP	Agricultural Sector Development Program
ATA	Agricultural Transformation Agency
BASINs	Budget allocation and estimating household investment in water for production
CA	Conservation Agriculture
CAADP	Comprehensive Africa Agriculture Development Programme (CAADP)
CF	Champion Farmer
CGIAR	Consultative Group on International Agricultural Research
CSO	Civil Society Organization
GWI	Global Water Initiative
GWI EA	Global Water Initiative East Africa
IWMI	International Water Management Institute
LPA	Learning and Practice Alliance
MoU	Memorandum of Understanding
ODI	Overseas Development Institute
NGO	Non-governmental Organization
SWC	Soil and Water Conservation
TaPs	Technologies and Practices
WaSA	Water Smart Agriculture
WLE	Water, Land, and Ecosystem Program

Final Report: June 2015

1. Executive Summary

The Global Water Initiative-East Africa Phase II was intended to increase political attention to and investment from government, the private sector, and the global development community in water for smallholder farmers. The program was initially conceived as a 5 year program to influence government and other stakeholders, change investment patters in water for agriculture at the local, national, and regional level, and to demonstrate the viability of a wider, 'water-smart' approach to ensuring water for agriculture that would increase farmer incomes, strengthen food security at the household level, and decrease reliance on over-taxed ground and surface water resources. The program was closed by donor mandate on 31 March 2015, 30 months after inception. This report is intended to describe and assess overall progress against program goals and indicators during those 30 months, as well as describe challenges, lessons learned, and continuing advocacy opportunities that may inform and strengthen continued efforts to advance water smart agriculture, and water and food security for smallholder farmers.

Overall achievements of the program include:

- The formation and refining of Water Smart Agriculture, a concept that packages interventions targeted to improving efficiency of water use for agriculture

- The publishing of the Sourcebook for Water Smart Agriculture in East Africa, in collaboration with government, academic, and non-profit partners. This sourcebook consolidates regional experience in the practical application of water smart agriculture. It is primarily oriented towards agricultural extension and others working directly with smallholder farmers, and presents the known evidence of practices and technologies that increase efficiency of water use for agriculture.

- Champions created in the national government in Uganda, and local champions created in Tanzania and Uganda.

- Increased budget allocation within local government for water for agriculture in all three program countries.

- Evidence and demonstration among farmers that improved practices and uptake of technologies increase both yield and income potential, as well as average crop diversity among practicing farmers. Each of these are recognized and tangible measures in decreasing food insecurity at a household level. Additional evidence in Uganda demonstrates the potential for household cost recovery of investments made in improved practices and technologies.

- Evidence of increased participation, decision-making, and empowerment among women smallholder farmers, also correlated with increased food security at the household level.

GWI-EA faced a number of challenges. Policy influence can be slow, and progress is often unpredictable from the outset. Though GWI-EA's work with champion farmers and LPA's was very tangible, gains at the national policy level were naturally less visible during the short project window. National governments in the three program countries are highly invested in irrigation per their national water, agriculture, and irrigation strategies, and broadening the water for agriculture discussion beyond traditional irrigation to include the appropriate balance between rain-fed and irrigated agriculture has taken considerable effort. However, progress is evident in both Ethiopia and Uganda, which have re-framed their national irrigation approaches to include soil moisture retention and more effective utilization of rainfall. In Ethiopia, GWI-EA's influence helped to refocus and rename the National Task Force for Irrigation, as the National Task Force for Water for Agriculture. In Uganda, GWI-EA's position on water smart agriculture was incorporated into revised drafts of the National Water Policy and the Nation Policy on Irrigation.

Several key lessons have emerged over the life of the project, and influenced iteration of the GWI-EA program over its development. First, the lack of unified discourse between the water and agricultural sectors and policies in all three countries is severe, particularly at a national level. Second, the breath of change that we were asking farmers to embrace by adopting water smart technologies and practices was large, and their demonstrated willingness to invest suggested a certain demand, that water smart agriculture addressed a salient problem at the household level. Thirdly, in order to be successful, improvements to smallholder farming must occur within a wider ecosystem of markets, value chains, and post-harvest crop management practices; a holistic approach would have to facilitate linking farm-level interventions to wider district and national policy on access to markets.

Additionally, the paucity of agricultural extension, and in the case of Uganda, the marked decrease in national investment in agricultural extension services, are additional challenges to increasing food security among smallholder farmers, as farmers first and foremost require access to knowledge about improved agricultural practices before practices and technologies can be adopted at scale. Effective agricultural extension will be an essential component of encouraging more efficient water for agriculture at scale, and continued efforts to strengthen agricultural extension are necessary.

GWI-EA leaves a legacy of relationships, champions, commitments, publications and rising momentum for Water Smart Agriculture that can be leveraged for further progress towards improved water for agriculture, and improved food security of smallholder farmers in East Africa.

2. Goals and objectives

The central goal of GWI East Africa was to improve food security for smallholder farmers in East Africa, by improving the efficient use of water for agricultural production at a local level. Smallholder farmers are responsible for 60-90% of the food production throughout the East Africa region; the vast majority of this food production is reliant on rain-fed agriculture, and is under increasing threat as smallholders face unpredictable rains and extreme climatic conditions and variability. In our GWI-EA program countries, a vast majority of surveyed smallholder farmers report that they have seen a shift in rainfall patterns in the last 10 years, and more than 90% believe that there will be a shortage of water for irrigation in the coming 10-20 years[1].

[1] Ethiopia and Tanzania GWI-EA 2 Baseline surveys

Increasing food security among smallholder farmers requires improved water use and management among smallholder farmers and their communities, as well as commensurate shifts in the policy and market environments that enable improved water use for production at scale. The objectives of GWI-EA were thus to increase local, national and regional policy response, and public and private investment, favourable to smallholder farmers.

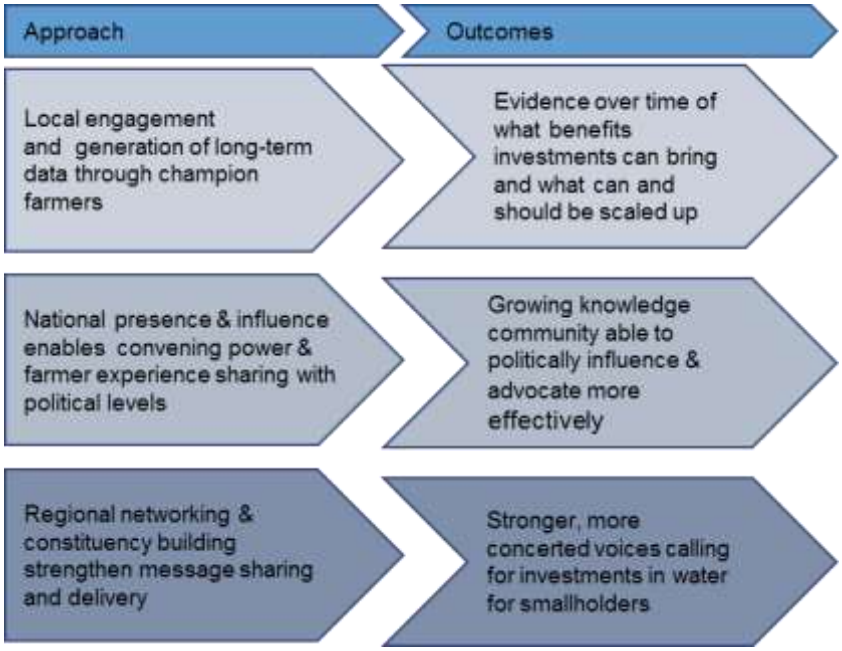
The intended outcomes of the GWI-EA program were the following:

1. **Greater political attention** to water for smallholder production, as evidenced by changes in policies and plans and their effective implementation at local, national, and regional levels.
2. **Increased investment** in smarter, affordable, and innovative solutions to providing water for smallholder production, especially for women farmers
3. **Increased voice and influence** of smallholder farmers, particularly women, within the institutions responsible for access to and control over water for agriculture.

The GWI-EA Theory of Change is based on the premise that the food security situation in East Africa can be transformed through improved information flow at different levels and increased pressure on policy makers from both insiders and outsiders. The result is smarter and increased investments in water for agriculture, especially for women farmers, and the overturning of obstacles to water access and its effective use in smallholder agriculture.

This Theory of Change is described in the figure below, where approaches on the left lead to outcomes on the right.

Figure 1: GWI-EA Theory of Change



From the outset of GWI-EA, we have been acutely aware that policy goals are often achieved incrementally, and through a series of proactive and reactive approaches - one milestone built on the one before it. Thus, GWI-EA was conceived as a staged approach, in which participatory action research at the local level builds an evidence base for informed policy decisions and informed investments. Learning and Practice Alliances, comprised of farmers, local government, researchers, agricultural extension, and other stakeholders, were instrumental to this approach. Champion Farmers "tested" effective water for

agriculture approaches in their own contexts, which demonstrated viability of and return on investments – to other farmers, as well as to policy makers.

The diagram below provides a snapshot of the intended stages of GWI-EA's work. Though the core activities — leveraging a participatory, grassroots action research mechanism for policy change at higher levels – remain consistent throughout, different levels of emphasis are placed on various aspects of the process as time progresses. For example, policy change, which can take several years and often requires a compelling evidence base, influential champions, and a critical mass of support, will require increasingly greater levels of time and effort as the program progresses. Similarly, the intensity of research efforts may lessen as an adequate evidence base for action crystallizes and others take on the application of WaSA within their own research and implementation.

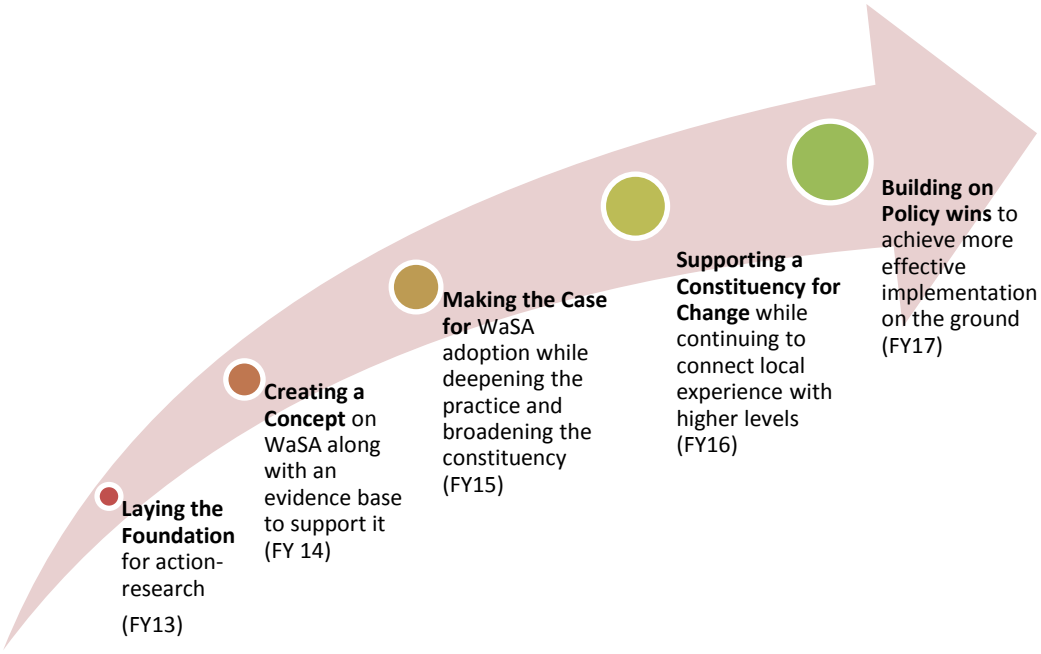


Fig 2: Intended stages of GWI-EA Impact

3. Achieved Outcomes and Results to date

The following section summarizes the overall achievements of GWI-EA Phase II, from September 2013 – March 2015.

GWI-EA was truncated during the phase of 'making the case,' and building a committed constituency at the regional, national, and local levels (see Figure 2) to the concept of Water Smart Agriculture (WaSA). WaSA was a concept coined by the GWI-EA program, and intended as a guiding framework for sustainable food security built on the balanced use of water resources, including rain-fed agriculture, conservation-sensitive irrigation, and retaining soil moisture through conservation agriculture practices. WaSA is meant to guide farmers and policy makers alike in looking beyond

simple irrigation or simple rain-fed agriculture, to finding an optimum and sustainable balance of water resources to maximize productive potential of smallholders in the short and long terms.

One of the greatest achievements of the GWI-EA program in building momentum for Water Smart Agriculture at the regional policy level included the production of the 'Sourcebook on Water Smart Agriculture in East Africa,' a compendium of articles/chapters from the three GWI-EA program countries that comprises the most up-to-date evidence base in support of the Water Smart Agriculture concept. The Sourcebook is intended as a practical guide for policy-makers, NGOs, and agricultural extension, that defines and contextualizes WaSA. This resource was jointly produced by GWI-EA, the International Water Management Institute, and the Consultative Group for International Agricultural Research (CGIAR) -Water, Land, and Ecosystems (WLE) program, in collaboration with local researchers and government stakeholders in Ethiopia, Uganda, and Tanzania. The Sourcebook was launched regionally at the final GWI-EA regional meeting in March 2015, and launched globally at the World Water Forum in Korea, in April 2015. It is now widely available online, and has registered more than 2,000 downloads in the first 2 months.

Critical to formulating the WaSA concept were the 160 Champion Farmers trained through GWI-EA across the three countries, from FY13 – FY15. These Champion Farmers tested water smart technologies and practices, and demonstrated improved yield and increased income – to farmers and government stakeholders[2]. The establishment of Learning and Practice Alliances at the district level in each country was also a central achievement of the GWI-EA program; key informant interviews with government stakeholders in all three countries suggests that LPAs were regarded as highly informative to local policy and practice. Though LPAs can be resource intensive, Same District stakeholders in Tanzania expressed commitment to maintaining the Same District LPA after GWI-EA's closure.

Additional key achievements of the GWI-EA program are described briefly below:

- Policy influence at the national level
    - Particularly evident in Uganda and Ethiopia where GWI-EA and LPA input has been incorporated into national water and irrigation policies, and GWI-EA participated in relevant national task forces on water for agriculture.
- Investment at the district level
    - Particularly in Ethiopia and Tanzania, where local government allocated significant budget to further testing water smart agriculture technologies and practices among smallholder farmers, and to incorporating LPA recommendations into agricultural extension and implementation of agricultural growth plans.
- Improved agricultural extension

[2] Research led by the University of California-Davis in collaboration with GWI-EA Tanzania suggests that Champion Farmers had a significant influence on the uptake of attitudes, technologies, and practices among a wide group of their peers, and that a diffused influence extends beyond their first person contacts. Emily Baker, (2014), Strengthening local adaptive capacity to climate change through adoption of "no-regrets" agricultural practices: Case study: Same District, Tanzania. University of California, Davis.

  - Particularly in Tanzania and Ethiopia, where district and woreda agricultural offices collaborated closely with LPAs. MOUs with local universities in Ethiopia helped to strengthen the role of research in agricultural extension. In Uganda, national budget allocation to agricultural extension has waned, and the Champion Farmer (peer-to-peer farmer exchange) approach has helped to overcome weak agricultural extension services.
- Increased farmer incomes
  - Evidence from both Uganda and Ethiopia (see figures 3 and 4) shows that income roughly doubles among Champion Farmers from baseline to the most recent harvest (within roughly 18 months). In Ethiopia, female headed households' income (among Champion Farmers) showed an average increase of 414%.
- Establishment of farmer-to-farmer exchange (Champion Farmer model) as an effective model for smallholder empowerment, and scale up of technologies and practices at the local level

Impacts achieved within the GWI-EA Strategic Objectives:

In the section below, we have assessed GWI-EA's progress towards each of the three strategic objectives and against the indicators of success as defined in the original proposal (FY2013). The stoplight analyses below reflect an assessment of success against each of the indicators, within the 30 months of GWI-EA's implementation. A green status indicates significant visible impact/change; a yellow status indicates some impact/change; a red status indicates little or no visible impact/change.

Overall, GWI-EA has demonstrated significant progress in raising awareness and increasing political commitment to water for agriculture, as demonstrated by influence to policies, practice, and champions at the local and national levels. GWI-EA has demonstrated moderate progress in increasing investment to smarter solutions to providing water for smallholder farmers; Champion Farmers have demonstrated significant personal investment, and district government offices have allocated budgets towards further

SO1: ***Greater political attention to water for smallholder production evidenced through changes in policies and plans, and their effective implementation at local, national and regional levels***

Overall, GWI-EA has demonstrated significant progress in raising awareness and increasing political commitment to water for agriculture, as demonstrated by influence to policies, practice, and champions at the local and national levels.

Increased political attention to water for agriculture as a result of GWI-EA's work was particularly evident in Uganda, where the National Water Policy and the Draft National Irrigation Policy reflect direct GWI-EA input, and where members of Parliament have made verbal commitments to incorporating LPA-generated data into national budget discussions. At the district level, the Otuke district LPA has been invited to comment on the District Food Security Ordinance.

In Ethiopia, increased political attention is also visible at the national and local levels. GWI-EA helped to shift the focus of the National Task Force on Irrigation to a broader mandate that encourages land and soil management practices, and rainwater harvesting and storage; as a result, the name of the Task Force has been changed to the National Task Force on Water for Agriculture. At the woreda and regional levels, GWI-EA has influenced the implementation of the National Growth and Transformation Plan, particularly in strengthening the quality and provision of agricultural extension services to smallholder farmers, and increasing political commitment (and budget allocation) to testing household irrigation technologies.

In Tanzania, influence has been largely visible at the district level, where data from LPA- sponsored demonstration plots has influenced the Same District government to allocate local budget to further testing of water-smart technologies and practices. Same District stakeholders express deep appreciation for the Learning and Practice Alliance approach, and have expressed commitment to maintaining the LPA beyond GWI-EA's engagement.

In all three countries, GWI-EA has created outspoken champions for Water Smart Agriculture. In Ethiopia and Tanzania, these champions are active at the regional and local levels, and are influential in local budget allocation and implementation of agricultural extension. In Uganda, these champions extend to the national level. Hon. Mathias Kasamba, member of the Ugandan Parliament and Chairman of the Parliamentary Agricultural Committee, is an outspoken advocate of Water Smart Agriculture; he chaired the final GWI-EA Regional Meeting, held in March 2015 in Bahir Dar, Ethiopia, and led a discussion of next steps for promoting Water Smart Agriculture within the region.

Table 1: Progress against success indicators, Strategic Objective 1
Green status = significant change; Yellow status = some change; Red status = limited or no significant change

Indicators of Success	Status			Activities and Remarks
Government demonstrates increased political will to address constraints on water for smallholder agriculture (participation in fora and action research activities);	X			Active participation by local government and other stakeholders in Learning and Practice Alliances, and National Learning Hubs in all three countries. Revised Draft National Water Policy and Draft National Irrigation Policy include GWI's position on water smart agriculture in Uganda. GWI-EA in Ethiopia helps shift the focus of the National Task Force for Irrigation to a broader mandate that includes land and soil management and rainwater utilization; Task Force is re-titled, the National Task Force on Water for Agriculture. The Otuke District LPA in Uganda is invited to inform the Otuke District Food Security Ordinance in 2014-2015.
Evidence of data being used;	X			In Ethiopia, LPA recommendations to Dera Woreda result in earmarked budget allocation to include

				sustainable household irrigation strategies in implementation of the National Agricultural Growth Plan. After visits to Champion Farmer demonstration plots, members of Parliament in Uganda and Tanzania have formally committed to using LPA and Champion Farmer-generated evidence to influence national budget discussions in 2014-2015. In Ethiopia, active LPA membership and engagement from the College of Agriculture at the University of Bahir Dar and the Amhara Regional Research Institute has strengthened the potential for research to inform local policy processes regarding water for agriculture. Key informant interviews in all three countries suggest that LPA-led participatory action-research is highly regarded as informative to local policy and practice.
Statements made in support of new approaches;		X		Chairman of the Ugandan Parliamentary Agriculture Committee, Honourable Matthias Kasamba, chairs the final GWI-EA regional meeting in Bahir Dar Ethiopia; participants include members of national and district level government in Uganda, and members of local government in Tanzania and Uganda. Many express personal and political commitment to Water Smart Agriculture, captured in the GWI-EA Bahir Dar Report, March 2015. Champions from Same District, Tanzania commit to sustaining the Same District LPA after the closure of GWI-EA. Other statements of support captured in Outcome Mapping journals.
Enhanced links between agriculture and water ministries;		X		Ministries of Water and Agriculture in Uganda, Tanzania, and Ethiopia collaborate on the production of the Sourcebook for Water Smart Agriculture, and jointly endorse at the final regional GWI-EA meeting in Bahir Dar, March 2015. However, further coordination between Water and Agriculture Ministries is still low.
Increase in budgetary and human resources allocated annually)		X		Significant budget allocation at the local level in all three countries towards water for agriculture in 2014. However, there is not yet evidence of sustained yearly investments, or of increased human resources at the local or national levels.

Strategic Objective 2: ***Increased investment in smarter, affordable and innovative solutions to providing water for smallholders, especially women farmers***

GWI-EA has demonstrated moderate progress in increasing investment to smarter solutions to providing water for smallholder farmers. In all three program countries, Champion Farmers demonstrated viability of investment in water smart agriculture practices and technologies, while further uptake of these technologies and practices among surrounding farmers demonstrated increased personal investment among farmers at a greater scale. In Tanzania, demonstration plots led by 60 Champion Farmers influenced the uptake of water smart practices and investments among 292 additional farmers[3].

Importantly, district level governments in all three countries allocated district budget to water smart agriculture in 2014.

- In Tanzania, the Same District government pledged USD 12,500 in support of further testing of water smart technologies and practices piloted by Champion Farmers
- In Uganda, the Otuke District government allocated USD 1,240 to fund a pilot of drip irrigation at the household of a Champion Farmer, in order to determine and demonstrate viability of water smart crop irrigation.
- In Ethiopia, the Dera Woreda Agricultural Office allocated USD 65,500 to incorporate small-scale, water-smart irrigation technologies recommended by the Dera Woreda LPA into the woreda-level implementation of the National Agricultural Growth Program

However, though there is evidence that LPA-generated action research results were extremely influential at a local government level and have informed national policy discussions in all three countries, no formal budget commitments were made at the national level during the 30 months of GWI-EA program implementation.

Table 2: Progress against success indicators, Strategic Objective 2

Indicators of Success	Status			Activities and Remarks
Government and private sector demonstrate interest in dialogue around identification of and investments in smarter solutions		X		LPAs generate concrete dialogue and recommendations towards smarter solutions and investments Champion Farmers demonstrate viability of and return on investments in new technologies and practices. However, while there is evidence of interest and investment from government, farmers, and university stakeholders, there is less evident engagement from the private sector.

[3] GWI-EA Tanzania Policy Brief 2015; Emily Barker, UC-Davis, 2014

Evidence of smallholders, particularly women, being more confident in accessing investment through more supportive institutional environments			X	There is concrete evidence, particularly from Champion Farmers in Ethiopia and Uganda, of increased incomes among women champion farmers. Anecdotal evidence from champion farmers in Uganda, Tanzania, and Ethiopia suggests increased empowerment and confidence of women in decision making related to agriculture and water use. However, there is little evidence as of yet that women's access to investment is greater at an institutional level.

Outcome 3: The voice and influence of smallholders will increase with regard to access to and control over water for agriculture

GWI-EA has demonstrated moderate progress in increasing the voice and influence of smallholder farmers. At the local level, farmers very effectively influenced the uptake of technologies and practices of their peers; 60 champion farmers in Tanzania influenced the practices of 292 additional farmers between 2014 and 2015, for example. Learning and Practice Alliances were extremely effective in bringing farmer voices and experiences to local government, and interviews with local government stakeholders suggest that farmer experiences were influential in local budget allocation towards water smart agriculture in all three countries. In Uganda and Tanzania, GWI-EA arranged field visits for members of Parliament to see Champion Farmer experiences first-hand, and government stakeholders from Uganda expressed at the final GWI-EA meeting in Bahir Dar that this was an influential experience. GWI-EA made significant effort to include farmers in global and regional discussion platforms, as well as publish stories and profiles of farmers in various online and media outlets; however, there is little existing evidence that farmers' voices or experiences were influential in these venues, or even heard. GWI-EA systematically documented the experience of women smallholder farmers, and while research and interviews in Ethiopia suggest that women Champion Farmers felt significantly empowered by their experience, there is too little evidence that women's voices are being heard in policy discussions.

Indicators of Success	Status			Activities and Remarks
Evidence of smallholders, particularly women farmers, being more able to articulate their concerns and aspirations in policy influencing contexts at different levels		X		There is evidence at the local level that women Champion Farmers feel more engaged in decision making at the household and local levels. In Uganda, women champion farmers described the impact of visits by national Parliament members as influencing their perception of themselves and their impact as farmers. In Ethiopia, the Dera Woreda LPA dedicated specific action research to

				issues related to women smallholder farmers.
Evidence of policy makers being influenced by smallholder experiences and feedback from action research		X		In Uganda, GWI-EA arranged a visit from Parliamentary members to Champion Farmers. Interviews suggest this was a formative event for both groups. Key stakeholders from each country expressed at the Bahir Dar meeting that farmer experiences had influenced government momentum and commitment to water for agriculture.

Evidence of Increased Food and Income Security among Smallholder Famers

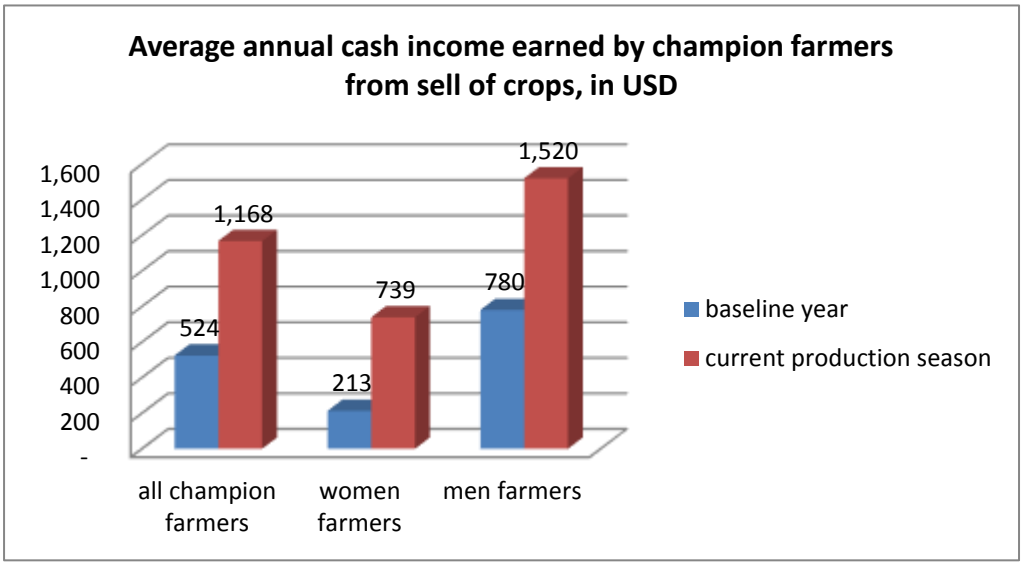
As the overall goal of GWI-EA was to improve the food security of smallholder farmers, GWI-EA sought to produce evidence that the uptake of technologies and practices generated a tangible increase in food and income security for smallholder farmers. This also helped to demonstrate a return on investments made by households, as well as by government.

The below excerpts from policy briefs produced by GWI-EA Uganda and Ethiopia demonstrate evidence of significantly increased incomes of Champion Farmers, and cost recovery for investment made in water smart practices at the household level.

<u>GIW-EA Ethiopia: Increased Incomes among Champion Farmers:</u>
(The following is an excerpt from GWI-EA policy brief, Ethiopia, 2015)

In Ethiopia, GWI-EA traced Champion Farmer income generation from baseline to end-line, and demonstrated a significant increase in income generation among Champion Farmers after the adoption of technologies and practices promoted by GWI-EA.

Figure 3: Annual income earned by Champion Farmers in Dera Woreda, Ethiopia through crop sales; Baseline 2013; current production season, 2015.



Female headed households who were among the most vulnerable at the start of the program have significantly improved their livelihood as seen through changes in income and food security. Female headed households' income on average showed an increase by 414%. Average income earned by female headed households from sale of crops more than tripled in the current production year, growing from 213 USD (4,260 EtB) in the baseline year to 739 USD (14,789 EtB) currently. During the baseline year, 15 (23%) out of the 66 champion farmers were food insecure, experiencing food shortage from one up to four months' in a year. All except one of the 15 were women. Currently the number of champion farmers who experience months of food shortage has dropped to 3 (5%).

GWI-EA Uganda: Cost Recovery of House-hold Capital Investments towards Water Smart Agriculture
(The following is an excerpt from GWI-EA policy brief, Uganda, 2015)

Data from Champion Farmers in Uganda was used in order to demonstrate a viable return on investment that justifies the capital costs of labor and infrastructure for water smart agriculture. The figure below shows the average time (in months) to recover capital costs at the household level, by sale of surplus crops (captured by increased yield).

Figure 4: Analysis of cost effectiveness of water smart agriculture technologies and practices; average cost recovery, in months

No.	Technology Combinations	Total Fixed Capital Costs (USD)	Average time for cost recovery (in months) for cultivation on 600m²		Average time for cost recovery (in months) for cultivation on 4000m²	
			Tomatoes	Cabbages	Tomatoes	Cabbages

1	Soil moisture management - mulch, manure and ridges	50	0.1	0.6	0.1	0.3
2	Sunken Planting basins	-	-	-	-	-
3	Minimum tillage	57	-	-	-	-
4	Surface runoff pond with a treadle pump	1,264	1.9	4.4	0.3	0.7
5	Surface run off pond with a watering can	997	1.5	3.5	0.2	0.5
6	Surface runoff pond with a drip kit	1,667	2.5	5.9	0.4	0.9
7	Roof top harvesting and treadle pump	2,293	3.4	8.1	0.5	1.2
8	Roof top harvesting and drip system	2,784	4.1	9.8	0.6	1.5
9	Roof top harvesting with a watering can	2,026	3	7.1	0.4	1.1
10	Shallow well*** with a drip kit	4,200	6.2	14.8	0.9	2.2
11	Shallow well and treadle pump	2,655	3.9	9.3	0.6	1.4
12	Shallow well, subsurface tank with a drip system	5,325	7.9	18.7	1.2	2.8

The data above shows the different soil and water management technologies assessed for cost effectiveness in relation to tomato and cabbage production (as income generating crops). The surface runoff pond used has a capacity of 40,525 liters, the roof top tank is 11000 liters, the subsurface tank is 32,000 liters and the shallow well had an unlimited water source. The water harvested is for supplementary irrigation and in case of the shallow well could be used for offseason vegetable production. The payback periods are computed against yield of two farmers in December 2014 where a champion farmer 2014 harvested 863 kgs of tomatoes and 990kgs of cabbages which they sold for USD 440 and USD 342, respectively, from 600m^2 trial plots.

4. Lessons Learned

Three main lessons have emerged over the life of the project. The first concerns the severity of the divide between water and agriculture policies and institutions in the three countries, particularly at national level. This lack of unified discourse has been more pronounced than we initially understood. It is also reflected in a similar disjointedness at local level where there are many discrete research initiatives typically established within their own separate networks. There is no central conduit for information and knowledge on water for smallholder agriculture through which to consolidate learning and achieve a more coherent approach to influencing. This state of affairs helps to explain the enthusiastic uptake of WaSA, both as a rallying concept and a platform for discourse between the water and agriculture ministries. It also emphasizes the importance of our convening power through the LPAs and national Learning Hubs.

Secondly, we better understand with hindsight how novel, and by extension dubious, the ideas we were proposing must have seemed to champion farmers and LPA members. The GWI EA message was one of hope and inventiveness, and of the possibility to reverse entrenched patterns of failure and risk. We learned that farmers only gradually change perceptions towards newly introduced technologies or ideas—and understandably so, given the high risks their farming livelihood subjects them to. In a sense champion farmers put themselves out on a limb. Had demonstration plots or new technologies failed, they would have opened themselves to ridicule from other farmers, not counting the opportunity cost of their time and other investments.

Thankfully, champion farmer experiences were overwhelmingly positive, as witnessed by their continued practice of the new methods and the uptake by other farmers. In Uganda, for example, champion farmers had a negative perception towards the adoption of vegetables and bananas as their production in Otuke was unheard of. GWI EA-supported work showed that vegetable production is possible in Otuke. Though demonstration plots in the first cycle struggled because famers lacked knowledge on the application of WaSA, with further trainings by Welthungerhilfe and support visits by LPA members, by the final year of the project all champion farmers were practicing conservation agriculture and had well maintained vegetable and banana plots.

Nonetheless, the project could have done more to prepare the champion farmers, such as offering other capacity building elements prior to introducing new technologies and approaches. These could have included business training, group organizing, and farmer-led problem diagnosis and visioning. In addition, we could have done more to understand the specific needs of women farmers.

The LPA approach was a similarly novel element, having never before been witnessed in the implementation areas, as noted in an evaluation of the approach within GWI-EA: "A learning platform such as the LPA has not occurred in Otuke. This made the concept somewhat difficult to envision, so participants were initially unsure of what to expect…some LPA members doubted the LPA would differ from typical NGO interventions. However, due to their participation in the LPA, they now recognize the program as a 'value-added' intervention." Notwithstanding the overall success of the approach in creating local ownership of the research process, we learned with hindsight that more intensive and structured research support was required, combining stronger GWI EA team inputs at local level with greater external support, including contracted researchers and interns.

Finally, even though WaSA gave us a broad lens through which to examine the problems of smallholder farming, discussions with stakeholders at local level have underscored the need for greater contextual analysis. Agricultural management practices and technologies alone cannot change the face of smallholder farming. As the work progressed, we became increasingly aware of the need to take stock of the wider markets, value chains, post-harvest crop management practices and ways of linking farm-level interventions to wider district and national policy on access to markets, and had begun to do so.

Our evolving understanding of the context also got us thinking of how the youth of today be brought into farming systems. At present there is a great push away from farming because of the real and perceived insecurities and risk involved. Our work started to address this challenge by focusing not just on how to increase investments but on ensuring that WaSA is part of a broader 'incentivizing' of engagement in farming by young people.

An abbreviated list of learning products is provided in Annex A. These materials are available on the GWI-EA website, or upon request.

5. Advocacy Opportunities

Advocacy - to increase local, regional, and global attention to water for food security - was a primary thrust of the GWI-EA program. The below is a brief list of GWI-EA advocacy outputs from FY 13 – FY15.

- Participation and presentation at global forums such as the World Water Forum, Stockholm World Water Week, Water for Food Conference

- Creation of the GWI Regional Charter on Investing in Water for Smallholder Agriculture, adopted by key stakeholders in all three GWI-EA program countries
- Development of the WaSA Sourcebook, in collaboration with IWMI, CGIAR-WLE, AgWA, and government and academic stakeholders from each of the three country programs.
- Participation in in national level policy discussions and national task forces in Uganda and Ethiopia that influenced the National Water Policy and the National Irrigation Policy in Uganda; the implementation of the National Agricultural Grown Program in Ethiopia, and influenced the shift of the National Task Force on Irrigation to a National Water for Agriculture Task Force in Ethiopia.
- Focused communications materials that bring Champion Farmer profiles and key issues related to water smart agriculture to a global audience via print and online articles, videos, podcasts, and social media such as Facebook and Twitter (see www.gwieastafrica.org for a list of media outputs).
- GWI-EA facilitated travel and engagement in regional dialogues by national government, LPAs, local authorities, and Champion Farmers to ensure that their perspectives are considered.
- Local advocacy based on LPA generated evidence (through action research), which influenced local government in all 3 program countries to allocate local funds to piloting and developing WaSA technologies and practices, and strengthen agricultural extension.

Continued advocacy for water smart agriculture in the East Africa Region remains strategic, even in the absence of GWI-EA program implementation. Ongoing opportunities for advocacy engagement at the regional and national levels, include:

- Wider dissemination of the Sourcebook on Water Smart Agriculture among regional stakeholders; use of the Sourcebook as a starting point for dialogue between stakeholders at the national and regional levels.
- Use of the Sourcebook at national levels to encourage greater engagement of and build capacity of agricultural extension in balanced water for agriculture
- Continued engagement with national level policy champions for Water Smart Agriculture, and support for framing key policy and investment 'asks'

6. Completed work plan

A final work plan for GWI-EA was submitted to the Howard G. Buffett Foundation in September 2014 detailing activities to wind-down the program between October 2014 and March 2015. As prior GWI-EA Annual reports have documented progress against prior annual work plans, we include here only an update of progress against the "wind-down" work plan. A full work plan, detailing the status of activities across the entirety of the GWI-EA project period is available upon request.

GWI-EA Wind-down Work plan: October 2014 -2015

Activity	Status	Notes
Finalizing work with Champion Farmers and Learning and Practice Alliances, and documenting learning from each	Completed March 2015	Documents describing learning from Champion Farmers and Learning and Practice Alliances have been submitted in draft form. See list of written resources in Annex 2.

Final meetings of National Learning Hubs and Learning and Practice Alliances, and determine next steps	Completed Feb 2015	Final meetings with LPAs and National Learning Hubs focused on next steps and opportunities for sustainability in the absence of GWI-EA.
Final GWI-EA regional meeting, and regional launch for the WaSA Sourcebook	Completed March 2015	Final GWI-EA regional meeting was held in Bahir Dar, Ethiopia, in March 2015 and included stakeholders from all three country programs; WaSA Sourcebook introduced, and copies disseminated.
WaSA discussion and global launch of the WaSA Sourcebook at the World Water Forum in Korea, April 2015	Completed April 2015	CARE and GWI-EA representatives participated in two sessions at the World Water Forum, including an official launch of the WaSA Sourcebook, with IWMI and CGIAR-WLE.

7. Budget Summary

The Budget Summary provided below is a an interim budget report for 2015 as costs are ongoing in support of final advocacy and policy activities until September of 2015. A full financial report will be provided upon completion of those activities.

Please refer to the attached financial report for details on GWI EA expenditures during the reporting period (October 1, 2013 through March 31, 2015).

In Fiscal Year 2015, a total of $695,768 has been expended in support of the GWI Phase 2 East Africa program representing 68% of total amount of $1,017,005 allocated for FY15. This expense includes $91,250 expended in support of the Global Policy and Advocacy program.

Item	FY2015 Budget	FY2014 Carry-over	FY2015 Total Budget	FY2015 Actual Expenditures	Difference ($)	Variance (%)
Direct Costs						
Salaries	220,105	-	220,105	194,540	(25,565)	-12%
Fringe Benefits	170,842	-	170,842	98,036	(72,806)	-43%
Travel	31,950	18,000	49,950	44,672	(5,278)	-11%
Consultants		26,100	26,100	47,737	21,637	83%
Supplies	50,330	-	50,330	44,073	(6,257)	-12%
Other direct costs	331,874	94,520	426,394	211,043	(215,351)	-51%
Capital equipment	-	-	-	-	-	0%
Total Direct	**805,101**	**138,620**	**943,721**	**640,101**	**(303,620)**	**-32%**
Shared Program Costs (5% of Direct In-Country Costs)	20,588	6,931	27,519	24,358	(3,161)	-11%

Total Direct Costs + Shared Program Costs	**825,689**	**145,551**	**971,240**	**664,459**	**(306,781)**	**-32%**
HQ Administrative Retention (4.5% of Total Direct Costs + Shared Program Costs)	38,907	6,858	45,765	31,310	(14,456)	-32%
Total Expenses	**864,596**	**152,409**	**1,017,005**	**695,768**	**(321,237)**	**-32%**

The GWI-EA program has closed effective April 30, 2015. However, CARE will continue utilizing the remaining budget to support Policy influencing activities through September 2015. In addition, country program expenditures incurred during the project period but were not recorded in the CARE financial system up until the issuance this report will be accounted in the final report through September 2015.

8. Submit to the program staff member assigned to your grant and copy compliance@hgbfoundation.org.

Annex A: Abbreviated List of GWI-EA Learning Documents

See a full archive of learning documents from GWI-EA at:
http://www.gwieastafrica.org/publications/.

See a list of media outputs from GWI-EA here:
http://www.gwieastafrica.org/mediapress/

GWI-EA Selected Learning Documents:

Regional Documents:

Sourcebook on Water Smart Agriculture in East Africa:
http://www.gwieastafrica.org/media/WaSA-final-version-04.04.2015.pdf

GWI-EA (2015): Report on the Results of the March 2015 Final Regional Platform Meeting of GWI East Africa.

Workshop Report (2013): Regional Charter on Investing in Water for Smallholder Agriculture. Workshop held, August 2013.

GWI-EA (2014): Monitoring & addressing Governance Factors affecting Rural Water Supply Sustainability

CARE Assessment (2014). Global Water Initiative – East Africa Report on First-Round Action-Research: Findings and Impacts of Learning and Practice Alliances; August 2014

CARE Briefing Paper (2014). The Mechanism of Action Research: An Evaluation of Learning and Practice Alliances within the Global Water Initiative in Ethiopia & Uganda. Dec 2014.

CARE Briefing Paper (2014). Reality on the ground: Addressing the policy-practice gap to achieve greater rural water supply sustainability (Briefing Pater). Katharina Welle; March 2014.

CARE Report (2014): The Mechanism of Action Research: An Evaluation of Learning and Practice Alliances Within the Global Water Initiative in Ethiopia and Uganda. Biruh Zegeye, Jillian Kenny and Nathan Kennedy. August 2014.

GWI-EA Phase II Baseline Reports: Uganda, Tanzania, and Ethiopia
GWI-EA Program Summary Report, 2013-2015
Outcome Mapping Journals: Uganda, Tanzania, Ethiopia
Final Monitoring and Evaluation Report of GWI-EA Phase I Water Points, 2015.

Tanzania:

GWI-EA Policy Brief (2015): Investing in water smart agriculture to improve smallholder farmers' productivity and food security in Tanzania.

CARE, (2013). Participatory socio economic and community based adaptation baseline survey for Global Water Initiative: Water for Agriculture and Community Based Adaptation Programs in Same District, Kilimanjaro region, Tanzania. Prepared by Dr. Ezekiel J. Mangi and Dennis R. Rweyemamu.

CARE, (2014). National learning hub workshop report held at Protea Hotel Courtyard, Dar es Salaam from 15 to 16 May, 2014.

CARE, (2015). Budget Analysis and Smart Investment (BASINs) for Global Water Initiative East Africa (GWI EA) on water for agriculture: A Case of Same District, Kilimanjaro region and National Budget in Tanzania. Prepared by Dr. Gody Jonathan Sanga.

Emily Baker, (2014), Strengthening local adaptive capacity to climate change through adoption of "no-regrets" agricultural practices: Case study: Same District, Tanzania. University of California, Davis.

Ethiopia:

GWI-EA Policy Brief (2015): Briefing paper on household irrigation: experience of the GWI program in Dera Woreda of South Gonder Zone, Amhara Region.

GWI-EA Policy Brief (2014): Food and Water Security in Dera Woreda, Ethiopia. Bethel Terefe and Alan Nicol. January 2014.

GWI-EA Report (2014): Dera Woreda Financial Situation Analysis. Bethel Terefe & Tesfaye Ewnetie. January 2014

Uganda:

GWI-EA Uganda, Briefing Paper (2015): Promoting Appropriate Soil and Water Conservation Practices for Smallholder Agriculture for Food Security and Increased Incomes: A Case Study of Otuke District, Northern Uganda.

BASINs Report (2014): Budget Analysis and Assessment of Smart Investments in Water for Smallholder Agriculture in Uganda and the East African Region. Economic Policy Research Centre (EPRC) for CARE Uganda. 2014.

CARE (2013). Monitoring Community Vulnerability and Adaptive Capacity to Climate Change in GWI-1 Programme Sites: Orum, Olilim and Ogor sub counties, Otuke District in Uganda. Patrick Nganzi & Cissy Kabagumy. Nov 2013.