Assessment of Skill Gaps in Irrigation Extension, Amhara Region

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Abstract

It is widely recognized that for sustainable food security irrigation extension service plays an important role in the dissemination of improved irrigation technologies to water users. Despite this, the performance of most irrigation schemes in the region is below expectation. This is due to many reasons among which, low implementation capacity of irrigation extension officers (Woreda IADP experts and IDAs) are said to be part of the cause affecting increased irrigated crop production. The situation has been aggravated as a result of poor irrigation extension service and weak institutional set-up particularly in farmers' organizations. Experiences in SWHISA indicated that in addition to some limitations with regard to irrigation engineering aspects, limitations in the capacity of farmers to effectively utilize the irrigation technology, and low capacity of irrigation extension officers working at woredas and scheme levels in supporting farmers are all affecting the effectiveness of irrigation development and management. Consequently skill capacity gap analysis of irrigation extension officers was done and the current level of knowledge and skill gaps of the irrigation extension officers and water users were identified with key recommendations and a way forward for improvement of existing irrigation extension services in the region.

Key words: Skill gaps, Irrigation extension, Experts, Water users, SWHISA, Amhara region

Introduction

It is widely recognized that irrigation extension service plays an important role in the dissemination of improved irrigation technologies to the water users for sustainable food security. According to the available reports in IADP and experiences, the performance of most irrigation schemes in the region is below expectation. This is due

to many reasons among which, low implementation capacity of irrigation extension officers (*Woreda* IADP experts and IDAs) is one which needs future intervention. The situation has been aggravated as a result of poor irrigation extension service and weak institutional set-vq!qbsujdvmbsmz!jo!gbsn fst !pshboj bujpot/!

JBE t! n boebuf! up! csjoh! bcpvu di bohft! jo! ui f! fyjtujoh! qppsmz! n bobhfe! jssjhbujpo! system, although encouraging, has not yet brought satisfactory results in addressing x bufs! vtfst !offet! boe! jn qspwfn foul pg ui f! tdi fn ft! bt! boujdjqbufe! cz! ui f! x bufs! vtfst! and farming communities. IADP was able to set up its offices at *Woreda* levels but in some cases the offices are not fully functional, mainly due to lack of experts and logistics support. For example, *Woreda* IADP office in West Belessa has currently no experts and a process owner. The organizational attitude of many *Woreda* offices of Agriculture and Rural Development is still geared towards rainfed *agriculture* extension; emphasizes on rainfed farming and credit facilities, not providing adequate attention to irrigation water management. The irrigation schemes lack attention and support both from woreda experts and DAs. Such irrigation schemes are either left to water user associations (WUA) or irrigation cooperatives (IC) or irrigation block teams where their own institutional set-up is unstable and linkages with IDAs and woreda IADP support service providers are weak.

Furthermore, irrigation extension services are weakened by lack of well-trained IDAs, experts and resources to carry out the task properly. IADP experts and DAs have little to offer farmers about water management and do not have adequate skills to cope up with existing farmers needs. Water users rarely participate in irrigation planning and in decision-making process with the stakeholders. The water users have no full control over water management and so the use of scientific methods to schedule irrigation is very difficult. Given this fact, it is foreseen that the impact of irrigation interventions on human assets, in the form of development of skills and knowledg ae.TJETkiess s ( )-69(iser)6(s -10( )

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coordination and linkage between the stakeholders, the capacity development will not be sustainable, rather it will weaken the performance of extension officers. This institutional support problem is known fact to IADP/ BoARD including stakeholders. The region has made a large amount of investment to develop services and participatory methods on irrigation extension. There exists a large gap between the availability of irrigation extension service for effective water use and the application of right irrigation extension communication methods to transfer improved irrigation technologies. IADP initiated some interventions to establish an effective irrigation support service system; however, the pace of its implementation procedure is still slow to assist water users in the adoption of improved irrigation technologies. As a result, the impact of the investments in many irrigation schemes is considerably low in terms of crop production and water savings evolving big concerns on system sustainability.

Objectives of the assessment were:

- To assess the efficacy of existing irrigation extension approach/methods and advisory services provided by *Woreda* IADP and kebele/scheme IDAs
- To identify and analyse the gaps in terms of current level of irrigation extension planning capacity of IDAs, and *Woreda* IADP experts commensurate with their job descriptions;
- To identify and analyse the capacity gaps of water users in adoption of irrigation technologies, and
- To develop plans to fill the capacity gaps so that IADP is able to deliver on irrigation extension strategic results and outcomes efficiently and effectively

Methodology

sjps! up! voefsubl joh! ui f! bttfttn fou! b! n fui pepmphz! bqqspbdi ! qbqfs! po! dbqbdjuz! hbq! analysis of extension officers aoe! gbsn fst! bu tfmfduf! tbn qmf! jssjhbujpo! tdi fn ft‘ ! x bt! developed by AEA Consultant of SWHISA, the draft discussed with IADP and SWHISA experts group and produced the final, that guided the overall capacity analysis process. Relevant data was collected in desk review and through field discussion with *Woreda* IADP experts, IDAs/DAs, experts of Agriculture Development and Management Unit (ADMU) of Koga Irrigation Project and water users through

administering open-ended assessment questionnaires and following strength, weakness, opportunity and threat (SWOT) guidelines. The excerpts of the methodology were as follows:

Considering time limitation and resources, the field visit for capacity assessment was conducted in three project *Woredas*, namely, West Belessa, Goncha Sisso Enesse and Mecha focusing on three categories of irrigation schemes. This assessment was undertaken during the period September 27 to October 5, 2010 in three categories of irrigation schemes: Kalai traditional irrigation scheme in West Balessa, Azwari modern small-scale irrigation scheme in Goncha, and Koga large-scale irrigation scheme in Mecha. In the irrigation schemes, the team conducted discussions by probing key questions to water users in three *Woredas*. A total of 30 water users (10 in each scheme/w*oreda*) were randomly-selected for assessment. About 25 IDAs/DAs (6 female) from three *Woredas* responsible for irrigation schemes management were interviewed. Interviews were conducted using structured questionnaires to assess the current expertise and skill gaps of the IDAs/DAs. In addition, capacity gaps of total of 13 *Woreda* IADP (from Goncha and Mecha Woredas only) irrigation experts and including the unit head of ADMU was assessed and analyzed through capacity assessment scores in relation to irrigation extension. Questions were posed to respondents using simple semi-structured questionnaires commensurate with the key assessment points for capacity analysis. Their views and opinions were assessed. Finally, data analysis was carried out by irrigation extension group of SWHISA in collaboration with IADP.

Results and Discussion

During the course of assessment, the team assessed the key capacity gaps of individuals (IDAs, IADP irrigation experts and water users) which are specifically and broadly illustrated in the following section keeping in view of their level of performance in three categories of irrigation schemes. In this section, a summary of key findings with regard to overall performance of irrigation extension service is presented to get a better understanding of the present situation, and also to know how IADP is addressing the

issues of capacity development and the needs of the water users for promoting improved irrigation technologies.

Irrigation extension implementation guidelines

There is lack of irrigation extension implementation guideline or manual to lead irrigation extension implementation strategies for IDAs and *Woreda* IADP experts. These guidelines/ manuals aigatio(a) imortae to o th(im)-3(io(atuls)-152o(f)-6) irrigation extension

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percent and the rest assumes community extension service which is also a part of their general extension, particularly the item number 2 of the following table shows that IDAs/DAs are hugely involved in *Woreda/kebele* campaigns (35%) which is also an ancillary task to irrigation activities and is important. The following table shows the activities and IDAs/DAs work performance in various fields.

Table 1. Performance of irrigation extension officials at woreda/kebele

No.	Performance of IDA/DAs work in various field	%
1	Participation in recovery of loan or rural credits	8

some of these activities are related to irrigation extension, they do not adequately boost effective participatory irrigation extension since essential irrigation extension ingredients like

trial and error methods with knowledge/skill gaps are detrimental for technology adoption which may not be successful at the end**.**

Extension demonstration and communication methods

The study team was able to assess and analyze the skill gaps of IDA/DAs and experts in terms of conducting irrigation demonstrations such as demonstration of high-value crops and other irrigation technologies like drip systems and siphons. The results indicate that extension officers have no practical knowledge on crop technology demonstrations and use of other irrigation devices since they have neither practical knowledge nor training. Also, they lack extension communication campaigns such as bx bsfoftt!sbjtjoh!gjfmeebzt!hspvq!dpoubdut!fud/!Ipxfwfs!xjui!TXI JTBt!tvqqpsujo! Azwari irrigation scheme some IDAs/DAs and experts were able to receive and undertake practical crop demonstration training for improved potato cultivar and construction of diffused light storage system. Such practical demonstrations either quantify the impact or avoid the use of such qualifiers to learning about the improved seed production, improved practices, irrigation water scheduling and storage of tubers. As a result of these demonstrations the neighbouring farmers in the scheme were motivated for technology adoption, which they are currently following but are lacking improved seed tubers. On the other hand, due to budget constraints it is difficult for *Woreda* IADP to establish and manage irrigation crop demonstrations in the other irrigation scheme of the woreda. Water users in all three schemes have strongly demanded for demonstrations, training and inputs.

Extension program budget

There is no requisite for the allocation of budget for *Woreda* IADP as per their annual budget plan. It was assessed that big chunk (about 69%) of *Woreda* IADP budget is curtailed that affects the continuity of the irrigation program and commitment to the water users. Meagre budget allocation for capacity development, logistics support and routine extension services such as training and demonstration, extension campaigns, and transport cost for IDAs/DAs with perdiem jeopardizing planned activities. Usually, less attention is given to budget allocation for IADP, as a result, good intentioned extension efforts remains unimplemented.

Performance of water user organization

In most cases, water user organization does not exist in many irrigation schemes or their existence is barely minimal. Their institutional set-up is also very weak with no clear roles and accountabilities. The water users are not aware of IADP and improved irrigation technologies. The Azwari modern small-scale irrigation scheme in Goncha *Woreda* has 600 water user beneficiaries, out of which 220 are members of irrigation cooperative and rest are non-members. The respondent-water users confirmed the role of irrigation cooperative in the scheme while some irrigation blocks are managed by the traditional water groups. The Kalai traditional irrigation scheme in West Belessa *Woreda* has three diversions (size of main diversion is 25 ha with total 70 beneficiaries), and these diversions are not systematically managed by the users since they lack skills in group formation and water management. As a result, conflicts in water distribution remain a common phenomenon, and the *Woreda* administration is seen often resolving conflicts. The Koga large-scale irrigation scheme in Mecha *Woreda* is currently having command area of 720 ha (actual target is 7,000 ha over 4 years) and it has irrigation cooperative operating for the scheme. Some irrigation blocks are managed by the traditional water groups with their own by-laws but are mostly disorganized with no clear responsibilities.

Capacity Gaps

This section broadly presents the analysis of the key capacity gaps of individuals (IDAs/DAs, IADP irrigation experts and water users) after summing up their level of current capacities in irrigation extension taking into account their involvement in the three irrigation schemes, which are traditional, modern both small-scale and large-scale. To this effect, the team also proposes suitable skills required for capacity development of these individuals to promote improved irrigation technologies.

Table 2. Capacity gaps and skills required for irrigation extension in Amhara region

Experts	Area of work	Skill gaps	Skill required
1. Woreda IADP experts of at least 5 years experience	**Irrigation extension planning and implementation**	▪ Inadequate skills on participatory irrigation extension planning ▪ Inadequate knowledge on irrigation extension approaches	▪ Ability to undertbl f! gbsn fst ! information needs assessment or PRA for participatory planning ▪ Sufficient knowledge on irrigation extension approaches, methods and

Experts	Area of work	Skill gaps	Skill required
(agronomy, horticulture, O&M, water harvesting, post-harvest). **2. Experts of ADMU of Koga Irrigation project of at least 5 years experience** (O&M, water management, agronomy, cooperative extension).		and methods ▪ Poor extension resource prioritization skills to promote irrigation technologies ▪ Insufficient orientation towards IADP implementation strategies ▪ Inadequate practical skills on operation & maintenance of schemes ▪ Lack of skills on monitoring & evaluation of irrigation extension programs ▪ Insufficient ability to guide and mentor IDAs/DAs and resolve water conflicts ▪ Lack of communication and team building skills ▪ Lack of skills to establish coordination link with irrigation service providers ▪ Poor time management skills ▪ Inadequate practical extension exposure ▪ Inadequate networking skills ▪ Lack of skills on extension-research-farmer linkage ▪ Limited skills on developing extension proposals and report writing ▪ Inadequate familiar with improved irrigation technologies including irrigation equipments ▪ Cannot develop impact points for irrigation extension	communication campaigns to transfer skills to the clients ▪ Basic understanding on how to prioritize extension resources ▪ Ability to highlight issues, if any, to the management and ensure their resolution so as not to compromise on water disputes, quality and time ▪ Sufficient knowledge of IADP program implementation strategies so as to communicate easily with the IDAs/DAs and water users ▪ Ability to organize and maintain documents and timely reporting ▪ Ability to effectively manage IDAs/DAs and ensure that they comply with irrigation extension guidelines ▪ Ability to understand monitoring & evaluation of irrigation extension ▪ Strong task orientation, trouble shooting to resolve issues, high integrity and energy levels ▪ Basic computer skills and ability to work on MS Excel ▪ Strong networking and coordination skills ▪ Ability to plan and effectively deploy the available resources (pumps, inputs, and other material) ▪ Strong extension communication skills to be able to communicate effectively with IDAs/DAs, water users, etc. ▪ Ability to articulate IADP objectives to team members, coordinate and mentor IDAs/DAs and farmers ▪ Strong skills to handle irrigation

Experts	Area of work	Skill gaps	Skill required
			equipment
1. Woreda IADP experts of at least 5 years experience (agronomy, horticulture, O&M, water harvesting, post-harvest). **2. Project Experts of ADMU of Koga Irrigation project of at least 5 years experience** (O&M, water management, agronomy, cooperative extension).	**Training and demonstration**	▪ Lack of skills to conduct training needs assessment for irrigation DAs ▪ Lack of skills on planning of training for IDAs/DAs ▪ Difficult to identify and prepare training lesson plans (training modules) ▪ Lack of skills on selection of suitable training methods ▪ Inadequate training skills to perform as a good resource trainer ▪ No skills on post-training evaluation ▪ Inadequate skills to plan and conduct crop demonstrations ▪ Jotvggjdjfoutl tl jnnt up! jefoujfy and manage pest and diseases ▪ Poor skills on managing water ▪ Poor skills in post-harvest technologies such as storage, markets, quality control, etc. ▪ Lack of skills to organize field days	▪ Ability to effectively conduct training needs assessment ▪ Ability to plan training programs for IDAs/DAs and farmers including budget and other cost ▪ Basic understanding of identification and preparation of training modules ▪ Strong ability to effectively choose suitable training methods ▪ Training techniques, skills to perform as effective resource trainer ▪ Knowledge of irrigation equipment such as drip system, siphons, pumps, geo-membrane and their functions and the ability to ensure its maintenance ▪ Good written/oral communication skills ▪ Understanding of issues associated with equitable water distribution ▪ Water application planning and management ▪ Planning and organization of field days, awareness and group discussion ▪ Knowledge and ability to undertake demonstration planning, selection of plots, crop cultivars ▪ Ability to demonstrate storage system particularly for tubers and explore market opportunities
3. IDA/ DAs	**Irrigation extension planning, implementation and communication methods**	▪ No orientation on IADP program implementation strategies is given by Woreda ▪ Lack of accountabilities since duties and responsibilities are not determined ▪ Lack of skills on participatory	▪ Ability to define IADP goal and key features, perceive its mission, design program keeping in mind functionality, targets and aesthetic aspects of irrigation extension ▪ Bc jnjuz! up! voefsubl f! gbsn fst ! information needs assessment or

Experts	Area of work	Skill gaps	Skill required
		planning of annual irrigation work plan with water users and other stakeholders ▪ Dboopu! jefoujgz! gbsn fst ! problems and undertake analysis for planning purpose ▪ Cannot perform participatory technology development trials with farmers and researchers ▪ Lack of knowledge to identify irrigation extension approaches and methods for technology adoption	PRA for participatory planning ▪ Sufficient knowledge on irrigation extension approaches and methods to transfer skills to water users ▪ Cbtjd! voefstuboejoh! po! gbsn fst ! problem identification ▪ Ability to organize and maintain documents and timely reporting ▪ Ability to effectively deliver extension services commensurate with irrigation extension guidelines
		▪ Inadequate skills to initiate group approach or strengthen water users associations ▪ Inadequate practical skills on operation & maintenance of schemes ▪ Lack of skills on monitoring & evaluation of irrigation extension programs ▪ Insufficient ability to mentor water user groups ▪ Inadequate skills to resolve water conflicts ▪ Lack of skills to mobilize water user communities for catchment treatment and maintenance ▪ Mbdl ! pg! tljmmf up! ftubcmjti ! coordination link with irrigation service providers (inputs dealers and markets) ▪ Poor time management skills ▪ Inadequate practical extension exposure ▪ Inadequate skills to determine actual requirement of inputs and	▪ Ability to understand monitoring & evaluation of irrigation extension ▪ Strong task orientation, trouble shooting to resolve issues, high integrity and energy levels ▪ Basic computer skills and ability to work on MS Excel. Ability to plan and effectively deploy the available resources (pumps, inputs, and other material) in command area ▪ Strong communication skills to communicate effectively with water users for technology adoption ▪ Strong skills to operate irrigation equipment and other devices ▪ Ability to manage water users and resolve water disputes as and when they arise ▪ Ability to create a sense of trust among the water users ▪ Ability to understand and take instructions from Woreda IADP experts ▪ Ability to undertake operations and maintenance activities

Experts	Area of work	Skill gaps	Skill required
		credits for water users ▪ Poor skills to undertake surveys or crop assessment or problem analysis	▪ Coordination with multiple irrigation service agencies and vendors ▪ Ability to mobilize resources as and when required ▪ Ability to handle complaints from water users, ensure timely resolution and keep track of the complaints
	Training and demonstration	▪ Cannot undertake training needs assessment for water users ▪ Lack of skills on planning of on-the-job farmers training ▪ Cannot undertake to run modular courses in FTC ▪ Difficult to identify and prepare training lesson plans (training modules) ▪ Lack of skills on selection of suitable training methods ▪ Inadequate training skills to perform as a good trainer ▪ No skills on how to conduct post-training evaluation ▪ Inadequate skills on establishing crop	▪ Ability to effectively conduct training needs assessment ▪ Ability to plan training programs for water users including budget ▪ FTC training techniques skills to run modular courses ▪ Basic understanding of identification and preparation of training lesson plans (modules) ▪ Strong ability to effectively choose suitable training methods ▪ Training techniques skills to perform as effective resource trainer ▪ Knowledge of irrigation equipment such as drip system, siphons, pumps, geo-membrane and their functions and the ability to ensure that the equipment are properly maintained as

Experts	Area of work	Skill gaps	Skill required
		demonstrations, irrigation equipment, etc ▪ Modl! pg! bqujuvef! up! efwfmpq! irrigation demonstration planning and layout and its management ▪ Insufficient skills in pest and disease identification and control measure ▪ Poor skills in post-harvest technologies such as storage, markets, quality control, etc. ▪ No knowledge on crop-water requirement ▪ Lack of skill in organizing field days	per standards ▪ Good written/ oral communication skills ▪ Understanding of legal issues associated with the equitable water distribution ▪ Knowledge and ability to undertake demonstration planning, selection of demo plots, crop cultivars, model farmers and its implementation strategies ▪ Ability to demonstrate storage system particularly for tubers and explore market opportunities ▪ Ability to identify pest and diseases and their control measure ▪ Planning and organization of field days
4. Water users	**Routine activities**	▪ Insufficient skills in the selection of irrigated crops ▪ Inadequate understanding of roles and responsibilities in scheme management ▪ Little experience on catchment treatment and protection ▪ Lack of training on improved irrigation practices ▪ Lack of knowledge on pest and disease identification and their control measure ▪ Little skills on equitable sharing of water ▪ Lack of skills on headwork and irrigation canal cleaning and maintenance ▪ Lack of knowledge on post-harvest such as storage of tubers and onions under farm	▪ Ability to select high-value crops ▪ Coordinate with IDAs and other water users for water sharing ▪ Knowledge and ability to undertake catchment treatment, drainage and canal maintenance, bund repairs, etc ▪ Ability to work in a group for problem solving ▪ Ability to understand improved cultivation practices ▪ Need to understand identification of pest and diseases and their control measure ▪ Understanding equitable water distribution and sharing ▪ Knowledge of headwork and irrigation system cleaning and maintenance ▪ Knowledge on application of suitable fertilizer and dosage

Experts	Area of work	Skill gaps	Skill required
		condition ▪ Lack of skills on application of suitable fertilizer and dosage ▪ Lack of skills to use modern irrigation equipment such as drip system, siphons, treadle ▪ Lack of skill in planning and managing plot water application	▪ Ability to understand post-harvest activities such as storage of seed tubers, onion and quality control of farm products ▪ Ability to use modern irrigation equipment, drip system, geo-membrane, treadle pumps, knapsack sprayers, siphons, etc ▪ Ability to communicate with other water users for technology adoption ▪ Planning and management of irrigation

Conclusions and Recommendations

According to expert opinions, in water resources management there is no single formula for building the necessary capacities to improve irrigation and drainage. The capacities that needs development ranges from effective communication skills, application of advanced techniques, through the development of analytical skills for those who are responsible for promoting improved irrigation technologies. The target groups or individuals for these different skills range from water users, through irrigation support service providers and irrigation technicians, technical experts and researchers, process leaders and policymakers. Capacity development is centred on the individual, which is why education and training tends to be the main focus of attention when the issue of capacity development is discussed. To understand capacity development is to understand that it is as much a process as an end product. It is an approach to development, not something separate from it to bring about a predefined outcome. It transfers the emphasis from the end product to the process of achieving it. While considering the capacity development for IADP experts, irrigation development agents and water users, the following recommendations are suggested.

Provision of operational manual: An operational manual is a guiding tool to achieving organizational objectives and goals within a time-frame. The manual is usually consisted of a compendium of program strategies and approaches, human resources, templates and importantly gives a clear-cut direction of program management and irrigation extension services. It provides information and practical advice helpful for capacity development of IADP experts and IDAs, increasing the efficiency and fggfdujwfoftt! pg JBE ! boe! tpmvujpot! up! x bufs! vtfst ! qspcmfn t/! Jul jt! tuspohmz! recommended to develop three important operational manuals, these are;

- Participatory irrigation extension operational manual,
- Operation & maintenance manual for scheme management,
- Water user organization and management manual.

Budget support: It is imperative that a requisite amount of budget be earmarked for capacity development initiatives to enhance skills of experts, IDAs and water users. As b! spvujof! qspdftt! jo! JBE t! pqfsbujpobmjtztufn ! dontinued availability of budget is required to cover the costs for staff training including logistics support. At *Woreda* level, the *Woreda* administration needs to be advised for allocation of funds to cater the need for human resource development. Since IADP is a new set-up, therefore, adequate funds are initially required for this purpose in view to keep the momentum of irrigation extension activities.

Motivation of staff: Increasing the capacity of IADP staff to deliver the best services, IDAs and experts need strong motivation and appreciation from their management. The best motivation is the self-motivation of knowing oneself first and then doing the right thing at the right time. For staff motivation, some of these are:

- Appreciation/recognition letters for good performance,
- Provision of rewards,
- Recommendation for promotion and higher pay scale within IADP,
- Recommendation for higher studies in relation to irrigation

Monitoring and on-the-job guidance: IADP will need to provide close supervision and monitoring of the IDAs regular duties to enhance capacity development

opportunities. Routine supervision and monitoring are important and is largely the responsibility of the supervising officer. On-the-job guidance may also include undertaking of joint field assessments, surveys, participatory extension planning, and free discussions with IDAs that can help enhance professional skills of the same. On-the-job guidance is particularly valuable for newly hired woreda experts and IDAs to improve all their abilities, not just manual skills. The following suggestion aims the maximum value in supervisory visits:

- Create opportunities for IDAs to demonstrate his skills, for example, ask the IDAs to show a practical recommended practice that was carried out,
- Avoid making criticism of the skills in front of others, give him/her guidance once they have gone,
- Do not limit guidance to just making comments, show the IDA how things should be epof!jgi f0ti f!epf to ull opx !bod
- Give feedback to IDAs, in order to improve his skills and to know how well the IDA is performing.

Imbalance education qualification of IDAs: The newly hired IDAs have education qualifications of 10+ 3 years diploma from TVET compared to the education qualifications of their co-worker DAs who have 12+ 2 years diploma certificate. Such inadequate qualification mires ui f!JEB t!up!hfu!ben jtt jpo!joup!tvn n fs!qsphsbn !C/Td/! degree at recognized universities since entry requirement for degree programs is 12+ 2 year diploma certificate. As a result, the IDAs are morally distorted when they witness their co-worker DAs have better scope for knowledge enhancement in the universities. Such B.Sc degrees also boost for future career development and promotion for DAs. It is very important for IADP to review the existing career development plan of IDAs and resolve this issue to create a favorable working environment otherwise this may continue affect the progress of promoting irrigation technologies.

Increasing IDAs work in irrigation extension activities: Currently, IDAs are more involved in community extension (about 60%) compared to their actual performance/contribution (12%) in irrigation extension. Their involvement in community extension is also a part of their general extension and is ancillary to irrigation services as shown in the previous section. It is recommended to increase IDAs

involvement more in irrigation extension towards increased food security as well as to qspn puf!JBE !n jtt jpo!up!ui f!gbsn joh!dpn n vojujfs since IADP is a new organization. Increasing IDAs work in irrigation extension could be initiated through discussions and meetings with *Woreda* administrations demonstrating the importance of irrigation extension and roles and responsibilities of IDAs in irrigation schemes. Such interactions with *Woreda* ben jojtusbujpo! x jmm tvc tuboujbmm! i fmq! JEB t! jowpmwfn fou n psf! jo! irrigation extension activities.

Training to IDAs on irrigation extension activities: Staff in IADP requires information, knowledge, skill, vision, and mission to do their best for the organization, and this is more important for *Woreda* IADP experts and IDAs. In an organization, capacity development initiatives are the processes through which these can be enhanced among the staff forming part of the network of roles in the organization. As a system for the development of personnel in an organization is generally brought about through a bunch of sub-systems all of which are meant to focus on development of the individuals and groups constituting the social system of the organization, one of these sub-systems is training. Over the years, training has been viewed as the active arm of the top management for preparing the personnel to upgrade their capabilities to meet new organizational challenges. Training thus assumed lot of importance in IADP. It is a qnhoofe!fggpsu up!gbdjmjubuf!fn qmpzfft !nfbso joh!pg kpc-related knowledge and skills for the purpose of improving performance. Efforts needs to be intensified to organize a quarterly training session at IADP *Woreda* offices, particularly during the irrigation season, to train IDAs on irrigation extension activities of the following quarter emphasizing on impact points (extension messages). Since the training venue is in *Woreda*, it will also give opportunity to IDAs to access information, establishing contacts with support service providers. Such opportunity will capacitate IDAs to provide updated information to water users. The purpose of *Woreda* level training is:

- To establish common understanding among *Woreda* IADP of the current situation in the irrigation field,
- To teach the IDAs precise improved agronomic and irrigation practices that will be suitable for water users,

- To provide the IDAs with supporting technical knowledge and skills, which will imqspwf! ui f js! bc jnjuz! up! bobmz f! x bufs! vtfst ! qspcmfn t ! voefstuboe! ui f! cfofgjut! pg! recommended practices and demonstrate these practices.
- To discuss the irrigation extension and demonstration programs of IDAs and sort out all administrative matters to enable them to work with water user groups.

Short-term training: Short-term training is usually geared to the acquisition of more immediate skills for well defined tasks, such as managing canals, establishing crop demonstrations, irrigation extension approaches and organizing WUAs. It may be special courses on particular issues for a wide range of experts including IDAs. They may be conducted on-site or more formally at a training centre or FTC. Increasingly short-term training is also seen as a means of changing attitudes as both IDAs and experts take on new roles in the process of irrigation extension management transfer, and there is a change in the objective of training from mere knowledge transfer towards increasing problem solving capacities. Competences are a complex interaction of knowledge, skills and attitudes, and some programs are now using participatory training methods to stimulate a continuing process of participation in subsequent water management practices. It is therefore recommended to conduct such short-term trainings on special courses to address immediate needs of the IADP staff.

Development of higher education training plan and ToT course: There is a need to develop the capacity of IADP experts and IDAs related to irrigation extension service. They also require a thorough understanding of extension communication methods and implementation modalities of IADP. Presently, most experts and IDAs have no extension exposure and practical training on irrigation extension which is a major weakness for program implementation. It is very important for IADP to develop a higher education training plan that can include course curriculum and modules, schedules, training methods and target trainees. This plan will guide the staff in overall planning and execution of variety of training programs for staff and water users. It is also recommended that a short-ufsn ! UpU! dpvstf! po! qbsujdjqbupsz! jssjhbujpo! fyufotjpo! jn qrfin foubujpo! tl jmm‘ !gps! ui f! tfmfduf e-IADP experts and IDAs/DAs be undertaken. The results of ToT will boost trainees to assist water users to solving their irrigation problems.

On-farm demonstration: On-farm demonstrations serve as one of the most effective extension education tools for promotion of technologies among the end users. Demonstration can effectively showcase the use of appropriate technology and provide a sustainable method of practical training for the adoption of improved irrigation technologies for the water users. The general objective of the demonstration is to expose water users to new productive irrigation technologies resulting in more profitable irrigated farming. This will result in increased production contRibbuting also to increased opportunities for employment and income in the irrigated agricultural sector. It is therefore essential for *Woreda* IADP to undertake demonstrations on improved cultivars, use of irrigation equipments such as drips and siphons, post-harvest storage, water management. Such demonstrations will capacitate the water user skills and knowledge about irrigated agriculture.

Workshop on capacity development: A 2-ebz!x psl ti pq!po! Dbqbdjuz!efwfmpqn fou!jo! jssjhbujpo!fyufotjpo !esbjobhf!boe!n bobhfn fou!jt!qspqptfe/!Ui f!x psl ti pq!offet!up!cf! organized by IADP preferably prior to the irrigation season. The workshop goal is to highlight the important role of capacity development in the irrigation extension and drainage sector, and to bring together agencies, institutions and individuals in order to review and address the following issues:

- Why is capacity development important and what are the specific issues and challenges that need to be addressed in a capacity development program?
- X i bu!jt!u f!qsftfou tubuf!pg u f!bsú!x jui !sftqfdu up!dbqbdjuz!efwfmpqn fou gps!u f! irrigation extension sector?
- What approaches are currently being used, and what are the issues and challenges arising from them, including more effective tools to assess the needs and impact of capacity development?
- What new approaches in capacity development are needed to address probable changes in the irrigation extension sector in the near future?
- What facilitating and complementary roles can institutional support service providers and IADP play in supporting and promoting effective capacity development within the irrigation sector?

Access to computers: Access to computers, networks and the internet is enabling access to volumes of information. The tools, techniques and technologies available to help in the management of irrigation, drainage and water resources are advancing rapidly. Developing advanced tools and the capability to apply them in the management pg x bufs! sftpvsdft! x jmmpggfs! JBE ! fyqfsut! boe! JEB t! ofx ! pqqpsuvojujft! up! cfdpn f! more responsive to the needs and aspirations of the water user communities they serve. After many years of being promoted as valuable technologies, geographical information systems (GISs) and soil testing kits are now viable tools for use in the routine management of irrigation systems. It is therefore suggested that provision of computers and other necessary kits be provided to Woreda IADP.

Developing coordination: It is recognized that the greater cooperation between IADP and other irrigation support services, the greater will be the accessibility of water users to extension services. To ensure the maximum utilization of its scarce resources in a cost-effective way, IADP will need to develop effective/enhanced coordination with the support services such as inputs dealers, credit institutions, researchers, extension agencies, markets so that flow of irrigation services are effectively channeled to water users for increased irrigated production. Therefore, *Woreda* IADP needs to identify these service providers, develop working mechanism to ensure supply chain of irrigation equipment, delivery of services to water users and other inputs. Such coordination linkage will capacitate the IDAs to deliver tangible inputs to water users.

Establishment of water user association: WUA is of paramount importance for promoting improved irrigation technologies. WUA plays a key role in every sphere of water resources management for increased irrigated crop production. Formation of WUAs that represent the users at all levels of decision-making in planning, management, and operation has been a key step involving water users in this process. The development of these associations helped promote a socially cohesive behaviour in irrigation. User managed schemes should be encouraged along with the decentralization of operational management to the *Woreda* level. It is worth mentioning here that IADP take necessary steps for the establishment of new WUAs or strengthen the existing WUAs with necessary trainings and institutional support. In this way the capacity of

water users will be enhanced and they will be able to identify and decide their roles in smooth water management in line with their expectations.

Ways Forward

Participatory irrigation extension operational manual: As a top priority, efwfmpqn fou pg bsujdjqbupsz! jssjhbujpo! fyufotjpo! pqfsbujpobmm bovbm! jt! ofdfttbsz! gps! IADP that can serve as guiding tools for the experts and irrigation technicians to achieve organizational objectives and goals within a time-frame. The manual will usually consist of a compendium of irrigation extension approaches, training needs assessment, extension communication methods, irrigation extension planning, monitoring & evaluation, roles and responsibilities of experts and IDAs, coordination mechanism, templates, etc. and importantly will give a clear-cut direction of irrigation extension delivery system. The manual developed jointly by SWHISA and IADP has been provided to IADP in November, 2010.

Training of Trainers (ToT) course for experts and IDAs: A 2-week ToT course on qbsujdjqbupsz! jssjhbujpo! fyufotjpo! jn qrfin foubujpo! tl jnn'! gps! tfnfduf-IADP experts and IDAs/DAs is strongly recommended for implementation. The course includes modules with practical exercises on training needs assessment, use of irrigation extension approaches, communication methods, establishing coordination linkages, participatory planning for annual work plan, techniques of irrigation demonstrations, techniques of gbsn fst ! qspcmfn t! jefoujgjdbujpo ! n pojupsjoh! boe! fwbmvbujpo! pg! fyufotjpo! qsphsbn t ! mentoring and irrigation advisory, techniques of formation of water groups, operation and maintenance of irrigation systems, role of experts and IDAs/DAs in irrigation tdi fn f ! spmf! pg! tvqqpsu! tfswjdft! boe! ui fjs! njol bhf fud/! Ui f! sftvmt! pg! ui f! UpU! x jmm boost trainees to replicate the skills gains to IDAs and water users. Though SWHISA and IADP prepared the course in January 2011, since then implementation is not possible due to workload of woreda experts and IDAs/DAs.