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Review Paper

Five Key Constraints to Small Scale Irrigation Development in Ethiopia: Socio-Economic View

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This paper presents a brief review on the constraints of small scale irrigation schemes in Ethiopia with the aim of summarizing findings of others in one. Although, Ethiopia is considered as a water tower of Africa, only 5% irrigation potential is developed yet. It is believed that small scale irrigation can increase security of crop production and income earning. Concurrently, in many parts of the country; it uplifted the food security of many smallholder farmers. However, evidence has shown that there are several constraints on the performance of small scale irrigation schemes and most are not performing at the best of their capacity. The key constraints impeding the success of small scale irrigation are; poor scheme management, imperfect market, financial shortage, insufficient technical skill, and institutional constraints. This paper argues that there is a need of attention by irrigation administrators, policy makers and development practitioners to tackle these constraints in order to develop small scale irrigation potential.

Keywords: Ethiopia, small scale irrigation, constraints.

INTRODUCTION

Ethiopia is characterized by famine as a result of high population pressure, resource base depletion and an erratic rainfall pattern that affects the rainfed agriculture significantly. Agriculture in Ethiopia is heavily dependent on rainfall, which is highly variable, both spatially and temporally. In many parts of Ethiopia, agricultural development is hampered by recurrent droughts, which over the years have increased both in frequency and severity in many parts of the country. In the past 30 years the drought incidence has become common in a pattern of every two to three years cycles (Haile, 2008).

Water for agriculture is increasingly recognized as a major constraint to improving the lives of the rural poor in Ethiopia. To overcome this problem the Government has given priority for irrigation development in the agricultural sector (MoFED, 2006). Irrigation is therefore taken as an essential component and strategy for food security, to increase agricultural output and crop diversification. The main focus of irrigation development strategy of the country is on the improvement and establishment of Small scale irrigation schemes.

Small-scale irrigation (SSI) usually indicates irrigation

practices on small plots, in which small farmers have the major controlling influence, and using a level of technology which the farmers can effectively operate and maintain.

Although, Ethiopia is considered as a water tower of Africa; only 5% irrigation potential is developed yet (World Bank, 2006) and Over 55% of developed irrigation is traditional he small-scale irrigation schemes are understood to include traditional and modern communal schemes up to 200 ha. Thus, irrigation development in Ethiopia is in its infancy stage and not contributing its share to the growth of the agriculture sector accordingly. Currently limited land is being cultivated under irrigated agriculture and therefore, crop production is predominantly based on rainfed agriculture (MoA, 2011; Table 1).

The existing irrigation farms operate at sub-optimal levels (Mekuria, 2003). Many studies have indicated that most small scale irrigation schemes in the country are performing below the intended standard and there are several constraints over the poor performance of many schemes. The aim of this review is therefore to identify key constraints of small scale irrigation development in Ethiopia so that policy makers, practitioners and irrigation administrators pay due attention to tackle them.

Key Constraints Of Small Scale Development

Poor scheme management

Many of the schemes in the Rrift Valley Basin, Awash River Basin, Tekeze River Basin etc were under severe challenges of siltation and sedimentation. For instance, from five to eight years after the irrigation project of Awash was commenced salinity became very severe (Girma and Fentaw, 2003). The same source indicated that the main cause of salinity was poor irrigation water management. Inefficient erosion drainage systems along the canals has caused severe siltation problem (e.g, Tekeze basin in Tigray, Mintesinot, 2004). This in turn affected seasonality, labor efficiency and cropping pattern (e.g, Argeda scheme in Oromia). As a result, the community has been forced to invest their scarce labor at peak periods for removing siltation at least three times a year. Had it been calculated the labour cost is so much high since it demands a large number of people to work on cannel clearing for weeks. This also creates dalliance in cropping season. There was poor performance in managing water distribution in terms of the three indicators: adequacy, reliability and equity in water distribution in Gibe Lemu and Gambela-Terre basins; Oromia region (Shimelis, 2006). Poor management of agricultural water leaves almost all part of the country highly susceptible to rainfall variability which depicts itself in terms of prolonged dry spells and droughts.

Evidence has also shown that nutrients are removed more rapidly than they are replaced in many schemes. The majority of farmers raised salinity problem as minor problem while few farms reported as severe problem (Wagnew, 2004). Poor cannel management and drainage system is also the cause of malaria.

The other aspect of poor scheme management is inadequate and late maintenance of canals. Added to this, many of the water users associations were at weak functioning. Lack of effective coordination, inefficient control system, very weak linkage with relevant stakeholders; and lack of regular training is the peculiarity of many WUAs. Existing problems in operation and maintenance and weaknesses in the capacity of WUAs is challenging (MoA, 2011).

Due to poor scheme management, land and soil productivity is declining with years of irrigation. In consequence the yield per ha has been declining year afteryear. The flood during rainy season is a challenge for children crossing the border for schooling (Gedemso scheme in Oromia). It is directly related to the water use system adapted by the farming community (Wagnew, 2004). Soil, water logging, erosion and soil nutrient mining are common problems of irrigation systems (Carter and Danert, 2006).

Imperfect market

All over the rural areas of Ethiopia; market access and marketing facilities are the major constraint influencing farmers' success. There is no rational place or customer for selling their produce. The middlemen and brokers were exploiting their benefit. It's not the market structure which determines price, but the brokers and merchants. The farmers have not the bargaining power (e.g, Doni Kumbi schemes oromia region). Input price is so mach expensive. Market problems mainly related to irrigation agriculture are acute due to perish ability of irrigation based agricultural commodities. Added to this lack of storage facilities and processing agro industries in many of the schemes caused a great loss. Price instability and lack of market are almost invariability confirmed as conspicuous major constraints to irrigated agriculture. Marketing cooperative were conspicuously missing or proved to be too ineffectual to reduce risks arising from price instability and marketing problems (e.g, Gedemso scheme in Oromia); (Seid, 2002; Dejene, et al, 2005). Small farmers face high costs and risks when entering markets, which severely limit the returns from irrigation. At market, farmers face low and unpredictable prices for their products because they lack the necessary information and exploitation by brokers.

Farmers have little bargaining power as they lack market price information and have no facilities to store crops for sale another day. Rural markets in Ethiopia are

Table 1. Irrigation development in Ethiopia

Traditional	Modern		Irrigable potential	Undeveloped
	Small	Medium/ Large		
138339	40078	61057	4256457	4008987

thin and the transaction costs of entering are high due to the lack of transport infrastructure (Tucker and Leulseged, 2010).

Internal markets for purchase of inputs and sale of produce are severely lacking in Ethiopia and infrastructure is generally poor. Even in cases where markets are available now, if too many producers grow the same cash crops, these eventually or quickly become saturated (Carter and Danert, 2006). The lack of access to market in close proximity has greatly reduced the income that farmers could have gained otherwise. Price information is haphazard, some farmers get it from neighbours or friends visiting the markets and some do not get it at all. The SSI users do not have market structure for their productions (MoA, 2011). In the absence of the necessary marketing facilities and infrastructure, farmers have no choice but to dump their produce at prices that may not cover costs of production. Most of the irrigation farmers in Ethiopia have been constrained by market and infra-structure and no proper government intervention has been made to avert existing farmers problems related with facilitating marketing systems (Damenu, 2011).

Insufficient technical skill

Low capacity of farmers, lack of know-how in, and access to, the opportunities of irrigation technology; weak economic base of most farmers and the relatively high development costs involved in developing irrigation schemes are also the other key constraints (Mekuria, 2003). In many parts of the country; the farmers are practicing irrigation without essential know-how on crop water need, water application method and irrigation interval Lack of knowledge of irrigation water management aspects has resulted in wastage of irrigation water, deterioration of some structures and water logging problems on some farms (Berhanu, 2006). Poor irrigation scheduling/crop-water-requirement balance; inappropriate irrigation methods are widely recognized (MoA, 2011).

Socio-institutional constraints

At all levels, there exists low institutional capacity which is critical to enhance development of SSI with respect to development planning, design, implementation, and operation and maintenance including irrigation advisory services (MoA, 2011).

Water theft, conflict on land, and water distribution is a common scenario in many schemes. Despite, the WUAs have weak have a weak coordination skill to solve scheme related problems. Upper stream households were getting adequate water, where as lower stream lower stream beneficiaries do not. As a result some sort of conflict and dissatisfaction was rising. However, the community has traditional means of negotiation. The participation of women in WUAs is not satisfactory. The cattle crop integration is another challenging issue. Inequity in water distribution between locations, between socioeconomic groups in (e.g, Lemu and Gambela-Terre basins; Oromia region; Shimelis, 2006) are the social constraints.

Other institutional barriers include limited or no priority given to irrigation development during national and local planning and budgeting; poor management structures in place to support farmers and promote irrigation development. For example, the infrastructure to facilitate agricultural development is underdeveloped (Mekuria, 2003; Berhanu, 2006). Poor coordination between institutions dealing with irrigation development: For example, there are no clear-cut duties and responsibilities between the Department of Agriculture and Department of Service Cooperative and Promotion (Seid, 2002). Inadequacy of extension support with respect to irrigation management is a common phenomenon for many schemes (Sileshi and Merrey). There is ample evidence from all regions that most of the failed projects are those implemented without sufficient and effective beneficiary consultation and participation (Sileshi and Merey). Absence of sanction and poor coordination of water users association are the main administrative problems in Godino and Filtino schemes; Oromia region (Abonesh, 2006).

Financial shortages

Lack of long and short-term credit provision affects the production of the scheme. The input for production like fertilizers, improved seeds and chemicals requires high financial input for purchasing (Berhanu, 2006). Moreover; lack of legal status for Water Users' Associations (WUAs) can present a challenge to farmers. Unlike cooperatives,

which are legal entities, WUAs cannot access credit or hold bank accounts (Carter and Danert, 2006). That is why relatively better-off households benefited more because they have more land, labour and money to buy farm inputs, which allow them to exploit irrigation opportunities.

RECOMMENDATION

The general recommendation from this review is to advise policy makers, development agencies and irrigation administrators tackle these key constraints so that small irrigation performance can be improved.

An innovative approach to irrigation management is necessary. This innovative approach should be farmer centered. In this respect attention needs to be paid on empowering farmers through trainings, provision of special irrigation focused credit services and legalizing WUAs.

Sediment concentration and land degradation as a result of poor management are common features of many schemes. In order to mitigate such constraint mobilization of local resources and adequate catchment management; soil and water conservation using physical and biological measures is essential.

Poor irrigation management is highly related to lack of sufficient skills. Thus, expansion of training for farmers and water user associations by governmental and non-governmental organizations will have a significant impact on irrigation development.

There is a strong need to improve access to market information to irrigators in other to improve the system in general and an effective extension system should be in place to guide farmers to manage traditional irrigation efficiently.

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