The impact of smallholder irrigation on household welfare: The case of Tugela Ferry irrigation scheme in KwaZulu-Natal, South Africa

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ABSTRACT

The potential of smallholder irrigated agriculture to enhance food security and alleviate rural poverty has led the South African Government to prioritise and invest significantly in irrigation establishment, rehabilitation and revitalisation. The question addressed in this study pertains to the extent to which smallholder irrigation has been able to reduce poverty in the rural communities to justify this investment. Using a sample of 251 farmers, this study found that factors such as land size, perceived soil fertility, household size, and access to support services were significant predictors of irrigation participation. The results from the treatment effect model indicated that access to irrigation plays a positive role in the welfare of rural households, with irrigators spending about ZAR2 000 per adult equivalent on consumption more than the non-irrigators. The study, therefore, concluded that government investments in smallholder irrigation for poverty reduction are justified. The other factors that influenced household consumption were off-farm income, land size, livestock size, education level, family size and access to support services and infrastructure. The study recommends that investments in smallholder irrigation continue for poverty reduction, and that priority should also be on finding other feasible rural micro-projects and development initiatives to complement smallholder irrigation and significantly reduce rural poverty.

Keywords: smallholder irrigation, poverty, food security, treatment effect model, Foster Greer Thorbecke (FGT) poverty measures

INTRODUCTION

Poverty reduction and ensuring household food security are important policy goals in developing countries, particularly in sub-Saharan Africa. Several authors agree that reaching the Millennium Development Goal (MDG) of halving poverty and hunger by 2015 in this region requires giving high priority to smallholder agriculture (Smith, 2004; Matshe, 2009; Tshuma, 2012). A general consensus is that smallholder irrigation remains a feasible and key strategy for achieving improved agricultural production, household food security and rural poverty reduction in the developing world (Kumar, 2003; Lipton et al., 2003; Hussain and Hanjra, 2004; Gebregziabher et al., 2009; Bacha et al., 2011). Although irrigation development comes at a cost, and may have negative environmental and health consequences such as increased water logging, salinization and water-borne diseases, it is one of the most important factors in increasing crop productivity and improving overall agricultural performance (Hussain and Wijerathna, 2004).

Access to irrigation increases the area under cultivation and crop intensity, and decreases crop losses (Namara et al., 2010). Moreover, it leads to poverty reduction by expanding opportunities for higher and more stable incomes, and by increasing prospects for multiple cropping and crop diversification (Hussain and Wijerathna, 2004). The potential of irrigated agriculture in enhancing food security and alleviating poverty has led the South African Government to prioritise irrigation development (Denison and Manona, 2007; Van Averbeke et al., 2011). The establishment, rehabilitation and revitalisation of smallholder irrigation schemes were made possible through the investment of large amounts of public resources (Denison and Manona, 2007). Shah et al. (2002) estimated the public investments in smallholder irrigation at ZAR2 billion (ZAR40 000/ha). In fact, smallholder irrigation schemes continue to be a major budget item on many developmental and district municipality financial plans (Denison and Manona, 2007).

Irrigation farming is imperative in South Africa as rain-fed crop production is inherently risky due to unreliable rainfall and frequent droughts (Cousins, 2012). South Africa is generally dry, with over 60% of the country receiving less than 500 mm of rain per annum on average, and with only 10% receiving more than 750 mm (World Bank 1994 cited in Cousins, 2012). The importance of irrigation farming in South Africa is underscored by the fact that the irrigated 8% of land under crop production contributes almost 30% of total agricultural production (Backeberg, 2006; NDA, 2007; Hope et al., 2008). Smallholder irrigation accounts for about 0.1 million hectares (about 8%) of total irrigated land in South Africa (Tlou et al., 2006; NDA, 2007; Van Averbeke et al., 2011).

Although smallholder irrigation accounts for a small proportion of irrigated area in South Africa, it is important and has generated national public interest in recent years (Denison and Manona, 2007). The importance arises primarily from its location in the rural areas, where poverty and food insecurity are concentrated (Perret, 2002; Sishuta, 2005; Vink and Van Rooyen, 2009). Poverty alleviation and ensuring household food security in rural areas are major objectives for the establishment of smallholder irrigation in South Africa (Denison and Manona, 2007). Furthermore, smallholder irrigation has the potential to create employment in these underdeveloped rural areas, both directly and indirectly through forward and backward linkages (Van Averbeke et al., 2011).

However, many researchers have reported that, despite its potential, smallholder irrigation has failed to meet the rural development and poverty reduction objectives in South Africa

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