

Africa RISING in the Ethiopian Highlands

Water lifting technologies for smallholder farmers provide opportunities for sustainable intensification

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Goal

IWMI under Africa RISING tested multiple water lifting and service provision technologies and evaluated their contribution to sustainable intensification. On farm piloting and learning with farmers were conducted in Lemo, Hosaena, Ethiopia. These interventions aimed to address technical – agronomic - microcredit – and social gaps with regards to technology suitability for smallholder irrigation.

Research and development methodologies

- Problem identification through participatory approaches with stakeholders
- Gender disaggregated household surveys on water lifting technologies
- Biophysical and socio-economic data collection during the irrigation seasons
- Seasonal feedback meetings with participating farmers
- Comparison of irrigation performance of technology users against control group

Technologies tested

Overview of the various water lifting and management technologies tested during the dry season of 2015 and/or 2016 (Figure 1):

Water lifting	Manual/ Motorized	Water application
Rope & Washer	Manual	Watering can
Solar	Motorized with manual option	Hose
Tractor mounted pump	Motorized (diesel)	Drip



Figure 1: The various technologies implemented under Africa RISING: rope and washer (A), solar (B), service provider with tractor mounted pump (C), drip kit (D) (photo credit: Dale Pulker).

Technology suitability goes beyond irrigation

- Water lifting technologies having multi-purpose functions beyond agriculture (e.g. rope & washer and solar pumps) (i.e. irrigation, domestic, livestock and drinking water) were preferred over tractor with drip and diesel pump (acquired before the project) as they do not serve as many functions (Figures 2 and 3).
- In terms of labor requirements, nearly 100% of women say that the tractor with drip, rope & washer and solar pumps have eased domestic and farm work whereas the diesel pump only eased domestic and farm work for 40% and 80% of the women, respectively.

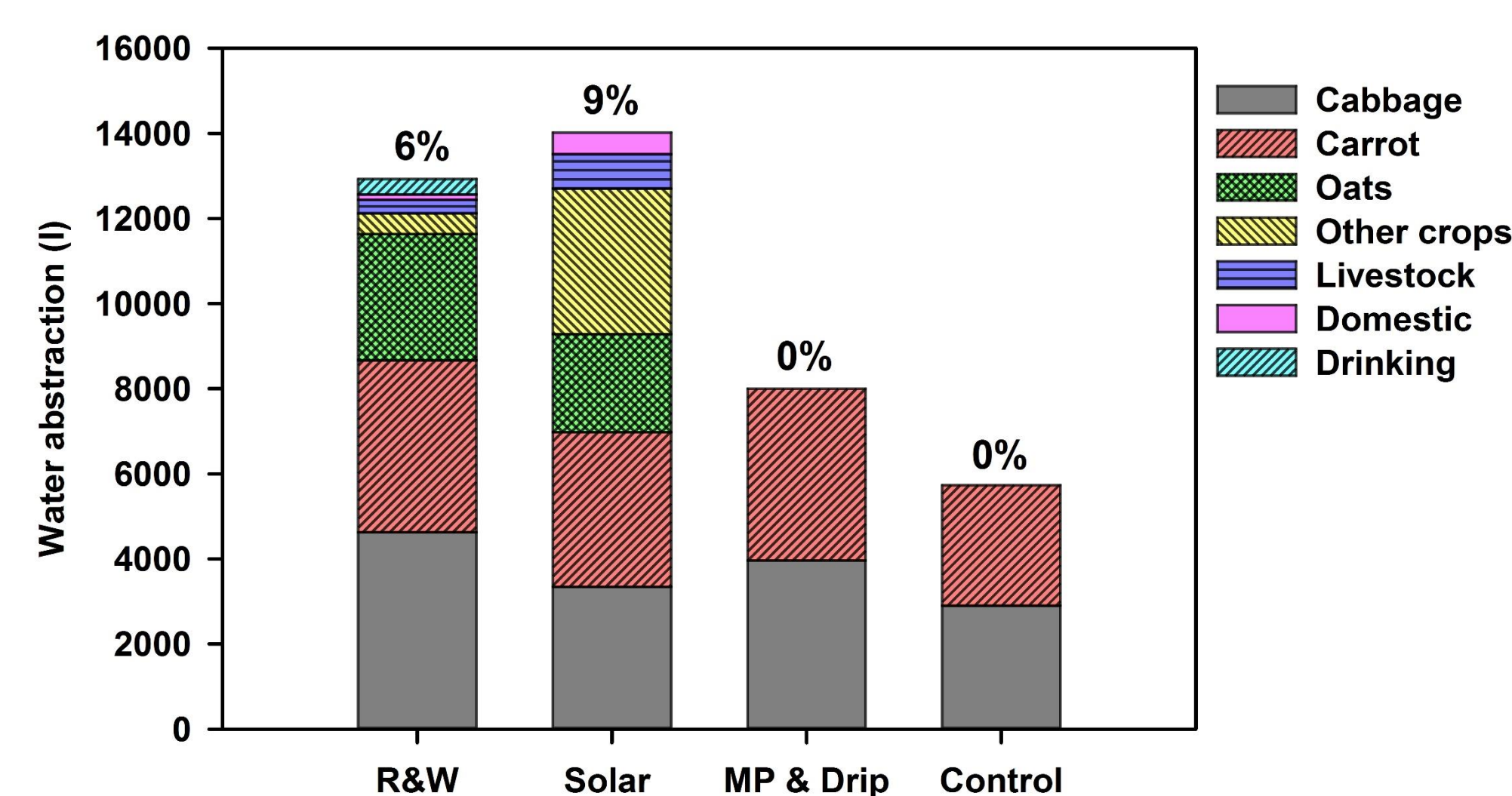


Figure 2: Total water consumption (l) per household during the irrigation season (December – May 2016) with the percentage of water extracted for livestock, domestic and drinking purposes.

Solar pumps and service provision of water using drip : new emerging technologies

- Solar pumps was preferred by male and female respondents due to its reduction in labor and multi purpose function, providing benefits to the community beyond individual households. The majority of both female and male respondents would trade their service provision with drip or rope and washer pump for a solar.
- The use of drip irrigation increased cabbage and carrot yields by 42 % and 28%, respectively compared to farmers using hoses or watering cans.
- Use of drip irrigation in more profitable compared to control farmers.
- Accounting for fuel and water delivery cost the service provision of water to drip farmers was found profitable.

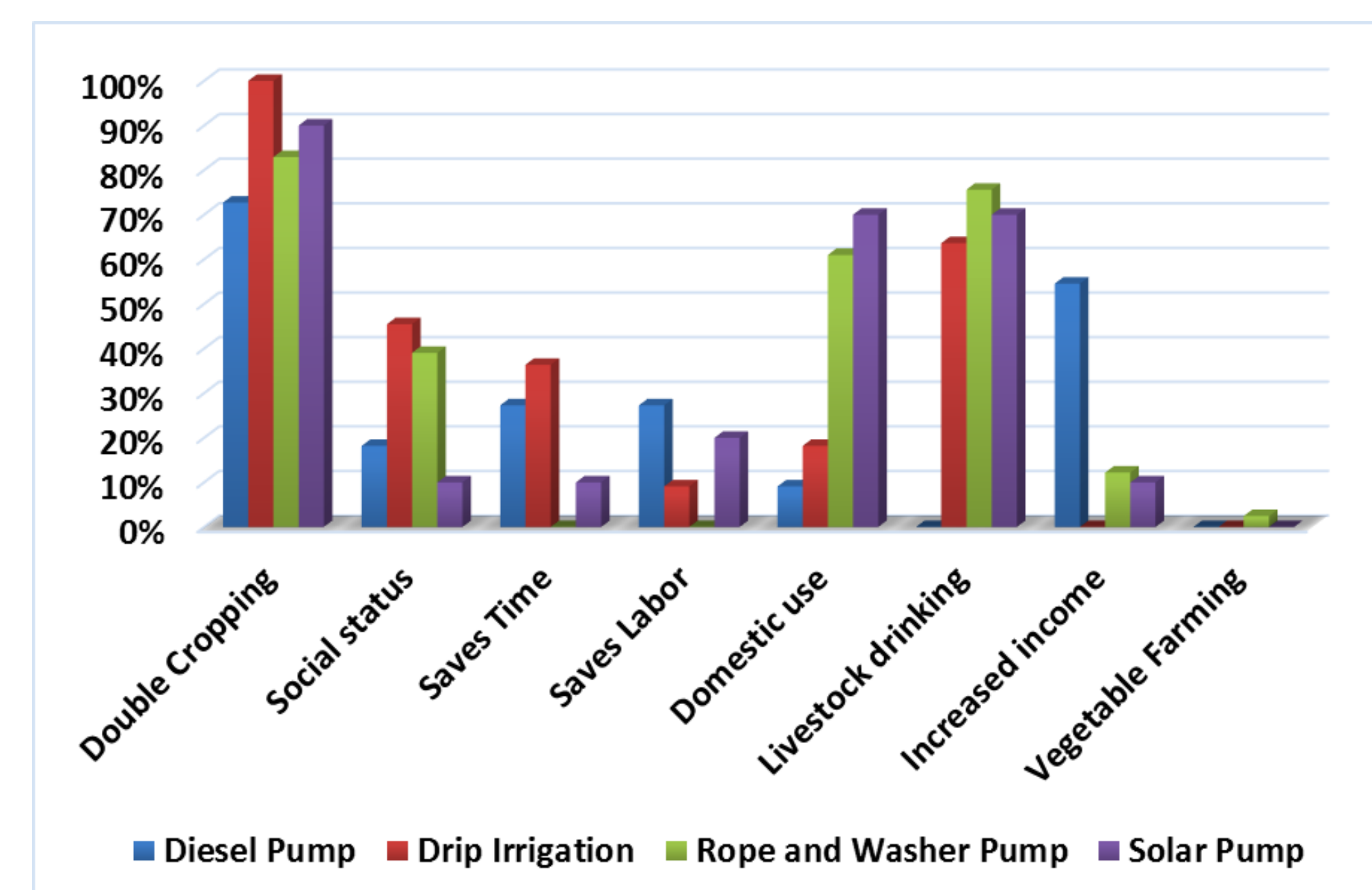
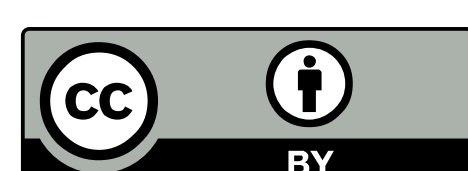


Figure 3: Identified top 3 benefits of the technology for the household.

Core partners



We thank farmers and local partners in Africa RISING sites for their support



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