

General Considerations Regarding Intervention and Site Selection

The selection of locales to implement the pilot interventions should be driven by analysis of the social and biophysical context as outlined below.

Farmer groups are central to the selection of interventions, so when selecting locales for interventions within the chosen communities we need to bear in mind how we can feasibly set up a cooperative, including the collective leasing of land. For example, a pond may be ideal for rehabilitation from a technical perspective, but if most of the land belongs to 5-6 medium farmers, it is not suitable from a socio-economic perspective.

For site selection, there are three processes:

1. Identify areas with a large amount of land belonging to a single landlord. If so, these can be sites for collective leasing. This will apply to much of the land in the Bihar and Nepal sites, where most the land belongs to zamindars, although this may be more difficult in West Bengal. If the land is made up of many small plots belonging to many farmers, it will be more difficult to do collective leasing – the central institutional intervention of this project. The field maps will make this more clear, but on the ground data from farmers can be used to shortlist such sites. For example, the Sakhi team have already identified tracts of land which can be distributed to farmer groups on a collective leasing basis.
2. Once sites have been selected, identify the range of technical interventions which can be installed in each site. For example, if a site which has potential for collective leasing already has limited provide opportunity for improved irrigation supply and management in the dry season it can be rejected from the list.
3. Make contact with land owners to see if they are interested in participating in the project, through providing land on lease on a fixed cash rent basis to a farmer group. For some groups, they may need to take leases from more than one land owner if the owned plots are small (this may be an issue in Mahuyahi where there are fewer large land owners). This is potentially the most challenging aspect of the project.

We must be realistic about the size of groups. 5 - 10 farmers would be an ideal size for the farmer groups. If the group becomes too big it could be difficult to manage, and it may be better to split it into two smaller groups. We would expect that in each village we can benefit at least 40-50 farmers.

Selection of interventions: Institutional

The collective leasing of land is central to the institutional innovations to be piloted in this project. However, there are several models of collective leasing which can be piloted in different contexts.

1. Mobilise existing tenants on a tract of land to form a farmer group. We expect farmers could still retain responsibility for their existing plots, but the lease can be joint and the rent paid proportional to the land owned, while all the technology (pump sets, solar panels etc) belongs to the group. For pond irrigation, the group could also form a committee to maintain the pond if necessary.
2. Create an entirely new farmer group on leased land. This can be targeted at particularly marginalized individuals (e.g. women headed household, landless hhs). We anticipate this would be smaller scale and would be run as a **pure cooperative**, with the sharing of labour and profits at the

end of the season. In one site, we have been provisionally offered some land by a land owner who wants to support a programme for the poor farmers in his village. The land is currently fallow. Again, for these pure cooperatives, all the technology would belong to the group.

3. Create a farmer group of small owner cultivators, who can jointly manage the technology. Therefore, not do collective leasing in these contexts. This may be suitable in West Bengal, although collective leasing can also be piloted, perhaps on a seasonal basis, as per the leasing norms of the region.

It is also worth noting that if there are some plots belonging to marginal farmers (owning less than 0.5ha) in the command area of the system, they could also be included as beneficiaries of the technology without being part of the collective.

The social interventions should also go beyond just collective leasing. Other options which we hope to explore with the farmer groups include:

- Initiation and support of farmer club and self-help group for dry season production and institutional opportunities.
- Support in identifying supply chain for dry season crops.
- Education and training and capacity development.
- Facilitating access to government subsidies for irrigation improvement (eg solar and drip).

Selection of interventions: technical

There are a number of important points which must be borne in mind when considering the selection of technical interventions.

We need to maximise our impact by channelling our efforts and funds across a number of sites in each village. Budget is however limited. Demonstrating more advanced, and expensive technological interventions (e.g. solar pumps, drip irrigation and storage reconfiguration) at selected sites is important for the project. However, small investment in improved management of existing systems can also **make** a big impact. We must therefore ensure we have a range of “impact” sites in each village, where we can trial lower cost interventions and management change, using existing irrigation farmer systems (e.g. Paddy) and water sources (e.g. tube wells).

We should be in a position to select “impact” sites in each village where we can support target WMT farmers to adopt, or improve dry season agriculture using low cost strategies and existing irrigation methods. Lower cost intervention options include:

- Trialling improved furrow irrigation layouts.
- Laser levelling and improved field layouts.
- Improved access to existing tubewells
- Filling of ponds from tube wells to maintain water levels in the dry season for fish production and irrigation.
- Minor pond rehabilitation.
- Better irrigation timing and scheduling.

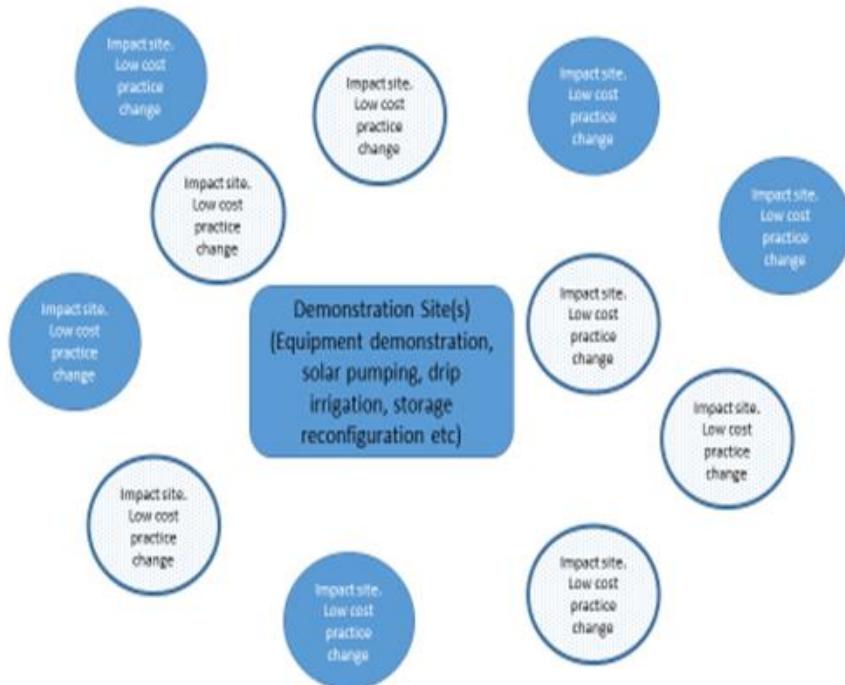
- Soil moisture monitoring and advice.
- Improved pump performance for energy saving.
- Mulching for soil water conservation.
- Better nutrition management for summer crops
- Improved tillage management
- Appropriate crop selection for dry season and training in water management and crop production.

Advanced technologies (eg solar pumping and drip irrigation) demonstrated successfully at a few sites , can then be scaled out following successful demonstration, to the larger number of “impact” sites, over time, possibly using subsidised government schemes or other funding sources. We therefore should identify a range of sites in each village where we can work with the community to identify low cost practice change that is appropriate to their needs, and plan our budget accordingly.

The diagram below illustrates this approach.

- Multiple “impact” sites where we are engaged with communities to change practice, under a low cost scenario, by improving existing irrigation practice using a combination of the social and technological interventions above.
- “Demonstration sites” where we work with communities to evaluate some of the newer more advanced technological solutions.

The shading below represents a phased approach whereby some sites may be established in later years through successful out-scaling. The challenge then as we undertake final selection of “intervention” sites is that we see intervention for what it is – facilitating change. This can be effectively done by making small incremental change to current systems and introducing collective approaches to improve water management based on current infrastructure as well as by demonstration of new technologies.



The pictures below from Bhagwatipur in Madhubani illustrates this concept. There are three active tubewells barely used in the dry season and 50 marginal farmers operating off 20 hectares. A range of social and technical interventions as listed above could be implemented with relatively low capital cost, using existing tube wells and possibly paddy field redesign (e.g levelled and furrows for dry season vegetables) and better water use efficiency with introduction of soil moisture measurement and improved scheduling. Working as a cooperative significant improvements in dry season production could be targeted with development of local capacity.

