An Effort to Make Water Everybody's Business

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Introducing the 5% model and constructing* happas *in the drought-prone, arid uplands and midlands of Molian panchayat in Bankura district has transformed barren tracts into verdant and productive lands, thereby benefiting and empowering the resource-poor occupants of the area.

PRADAN AND MGNREGA

Pradan has been working in West Bengal since 1986 and, more specifically, in Bankura district since 2005. Pradan's focus has been on Integrated Natural Resources Management (INRM) for sustainable livelihoods promotion. The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) has created umpteen opportunities for INRM by ensuring technical and financial support for an array of bio-physical activities. By guaranteeing every rural household 100 days of work a year, MGNREGA has made it possible to drought-proof landscapes and create durable livelihood assets on a massive scale. MGNREGA envisages that plans for village development will be prepared in the highly desirable bottom-up manner, with the *panchayat* playing a crucial role in both planning and implementation. Despite the good intentions, however, the works are largely instigated by a few influential persons at the block level and the rural poor are seldom consulted in the process. Such an approach hardly makes for any change.

In most parts of Bankura district, which is rainfed and dry, the food sufficiency of small and marginal farmers suffers greatly due to lack of assured irrigation for kharif paddy. NREGA funds are available but, as mentioned earlier, the challenge remains in how they can be leveraged and plied through institutional arrangements, and most of all how such arrangements can be fine-tuned to address the real needs of the people. Another pertinent challenge lies in cohering the long standing knowledge and understanding of village communities with the technical and specialized inputs that facilitating agencies are attempting to bring to the fore.

This article looks at Pradan's accomplishment in saturating a smaller sub-watershed that cuts across three village habitations of the Molian panchayat with water harvesting structures. The precise manner in which the intervention was customized to meet the needs of resource-poor farmers, the way in which NREGA funds were efficiently tapped into, and the SHGs were centre-staged to ensure a bottom-up process of planning-cum-implementation are highlighted.

THE CONTEXT: LOCATION, PEOPLE AND POVERTY

Molian *gram panchayat* falls in one of the western-most blocks of Bankura district, Hirbandh. There are five *panchayats* in Hirbandh block. The block is, by and large, under-developed and characterized by a high SC and ST population of 25% and 29%, respectively. Close to the reported figures at the block level, the SC and ST population in Molian stands at 21% and 33%, respectively. More than 50% of the households live below the poverty line (BPL), and 70% of them are small and marginal farmers. The Molian *panchayat* comprises 26 habitations (*mouza*). These 26 *mouzas* have been organized as 12 *gram sansads*, and they are governed by a Gram Unnayan Samiti (GUS) each.

The agro-ecological context of the region is typical. The uplands along the ridge portions, referred to in the local parlance as *tarnd*, are highly degraded and fragmented. They are characterized by high slopes, minimal soil cover and low water-retention capacity. There is no bunding here, and such lands are mostly held by the STs—commonly the *Santhals*, barring a few upper-caste exceptions. Likewise, there are the midlands, or the *baid*. In comparison to the *tarnd*, the midlands are less fragmented and less steep. Erosion being lesser in such reaches, there are fewer gullies and rills in the midlands. The most fertile lands, however, fall in the valley portions and are referred to as *shol*. The *shol* boasts of a superior soil and moisture regime, and comprises large landholdings that are invariably under the ownership of the upper-caste farmers (also referred to as the general caste, or GC farmers).

The GC farmers prefer to keep their fertile and moisture-rich tracts in the valley portions under agriculture rather than allocate them for less lucrative purposes such as water storage. This has been both strategic and profitable.

The region records an annual rainfall of 1,330 mm. From figures at the block level, it is approximated that about 89% of the Net Sown Area (NSA) in Molian is rainfed, a negligible 2.5% of the NSA is supported with water from dug wells, and the remaining 8.5% with water from the larger village water bodies called *pukurs*. The *pukurs* are in the nature of dug-out ponds made by the GCs over a hectare or more. The GCs are mostly big farmers.

It is interesting to note that the *pukurs* made and owned by such farmers rarely occur in the more fertile lowlands. The GC farmers prefer to keep their fertile and moisture-rich tracts in the valley portions under agriculture rather than allocate them for 'less lucrative' purposes such as water storage. Owing to this prudence, the *pukurs* have instead been located by the GCs amid the table lands of the upper reaches. This has been both strategic and profitable. The *pukurs* are a rich source of fish produce, which are frequently auctioned by the GC owners to fishing enterprises or entrepreneurs for hefty amounts. In this way, the *pukurs* make for little 'islands of prosperity' in the degraded uplands/ midlands, where arable lands are otherwise scant and held by small and marginal lower-caste farmers.

The most fertile lowlands, thus, remain reserved for the bumper crops of the GC farmers, while the scant uplands are made to accommodate the fish-laden *pukurs*, also for the ultimate benefit of the GC farmers. This is not to say that the water of such *pukurs* does not come in handy for the lower-caste households, who frequently avail of it for

domestic purposes such as washing clothes and utensils, and bathing. The *pukurs*, however, do not serve the irrigational needs of the lower-caste farmers in the degraded uplands. Even where they do support agriculture in the uplands, the *pukurs* often fail to deliver the last critical irrigation for paddy—this happens mainly because, with the onset of summer, a *pukur's* receding waters comes under contention for the purpose of fisheries (over which the lower castes have no right).

The water harvesting structure, called* happa*, localizes water availability to meet the individual farmer's needs and, when undertaken in large numbers, improves the soil and moisture regime of a landscape.

The *pukurs* have been primarily designed to contain water for fisheries. That these water bodies support the domestic household needs of the poor is incidental; the waters were never intended to irrigate the adjoining degraded lands and support the cultivator-households that live by them.

DESIGN OF INTERVENTION: NEED AND SUITABILITY OF *HAPPAS*

The need to decentralize water availability, thus, becomes even more crucial in the uplands and midlands, for reasons that such tracts:

- Are degraded and possess an extremely inferior soil and moisture regime, within the given agro-ecological context.
- Support the subsistence needs of some of the poorest people in the region.
- Are not irrigated by the prevailing system of water management (*pukurs*), which does not ensure water for the crops or livelihoods of poor farmers.

The 5% model, advocated by Pradan, is a practical alternative in such a context. The 5% model is essentially pro-poor in nature, and suited to meet the needs of small and marginal farmers in the upper reaches. The water harvesting structure, called *happa*, localizes water availability to meet the individual farmer's needs and, when undertaken in large numbers, improves the soil and moisture regime of a landscape. In the 5% model, a farmer in the uplands/midlands is advised to allocate at least 5% of his/her total landholding for the construction of a *happa*. A *happa* is technically suited for terrains in which the land slope is under 15%. This assured, it hardly matters if the farmer allocates the most degraded part of his/her plot for the *happa*. A *happa* is usually 10 to 12 ft deep and ideally 50 by 40 ft in length and breadth. However, the length and width varies in proportion to the total landholding of the farmers—24 by 30 ft and 40 by 36 ft are some of the other dimensions adopted where the landholdings are small.

A *happa* is a mud-excavated structure and does not have any cement work or stone revetment. This makes the design easily achievable, within the limited capacities/resources of the local farmers. The sides of a *happa* are stepped in a manner to ensure a slope of 1:1. The steps make it easier for both livestock and humans to access the water of the *happa* once it recedes in summer.

The 5% model is not entirely technical, it involves a social angle as well. Its implementation involves a multi-stakeholder dialogue. In Molian, it has entailed the active involvement of the women SHGs at the grass roots as part of an overall bottom-up process to harness the resources of NREGA.

A pro-poor model when combined with a bottom-up process, as in Molian, is sure to result in the (re)formation of local institutions that are both democratic and inclusive.

PROCESS: AN INSTANCE OF BOTTOM-UP PLANNING

The Central Role of Women SHGs

In Hirbandh block, most of the SHGs, being facilitated by Pradan, had been formed earlier by the *panchayats*, as per the norms of the Swarna Grameen Swarozgar Yojna (SGSY). Being the most basic form of social organizing at the village level, Pradan perceived that the enhanced participation of SHGs could very well make the NREGA a programme that is both for and by the people. Pradan was equally aware that women, particularly the SCs, STs and OBCs, share an intimate relationship with nature. They are routinely engaged in identifying appropriate water resources for drinking, washing clothes and utensils, bathing, etc.; they collect fuel wood and fodder to meet household energy requirements and to stall-feed animals; they also collect Non Timber Forest Produce (NTFP) where available. They play an equally important role in agriculture as their male counterparts. The knowledge and understanding that the women and their groups have about the natural resources was waiting to be capitalized upon. Bearing in mind the pressing water problem and the simultaneous opportunity offered by NREGA, Pradan decided to facilitate the capacities innate to women's SHG groups for the preparation of INRM-based plans.

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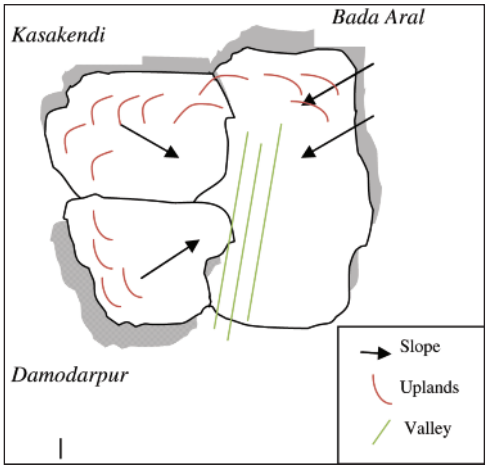
Pradan as Facilitator

Pradan first began with orienting SHG members and the communities at large, with the provisions of the NREGA and the possibility of harnessing the benefits of the 5% model. That community members will be rewarded with high wages (as a matter of right!) for upgrading their own lands appealed to many. Some, however, felt that allocating land for water conservation would be tantamount to the loss of arable land, which, in any case, is scarce in the uplands. Of all the villages, Kasakendi, Damodarpur and Bada Aral were quick to gauge the benefits in store for them. Owing to the willingness of the eight SHGs in these three village habitations to cooperate and treat the sub-watershed shared by them, these SHGs became the entry point for more serious deliberations.

The initial sessions detailed the broad percepts of INRM and the entire set of activities, including agriculture, timber plantation, fodder development, wasteland development, etc.

The farmlands of Kasakendi, an entirely *Santhal* habitation, are situated in the *tarnd*. Damodarpur, which adjoins Kasakendi, is an ST/OBC-dominated habitation, with most of its lands falling in the *tarnd*, and with smaller chunks in the *baid*. Bada Aral is a somewhat more prosperous village, with significant tracts that fall in the *shol*. Nevertheless, the SC/STs and OBCs of Bada Aral also hold lands in the *tarnd* and *baid* portions of the village. A contiguous stretch of *tarnd* and *baid* portions, therefore, is commonly held by the lower castes of the three village habitations (See Figure 1). The sub-watershed presented above has three *pukurs*, each being located on about 1 to 1.25 ha of land and owned by the GCs. There are also three dug wells, each 30 ft deep and with water only to support 2 to 3 ha beside these.

Figure 1:
Rough Representation of the Area



At the start, there were two SHGs comprising 20 members in Kasakendi, one SHG with 11 members in Damodarpur and another five SHGs in Bada Aral, with a membership of 53 individuals. The above groups were mostly homogenous lower-caste groups, except the two of Bada Aral that comprised a handful of SC and GC members. Once consensus was built among the SHGs, Pradan initiated a series of trainings for the members. The initial sessions detailed the broad percepts of INRM and the entire set of activities, including agriculture, timber plantation, fodder development, wasteland development, etc. The later sessions looked more specifically at the utility of the 5% model in enhancing the soil and moisture regime of the area, and how the provisions of the MGNREGA could be leveraged for the excavation of *happas*. The SHG members were familiarized with the process of obtaining job cards and opening bank accounts, to avail of the full benefit of NREGA. Twelve individuals from the three habitations were identified to act as

Table 1: Demography of the Three Village Habitations

	Name of Habitation	Number of Households Caste-wise				No. of SHGs	Small and Marginal Farmers (%)	BPL House-holds (%)	Total Arable Land (ha)
		SC	ST	OBC	GC				
1.	Kasakendi	..	22	…	…	2	100	100	14.8
2.	Damodarpur	…	11	5	..	1	97	95	17
3.	Bada Aral	58	12	12	20	5	80	39	80
	Total	**58**	**45**	**17**	**20**	**8**			**112**

*Source: Pradan household survey

community resource persons (CRPs). The CRPs were chosen carefully from among those members at the village level, who were astute yet impartial, and had the capacity to resolve conflicts. The CRPs were trained on intricate details, ranging from quality control to record maintenance and, most importantly, on their all-important role of ensuring social cohesion.

Mapping and Budgeting Intervention

Political parties play a vital role in the decision-making processes in these villages; owing to which both the ruling and opposition parties were oriented and taken into confidence for participatory planning with the SHGs in the village. Meanwhile, the SHGs and the CRPs informed the rest of the community and discussed with them the prospects of the new programme. Thereafter, they prepared a comprehensive list of farmers, who were willing to participate in the new activity. The SHG members obtained the revenue cadastral maps from the *tehsildar*. By organizing Participatory Rural Appraisal (PRA) exercises and land transects, involving representatives from all three habitations, the CRPs and SHG members succeeded in mapping the precise area that would be brought under treatment. Pradan provided the much-required facilitation and technical assistance at this stage. The treatment maps,

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prepared by using the cadastral maps as base maps, were made to indicate topographical features such as agro-ecological zones (*tarnd*, *baid* and *shol*), the gradient and slope of the land, and the location of water bodies and forests. Most important, the maps pinpointed the individual plots of the farmers, who had decided to implement the 5% model on their lands through NREGA. The treatment maps also came in handy later in prioritizing work across different habitations, comparing accomplishments with planned targets, and undertaking inspection visits.

Taking cognizance of such politicking at the grass roots, Pradan, the SHGs and the CRPs moderated the selection of paymasters and supervisors in a manner to ensure that all stakeholders—the ruling and the opposition parties, SHGs, landholders, the GUS members—got an equal opportunity to voice their choice.

Finally, a decision was taken to excavate 150 *happas* in private lands falling in the *tarnd* areas of these villages. The assistance of the Junior Engineer (*Nirman Sahayak*), appointed at the *panchayat* level, was sought, and detailed estimates were prepared for the *happas*. To speed up the process, Pradan shared a simple yet effective software, using Microsoft excel sheet, with the *Nirman Sahayak*. This helped the *Nirman Sahayak* to prepare estimates in a few hours, saving more than a month's paper work. Thereafter, the SHGs submitted formal requisitions to the GUS for direct implementation of the proposed works under NREGA. The requisitions were grouped together for plots closely adjoining one another, thereby making for patch-wise plans/requisitions. While aggregating individual plans into patch-wise plans/requisitions, care was taken to ensure that none of these exceeded a total value of Rs 2.5 lakhs. This was done primarily because it is beyond the scope of the *gram panchayat* to sanction works in excess of this amount. Works above Rs 2.5 lakhs require special permission from the district administration, which would only mean more delay.

Sanctions at Different Levels

The requisitions were approved by the GUS. The order in which the works would be undertaken was also decided. The priority was determined, keeping in mind the urgency for wage relief and/or seasonal availability of labour across different habitations. In order to avoid any overlaps, one SHG each from a village was allocated the responsibility of overseeing the excavation of *happas* in a patch. In accordance with the criteria laid out in NREGA, five paymasters and seven supervisors were selected in this GUS meeting attended by the SHGs. The selection of paymasters and supervisors could have become a serious cause for conflict because political party workers are usually keen to ensure that their members ascend to such posts. Taking cognizance of such politicking at the grass roots, Pradan, the SHGs and the CRPs moderated the selection of paymasters and supervisors in a manner to ensure that all stakeholders—the ruling and the opposition parties, SHGs, landholders, the GUS members—got an equal opportunity to voice their choice.

The supervisors and paymasters were, thereafter, trained. The *Nirman Sahayak*, the pradhan of the *panchayat*, the local leaders, the SHG members and the office bearers at the *panchayat* level were invited to participate in such training sessions. Subjects such as the layout, the measurement and the execution of the *happas*, and the preparation

of the muster rolls were discussed in great detail. Besides technical and procedural clarity, the training sessions helped in arriving at a shared and coordinated understanding of the roles the different stakeholders would have to perform. Through one-on-one interactions with the *pradhan*, Pradan was able to establish a healthy rapport and further convince the *sarpanch* of the benefits that would accrue to his 'constituency' from the proposed work. In due course, the plans were first passed by the GUS, then approved by the gram *panchayat* and sent to the BDO for a final approval by mid-July 2008. The sanction orders were passed by the BDO in less than a week. One copy each of the sanction order was handed to the gram *panchayat*, the concerned SHG heads and Pradan. The *sarpanch* passed the work orders to the paymasters, and the work was begun, as per the priority decided upon. The social, economic and political aspects of the process, across different stages, are presented as part of Table 2.

Realizing Targets

The work groups succeeded in excavating an astounding 134 *happas* in less than 4 months! During this period, Pradan carried out weekly monitoring meetings involving the SHGs, CRPs, supervisors, paymasters and the *Nirman Sahayak*. Work progress was discussed and muster rolls were verified. After making a final verification of the muster rolls, and corroborating entries with the measurement book (M-Book) and the evidence in the field, the *Nirman Sahayak* paved the way for payments to be made. The *gram panchayats*, then, released the cheques to the SHG paymasters, to be credited into the accounts of the beneficiary households.

A phenomenal Rs 39 lakhs were distributed as wages, and no less than 48,180 employment days were generated for the communities of these village habitations (Table 3). But more than the monetary gain, 134 technically sound water-harvesting structures were pitted across the terrain. These structures are a vital contribution to the asset base of the region and bear the promise of steady returns over the years to come.

IMPACT: A PRELIMINARY ASSESSMENT OF BENEFITS

Since the primary impact is in terms of supplementary irrigation, it would be best to affect a before-after comparison. The figures in Table 4 were arrived at in the Focused Group Discussion (FGD)

Table 2: Different Dimensions of the Process

Dimensions Stages		Social	Economic	Political
Idea Sharing		Exposure and idea sharing with community members Elaborating key features of the 5% model/Advantages of *happas*	Sharing of opportunities available under NREGA	Generating awareness of rights under NREGA Co-opting local leaders, especially party workers
Pre-Planning	**Review and Reflection**	Securing partnership of SHGs Building consensus	Assisting community members to open bank accounts and avail job cards under NREGA	
Planning		Identifying CRPs, paymasters and supervisors Technical assistance/training for plan preparation Capacity building for stakeholders	Drawing plans for intervention, estimate preparation Obtaining work orders through sanctions at different levels (GUS, *panchayat* and the Block Development Office)	Engaging with GUS and the *gram panchayat*/Building a working relationship with such bodies
Implementation		Mobilizing labour at worksites Ensuring quality of work through a system of checks and balances	Excavation of *happas* Monitoring, record maintenance and payments	Inviting block-level administration to visit works Exploring opportunities of replication along with the BDO and neighbouring *gram panchayats*
		Measuring Impact		

attended by community members, NREGS supervisors, CRPs and Pradan staff working in the area.

The *happas* assured three complete irrigation cycles for paddy over a minimum of 65 ha of land in the kharif season of 2009. This was in addition to 17 ha that were being irrigated by the older structures. Many farmers report that they were able to sail past the drought of 2009 with the aid of water from the *happas* alone. This was particularly true of the farmers, who had undertaken long-duration paddy. Some of the farmers report that where they were accustomed to harvests of 2 to 3 tonnes per ha in times of poor rains, the assured irrigation from the *happas* had ensured yields of 3 to 5 tonnes per ha in similar rainfall conditions. Such farmers opted to sell at least 30% of their produce in the local market. Crop residue is a potential source of fodder for work animals and the increased yields have resulted in fodder security at the household level. The *happas*

Table 3: Material and Monetary Accomplishments under NREGS

No.	Name of Habitation	Households Holding Job Cards	Area Treated (ha)	Total *Happas*	Employment Days Generated
1	Kasakendi	22	14.8	24	8,025
2	Damodarpur	16	17	19	6,457
3	Bada Aral	75	80	91	33,704
	Total	**113**	**111.8**	**134**	**48,186**

*Source: Pradan household survey

have also met the water needs of livestock, especially in habitations that are distant from village water bodies.

Whereas 5.5 ha were being brought under vegetable cultivation during the rabi season earlier, now 18 ha have been added to this. These 18 ha mainly comprise plots beside the *happas* and their bunds. Radish, cauliflower, cabbage, potatoes and tomatoes are also being cultivated now by the farmers. Most of the vegetables are being retained for household consumption, with reasonable quantities being sold in the market place. The small-scale propagation of fisheries and duck rearing in the *happas* have similarly become a source of healthy diet and revenue in recent times. Farmers have earned anything between Rs 4,000 and 15,000 from the sale of vegetables and fish in the local markets. Farmers now feel more secure; the present diversification of local livelihoods into fisheries and vegetable growing has reduced the risks they faced earlier of depending on a single kharif crop of paddy. The benefits have also paved the way for farmers to step into market spaces with increased confidence.

Although it is still too early to suggest the ecological benefits, in select cases these are more than visible. For one, the intervention has drastically reduced run-off and soil erosion. A number of farmers are startled by the amount of silt (approximately a foot!) the farm ponds have trapped in just one monsoon. Farmers are aware of the losses and benefits that accompanied degradation. Saroja *didi*, a farmer, explained how, earlier, the accumulation of valuable silt in the lower reaches through erosion resulted in the concentration of viable farming opportunities for an elite few, namely the GC farmers holding lands in the *shol*. Farmers now are more than willing to remove the silt that accumulates in the *happas* and apply it to their farmlands, in a bid to improve their yields.

The *happas* exert a positive influence on the adjoining waste and scrub lands too. The water of one *happa* has rejuvenated a bamboo grove on an adjoining wasteland. The farmer now uses the bamboo in the grove to make stilts for his tomato crop, which also is being supported with the water of the *happa*.

The owners report a marked increase in water levels in the dug out ponds after the excavation of *happas*. Though this is merely an occular estimate at this stage, it remains a confirmed indicator of the ground water recharge being affected by the newly excavated structures.

On the social front, the present effort has a gendered dimension. The *happas* have made water available for household purposes such as washing clothes, cleaning of utensils, bathing, etc. All these activities are

Table 4: Additional Facility Created by *Happas*

Source	No.	Description	Area Serviced Kharif (ha)	Area Serviced Rabi (ha)	Source	No.	Description	Area Serviced Kharif (ha)	Area Serviced Rabi (ha)
Pukurs Dug well	3	Traditional village water bodies that are in the nature of dug out ponds spread over 1 to 1.25 ha.	10 ha of paddy (*approx*) assured 3 complete irrigation cycles Another 15 ha forego last or last two irrigation cycles	3 ha (by way of small patches near *pukurs*) brought under vegetable cultivation	*Happas*	134	Water harvesting structures made as part of the 5% model	65 ha assured irrigation till the last and final stage	13 ha brought under vegetables
	3	About 30 ft in depth and 10 ft in diameter	6 ha of paddy assured 3 complete irrigation cycles	2.5 ha under vegetables					
Total	**6**		**16**	**5.5**		**134**		**65**	**18**

customarily performed by women. The ready availability of water in a *happa* next to their habitation (or even their homes) has reduced the drudgery otherwise involved in getting water from a distant *pukur* for all such purposes.

On the institutional front, the effort has resulted in the convergence of grass roots institutions. Institutions, particularly the *gram sabha* and the GUS, are now characterized by greater participation of lower-caste farmers, who hold lands in the upper reaches. Likewise, negotiations at the village level have resulted in a fruitful working relationship between different stakeholders—community based groups (SHGs), traditional institutions (GUS and *panchayat*) and the bureaucracy (block-level authorities). The alliance built with mainstream political parties such as CPI (M) is a significant contribution to the political capital of beneficiary communities. Also, the processes of planning and implementation have resulted in the enhancement of capacities, be it in terms of knowhow to ensure the technical soundness of works or record maintenance to ensure timely disbursal of funds. Today, the supervisors, paymasters and CRPs make for a cadre of well-trained village youth. Although a fair amount of politicking is involved in the recruitment of supervisors and paymasters, as mentioned earlier, Pradan has oriented the people and selected representatives in a way that they uphold the interests of village communities above all else.

An enhanced sense of awareness, of rights under NREGA in particular, and the increased participation of women SHGs in local decision-making are reflective of some of the important social and political transitions the area is undergoing.

The ready availability of water in a happa *next to their habitation (or even their homes) has reduced the drudgery otherwise involved in getting water from a distant* pukur *for all such purposes*

The many ways in which the present intervention has contributed to diverse benefits is evident in the following three cases, namely, of Bodon *da*, Parangope and Uttam Bauri.

Case 1: Bodon da, Kasakendi

Bodon *da* is an ST farmer in Kasakendi. He owns about 3 *bighas* (0.50 ha) of land in two patches—one of 1 *bigha* and the other 2 *bighas*. He has excavated two *happas* in his plot of 2 *bighas*. One of the *happa*s measures 50 by 60 ft and the other is 30 by 24 ft, thus amounting to about 5% of the total land owned by Bodon *da*. The two *happas* on his farmland generated about 50 days of employment for the household. This saved the household the need to migrate in summer. Prior to the construction of the two *happas*, Bodon *d a* used to cultivate short-duration paddy on about 1 *bigha* of this plot, and the remaining land would most often go unutilized. He would get anything between 3 and 4 quintals of paddy and this was almost always retained for household consumption.

The *happa* came as a timely intervention. Bodon *da* says that with the water from the smaller pond (30 by 24 ft), he was able to salvage his paddy crop despite the drought (2009, kharif). The assured irrigation yielded a commendable 5 quintals of paddy despite vagaries. The water from the larger *happa* (50 by 60) helped him cultivate maize and bitter gourd in the initial rabi months. This was followed by the cultivation of other vegetables such as radish, tomatoes, cabbage, cauliflower and greens. Bodon *da* was also able to prepare Jeevamrita—an organic supplement made of cow urine, jaggery and water. The application of Jeevamrita to the radish crop yielded a prize winning size. Radishes from Bodon *da's* fields weigh anything between 3 to 5 kg each!

Table 5: Accomplishments at a Glance

No.	Dimension	Accomplishments
1.	Economic	Drought proofing through *happas* Sale of excess grain/vegetables in local markets Fodder security through enhanced crop yields Water for work animals/livestock Small-scale fisheries and duck rearing made possible Wage relief and employment generated through NREGA
2.	Social/ Institutional	Bottom-up planning of development works Convergence of different institutions—SHGs, GUS and *panchayat* Capacity building of CRPs, supervisors, paymasters, etc. Food and nutritional security enhanced at the household level Easy access to water for domestic household needs Reduced drudgery for women
3.	Political	Awareness of rights under MGNREGA Greater role for women in decision-making Working partnership with mainstream political parties at the grass roots
4.	Ecological	Reduced run-off Groundwater recharge Improved soil and moisture regime Biomass enhancement Agro-biodiversity

Bodon *da* was able to sell a significant quantity of his vegetables in the local market. He also undertook fish propagation in the *happa* and has sold about 5 kg of fish in the first year. Bodon *da* estimates that he has been able to make a profit of at least Rs 30,000 from vegetable and fish sales in the local market. The surplus grain that he has been able to store, after household use, is no less than Rs. 7,000 in value. Bodon *da* is enthusiastic about deepening the *happas* on his land by another couple of feet. He says that he would "rather get busy deepening the *happa* than merely wait for the clouds!"

Case 2: Parangope, Damodarpur

Parangope is a GC farmer in Damodarpur. He holds about three-fourth of a hectare across two separate plots. Parangope has made a *happa* that measures 36 by 40 ft on one of the plots that measures nearly half a hectare. He says that he saved his kharif paddy last year with the water in the *happa*. Keeping the better portion of his lands reserved for cultivation under conventional methods, Parangope allocated a small degraded patch on his plot for experimenting with the System of Rice Intensification (SRI). He found that the degraded patch under SRI yielded the best results. Parangope is now convinced that a combination of SRI methods with the 5% model is sure to double his yields. It is also bound to create a surplus of water for the cultivation of vegetables during rabi.

Parangope has laid a trellis on top of his *happa*, with the aid of bamboo poles and GI wire. Creepers that have been allowed to

The happas *have now made it possible for many farmers to grow and sell vegetables during rabi.*

grow on the grill provide fresh vegetables and gourds for household consumption. These also shade the water beneath and reduce the loss of water through evaporation. Parangope cultivates small quantities of cabbage, cauliflower and potatoes on his farm land adjoining the *happa*. He has made a profit of Rs 2,000 from the sale of these vegetables.

Parangope released 3 kg of fingerlings in the *happa*. Although the fish was mainly for household consumption, small quantities of fish were also sold in the market. This earned him Rs 1,200. The water in Parangope's *happa* is likely to last only for a few weeks more; he plans to connect the surplus of a nearby village tank (*pukur*) to his *happa*, with the aid of a diesel pump. This will save the last remaining fish in his *happa* that are under threat on account of the receding waters. Parangope estimates that he will earn another Rs 2,000 from the sale of the remaining fish in the *happa*. Parangope says that he has also been able to save sufficient amount of grain. The total value of the grain is no less than Rs 5,500. Being close to the beginning of the academic year, he says he will use his additional earnings to pay for his children's school fees.

Case 3: Uttam Bauri, Bada Aral

Uttam Bauri is an SC farmer in Bada Aral. He owns a small plot of land, measuring about three-quarters of a hectare at a distance of about 500 ft from the village *pukur*. Uttam Bauri says that, in the past, it was only possible for the farmers holding lands near the *pukur* to undertake the cultivation of vegetables during rabi. The *happas* have made it possible now for many farmers, like him, to grow vegetables during rabi. Uttam Bauri excavated a *happa* measuring 36 by 40

ft, and with the water from the *happa*, he cultivated vegetables such as tomatoes, cabbage, brinjals, radish and cauliflowers. Uttam Bauri estimates that he expended about Rs 200 as input cost in growing the vegetables. Sometimes he relied on a diesel pump to lift water from the *happa* to the vegetable plots. Considering these expenses, Uttam Bauri estimates that he has made a profit of Rs 5,000 to 6,000 from the sale of vegetables. Significant quantities of vegetables were also retained for household consumption.

Uttam Bauri says that the water of the *happa* saved his kharif crop of rice. He would have otherwise lost his standard crop of 4 quintals to the drought. His additional earnings because of the *happa* are as much as Rs 11,000—this includes both money from small-time sales and savings on account of food sufficiency. Uttam Bauri also released fingerlings in the *happa*. Unfortunately, the fish was stolen. Uttam Bauri says that unlike the bigger structures and water bodies, in which fisheries are promoted on a commercial basis, the smaller *happas* remain unguarded at night. Besides, Uttam Bauri's plot is flanked by a wasteland on one side. This makes it easier for thieves to steal the produce at night. Nevertheless, the cattle which grazes on this adjoining wasteland avails of the water in Uttam Bauri's *happa* during the day. Uttam Bauri is fine with cattle belonging to others benefiting from his *happa* because, on many occasions, his own work animals drank water from some other farmer's *happa*.

Critical Overview and Way Forward

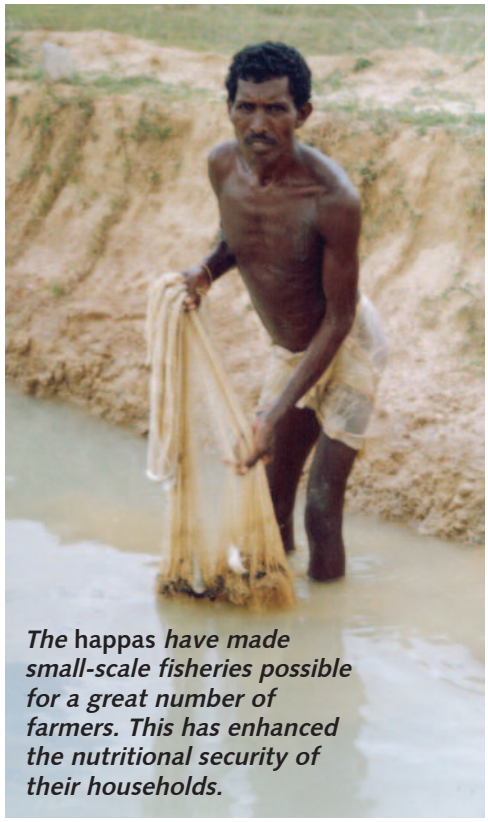
Despite these achievements, some issues remain to be addressed. There is the fundamental need to combine the structures (*happas*) with other bio-physical measures and watershed activities such as field bunding, networking and supply channels. At a socio-economic level, the programme favours those who hold lands, even small and marginal, in the upper reaches. In certain instances, the landholding is so small—a mere cent or two—that even the 5% model cannot be implemented in the limited space. A common *happa* that services the needs of a group of small landholders remains to be contemplated. Similarly, the landless do not stand to benefit from the construction of *happas*, except by way of temporary wage relief under NREGS works. Likewise, in terms of gender equity, it needs to be ensured that the economic benefits from the programme flow back to the women SHGs. In the current scheme of things, there is greater likelihood that returns will, once again, percolate to the men—the owners of the *happas*. As important as the need to ensure the participation of women in development processes, is the need to ensure that they also partake in equal measure in the benefits. Modalities need to be conceived for the same.

As part of a continuous cycle of self-improvement, Pradan is exploring new ways to address some of the above issues and to improvize interventions. At the same time, opportunities for replication of established benefits are coming Pradan's way with increased recognition of its efforts by the district level administration. As part of the latest developments, the district administration has finalized a Memorandum of Association with the Pradan team, designating it as a facilitating agency for the replication of the present effort at the district level.

The strong features of the present model are that it is both replicable and sustainable—key ingredients of any model. Within Molian

gram panchayat, similar plans are now being prepared to treat the contiguous tracts shared between the village habitations of Brahmo Danga, Chapsaol and Nodia. Community members are equally interested that the adjoining tracts shared by Chapsol, Nodia and Banguria be brought under the intervention. Pradan is hopeful that such efforts at the level of village habitations will culminate in a superior soil and moisture regime across the entire landscape. *Happas*, being in the nature of private assets of the farmers, are more likely to be maintained. The fact that such structures are low-cost makes maintenance affordable. The sustainability aspect of the present model can be attributed to both the above facts, that is, the incentive to maintain the *happas* because they are in the nature of private assets, and the affordability of maintenance on account of design advantages. Another strength of the programme is the manner in which people's knowledge, particularly that of women, has been knitted with the technical inputs offered by Pradan and other facilitating agencies.

More than anything, the model achieved by the resident communities, with assistance from Pradan, is superlative for its bottom-up planning and the many ways in which economic opportunities have been enhanced by building the resource base of marginalized communities.



The* happas *have made small-scale fisheries possible for a great number of farmers. This has enhanced the nutritional security of their households.