

A Case Study of Three Villages under the 'Pani Thiye Panjo' Programme: A Multi-Institutional Decentralized Solution to Drinking Water Scarcity in Abdasa Taluka, Gujarat

AMITANGSHU ACHARYA

Arghyam
Bangalore, India
info@arghyam.org

Sahjeevan
Vijay Nagar, Bhuj, India
sahjeevan@gmail.com

Profile of the Programme and Partners

“Pani thiye panjo”, (loosely translated from Kachhchi means ‘let this water be ours!’) is a multi institutional programme that attempts to address issues of water scarcity through local water source augmentation in Abdasa taluka, Kachchh district, Gujarat. The project was conceived by Sahjeevan and is being implemented by a group of NGOs, namely Vivekanand Research and Training Institute (VRTI), Kutch Fodder Fruit & Forest Trust (KFFFT), Manav Kalyan Trust (MKT) and Abdasa Mahila Vikas Sangathan

(AMVS). It aims to ensure adequate¹, safe drinking water² access³ to 80%⁴ of the population of the taluka through the development of sustainable water resources at village level over a period of five years. The meta objective is to reverse the dependency of water from unreliable centralized rural water supply schemes to community managed wells.

The multi institutional framework helps to create and tap into a dynamic knowledge pool. In a classic example of community-public & civil society partnership, WASMO (Water and Sanitation Management Organisation), an autonomous organisation established by the Government of Gujarat in 2002, joined hands and committed funds to support the hardware costs (also some administrative ones) involved in programme implementation.

The programme is anchored in communitarian processes. Pani Samitis (i.e. Village Water Management Committees, a subgroup of the village Panchayat⁵) is capacitated by implementing NGOs, prepares a project proposal, the quality of which is assessed by ACT⁶. The final proposal is submitted to WASMO, which extends support through hardware financing.

Arghyam provides financial assistance to cover all soft costs of implementing NGOs. Sahjeevan being the nodal agency coordinates activities of the consortium.

Sahjeevan, (literally sah i.e together & jeevan- living) was set up in 1991 and has over a decade's experience in working on action research and developing models with the women collectives. Sahjeevan is an active member of the Kutch Nav Nirman Abhiyan⁷ a civil society network and provides leadership to the Drought Proofing Program in the district, coordinated by the same people. Working in tandem with the other partners,

¹ 70 liter per person per day

² The quality parameters will be concomitant to WHO standards, http://www.who.int/water_sanitation_health/dwq/guidelines/en/

³ 'Access' will mean a distance of not more than 200m from individual households

⁴ 135 out of 166 villages, as they were categorized earlier, and 80% required urgent intervention, the remaining had assured supply but work was required at management levels.

⁵ Village level constitutionally approved (73rd Amendment of the Indian Constitution) governance and administrative units.

⁶ Arid Community and Technologies, an NGO with expertise in geo hydrology

⁷ Rebuild Kachchh Movement, which began after the devastating earthquake of 2001

the network has now gone on to support several villages in protecting their water, land, grasslands and mangroves.

Arghyam⁸ is a public charitable foundation and has been working in the water sector since 2005. Guided by its mission “Enough water, safe water ... always and for all”. Arghyam supports strategic and sustainable projects and programmes in the water sector that enhance equity in access to water for all citizens. Its key interest areas are Integrated Domestic & Waste Water Management, Rainwater Harvesting, Groundwater Management and Sanitation. Till 2007-2008 Arghyam has supported 29 projects on water and sanitation in 9 States of India, spread across 30 Districts and more than 700 villages.

Types of Water issues in the Region

Kachchh (previously Kutch) is geo climatically one of the harshest regions of India. It forms a contiguous land mass with the Arid and Semi Arid regions of Thar Desert in Rajasthan. Kachchh experiences the highest air temperature in the month of May with temperatures ranging from 40°C-45°C. An average annual rainfall of 312 mm⁹ coupled with 2-3 droughts in every five years make it a water stressed zone, The project area, namely Abdasa taluka¹⁰ is located in this dry zone. Abdasa is one of largest talukas of the district¹¹ with 8 small towns and 165 villages. A large number of people, 73,633 (49%) do not have access to safe and adequate drinking water¹². Water quality issues further compound the scarcity factor. Preliminary analysis of drinking water quality of 130 samples of water sources revealed 35 with high levels of fluoride and 54 samples had high salinity and was undrinkable. Overall, 58 villages are consuming saline water¹³, way above the permissible limits of 1500 parts per million¹⁴.

⁸ ‘Arghyam’ is a Sanskrit word meaning ‘Offering’.

⁹ Gujarat Water Supply and Sanitation Board (GWSSB)

¹⁰ Generally, a taluka consists of a city or town that serves as its headquarters, possibly additional towns, and a number of villages. As an entity of local government, it exercises certain fiscal and administrative power over the villages and municipalities within its jurisdiction. It is the ultimate executive agency for land records and related administrative matters. Its chief official is called the talukdar or tehsildar.

¹¹ The second largest in India, first being Ladakh

¹² The baseline scenario of Abdasa taluka was determined in a joint study conducted by Sahjeevan, ACT, WASMO and the four NGO’s of Abdasa.

¹³ *ibid*

¹⁴ *ibid*

Traditional coping mechanisms to such conditions had generally been migration in peak summers and manual construction of shallow dug wells known as virda. However, well construction technology (especially masonry) never really shaped up in Kachchh unlike its neighboring low rainfall areas of Rajasthan. Still, communities possess excellent traditional knowledge on marking out sweet potable water spots. Such knowledge systems are also under threat as over the years salinity ingress has affected such sources, putting otherwise vulnerable communities in a tighter spot. Also, traditional techniques are unable to mitigate fluoride contamination.

Efforts have been ongoing to address water scarcity issues in Abdasa taluka. On paper, it's the last taluka which will receive water from Narmada dam. Given the present controversy and public debates on the project and progress of construction, communities will have to wait for long till the "benefits" of such large developmental projects reaches its parched lands. In Gujarat, the last couple of decades, there has been an overemphasis on the Narmada dam solving the problem of drinking water for the State. But as the canals and pipelines started getting laid out the enormity and the difficulty of the task became apparent.

Making a choice between water for life and that of livelihoods is an everyday experience in these parts. Wells and lakes are and has always been the only way. "Virda" or shallow dug wells tap potable water at upper reaches of an aquifer (1-4 metres) as deeper down (<4m) one hits saline/brackish water. Rainwater harvesting through ponds and lakes has been a traditional process. Usually well off individuals in earlier times constructed such catchment structures out of charity. They served a key purpose in attending to livestock water requirement. Since livestock rearing is a key occupation in these parts, rising animal populations translates into higher water demand¹⁵. Traditional structures no longer hold ground in a fast changing demand supply regime. Hence augmenting water sources for both humans and livestock is a critical need of the taluka.

Challenges and Solutions to Pani Thiye Panjo Programme in Three Villages in Abdasa Taluka

Addressing the water scarcity challenge in villages in Abdasa has been attempted from two paradigms. The dominant one is that of a centralized techno bureaucratic approach in the form of transporting Narmada waters through large-scale engineering

¹⁵ For rural areas 30 lpcd for each adult cattle unit is recommended by the GWSSB.

and construction related activities. The other is of decentralized community led water management and augmentation. Of the two, the second seemed more feasible as it enables communities to seek solutions by enhancing their adaptive capacities, especially in the larger context of global climate change. The goal of this programme is to influence the state by setting an example, on a reasonable scale, which demonstrates that source development and the governance of safe drinking water can be technically and administratively devolved to the village/town level. It will also demolish the myth that arid, drought prone areas cannot be self-dependant for their domestic water needs.

Nimanivandh, Karamta and Sadhiravandh are three villages in the programme area. The following figure provides a brief profile of each village:

Details	Sadhiravandh	Nimanivandh	Karamta
Population	300	200	169
No of Households	54	35	52
Households below poverty line (BPL)	38 (70.4%)	20 (57.1%)	40 (77%)
Communities	Jat Muslim (100%)	Jat Muslim (100%)	Rabari 100%
Primary Occupation	Animal Husbandry	Animal Husbandry	Animal Husbandry
Name of Panchayat	Butta Juth Panchayat	Charopadi Juth Panchayat	Akari Juth Panchayat
Secondary Occupation	Labour Work	Dry Farming, Fishing, Labour Work	Dry Farming, Mava Making (Milk Product), Handicraft, Labour Work
Geo Hydrology (types of rock, soil)	Vinzan Series clay Formation	Recent Pleistocene Deposition	Vinzan Series clay Formation
Existing Water Structures (Traditional i.e. virda)	0 (traditionally both humans and livestock drank water from a nearby pond)	5 (2 in disuse)	3 (all in disuse)
No of lakes/ponds	2	1	3
Water Quality of Ponds	TDS and Bacteriological impurity	TDS and Bacteriological impurity	TDS and Bacteriological impurity

Use pattern of Ponds	Livestock Water	Groundwater recharge	Livestock Water
Existing Water Structures (Panchayati Wells)	0	3 (1 for livestock and 2 for drinking water)	0
Existing Piped Water Supply	From District Rural Water Supply and Sanitation Scheme (RWSS)	None	Sanghi Industry (CSR) & R.W.S.S
No of overhead tanks	1	0	1

The challenges faced by the Pani Thiye Panjo programme in these villages were the following:

1. **Physical Water scarcity:** In all three villages, there is acute water scarcity especially in summers, when the average annual rainfall is only 314 mm. In Nimanivandh and Sadhiravandh, virda's or traditional shallow dug wells (without masonry) usually cave in during monsoons, as mud and sand chokes the well. Locating the right spot for virda's is also not precise and many a times, such wells choke immediately on construction or produce brackish rather than sweet water.
2. **Unreliability of Centralized Supply:** In two villages, drinking water is sourced through a rural water supply scheme from an adjoining taluk. However, such systems are energy dependant and given erratic electricity supply in the taluk, villagers get to see water in overhead tanks only once in week. Water is also supplied through tankers, as in Sadhiravandh but again, its infrequent. Hence, 6 days in a week communities have to resort to traditional coping measures. Operations and maintenance (O&M) is also a major issue, as ownership of fixing pipelines and other peripheral equipments lies with the Panchayat. However, being technologically incapacitated, the Panchayat has to redirect the issue to the local water supply engineer, and this entire process is painstakingly slow. The village of Nimanivandh refused to lay out pipelines in their habitation, being aware of failure of piped water supply in neighboring areas.
3. **Water Quality:** Fecal coliform has been detected in ponds in each village, and health risks are high in Karamta where the existing pond provides drinking water to humans and livestock both during peak summer. As regards chemical impurities such as fluoride, water test results are awaited.

4. High opportunity cost in water collection: In all three villages, when assured sources of water (such as piped water) fail, women and children have to travel a distance of 3-4 kilometres on an average, to collect water from a distant source. Water is not only collected for domestic needs but also for livestock, implying greater demand and hence time taken and drudgery increases proportionately.
5. Low Masonry Skills: Though communities are adept in identifying sweet water spots and digging shallow wells, being pastoralists and migrants, there was never an effort to develop masonry skills. Hence, well construction know-how remains in a basic stage.
6. Institutional and Intra Community Conflicts: Formation of village level institutions, in the form of Pani Samiti's is a mandatory project process. This is primarily to strengthen decentralized management through users. Since Panchayat's are de jure management units of developmental intervention in a village, Pani Samiti's may be perceived as an existential threat. As witnessed in Karamta, there was noticeable conflict between the Pani Samiti and the Akari Juth Panchayat on these very lines as the Sarpanch wanted to wield political clout and demanded to be made president of Karamta Pani Samiti. In Sadhiravandh, individual farmers got on the wrong end of Pani Samiti by attempting to put in bore wells in revived ponds for irrigation. Also, there is confusion about legitimacy and association of Pani Samiti's unlike that of Panchayats
7. Willingness to Pay: Generating contributions at the village level are mandatory under WASMO project support guidelines. Ideally, communities have to show intent by paying 10% of the project cost in advance. Poverty being rampant in all three villages, getting communities to commit to such financial contribution was extremely difficult.
8. Involving women: Socio cultural and religious contexts are at times bottlenecks to ensuring women's participation in project processes. Though in random cases women have spearheaded projects in their village, gendered participation is still a much desired programme objective.
9. Inaccessibility: Two of the three villages are located in interior areas and are not accessible by road. This has adversely affected communities' ability to access developmental benefits such as education and health. Mostly pastoralist societies, Government programmes are unable to keep them in its ambit.
10. Changing Desert Ecology: *Prosopis juliflora*, an invasive with known negative impacts on soil moisture and groundwater, has proliferated over the years in Kachchh. Recent policy measures to check its spread was to sanction free logging of the same for charcoal making. However, a well meaning policy has backfired. Charcoal making being financially remunerative, there has been excessive logging of all local

varieties as well. This has intensified desertification and the impact of this entire phenomenon on infiltration is yet to be studied. Yet, current literature suggest that subsequent reduction of water infiltrating the soil due to lack of vegetative cover may result in a lowering of the water table and a potential reduction in the amount of groundwater

Response to such challenges requires deeper understanding of communities, local water issues, policies and institutional processes. The in house capacities of all stakeholders, especially the implementing organizations proved crucial for smooth project implementation at the village level. Solutions to challenges listed above originated mostly at the village level and was anchored in collective decision making. External support was leveraged mostly on technical fronts. However traditional knowledge of communities was integrated in such processes wherever possible. The following chart out key processes that allowed positive outcomes to the overall programme in the documented villages.

1. Promoting local wise use of water: Through the programme 3 new wells in each of the three villages have been successfully constructed. Well construction was the final output of a detailed planning exercise, which was 'ground truthed' by ACT and WASMO. In each village, communities helped with the preparatory work of testing and deciding the location. The formation of Pani Samiti's in each village, before construction paved the way for setting up of rules and norms of use. In Ni-manivandh, the community preferred their "virados¹⁶" to any modern construction and consecutive deepening and strengthening of a virado has brought in greater relief to the community. There are strict norms on water use. It's mandatory for all to take off their shoes before getting on the platform of the virado. The old virado is now being used for domestic needs such as washing and drinking water for livestock and the newly constructed one solely for drinking water. The success of the well has been such that villagers from neighbouring Mohadi (which already has a piped water supply scheme) use the same virado to cater to their drinking water needs. The Pani Samiti allows such use, a decision which is based on mutual understanding and empathy as Mohadi, due to inadequate and irregular electricity supply gets piped water only once in a week. The other forms of wise use being witnessed in the villages include social fencing of drinking water source for villagers from livestock, source augmentation by deepening ponds, building earthen check dams surrounding the well, digging series of shallow dug wells and using them in rotation and clearing the feeder channels to the catchment areas

¹⁶ Virda's in the local 'jati' dialect

2. Training “Barefoot Engineers” to plug knowledge gaps: Providing appropriate and timely technical services to Panchayats, Pani Samities, NGOs, CBOs and individuals, was critical to success of Pani Thiye Panjo. Hence, a service centre for drinking water, titled “Parab¹⁷” was established in Abdasa taluka of Kachchh to train and develop para water engineers. These ‘barefoot engineers’ are capacitated to tackle basic technical issues related with augmentation and management of drinking water. Since well construction is a relatively new phenomenon in these villages, developing technical expertise in rural youth has borne fruit. In the village of Karamta, quality control by para engineers resulted in better materials and technique being used for construction of the only well in the village under the programme. Parab technicians are trained to conduct technical geo-hydrological surveys, prepare estimates etc, and these services would be offered to Panchayat and other line departments for implementing other water related schemes in the region
3. Leveraging on and assisting local champions: Noormahmamad Sarfuddin Jat (Secretary, Sadhiravandh Pani Samiti), Mr. Sakurbhai Bhachal Jat (Panchayat Member, Sadhiravandh), Ibrahimbhai from Nimanibandh and the articulate Ms. Hansabai, (Ex Sarpanch¹⁸ and Secretary Karamta Pani Samiti) are unsung heroes of rural Gujarat. Their roles in bringing communities together for collective action, has freed respective villages from acute water stress. Hansabai went around talking of community contribution when the very idea was perceived as attempted humour in Karamta. Refusal to give up has now ensured a community contribution of Rs 86000¹⁹/- for constructing an open well. Now, there is a further add on, as a solar pump is being set up which will directly bring water to each household. Convincing the community to opt for such technology was difficult, but Hansabai had a strong logical approach. She convinced her community of the system’s sustainability and since input costs were being reduced through programme intervention, it would be an opportunity which if missed will make successive generations suffer the same drudgery being experienced now. In Sadhiravandh, Sakurbhai, used his presence in the Panchayat to ensure greater coordination between the Pani Samiti and Butta Juth Panchayat
4. Nesting and linking institutions: The need to nest Pani Samiti’s within Panchayats is critical for sustainability of the intervention. Pani Samiti’s are community endorsed but have no constitutional validity. Panchayats issue a No Objection Certificate

¹⁷ In Kachchhi parlance Parabes are the water points meant for distributing drinking water to the people without any monetary charges, especially during the summer

¹⁸ Elected head of the Panchayat

¹⁹ Approximately \$ 2263 in current valuation

(NOC) to Pani Samiti's but has powers to revoke it. Hence, the programme envisaged greater sensitization of Panchayat's for need of Pani Samiti's as being user oriented; they are capacitated to meet local needs more efficiently. To bring about this desired synthesis, capacity building trainings, workshops and visits were organized at the village level involving both PRI's and Pani Samiti functionaries. One of the major outcomes of Pani Thiye Panjo programme was streamlining Pani Samiti formation in each village. Previously, the Panchayat also initiated pani Samiti's alongside WASMO. Hence often in one village, there were multiple Pani Samiti's resulting in an institutional chaos. This was sorted out through multi stakeholder dialogues, involving district and block administration, WASMO officials, Panchyati Raj Institutions (PRIs), Pani Samiti functionaries and NGO partners. It was agreed that hence onwards there would be only one Pani Samiti in a village, which will be recognized by WASMO and the village Panchayat. The talati²⁰ will facilitate the process and the Panchayat will issue a No Objection Certificate.

5. Strengthening institutions to manage conflicts: In Sadhiravandh, when a powerful farmer attempted to use a bore well to irrigate his agricultural land in a rejuvenated recharge structure (i.e. pond), the entire village, led by the Pani Samiti, filed a First Information Report (FIR)²¹ in the local police station. When this failed to work, they appealed to the District Collector in Bhuj who responded favourably and threat to the resource was mitigated. Similarly when the Sarpanch of Akari Juth Panchayat demanded de facto leadership of Karamta Pani Samiti, there was stiff resistance, as members realized this would lead to political capture of the institution. Threats to villagers of dire consequences, jeopardizing project funding, et al didn't leave a dent and the Pani Samiti was formed with the help of the Talati, who realized that such institutions actually enable him to work more efficiently.
6. Flexible systems to ensure contribution: WASMO guidelines clearly spell out advance contribution of 10% of the total project cost from the community. Only on satisfying such a condition does WASMO release 90% of the rest of the funds to the Pani Samiti for implementation. However, in areas where 77% of the population are below poverty lines, such contributions are hard to come by. And yet, a flexible system of payment of either cash or kind (i.e. through labour) sped up such a process. Continuous dialogue with WASMO officials allowed villagers of Nimanivandh to build a well by pooling in only human labour. Labour went into site clearance and other maintenance costs. Also payment in instalments for those unable to other-

²⁰ Village level revenue official

²¹ According to Section 154 of Code of Criminal Procedure (1862) whenever a citizen informs the police, or the police learn otherwise about the occurrence of a cognizable crime the station house officer [SHO] institutes a First Information Report [FIR] which initiates the criminal investigation.

wise, facilitated well construction in Sadhiravandh and Karamta, as villagers, finding it easier to contribute, pitched in.

Access Barriers to Clean Drinking Water

Availability of clean drinking water in Kachchh is bottlenecked by several institutional and economic factors. Perhaps the biggest of them all is the dominant worldview that water needs centralized, techno-bureaucratic management. Such thoughts find their way through to policy and subsequent planning and implementation. Each of these processes fails to factor in actual water demand, existing local management practices and regimes, and often there is a mismatch between real needs and created demand. Also such systems are heavily dependant on non-renewable energy sources, and in principle unsustainable and given the nature of erratic supply, in practice, untenable.

Communities in Abdasa Taluka have for centuries managed to adapt to their environments by developing local coping mechanisms. Such mechanisms are anchored in source sustainability and are flexible. Augmenting such local knowledge systems with modern technical know-how is ipso facto, a best practice.

If water is best managed locally, then institutions at micro, meso and macro levels need to interweave, leaving decision making at the grassroots to users. However such decision-making also needs to be vetted with current scientific knowledge systems. Community based knowledge systems can no longer operate in isolation and in its interactions with the outside world, requires additional external inputs.

Interlinking of institutions is critical for sound water management. Absence of the same has resulted in lacunae in delivery schemes. An inter-institutional dialogic process is a pre-requisite for smooth, efficient and practical implementation of water management programmes in India.

Future Goals and Initiatives of Pani Thiye Panjo Programme

The programme expects that successful outcomes will provide it with greater credibility to continue to get more work in the region (including 3-4 talukas of western Kachchh). This will ensure up scaling of local water management projects across Kachchh, proving once again the practicality of low scale, locally viable management systems.

With structures in place, the next logical step is to look into water quality issues. Tests of drinking water from both traditional and new sources on various parameters have been initiated. On the basis of its results awareness on drinking water quality and safeguards will take place. Strengthening institutional processes such as regular collection of water charges and facilitating women's leadership in water governance is another objective. The programmes will also concentrate on developing and augmenting knowledge at the grassroots. The para engineers (parabs) will play a critical role expanding and strengthening the programmes' work in Abdasa.

The final push of the programme at the village level would be to transforming local sources as the primary source with the external sources only functioning as backup. It also envisages evolving a system of water prices and taxes that will help in the financial sustainability of managing local sources in a competitive manner. Improving the local governance and management of water systems such as efficient tax collection, proper operation and maintenance, and protection of sources with active community participation are the probable end milestones.