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Removing ropes, attaching strings: institutional arrangements to provide water

The case of Dodopani (India) illustrates that governments often attempt sweeping technically oriented changes to improve standards of living without paying adequate attention to the political and institutional context that defines rural power dynamics, interactions and realities. The article argues that the manner in which the government chose to supplement the water supply in Dodopani discouraged villagers from acting together to create collective solutions, spurred the breakdown of indigenous participatory institutions and worsened the drinking water supply for many of the villagers. The primary conclusion of the article is that development projects cannot be successful unless they comprehend issues from the perspective of people influenced by the projects and pay attention to local institutional realities.

Dodopani[1] is located in one of the driest parts of India. There are no rivers or lakes near the village and the 180 households must rely on groundwater to meet their drinking water needs for much of the year. But the village does not possess good groundwater resources either. Until four years ago, the residents of Dodopani drew much of their drinking water from a well dug by the local feudal lord nearly a hundred years ago. The villagers did not have to make any contributions for digging the well, but because the water lay at a depth of nearly 250 ft, they had to create a viable institutional arrangement to draw the water out of the well.

Villagers employed two to three persons each year to draw water and distribute it among village families. These persons, who were hired in informal meetings of all the village households, maintained the equipment (rope, barrels, buckets, pulley) needed to draw the water from the well and were responsible for feeding the animals used to provide the draught power.

The persons drawing the water were paid a fixed amount by each household, usually between Rs. 15.00 to 25.00[2]. The actual amount paid depended upon the number of animals that a family owned, weighted by species, and the number of persons in the household. Rights to draw water from the well were auctioned each year; the winning bid went to whoever was willing to draw the water for the lowest amount. One to two village families earned their livelihoods in this way.

Since there was only one well in the village for nearly 180 households water was scarce, especially before and after the rainy season. Approximately 48% of the households owned personal cisterns (water tanks) in which enough rainwater could be collected to supply their drinking water needs for about two months of the year. But for the rest of the year, all the villagers depended on the well for their drinking water. Very often, water was drawn round the clock to supply village needs and villagers waited in long queues to get their vessels filled.

Villages around Dodopani share its physical characteristics. Their average size ranges from 60 to 300 households. None of them possesses potable groundwater at an accessible depth. The chief occupation in all villages is farming; milk and sale of animals supplement the family budget. Water reigns as the limiting constraint for all economic activities.

Four years ago the government provided Dodopani with a storage tank filled by piped water from a tubewell located six km away. Water from the tank is available to all villagers free of cost. The same tubewell (sunk by the state government and supposed to be maintained and looked after by a government employee) also supplies water to nine other villages in the vicinity--each an average distance of five km from the tubewell. Villagers state that water is now available in more than sufficient quantities for some days in the month. In fact, water overflowing from the tank creates a big puddle for 8 to 10 days in the month. For another 5 to 6 days, water supply is normal, just filling the tank. For approximately 15 days each month, however, water supply is less, often far less than what is needed.

Three important characteristics of water supply to the villages have changed through the provision of a storage tank:

- Prior to piped water supply, each village was responsible for ensuring that water be drawn from the local well. Now, however, the system involves 10 villages and nearly 2,000 households. Any solutions to problems in water supply, therefore, require the coordination of the activities of a much larger number of people.
- The average annual supply of drinking water has increased enormously.
- The variation in the supply of water has also escalated: so much that sometimes during the summer the storage tank in the villages is empty for weeks on end. In an ironical twist, the villagers are then forced to improvise labour gangs to draw water from the old well.

A number of factors explain the variation. The most important reason, however, is that the government employee in charge of operating the tubewell is negligent. Sometimes he forgets to turn on or off the valve on the pipeline carrying water to the village. Sometimes he is on leave without arranging a replacement and if the motor does not work, he does not get it repaired in time. And indeed, there are occasions when he sells off the diesel fuel supplied to run the tubewell motor.

Why are villagers who were earlier willing to pay Rs. 15.00 – 25.00 for their water supply now unwilling to pay Rs. 3.00?

One way to motivate the government appointee would be for each village to select a person who would regularly remind the tubewell operator to turn on (or off) the valve, complain to higher authorities if the fuel for the motor is sold, and so forth--in short: to lobby. In a meeting, the villagers estimated that if each household in the village paid Rs. 2.50 to 3.00 per month to such a person, they would pay the person Rs. 500.00 to 600.00 per month and would be able to ensure a more regular and adequate water supply. They also felt that if each village receiving water under the tubewell programme was willing to appoint such a person, a force of ten persons will be created which could keep the government appointee on his toes.

However, as the situation stands, the villagers are unwilling to pay even Rs. 3.00 to a person to ensure regular water supply for themselves. In a meeting of thirty villagers, one of the wealthiest persons in the village said: 'Why should I pay three rupees for water? It is the responsibility of the government to ensure regular water supply. Not mine'. This statement probably echoed the feelings of a number of villagers present in the meeting. At the same time, many villagers also stated that it was a great pity that the informal village institution which earlier enforced and coordinated the water supply at an average cost of Rs. 20.00 per family, could not collect even Rs. 3.00 from each family today. All villagers agreed, however, that the water supply today was far more erratic than four years ago, especially during their greatest need, the summer.

The puzzle that needs explanation is 'Why are the same villagers who were earlier willing to pay Rs. 15.00 to 25.00 per household for this water supply now unwilling to pay Rs. 3.00 per household?'

Analysis

The government can potentially provide water to village families at a cost much lower than they were incurring under their indigenous institution--Rs. 4.71 per family per month instead of Rs. 15.00 to 20.00. The daily average amount of water available is higher under the current system than in the earlier system. Thus purely in terms of cost per unit of water, the new system is more efficient. However, there is a great variation in the water supply. The villagers have been unable to create a new institutional arrangement that could accomplish this objective. A number of explanations are possible. The following analysis develops two perspectives that capture problematic aspects of the intervention by the government.

The outsider's view of the problem: a sociological analysis

Standard analyses of the problem embodied in the case described above point to bureaucratic corruption and inefficiency, problems in top-down planning and implementation, lack of participation by villagers in externally funded programmes, biases in government projects against the poor and general powerlessness of villagers. Many of these criticisms of government policies are certainly well founded. In the above example, the solution provided by the government, although it was technically more efficient, failed to improve the supply of drinking water for villagers. The solution chosen by the government was in the nature of a "technical fix" where issues of people's participation did not merit any attention.

Thus the villagers in Dodopani and the surrounding villages do not really have much control over government employees. Even if they select some individuals to pressure the tubewell operator, their efforts may not come to anything. The tubewell operator can easily ignore the exhortations from villagers. The villagers suffer a structural powerlessness: they are unable to exercise effective demand and they are unable to create a mechanism through which water from the new tubewell can be distributed over time in an equitable fashion. Since the government provided a new resource without paying any attention to institutional design or issues of people's participation, highly debilitating dependency relationships resulted between the villagers and the government employee. The self-help potential of the villagers has thus been affected adversely.

The situation also illustrates the problem of maintaining infrastructures in villages. Although the provision of infrastructure by governments is fairly efficient, long term operation and maintenance of the same infrastructural goods raise a number of problems. Maintenance necessitates costs that are regularly incurred, requires dedicated employees and implies attention to details if the resources are to function well. Policy-makers did not pay adequate attention to these issues when designing the programme for supplying drinking water. Lack of attention to maintaining the local resources through people's participation results in the types of failures outlined for Dodopani.

An insider's view: analysing institutional incentives and people's motivations

The above analysis, although it captures significant aspects, is incomplete. It examines the problem only from an outsider's perspective and ignores the divisions within the village and the point of view of villagers. For a more complete understanding it is essential to understand how different villagers look at the problem of drinking water supply and the changes following the intervention by the government. Under the old system of water supply, villagers had been faced with the problem of distributing water after the feudal lord had provided the well. Under the new system, villagers are faced with the problem of smoothing the variation in the supply. The two situations present distinct sets of incentives to different groups in the village. The responses they prompt in terms of participation by villagers, therefore, also differ significantly.

Today, not only are the villagers unable to solve the problem that faces them, even the indigenous institution that ensured participation earlier has broken down.

Under the indigenous institutional arrangement developed by the villagers, they could either draw water from the well individually--which would have required large investments from each family in the necessary equipment for drawing the water from such a depth--or they could choose to act collectively. Collective action to draw water from the well required cooperation among village households to reduce costs of selection, coordination, monitoring and enforcement. The villagers chose the collective solution and acted cooperatively. The village assembly selected a person every year who would draw water from the well thus taking care of the selection and coordination. If there were persons who violated rules, the village assembly punished the offenders simply by withdrawing their access to the person who drew water from the well. By creating an effective institution in which all villagers found it to their advantage to participate, the villagers ensured that water from the well would get distributed equitably and at a lower cost than if each individual acted privately.

Today, not only are the villagers unable to solve the problem that faces them, even the indigenous institution that earlier ensured participation has broken down. The water is supplied free by the government to all villagers who are entitled to it equally. None of them can be prevented from using the water. Even if villagers are able to appoint a person to ensure a regular water supply and agree to pay him Rs. 3.00 per household, the benefits would be available to all households. Some households can refuse to pay the contribution, reasoning that the water supplied is free, and therefore they need not pay any money at all to ensure its provision. Since non-payers cannot be excluded from getting water, the problem of exclusion is greater than in the situation prevailing four years ago when water was available only after expending considerable effort. When water was drawn manually, persons not paying their share could be prevented from using the water and this punishment for free riding was extremely effective as there were no alternative sources of water conveniently located.

Governments and people view development from different perspectives.

In addition, today the money needed to appoint a person for regular provision of water will "only" improve the water supply (i.e. make it more regular over time). This will help only a section of the village. All people who have cisterns in their homes can fill them on the days when water supply is abundant in the tubewell tank. Then they have sufficient water for one to two months depending on the size of their cistern. They gain nothing from a regular water supply from the tubewell tank. Therefore they have no incentive to contribute anything towards hiring a person who could attempt to ensure regular water supply. Indeed, whatever they pay towards the salary of such a person will be a pure loss to them.

This is a critical point. Earlier even the persons with cisterns in their houses were locked into the village system because after the rainy season large amounts of water to fill up their personal cisterns were simply not available. They depended on the village well for water after their private tanks were depleted. That supply was quite limited and could not be used to replenish their cisterns. However, today, the government water supply may be irregular but on many days it is far in excess of village daily needs. On the days when there is excess water supply, the villagers owning cisterns can siphon off some of the excess to fill their cisterns.

It is fair then to inquire, 'What are the characteristics of households that possess cisterns?' In general it is the richer villagers who can afford to have private water cisterns in their homes. Thus it is they who have the least incentive for cooperating in regularizing water supply for the village. They, however, also possess the greatest potential influence for pressuring any government employee into maintaining the existing infrastructure efficiently. But because they own personal cisterns, they are effectively uncoupled from the variances in water supply. That the remark in the village meeting about not contributing was made by a wealthy person is significant. There is a relationship between asset holding of village families and whether they have a water cistern in their homes.

Upper caste identity and ownership of large animals (cows and buffaloes) both bear a positive correlation with ownership of drinking water tanks by a household. Sheep and goats, while they are also assets, are owned primarily by the poor. As expected, their ownership is negatively correlated with ownership of cisterns. In the absence of cooperation by the wealthier and presumably more influential section of people in the village, it is clear that the informal institution for managing drinking water supply to the village will break down. In case an arrangement for improving water supply can be made it will also be more vulnerable to non-cooperation by some villagers since there exist possibilities of complementing the public water supply with private sources. In the earlier situation, non-cooperation was less likely because of the scarcity of the water. Even if some people did not cooperate, the rest had no desire to stop cooperating in maintaining and running the arrangement necessary to secure water supply.

Conclusion

The analysis suggests two major lessons. First, in many regions of the developing world, indigenous institutions effectively meet problems faced by people as regards resource needs until governments intervene and begin to "develop" people. This seeming paradox arises from the fact that governments and people view "development" from different perspectives. It would seem that for a government, provision of infrastructure at a large scale, using new technologies, is what constitutes development. For people, it is the actual delivery of services that matters. In a developing society, actual delivery of goods and services may, however, require close involvement of different groups of people in maintenance and upkeep. Otherwise the utility of the infrastructure that is created by external intervention may not be realized. In the case under consideration, although the government provided the infrastructure for meeting the drinking water needs of villagers, lack of adequate attention to institutional incentives for participation meant that not all villagers would benefit from the new water supply. Indeed, some villagers were worse off under the new system.

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The second lesson underscores the fact that depending on the kinds of assets and incomes different groups of people possess, the benefits from a seemingly equitable intervention may still be distributed unequally. Thus although water was available to all villagers equally, those possessing personal cisterns gained greater benefits. Finally, the above conclusions can be reached only after we adopt the point of view of different groups of people in the village--rather than looking at the issue purely as outsiders, or treating the village as a homogeneous unit.

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Endnotes

[1] The real name of the village has been disguised. However, the events as described in the study are real. That is, the description is not a composite of events from several different villages.

[2] A dollar equals approximately Rs. 31.00 at the current exchange rates. At the time the field work was carried out (1990), the exchange rate was closer to Rs. 18.00 for a dollar.

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