

PEOPLE-CENTRED APPROACHES TO WATER AND ENVIRONMENTAL SANITATION

Lessons from market-based approaches to improved hygiene for the rural poor in developing countries

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The countries that adopted the Millennium Development Goals (MDGs) have pledged to halve the proportion of the people without access to water supply and sanitation by the year 2015. Existing strategies have been slowed in closing the gap. Few countries have long-term, financially viable programs and many programs deliver a standard heavily subsidized model, which does not reach many of the poor in the short-term. This paper discusses alternative strategies that focus on effective, low-cost water treatment and sanitation technologies that aim to reach more people for far less cost than conventional approaches. This approach is particularly relevant to the vulnerable groups of the population and poor regions of developing countries. Experience and illustrations come from Cambodia and Vietnam where nearly 80% of the poor live in rural areas and the market for small-scale water supply and sanitation is relatively underdeveloped.

Introduction

This discussion paper places the introduction of low-cost domestic water treatment and on-site latrine technologies in the context of the financial constraints in scaling up the supply of rural water and sanitation in the developing world and the slow progress in meeting the Millennium Development Goals (MDGs). The paper proposes an integrated approach of technological, social and behavioral interventions to maximize impact on health improvements.

In recent years, developing countries such as Cambodia and Vietnam have made enormous progress in improving their water and sanitation infrastructure, however, access to water supply and coverage of sanitary latrines remain low.

In the case of Vietnam, evidence from the Vietnam Household Living Standards Survey 2002 (VHLSS) reveals that rural water supply has progressed far better than rural sanitation as the proportion of households having access to clean water in 2002 is almost as twice the proportion of household having access to hygienic latrines. Additionally, the progress achieved in water supply and sanitation has been disproportionately unfavorable for the poorest segments and ethnic minorities in rural areas. The same source of evidence reveals that the proportion of households in urban areas that have access to hygienic latrines is almost 7 times as the proportion of households that have access to hygienic latrines in rural areas. In terms of income, the proportion of households having access to sanitation in the two poorest quintiles is less than one tenth than the proportion of households having to sanitation in the richest quintile.

Although households may have access to untreated sources of water, access to safe drinking water sources is still significantly low and water-boiling is not practiced universally or consistently in rural Cambodia and Vietnam [Note 1]. In

Table 1. Access to water supply and sanitation in Vietnam (Household Living Standards Survey 2002)

	Access to clean water			Access to hygienic latrines		
	1993	1998	2002	1993	1998	2002
Total	26.2	40.6	48.5	10.4	17.0	25.3
Urban	58.5	76.8	76.3	44.9	60.1	68.3
Rural	18.1	29.1	39.6	1.8	3.4	11.5
Kinh and Chinese	29.0	44.9	52.6	11.6	19.3	27.7
Ethnic minorities	5.3	9.9	12.8	1.1	0.8	4.1
Poorest	9.4	16.1	22.7	1.0	0.6	2.0
Near poorest	16.7	26.9	35.4	1.0	2.4	5.0
Middle	21.3	31.7	42.7	3.3	5.3	10.7
Near richest	27.5	45.5	54.0	7.9	14.5	28.4
Richest	51.3	72.1	78.8	34.8	53.0	69.6

a recent household baseline survey in Cambodia, International Development Enterprises (IDE, 2003) found that 69% of households boiled their water ‘sometimes’ or ‘always’. There is significant space for health improvement through convenient and accessible low-cost domestic water treatment devices. The focus should then be placed on water safety, not just on water supply, which may be a more effective and efficient way to address immediate water and sanitation needs and to improve health while water sanitation and supply infrastructure remains economically unviable

Conventional public finance in the past generally focused on subsidies for water supply infrastructure and public toilets, and grants for urban sewerage and solid waste systems. However, past efforts have reached only a small fraction of the population, concentrated mostly in urban

and densely populated areas, leaving a large proportion of people, mostly the poor in the rural areas, un-served. Water supply infrastructure should not be the immediate priority for areas (such as the upland and mountainous regions) where the ability of the poor to pay for large water supply systems is limited. An alternative solution can be found in low-cost domestic water and sanitation technologies that can meet the basic water and sanitation needs of many more people, in less time and at less cost than infrastructure, assuming that there is water availability.

To maximize access and health impact, a dual approach encompassing both hardware and software components should be pursued. The soft component of an intervention should play a leading role in promoting perception and behavioral change, which is critical for achieving sustained health results. The hardware components of the intervention, such as promoting water and sanitation technologies and infrastructure, are just the starting point and play an important role in facilitating the environment for an improved health situation.

Experiences from Cambodia and Vietnam

In Cambodia, from July 2002 to January 2003, a pilot test was conducted in the western provinces of Kampong Chhnang and Pursat, introducing a low-cost technology for domestic point-of-use water treatment as a tool to reduce the incidence of diseases caused by unsafe drinking water. Ceramic water purifiers (CWPs) were distributed to 1,000 households in twelve villages in order to test the effectiveness of this technology under conditions of household use and appraise consumer acceptance and their exposure to health and hygiene information during the product trials. In addition, incidence of diarrhea in the past 30 days was used to measure health progress in household using CWPs.

In Vietnam, since August 2003, a pilot sanitary latrine intervention is currently being implemented. The intervention entails integrated strategies that promote hygiene behavior change and a portfolio of sanitation technologies in two central coast provinces, Thanh Hoa and Quang Nam. Three different types of latrine technologies were promoted: septic tank, semi-septic tank, and pour-flush. The project targets 54,000 poor households to test whether rural families will invest in latrines when low-cost models are available from local private sector enterprises, and the extent to which targeted promotional campaigns can influence their decision to do so.

Valuable insights can be drawn from these two projects. When innovation exist in the market and they are effectively communicated to the prospect users, the following occurrences can take place:

- A. Consumer research and product development can effectively tailor technologies to the needs of the rural poor
- B. Users willingness to pay and full capital cost recovery for sanitation increase when innovation is communicated effectively and is appropriate for the poor

- C. The combination of “soft” intervention components such as marketing with “hard” components such as technology enhances intervention impact
- D. Small-scale entrepreneurs can effectively respond towards user’s demand driven by profitability.

A. Consumer research in the form of technological adaptation of effective, low-cost options for water treatment and sanitation technologies is critical to meet the needs of the poor

The poor normally represent a market segment in which private investment on research and development would remain financially unrewarded. However, given the restricted cash outlay of poor users, critical factors such as affordability, scalable investment and choice must be taken in consideration in order to outreach to this disadvantaged segment. Low-cost technologies for both domestic water treatment and sanitation have been developed and tested for their effectiveness and consumer acceptance in the rural areas of Cambodia and Vietnam.

The silver-impregnated ceramic water purifier (CWP) treats water meeting and exceeding WHO “low-risk” guidelines for rural water supplies at a cost of US\$5.50, representing a market-leading product in the low-cost domestic purification market. During the pilot testing, households that used the ceramic purifier experienced significant health improvements and savings in both, time and cash expenses, when compared to households that did not use the CWP. Additionally, benefits, such as convenience and good water taste have been highly rated by users.

In the case of Vietnam, technical adaptation of low-cost hygienic latrine technologies has made a significant impact on the sanitation market dynamics catered to the rural poor. Prior to the intervention, few small-scale latrine builders had suitable technical knowledge to supply products appropriate for the poor. Technology designs available prior to the intervention were centrally designed and based on highly subsidized models that did not promote choice nor met the purchasing capacity of the poor. Those unsuitable latrines did not prevent unhygienic and hazardous practices by their users.

Additionally, knowledge about alternative sanitation technologies was scant leaving the poor with limited choices of technologies. To address these challenges, IDE, along with water engineers, health experts, and the private sector, assisted in standardizing a portfolio of technologies that were appropriate to the poor. Cost reduction of sanitation technology was achieved through substitution of materials, improvement in design and scale of operations. Moreover, the concept of scalable investment, that specifically addresses cash constraints, was introduced and promoted for the first time. The project social marketing campaign stimulates demand for a set of 3 different sanitation technologies with prices ranging from US\$35 to US\$90.

The cost of the water purifiers and the latrines are an af-

fordable choice for the rural households in Cambodia and Vietnam, representing a small percentage of the annual family income of 5 and 3 percent, respectively.

B. User willingness to pay and capital cost recovery for sanitation increase when innovation is communicated effectively and is appropriate for the poor

Experiences applying the same marketing strategies to the promotion of hand pumps implemented in Vietnam during the period 1994-2003 showed that a total of 84,000 unsubsidized hand pump were purchased by rural families from local small-scale private sector dealers. The hand pumps are affordable and deemed an appropriate investment by rural households. These figures represent a level of direct cash contribution of \$2.5M (millions) from local households. The marketing and promotion budget was less than \$0.5M (millions), indicating a fivefold leveraging of local resources for market development.

The sanitation project currently being implemented by IDE in Vietnam to promote latrine coverage in rural areas also demonstrates the degree of ownership from the local community as a result of market value. At the time of writing this paper, a total of 2,328 latrine investments have been made by rural households during the first 6 months of the project implementation. At an average cost of \$60 per latrine, the financial contribution from household represents a total of US\$140,000 for a project cost of approximately US\$94,500 [Note 2]. The leveraging ratio for this initiative has not achieved the same level as that of the hand-pump project, considering the fact that the sanitation initiative is still in its early stages of implementation.

The experiences with latrines and hand-pumps in Vietnam have shown that the poor are willing to bear 100% of the capital cost of technologies when prices are within their spending range. A financially leveraged intervention with end users enables public practitioners to re-direct resources strategically in areas of investment that the market would not reward, such as, research and development and consumer understanding. At the same time, a financially leveraged intervention with end users allows public practitioners to reach an increased number of poor households with the same level of investment. Experience has shown that user willingness to invest increases when consumers are informed of the range of options and when they understand and appreciate the value and benefits of these products.

The mentioned examples illustrate the level of “market response” from users and thereby proving the high degree of ownership from the local community towards the initiative. In both illustrations, the household level financial contribution exceeded the direct investments from the project to develop the markets.

C. The combination of soft intervention component such as social marketing with “hard” component such as technology enhances intervention impact

Social marketing can be an effective tool for promoting behavioral change and for stimulating demand for household technologies. Having appropriate technologies are just the starting point in achieving improved health status as they simply facilitate the environment for hygienic practices. However, the task is not done unless the target users understand the fecal-oral contamination route and how diseases are spread. Thus, effective education campaigns play a pivotal role in sustaining the health impact. Additionally, effective communication should be based on a clear understanding of consumers and should appeal to their underlying aspirations, which are often related to benefits such as social status and convenience.

A combination of promotion strategies can maximize the impact of the messages. While complex communication may be well accomplished through promoting face-to-face interaction amongst health practitioners, the private sector and users; scaled mass communication can be extremely efficient in achieving widespread household coverage. Key drivers of success for effective communication have proven to be: creating systematic consumer research, identifying marketing target segments, developing a variety of ways to reach the target audience in the form of a “marketing campaign”, appealing to rational and emotional benefits creatively, and promoting linkages between the private sector and prospect users.

An effective intervention must take the market creation investment into consideration. Experiences with hand-pumps interventions in Vietnam show that nearly 80% of the total program budget has to be allocated for financing a marketing campaign to fuel demand for the services and technologies and promote good hygiene habits.

Initial evidence of the sanitation program in the central coast provinces of Vietnam suggests that the communication and promotion efforts have been significantly effective in both modifying initial sanitation behavior towards improved hygiene practices and changing target audience’s perception and knowledge concerning sanitation in the project areas. Access to hygienic latrines has improved dramatically during the project the 6 months implementation period with a 25 percent increase of households having hygienic latrines in the target areas. This number represents a six-fold increase in the rate of constructions of latrines as compared to the rate of latrine construction before the project implementation.

D. Small-scale entrepreneurs can effectively respond to demand driven by profitability

The sanitation private sector can satisfy demand that cannot be met by public services and in some cases can present several advantages when compared to centrally planned, subsidized programs. The hand-pump intervention in Vietnam has demonstrated that small scale drilling teams can effectively take

part in the initiative in promoting and distributing technologies for the poor. Small-scale distribution agents can inject working capital into the commercial transaction process. Key to achieving sustainability is the promotion of market competitiveness. By empowering numerous entrepreneurs IDE promoted quality of after-sale service and availability of spare parts for the hand-pump market. In the case of the sanitation initiative in Vietnam, specialization of functions of the value chain participants within the latrine sector has resulted in cost efficiencies in the range 20-30 percent that have been directly transferred to the poor users.

Conclusion

Conjunctive efforts of water treatment and sanitation technologies introduced in Cambodia and Vietnam provide opportunities for a combined low-cost water sanitation and water purification package that can be promoted along with behavioral change. IDE in Southeast Asia is looking to build on its experience and thereby reach disadvantaged rural areas. The initiative will aim to diversify efforts from the current infrastructure-focused initiatives targeted to urban centers and small townships. The project will address the needs of the rural disadvantaged people through commercially viable technologies that respond to the specific requirements of the poor.

To meet the MDGs, public practitioners in the water and sanitation sector should consider alternative choices such as on-site water treatment of existing supplies over highly subsidized, infrastructure-based models for water and sanitation development in rural areas. Field experience from Cambodia and Vietnam suggests that alternative household-level solutions can be an effective and achievable transition strategy until such time as more sophisticated community-level systems become viable. Market-based strategies can result not only in increased sustainability but also in enhanced efficiency in the utilization of public resources. A demand-oriented methodology for achieving water and sanitation can enable practitioners to leverage investments while reaching market segments that are currently underserved in the development process.

References

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Note/s

1. Safe water is defined as water coming from pipes, public taps, tube-wells with hand-pumps, protected wells and springs.
2. Direct resources for market development presupposes the funds necessary to replicate the here exposed approach such as marketing and promotion, capacity building and monitoring and evaluation. In other words direct project resources exclude funds invested on research and development, travel and administration.

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