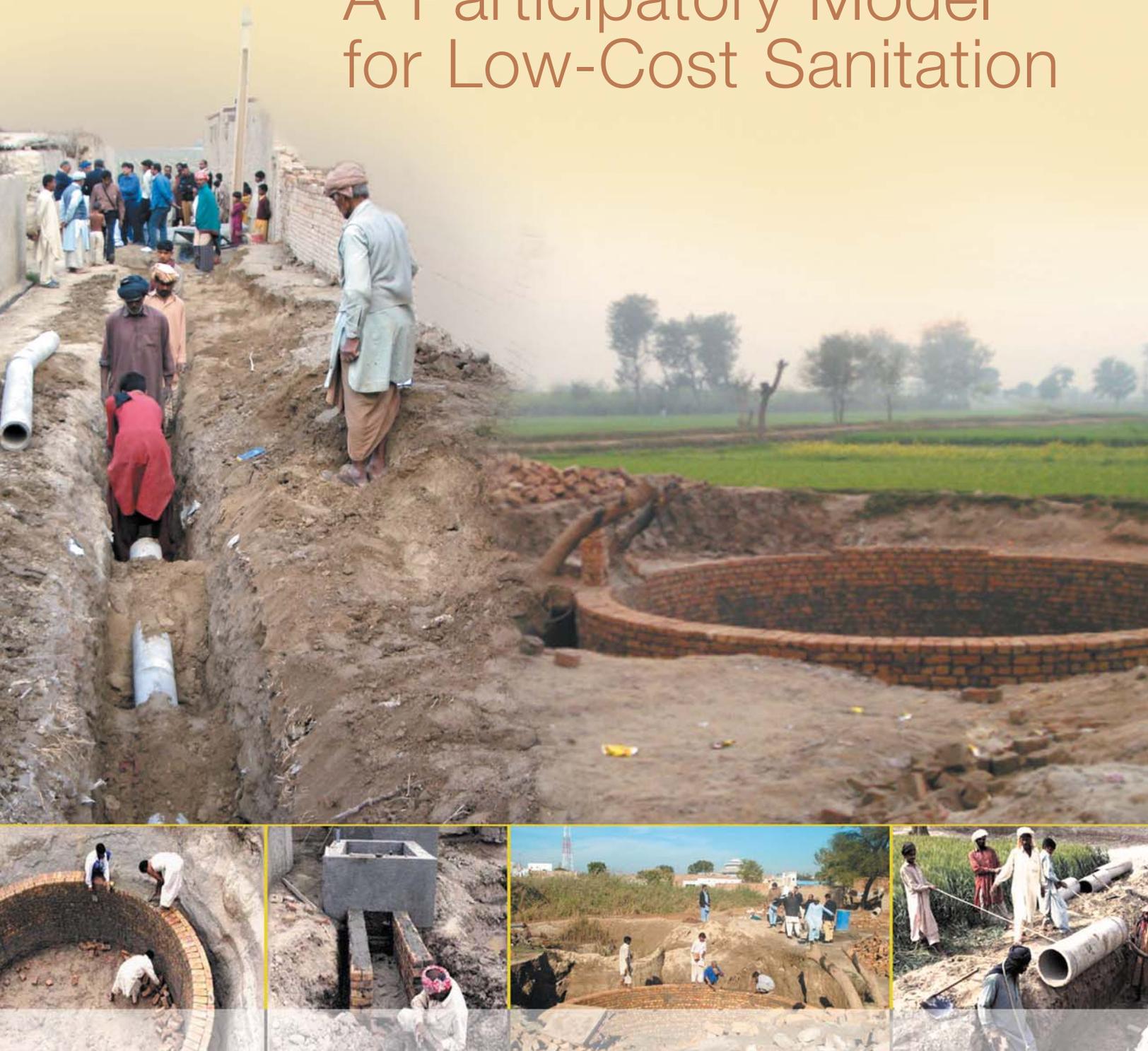


The Lodhran Pilot Project Implementation Toolkit

A Participatory Model for Low-Cost Sanitation



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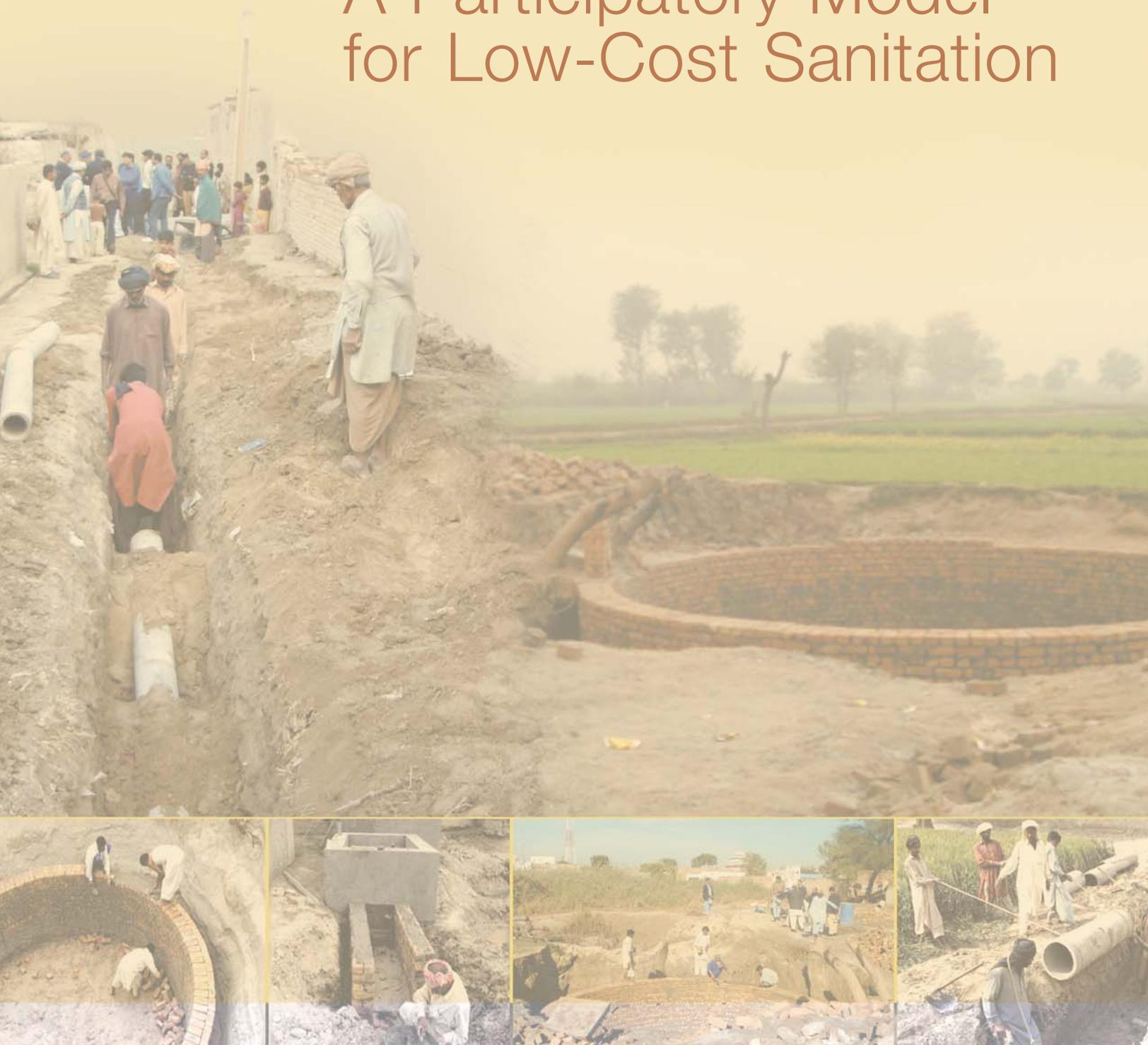
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Contents

Preface	5
Acronyms and Abbreviations	6
Executive Summary	7
Project Outline	8
The Context	13
Progress in South Asia	14
Local Government Ordinance	15
Tool One: The Model	16
The Participatory Development Model	16
The Village Sanitation Committee: A Vehicle for Change	18
Ensuring Financial Transparency	20
Tool Two: Social Mobilization	21
The Social Mobilizer: Creating the Space for Change	21
The Role of Women	22
Agents of Change	23
Tool Three: Innovating and Experimenting	27
The Technical Process	28
Technical/Social Survey (Mapping)	28
Estimation of a Sanitation Scheme	28
House Connection	28
Execution of Sewer Lines and Manholes	29
Disposal Station	29

Tool Four: Building Capacity	33
Outlining the Capacity-Building Process	33
Training Engineers	33
Training the Community	34
Training Local Representatives	35
Training Masons	35
Training Sewer Men and Sanitary Workers	35
Appendix A: Agreement between Village Sanitation Committee and the Lodhran Pilot Project	37
Appendix B: Agreement between Landowner and Village Sanitation Committee (on Affidavit)	39
Appendix C: Stock Register	40
Appendix D: Details of Estimate	41
Appendix E: Abstract of Costs	42
Appendix F: Completion Proformas	44
Completion Proforma—A	44
Completion Proforma—B	45
Appendix G: Social Survey: Summary	46



Preface

The primary aim of this study is to draw out knowledge, experience, and lessons from the best practice of the Lodhran Pilot Project (LPP), and document this learning in a user-friendly format to promote easy replication and scaling up. The findings of the study have been compiled into a toolkit to provide step-wise guidelines to practitioners, politicians, technocrats, communities, social mobilizers, and local governments.

In Pakistan—as in most developing countries where resources are scarce, hygiene awareness low, and knowhow limited—sanitation remains a relatively neglected sector. Sanitation is a concern for every household in society that requires a partnership solution between communities and the local governments to be sustainable. This is particularly so in peri-urban areas which are large enough to require sanitary networks and collective management but small enough that urban complexities have not diminished the effectiveness of community partnerships.

Traditionally, in Pakistan, sanitation projects have remained supply driven and infrastructure focused. As a result, even after an investment of billions of rupees, access to safe sanitary facilities and its ultimate health impacts are limited. Government spending has increased from 0.11 percent of Gross Domestic Product (GDP) in 2001–02 to 0.19 percent in 2006–07. This is inadequate in a country where the cost of treating only diarrhea and typhoid is estimated to be 1.81 percent of GDP (World Bank), with a strong positive correlation with sanitation. In Pakistan, 60 percent of total child mortality cases are caused by water- and sanitation-related diseases (USAID); 50 million people still practice open defecation (Joint Monitoring Programme 2008) mostly in rural and peri-urban areas. Merely building toilets is not enough to become open defecation free; the key is to raise awareness and change communities' behavior. The Lodhran Pilot Project is a successful model where raising awareness, motivating people, promoting collective outcomes, and changing behavior are essential building blocks of a well-functioning, community-owned and managed, sanitary system.

Marked rural-urban variations occur in sanitation. For instance, in 2006, while 94 percent of the urban population had improved or shared access to sanitation, only 45 percent of the rural population had such access. In Pakistan, the culture of the masses is still largely rural despite strong urbanization. Many latrines are not sanitarly safe in rural areas, mostly due to a lack of proper disposal mechanisms—negatively impacting larger community efforts. The LPP model seems a possible answer—being a low-cost, component sharing, community-managed, 'cradle to grave' approach. The LPP component sharing approach can also be a plausible model to address service provision of water and sanitation in slums such that service providers could provide bulk services as 'external component' and slum dwellers could lay piping networks as 'internal component'—thus easily separating services from tenure issues.

This toolkit has been designed to be a handy guide for a diverse group that would be interested in replication or scale up. It provides strategic insights into political realities and social triggers to motivate communities at large for thinking, planning, and adapting collectively. In addition to technical implementation details and ideas on a socially enabling framework, the toolkit also identifies critical elements for cultivating community leadership, and essential factors for harmonizing community ownership and entrepreneurship.

With a bleak sanitation outlook in Pakistan, the challenge of addressing sanitation is more of a hygiene and behavior issue than that of infrastructure and investment. It lies more in the domain of individuals, households, and communities rather than of donors and governments. The LPP approach revolves around this and hence stands out as an adoptable and sustainable framework for peri-urban areas, slums, and rural settings.

Farhan Sami

Acronyms and Abbreviations

ADB	Annual Development Budget
CBO	Community-Based Organization
CCB	Citizen Community Board
CDG	City District Government
CLTS	Community-Led Total Sanitation
EDO-CD	Executive District Officer—Community Development
FUI	Field Unit Incharge
GDP	Gross Domestic Product
HRD	Human Resource Development
JMP	Joint Management Program
JSDF	Japan Social Development Fund
Katchi abadi	Translates as ‘squatter settlement’
LGO	Local Government Ordinance
LPP	Lodhran Pilot Project
MDG	Millennium Development Goals
MERD	Monitoring, Evaluation, Research, and Development
MTDF	Medium Term Development Framework
Nallahs	Translates as ‘natural drains’
NGO	Nongovernmental Organization
NWFP	North West Frontier Province
OPP	Orangi Pilot Project
OPP-RTI	Orangi Pilot Project—Research Training Institute
PHED	Public Health Engineering Department
PRSSP	Participatory Rural Sanitation in Southern Punjab
SACOSAN	South Asian Conference on Sanitation
SKAA	Sindh Katchi Abadi Authority
TMA	Tehsil Municipal Administration
ToR	Terms of Reference
UNICEF	United Nations Children’s Fund
VSC	Village Sanitation Committee
WES	Water and Environmental Sanitation
WHO	World Health Organization

Executive Summary

The Lodhran Pilot Project (LPP) was initiated in 1999. The first LPP interventions involved the construction of low-cost sewerage networks in towns in southern Punjab. Now in its 10th year of operations, the project has successfully demonstrated—through on-ground implementation—a low-cost, community-owned rural sanitation model based on a participatory approach (component sharing). The LPP has till now adapted its approach for use in small, rural communities in the districts of Lodhran, Rahim Yar Khan, Kasur, and Bahawalpur.

The LPP has based its participatory low-cost sanitation model on the component sharing approach developed earlier by the Orangi Pilot Project. In this model, the sanitation project is divided into (a) *internal* components: community responsibility (sanitary latrine, household connection, and lane sewer); and (b) *external* components: external agency (government, NGO, and so on) responsibility (main sewers and treatment or disposal works). Rather than sharing the costs of the total system, the responsibility for components of service provision is clearly allocated between the stakeholders involved. This creates a sense of ownership as community contributions are substantial, often approaching 50 percent of the total scheme cost.

The LPP found space for expanding its work within the political context of the new local government system after 2001, when the responsibility for local sanitation and hygiene service delivery was vested with the tehsil municipal administrations (TMAs). Human and financial resources remained obstacles to deliver fully.

Social mobilization was used as both an approach and a tool that enabled people to organize for collective action by pooling resources and building solidarity, which was required to resolve common problems and work towards community advancement. Village Sanitation Committees became a viable platform for facilitating citizen participation together with the social mobilizer, attached with each field unit of the organization.

The LPP team innovated with the technical design of its sanitation model to reduce costs, and attain higher working efficiency to achieve better environmental results such as wastewater reuse.

The rapid expansion of the project in southern Punjab has been due to the dynamism of the model under varying political, socioeconomic, and physical landscapes. The project has now gained added significance since the recently notified national and provincial sanitation policies, wider exchanges via SACOSAN, and the government's drive to meet its global commitments, such as the Millennium Development Goals (MDGs).

The success of the LPP has attracted more donors and its model has impacted even governments' policy as the provisions made in the recently promulgated national and provincial sanitation policies demonstrate.

Project Outline

The Lodhran Pilot Project (LPP) that was inspired by the experience of the famed Orangi Pilot Project (OPP) (see Box 1), the brainchild of Dr. Akhtar Hameed Khan (Late), is now in its 10th year of operations. In its early years, the project demonstrated—through implementation on the ground—a low-cost, community-owned rural sanitation model based on a participatory approach (component sharing) in Lodhran district, Punjab. The LPP received a significant financial and credibility boost when the World Bank, financed by the Japan Social Development Fund (JSDF), awarded a \$1.1 million worth project—Participatory Rural Sanitation in Southern Punjab (PRSSP)—to the LPP for expanding its model in 100 villages in southern Punjab, with an added focus on enabling the tehsil municipal administrations (TMAs) for public-private partnership, training, capacity building, and communication.

The expansion of the LPP from a handful of municipalities and villages in Lodhran district to over 50 villages spread over five districts in southern Punjab points to the viability and dynamism of the model in terms of its replication under varying political, socioeconomic, and physical landscapes. A promising potential for upscaling the LPP and replicating it further is clearly indicated, even beyond national boundaries. There is, however, an urgent need to document this participatory model in the form of a toolkit that can act as a reference for community-owned rural sanitation in its entirety—detailing the model, depicting

how it interfaces with the various actors, demonstrating lessons learnt, and exhibiting the ingredients required to successfully initiate and sustain the model elsewhere.

The LPP was started in 1999 under the initiative and leadership of local agriculturist and philanthropist Mr. Jahangir Khan Tareen with significant technical assistance and support from the OPP. On the request of Mr. Tareen, Dr. Khan (Late) visited Lodhran in 1999 and later deputed one of his close associates in OPP, Hafeez Arain (Late), to help in facilitating the initiation of the LPP endeavor.

The first LPP interventions involved the construction of low-cost sewerage networks in towns in southern Punjab, with the first lane sewer being laid in Agriculture Bank Street in Lodhran City after a six-month process of social mobilization. The LPP has since evolved and adapted its approach for use in small, rural communities in the districts of Lodhran, Rahim Yar Khan, Kasur, and Bahawalpur.

A typical village in southern Punjab consists of several hundred closely spaced households, each housed within a walled compound, most of whom discharge wastewater and latrine wastes directly into the street or open drains nearby. As a result, the streets are often inundated with foul smelling wastewater excreta, providing an ideal breeding ground for mosquitoes and the resultant diseases.

Vision: To create a sense of belonging among the communities using a participatory approach to propagate sustainable and equitable development.

The LPP took up the challenge of changing this scenario.

The LPP set the following objectives:

- Support the local community in the provision of basic necessities.
- Empower communities in solving their problems with their own resources.
- Build capacity of the communities in the operation and maintenance of local sanitation projects.
- Provide liaison between development institutions and communities, because the need was felt for greater coordination.
- Create environment-friendly neighborhoods through awareness education and technical information both for public and institutions.
- Create attitudes favorable for community participation at local levels.
- Help institutions—for instance, government development bodies—ensure better service delivery.

The LPP gained critical political support from local government representatives—the local TMA took up the model enthusiastically and the LPP office was housed within the premises of the TMA of Lodhran district. The LPP based its participatory low-cost sanitation model on the component sharing approach developed earlier by

the OPP. In this model, the challenge of providing sanitation infrastructure is divided into *internal* components (sanitary latrine, household connection, and lane sewer) and *external* components (main sewers and treatment/disposal works). Rather than sharing the costs of the total system, the responsibility for components of service provision is clearly allocated.

The LPP team identified three main parameters that impacted the cost of a scheme, namely (a) material cost; (b) labor cost; and (c) supervision and overhead expenditure. The component sharing model is designed to rationalize costs, and encourage cost efficiency and a sense of ownership as community contributions are substantial, often approaching 50 percent of the total scheme cost. A viable platform for facilitating citizen participation was created in the form of the Village Sanitation Committee (VSC).

The LPP team innovated with the technical design of the sanitation model to reduce costs and attain higher working efficiency. The team also decided to close the loop—sewage collection to engineered treatment/disposal—to achieve better environmental results. It would also be an added incentive for the community to invest by offering the option of wastewater reuse in areas facing acute water shortage.

The external financing for LPP sewerage schemes has come from a number of sources. In the initial urban schemes, the respective municipal committees financed the external works from their development budgets. In the first 18 rural schemes, the LPP's founder and Chairman, Mr. Jahangir Khan Tareen, financed the external works.

Box 1: The Orangi Pilot Project

Orangi is Karachi's largest *katchi abadi* (squatter settlement) with a population of 1.2 million. The Orangi Pilot Project (OPP) was established here in 1980 by Dr. Akhtar Hameed Khan (Late), the renowned Pakistani social scientist. The OPP is considered a research institution whose objective is to analyze outstanding problems of Orangi, and discover viable solutions through action research and extension education. These solutions are then applied, with modifications where necessary, to other settlements and become part of state policies. The OPP does not fund development but, by providing social and technical guidance, it encourages the mobilization of local resources and the practice of cooperative action.

The Low Cost Sanitation Program, managed by the OPP's Research and Technical Institute (OPP-RTI) enables low-income families to construct and maintain an underground sewerage system with their own funds and under their own management. For this program, the OPP provides social and technical guidance (based on action research), tools, and supervision of implementation. The OPP's work has shown that people can finance and build underground sanitation in their homes, lanes, and neighborhoods. This development is called internal development by the OPP. However, people cannot build external development consisting of trunk sewers, treatment plants, and long secondary sewers. This only the state can provide.

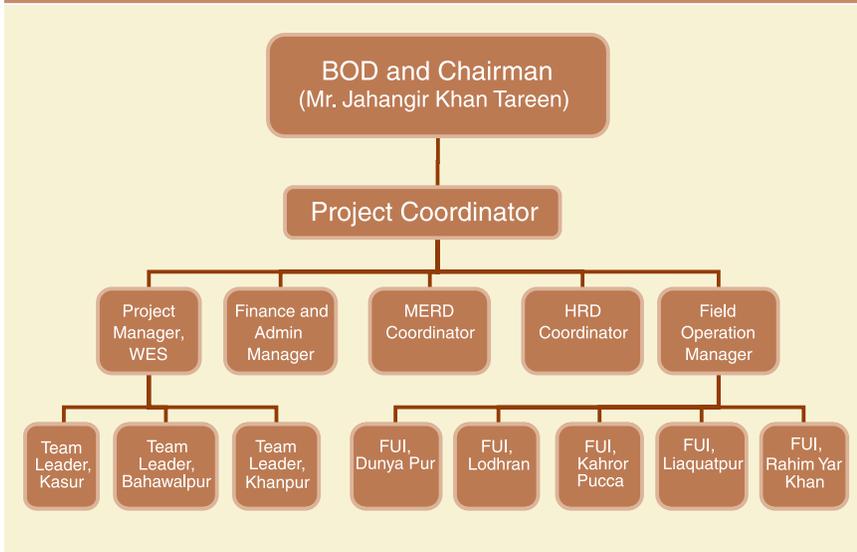
In Orangi, people have invested Rs. 78.79 million¹ on internal development (including 405 secondary sewers) in 5,987 lanes consisting of 90,596 houses (there are 104,917 houses in Orangi). The state would have spent over six times to do this work. The program is being replicated in seven cities of Pakistan by NGOs and CBOs and in 49 settlements in Karachi by the Sindh Katchi Abadi Authority (SKAA). The OPP concept has been accepted by the City District Government Karachi and SKAA, and is being applied to development plans.

Increasingly, the OPP is getting involved in policy issues and promoting macro-level solutions, based on its models. This has led the OPP to document more than 300 *katchi abadis* in Karachi along with physical and economic proposals for upgrading the *nallahs* (natural drains) in Karachi through which most of the city's sewerage flows. For this work, the OPP trains young people from low-income settlements who, after their training, become not only an asset to their community but also a part of a larger movement to create self reliance, freedom from foreign loans and grandiose projects, and a more equitable relationship between low-income communities and government agencies and their plans.

Source: Arif Hasan. 1999. *Understanding Karachi: Planning and Reform for the Future*.

¹ US\$1 = PKR 80.67 (as of April 16, 2009). Conversion rates are from <http://coinmill.com/>; all conversions in the text are approximations.

Figure 1: Organizational Chart



In the meantime, a new system of local governance was introduced in the country in 2001, with the intentions of devolving and decentralizing services at the grassroots level. In November 2004, the World Bank approved a grant of US\$1.1 million, financed by the JSDF to the LPP. The PRSSP project identified for itself the following core objectives:

- Provide basic services to poor and vulnerable communities (expanding the spread of the project/model to 100 villages in southern Punjab).
- Enable TMAs for public-private partnership.
- Reform public policy towards institutionalization of the allocation of provincial and federal funds for similar approaches to participatory development.

- Reform the design of donor-funded projects through the demonstration of public-private partnerships.

The PRSSP project is currently under way, and has the following four core components:

Component A: Implementation of 100 community-based sanitation schemes through a participatory approach.

Component B: Training, capacity building, and advocacy for participatory approach.

Component C: Curriculum development and implementation of module on participatory approach.

Component D: Implementation of information, education, and communication material.

The success of the LPP has attracted other donors. Three TMAs have

financed rural sewerage schemes on the pattern of the LPP through Citizen Community Boards (CCBs), and the United Nations Children’s Fund (UNICEF) is financing 30 LPP rural sewerage schemes through other TMAs in Punjab. The LPP is working with UNICEF Punjab under the Water and Environmental Sanitation Program (WES) and the Punjab Program for Community-Led Total Sanitation (CLTS) in the districts of Rahim Yar Khan, Bahawalpur, and Kasur. Social Mobilization Units (SMUs) have been set up in each TMA office and the TMAs have identified schemes. For project financing, 80 percent share will come from TMA budgets for at least 10 village sanitation schemes through the CCB conduit and the LPP model will be adopted. Technical assistance in survey, mapping, documentation, and other project-related activities will be provided to the TMAs by the LPP (staff salaries of LPP staff and logistical support for the project being provided from UNICEF funding).

Ever since the inception of the local government system, the LPP has been acting as a supporting and teaching institute for TMAs and has provided research opportunities to a number of academic institutions and government agencies. Its model has impacted government policy as is indicative from the provisions made in the recently promulgated national and provincial sanitation policies.



Table 1: Progress of Participatory Rural Sanitation in Southern Punjab (PRSSP)

COMPONENT A: Execution of Subprojects					
Field unit	Estimated target	Subprojects			Total revised target
		Completed	Near completion	Initial stages	
Dunya Pur	34	24	11	3	38
Lodhran	33	22	3	5	30
Kahrur Pucca	33	9	12	12	33
Total	100	55	26	20	101
COMPONENT B: Capacity Building and Advocacy					
Description of component	Target		Achievement		
Capacity building of VSC	101		79		
Training of associate engineers	150		152		
Orientation training of TMAs	20		17		
COMPONENT C: Module Development for Curriculum, Participatory Development					
Description of component	Target		Achievement		
Workshops in GCT in southern Punjab for third-year civil students	6		4 (5th in progress)		
COMPONENT D: Monitoring, Evaluation, Research, and Documentation					
Description of component	Target		Achievement		
Quarterly newsletters	12		10 (11th in progress)		
Annual reports	3		2		
Documentary	1		1		
Research report	1		In process		

BOX 2: Rationale for a Toolkit: Spreading the Success

The toolkit charts a storyline of the Lodhran Pilot Project (LPP) that is woven around the roles and actions of the three main project proponents:

- The Lodhran Pilot Project;
- The community; and
- The government, that is, TMAs.

The project model has been interpreted and explained in terms of its political, administrative, technical, socioeconomic, and environmental content and resulting implications. The LPP storyline toolkit has been broken down into sections that deal with important project-related matter:

- The LPP model;
- Role of the community;
- Role of social mobilizers;
- Technical details or innovations;
- Tools for monitoring and evaluation; and
- Skills transfer, capacity building, and so on.

Some elements critical to the success of the project also find detailed attention. These include:

- Technical details that include pioneering technical innovations.
- Financial, administrative, and project documentation tools and mechanisms put in place to ensure effective monitoring and evaluation, and financial transparency.
- The agents of change that have emerged to mobilize communities have been identified and profiled to stress the importance of community-based social mobilization and the importance of communities taking ownership of the project to ensure long term sustainability of actions.

Other than the project proponents, the toolkit is also useful for prospective donors, as a handy Guidebook, as they assess the merits or demerits and strengths or weaknesses of projects that require external support and funding in the relevant sphere of work.

As the main objective behind the preparation of this toolkit is facilitation in the project's upscaling and replication, the document does not cover within its scope a wide-ranging and in-depth assessment or evaluation of the project. Instead, it focuses on the model itself and highlights its adaptability and social dynamism. A model that is static or unbending does not lend itself to replication in scenarios that differ in certain respects to its own. The LPP has to therefore be recognized as a model capable of not only adapting to but also assimilating change. The toolkit talks about change—in behaviors, attitudes, and knowledge skills. Successful organizational initiatives create the need for change—a challenge for the leaders of an initiative is to provide people with the tools to embrace it. The toolkit is designed to help project leaders carry out initiatives that require changes in the way people work or in the culture in which they work. Within these parameters, however, the tools are adaptable to a wide range of endeavors.

The toolkit therefore aims to find that delicate balance, while journeying through the LPP experience, which marks the boundary line between success and failure, as well as between feasibility and nonfeasibility, in implementing the LPP model.

"The LPP established itself on a sound footing as it emerged from within the community, having good political support. Its model was owned by the local government with some of the original LPP staff also being deputed to LPP from the local government."

*Perween Rahman, Director,
the Orangi Pilot Project—
Research Training Institute*

The Context

Before journeying through the LPP experience, it is important to discuss and highlight the political and physical context within which the Lodhran Pilot Project (LPP) model originated, gained prominence, and is currently operating, to understand and comprehend better its rationale and contribution.

Innovative policy-based financial incentives are encouraging dramatic shifts in local government approaches to the development and delivery of sanitation and hygiene services in Pakistan. Following the inclusion of an outcome-based financing framework in the 2006 National Sanitation Policy, provincial governments are in the process of developing detailed strategies and implementation programs to achieve open defecation-free, litter-free, and foul water-free outcomes at the community and local government levels. This is different from the past where, in the last five years, the government has invested less than 0.2 percent of its Gross Domestic Product (GDP) in the water supply and sanitation sector, with the emphasis being on building infrastructure rather than delivering a safe and sustainable sanitation service. Previous sanitation investments in Pakistan have favored capital-intensive works (for example, trunk sewers and open drain systems) that have failed to stop the root problems of open defecation and unsafe disposal of effluents (see Box 3). Where facilities have been built, the arrangements for operation and maintenance are rarely adequate; unsurprisingly, these facilities often fall into disrepair, leaving many users without adequate sanitation.

Box 3: Open Channel Drains: Time for Change

Open channel drainage systems are designed to remove storm water and household wastewater (sullage) from the domestic environment. Open drains can help prevent the formation of stagnant pools of poorly drained storm water and wastewater, removing breeding sites for disease vectors, lowering the risk of contamination of water supplies, and preventing the flooding of homes and streets. However, if pour-flush latrines or septic tanks are connected directly to the drains—a commonplace practice in many parts of Pakistan—then, rather than mitigating many public health risks, these open drains can actually present a serious risk to public health.

The WHO-UNICEF Joint Monitoring Program (JMP) for Water Supply and Sanitation² states that flush or pour-flush latrines qualify as improved sanitation facilities if they are connected to piped sewers, septic tanks (with safe disposal) or latrine pits. If the excreta is flushed into a street, yard, plot, open sewer, ditch, drainage way or other location then the latrines are considered unimproved sanitation facilities as they do not prevent human contact with human excreta. Put simply: connecting a latrine to an open drain is no different than defecating directly into the drain! Most open drains are not designed to carry sewage solids; hence, solid excreta tends to settle out in the drains, leaving the fresh excreta lying in the domestic environment. When these drains contain latrine and septic tank discharges, blockage results in raw sewage overflowing into the street, with dire consequences for the public health of local residents and children.

Bad experiences with conventional sewerage networks in Pakistan have led many sector stakeholders to conclude that, even when affordable, sewers are not appropriate in peri-urban or rural community contexts. Conventional sewerage systems usually require expensive pumping and regular maintenance, which few local governments or communities in Pakistan have been able to sustain.

The 2006 National Sanitation Policy states that only 42 percent of the population has access to improved sanitation facilities. At least 70 million people in Pakistan defecate in the open; another 20 million use unsafe latrines that either discharge excreta into the open (for example, pour-flush latrines connected to open drains), or

do not separate excreta from human contact (for example, bucket and open pit latrines). Sewerage and sewage treatment are almost nonexistent outside of a few big cities, with discharge of untreated sewage and wastewater into natural water bodies resulting in severe contamination and pollution.

² WHO. 2006. *Meeting the MDG Drinking Water and Sanitation Target: The Urban and Rural Challenge of the Decade*.

Progress in South Asia

Evolving approaches to rural sanitation in India and Bangladesh have led to major changes in regional policy, practice, and priority. The success of the Total Sanitation approach, originally developed by nongovernmental organizations in Bangladesh, is driving a shift from subsidy-based latrine provision towards the promotion of open defecation-free communities.

The 2003 South Asian Conference on Sanitation (SACOSAN-I) in Dhaka and the second South Asian Conference on Sanitation (SACOSAN-II) in Islamabad in 2006 have led to accelerated progress in sanitation and hygiene improvement through a people-centered, community-led, gender-sensitive, and demand-driven approach with emphasis on the elimination of open defecation and other unhygienic practices.

Box 4: 2006 National Sanitation Policy

The National Sanitation Policy aims to meet the 2015 Millennium Development Goal of halving the proportion of people without sustainable access to basic sanitation, through the creation of an open defecation-free environment with safe disposal of liquid and solid waste, and the promotion of healthy and hygienic practices.

The Policy encourages the promotion of innovative new approaches such as Community-Led Total Sanitation (CLTS) and component sharing, and also proposes a system of outcome-based local government incentives intended to accelerate progress:

- Fiscal rewards for open defecation-free tehsils or towns (complete eradication of open defecation and no effluent releases into open drains or open spaces).
- Fiscal rewards for 100 percent sanitation coverage (open defecation-free; plus 100 percent sanitation coverage in households, schools and public areas; litter-free environment; plus eradication of foul water).
- Competitions, with awards for the cleanest tehsils or town in each province (judged by the highest standards in environmental 'quality of life' outcomes).
- Competitions, with awards for the cleanest industrial estate or cluster in each province.



Local Government Ordinance

One of the key recent institutional changes in municipal services in Pakistan is the devolution of authority under the 2001 Local Government Ordinance (LGO). The LGO created autonomous tehsil municipal administrations (TMAs) and city district governments (CDGs), and made them exclusively responsible for municipal services in both the rural and urban areas of their jurisdictions. Furthermore, the new local government bodies are led by an elected official (tehsil nazim/mayor and city nazim/mayor) rather than a bureaucrat.

This radical institutional arrangement removes the rural-urban divide: centralizing urban services from urban local councils to the tehsil (that is, the subdistrict) level; and decentralizing rural services from the provincial line departments (for example, Public Health Engineering Departments) to the TMAs. There has been some resistance to this transition—many reforms have not yet been put into practice, and most TMAs are still struggling to meet their responsibilities. To make public participation more meaningful, an effort has been made to institutionalize their role with the formation of CCBs (see Box 5).

However, while the responsibility for sanitation and hygiene policy remains with the provinces, the responsibility for local sanitation and hygiene service delivery is mostly vested with the TMAs that rely on sector projects or support from national and provincial legislators

Box 5: Citizen Community Boards: An Experiment in Social Mobilization

Chapter X of the Local Government Ordinance provides for setting up Citizen Community Boards (CCBs) for energizing the community to develop and improve service delivery through voluntary and self help initiatives. The law provides legal cover to the formation of CCBs to enable citizens to actively participate in the development and nondevelopment activities of local governments. Twenty-five percent of the Annual Development Budget at the district, tehsil, town, and union levels has been earmarked for CCBs. The CCBs are voluntary, nonprofit associations and are registered with the Executive District Officer–Community Development (EDO–CD). The CCBs can engage in the following kind of activities:

- Develop, manage, and maintain public facilities.
- Identify development and municipal needs and mobilize resources.
- Help persons with disability, destitute people, widows, and families in extreme poverty.
- Establish farming, marketing, and consumers' cooperatives.
- Form stakeholder associations (for example, parent-teacher associations or patient-hospital associations).
- Reinforce the capacity of monitoring committees, as required by the concerned council.

The CCBs have to raise 20 percent of funds for a project themselves. The remaining portion has to be provided by the local government. CCB contributions have to be made in cash. However, in addition to this, they can make contributions in kind, for example of land, labor or materials. There is no limit to the number of CCBs that can register in a single district. Monitoring of projects is carried out by the CCB, council monitoring committees, and local government offices.

to finance the development of sanitation facilities. Despite attempts to make these interventions demand-responsive, their top-down nature and external financing often limit the menu of options made available to communities.

Anecdotal evidence from Punjab, Sindh, and the North West Frontier Province suggests that the majority of rural sanitation investments have been in the construction of open drain networks and street paving.

Tool One: The Model

After its initial work in Lodhran district, the Lodhran Pilot Project (LPP) created a real space for expanding its work within the context of the new local government system. Within the framework of the new system, the tehsil municipal administrations (TMAs) served as the critical tier of governance responsible for tackling issues related with sanitation. The Public Health Engineering Department (PHED), responsible earlier for developing water supply and sanitation schemes, was supposed to devolve into the new set up. However, while the TMAs were given the requisite powers and functions, they lacked the human and financial resources to deliver fully. The PHED though had still remained active; it was felt that most of its schemes were failing due to inappropriate planning and design, and lack of effective operation and maintenance procedures. In addition, there was no meaningful mechanism for public consultation during the project conception and implementation phase.

The design specifications and standards for schemes were rigid, restricting their capacity to adapt to area-specific needs suited to the local environment, availability of materials, and technology. This rendered the projects and schemes both technically and financially nonfeasible.

However, while the new local government system was facing these adjustment problems it had, nevertheless, opened up the process for greater and more meaningful

public involvement, with provisions of forming Citizen Community Boards (CCBs) and opening up options for public-private partnerships. For instance, the mobilization of women was having a critical impact on the overall dynamics of civil society engagement with service delivery and public utility institutions. So while the system was having problems in delivering itself, a greater involvement and awareness generation was being witnessed among the local communities. A lot of donor funding was also being directed at strengthening the institutions of local governance by building critical capacities to deliver and also in facilitating public-private partnerships.

After assessing the context within which it wanted to make a difference, the LPP based its model on the following broad strategic guidelines:

- Facilitate mechanisms for public-private partnerships and methodologies for participatory development in terms of planning, financing, and implementing projects.

- Create a sense of ownership among the communities.
- Bring down the cost of the projects, through innovations in technical design and project management, to make them affordable for the communities and to make them more suited to the physical and natural environment.
- Establish forums (that is, institutionalizing) for supporting sustained public involvement in project planning, design, implementation, monitoring, and evaluation and to ensure financial transparency.
- Build capacity among the government agencies, communities, engineers, and technicians to plan, implement, monitor, and evaluate low-cost sanitation schemes based on the participatory mode of development.

The Participatory Development Model

The LPP based its participatory low-cost sanitation model on the component sharing approach

“The trick is to simplify the process for the community and gain their trust. You need to simplify the technical details, the financial details, converse with them in their local language, hold informal public meetings in places they are comfortable with, like the mosque, and make them realize that the system they put in place would survive only if they are willing to take ownership. Once the community and the local elected representatives are convinced, half the battle is won without a stone being placed.”

Khalid Warraich, Field Operations Manager, the LPP

developed earlier by the Orangi Pilot Project (OPP). The challenge of providing sanitation infrastructure is divided into internal components (sanitary latrine, household connection, and lane sewer) and external components (main sewers and treatment/disposal works). Rather than sharing the costs of the total system, the responsibility for components of service provision is clearly allocated:

- Internal components are financed, installed, operated, and maintained by the community; and
- External components (as well as technical assistance and social guidance) are financed and installed by the donor (for example, the LPP or the local government).

The LPP team identified three main parameters that impacted the cost of a scheme, which were (a) material cost; (b) labor cost; and (c) supervision and overhead expenditure. The component

Box 6: Contract between Village Sanitation Committee and Landowner (site for disposal works)

Roles and responsibilities of the landowner:

- He will look after the building and machinery of the disposal works.
- He will change the Mobil Oil of pump in time and bear all the expenses of maintenance.
- He will drain the well once it is filled up to the given mark.
- He will use the treated water for irrigating his land and sell it at reasonable rates.

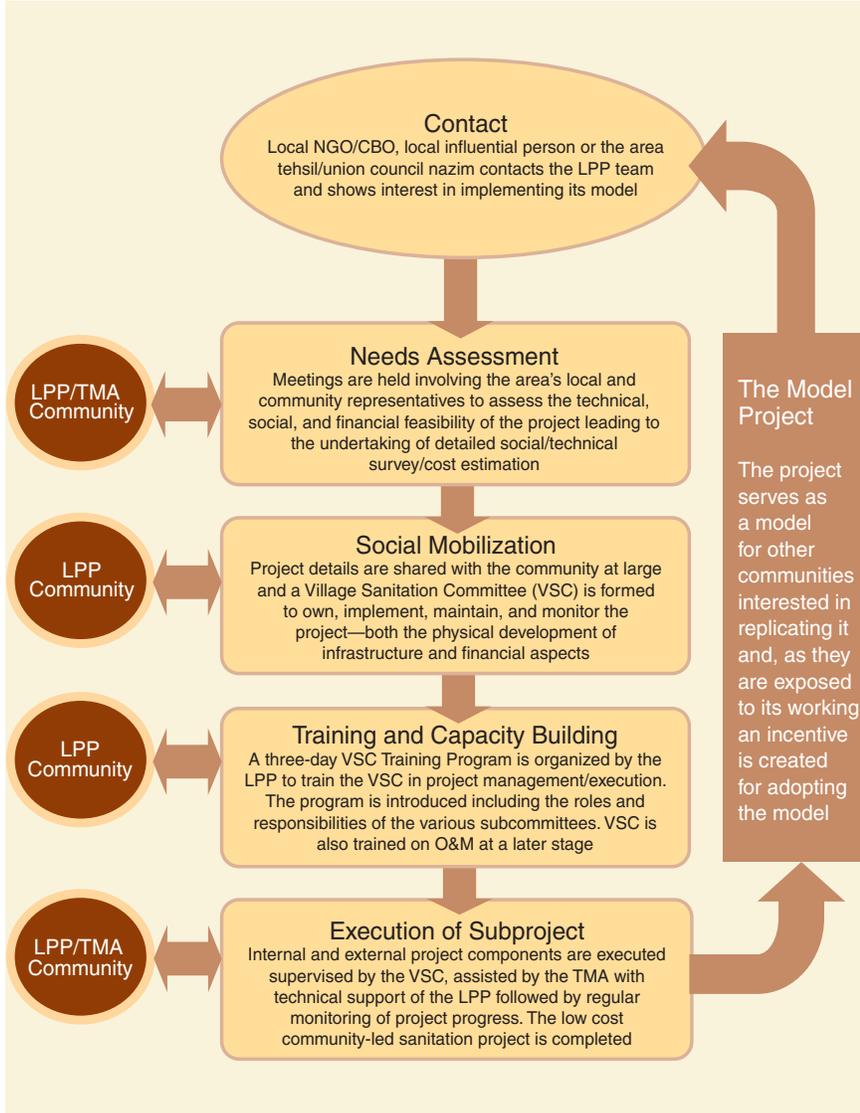
sharing model is designed to rationalize costs and encourage cost efficiency and a sense of ownership as community contributions are substantial, often approaching 50 percent of the total scheme cost. Community members are keen to reduce their contributions and ensure value for money, thus community contracting is usually used, with some communities manufacturing the

concrete sewer pipes *on site* to lower costs. The LPP has also developed simplified designs and technical criteria to reduce scheme costs. For instance, the simple concrete manhole covers used in LPP schemes cost Rs. 600 (US\$10) compared to the approved rate of Rs. 3,600 (US\$60) for the cast iron covers used in government schemes. In addition, there were differences in design.

Table 2: Roles of the Stakeholders

Lodhran Pilot Project	Community	Tehsil municipal administrations
Motivation	Organization	Institutional support
Survey and mapping	Village Sanitation Committee formation	External development
Technical assistance	Monetary contribution	Pavement of streets (incentive for community)
Capacity building of communities and TMA	Internal development	Provision of equipment
Monitoring and follow-up	House connection	Public consultation

Figure 2: The Component Sharing Sanitation Model: Lodhran Pilot Project



Component sharing and community contracting limit the scope for collusion between contractors, community representatives, and local authorities in making project payments, because the responsibility for asset ownership,

management, and financing remain with a single entity, that is, either with the community or a local authority. In cost-sharing projects financed through government, the government schedule of rates (which are often up to 40

percent higher than market rates) offer sufficient margins for contractors to pay the community contribution (usually 5 percent to 25 percent of the total cost) in return for the award of the contract. Anecdotal evidence suggests that this type of collusion is widespread in cost-sharing projects in Pakistan, resulting in reduced community participation, limited sense of ownership, and lower scheme sustainability.

Roles and responsibilities are well defined through contracts and the development of clear and specific Terms of References. The LPP enters into contracts both with the local government at the level of the TMA and the community via the Village Sanitation Committee (VSC), thereby acting as a bridge between the two key stakeholders. For instance, when a contract is formalized between the VSC and the community resident that provides the land for constructing the disposal works, the provider of land is responsible for operating and maintaining the pumps/motors (operation and maintenance costs) and related disposal works in return for gaining the right to use, and sell, the treated water for irrigating his fields.

The Village Sanitation Committee: A Vehicle for Change

The LPP team, while developing its model for community-led low-cost sanitation, identified four critical barriers that restricted and hindered the mobilization for change: psychological, sociological, technical, and economic barriers.



Figure 3: Profile of the Village Sanitation Committee



The VSC was designed to dismantle these barriers. According to the LPP philosophy, the willingness of the communities to execute the schemes on participatory approach as a result of mobilization breaks the psychological barrier and the formation of the VSC is an indication that the sociological barrier has been successfully breached. The social engineer then breaks the technical barrier by providing feasible and applicable technical designs and cost estimates, and the economic barrier by bringing the design solutions within the affordability and paying capacity of the community.

The formation of the VSC and its office-bearers' elections indicate that the community is now mobilized, committed to the project, and organized to be trained. A VSC is constituted by a community when the people are ready to implement a sanitation scheme. The VSC is required to have a minimum of 20 male and five female members.

Box 7: The Vanguard Communities

In most successful development networks, there are certain communities playing the role of vanguards, or that of the forward troops, in the process of development. They are at the frontlines of action. In Lodhran district, there are a number of communities who are now acting as a role model for other communities. These communities serve as demonstration centers and hosts for innumerable exchange visits. Among these communities are Barati Wala, Pipli Wala, Gahi Mohmar, Dhanot, and many others.

These vanguard communities have now become very resourceful and efficient hosts of exchange teams. With the passage of time, they do not need any NGO or donor support to sustain their efforts. These communities are always generous in sharing their knowledge and experiences. They spread the message far and wide.

After the VSC's formation, the LPP organizes a three-day training program. An orientation about the roles and responsibilities of the VSC, basic training in the technical, financial, and management aspects of the project is provided along with a field visit to any completed subproject to orient the community with a working project. The field visit provides VSC members the opportunity to discuss their fears and expectations with a community that has gone through the experience. A VSC is divided into five subcommittees (see Figure 3).

Box 8: Linking and Networking

The Lodhran Pilot Project (LPP) model has proven its adaptability to change by networking and successfully linking up its work with other organizations and variable project needs. Some such examples are highlighted here:

Finding Synergy with the CCB Model

The LPP has been providing support to the government's devolution program ever since the promulgation of the LGO 2001. After having witnessed an LPP project and having been impressed by its methodology and approach, the tehsil nazim of Kasur invited the LPP team to visit Kasur TMA and explore the possibility of linking up with a Citizen Community Board's (CCB's) work in the tehsil. Subsequently, an agreement was signed between the LPP and Kasur TMA for execution of the sanitation scheme through the CCB based on the low-cost sanitation model of the LPP. The LPP provided technical support and, in consultation with the CCB, framed a comprehensive village improvement plan. Based on the recommendations of this plan, the scheme prepared by the CCB was approved by the Kasur tehsil council and work began, merging the management and financing system of the CCB with the low-cost, community-owned methodology of the LPP.

The LPP office in Khanpur launched 12 sanitation schemes through engaging CCBs. The component of community mobilization, technical assistance, and designing was handled by the LPP, whereas the development grant was released by the TMAs/union councils.

Using the District Government Grant through the LPP Model

To resolve the sanitation issue in Khanpur tehsil, the district government of Rahim Yar Khan released a grant of Rs. 40 million to Khanpur TMA with the understanding that the entire grant would be utilized to resolve sanitation issues in Khanpur by implementing technical methodologies of the LPP. In this way, while the internal components of the project were then financed by the community, the external components were funded by the government.

Ensuring Financial Transparency

It is critical to ensure that the projects are properly planned, estimated, and documented so that financial transparency is secured.

The process begins with the LPP surveyor making a social/technical survey of the village. Based on the survey results, the field engineer prepares an estimate of the project (a chart with project area, financial/cost sharing details) that is subdivided into internal and external costs.

External cost comprises the main sewer and disposal station and the **internal cost** includes the cost of the household connection and the lane sewer. The community has to bear the internal cost of the project while the external cost/technical support is provided by the LPP. The VSC then opens a bank account for the disbursement of the LPP grant. The authorized signatories of this bank account are:

- President, VSC;
- General secretary, VSC; and
- Field operations manager, LPP.

The LPP share is disbursed in four separate installments. The first installment is released when the community has deposited 50 percent of its share in the bank account; the second after 70 percent of the community share has been collected and deposited, the third at the depositing of 100 percent community share; and the fourth installment (15 percent of the total LPP share) is released after the successful results of the field monitoring visit of the Monitoring, Evaluation, Research, and Development coordinator of the LPP.

Tool Two: Social Mobilization

The fact that the Lodhran Pilot Project (LPP) model has shown adaptability, flexibility, and capacity to be replicated under varying political, socioeconomic, and ethnic circumstances has much to do with the innovative designing and application of its social mobilization strategies. The LPP team defines social mobilization as the “process of collecting the members of a community, neighborhood, and village for the solution of problems faced by the communities collectively”. They identify it as an approach and tool that enables people to organize for collective action by pooling resources and building solidarity required to resolve common problems and work towards community advancement. In the LPP model, the social mobilization path is marked by the following landmarks:

- Organizational development.
- Capital formation for development through community savings.
- Training for human resource development.
- Environment.

The process is designed to enable the empowerment of men and women to organize their own democratically self-governing groups or community organizations. These then provide them with the appropriate forum to initiate and control their own personal and communal development, as opposed to mere participation in an initiative designed by the government or an external organization. The social organization process, thus outlined, takes the following steps:

- Information dissemination.
- Increased awareness.
- Community mobilization.
- Total awareness.

The Social Mobilizer: Creating the Space for Change

Within the LPP organizational model, the key agent for social mobilization is the social mobilizer, attached with each field unit of the organization. Social mobilizers serve as the eyes and ears of the organization and act as the direct link between the community and the

organization. Social mobilization is achieved through adopting participatory approaches. The key objective of the social mobilization exercise is to motivate the communities for action. It is not easy as the LPP model requires changes in the behavior of the communities, demands financial contribution, and a change in mind-set from dependency on government to adopting and practicing a participatory and self-help mode of community participation.

The model has functioned both in the extremely poverty-stricken areas of

Box 9: Functions of a Social Organizer

- Carrying out socioeconomic surveys.
- Conducting need assessments.
- Educating and motivating the community (with special emphasis on educating and creating awareness among rural women about health and hygiene conditions and their social mobilization for active participation in the development process).
- Attending meetings of the community organization and supervising their work.
- Organizing training programs to build capacity of the communities.
- Working as a channel for bringing community problems to the project management process.
- Promoting self-sustaining village enterprises.
- Evaluating new trends emerging from collective management.

“The people know about their problems but they cannot very well link them with the wider issues and the larger picture. That is where we come in to help them unravel the whole picture.”

Nousheena, Social Mobilizer, Field Unit, Dunya Pur

Box 10: Motivating the Community

The various stages undertaken in motivating communities are:

- Establish contact with the target communities (individually and in groups).
- Understand the needs and demands of the people.
- Discuss the required information and communicate the benefits of sanitation at family, group or community levels.
- Identify reasons for hesitating to participate.
- Create interest for sanitation and encouragement to participate.

Punjab and also in the relatively well-planned regions of the province. However, results have been better in areas with higher levels of literacy and a more stable socioeconomic profile. The more literate communities may be harder to convince since they have more questions but once they are on board, they prove much better project managers. The convincing factors and

arguments mostly remain the same— lesser instances of diseases means lesser health-related expenses, no more standing sewage means no more degradation of houses (sewage seeping into wall structures), and prevention of accidents (children falling and, in some cases, even drowning in pools of standing sewage). The importance of improved health and

hygiene is equated with religious edicts and, normally, community meetings are initially held in the local mosque after the Friday prayers.

The Role of Women

The LPP model places a high level of importance on an active role of women in its participatory method of community development. Experience has shown that villages with higher levels of women literacy have fared better in terms of attaining a faster pace of community mobilization as well as better operation and management of projects. The model focuses on not just women but looks at the wider issue of relationships between men and women, their roles and responsibilities in life, access to and control over resources, division of labor and needs, and so on. Women participation analysis frameworks thus cover need assessment, activity profile, benefits



Box 11: A Women Empowerment Center

The LPP has now moved beyond the project itself and seeks to facilitate a wider and more pro-active role of women in rural life in local affairs. In this regard, a Women Empowerment Center that covers the following areas of work has been established at the LPP main office:

- Roles and responsibilities of lady councilors.
- Involvement of women in the development process.
- Income generating activities by rural women.
- Role of women in rural sanitation projects.
- Formation of women Citizen Community Boards (CCBs).
- Formation of women Village Sanitation Committees.
- Establishment of women vocational centers through CCBs.

and incentive analysis, constraints, and opportunities. In this regard, special training packages are developed to sensitize program staff and the community on gender issues within the context of the social and cultural environment.

Women form part of Village Sanitation Committees (VSCs), and have acted as catalysts and leaders in social mobilization and project management. They play a key role in generating, among the men, the required level of willingness and commitment to engage in the project and invest their time and money for ensuring for themselves a better quality of living. They have a key role to play in managing their household's sewage generation to avoid blockages in the system. In an interesting case in village Mian Pur, Lodhran district, the community was

convinced that whatever the women earn for cotton picking in one day should be contributed to the project—an amount of Rs. 97,000 was collected in one day! Effective social mobilization can bring about change where no one expects it can happen. In Busti Shaikwa, Lodhran district, the LPP team started work in a community where there was extreme poverty and the women literacy rate was 0 percent. Initially, a few sessions with the local women, on the benefits of having a clean disease-free environment with a focus on child health, were conducted. The team made a surprise visit to the village after a gap of one month. The project had not even started but they found that the women had properly clothed their children while earlier they ran naked—the community was ready for the project!

Agents of Change

The LPP experience has shown that, to ensure the proper implementation and long term sustainability of the project, it is absolutely essential that certain key stakeholders within the potential project areas are motivated to become willing and committed partners in the process. In the case of the LPP model, these include:

- The area nazim;
- Local influential people; and
- The community at large.

From within these stakeholders, the local catalyst, or what can be termed as the agent of change, has to emerge to lead and manage the project with facilitation from the LPP team. It is here that the LPP model is put to the test with skilled social mobilization, negotiations, and bargaining coming into play to help identify the most appropriate agent for change from within the target community and assist in the subsequent mobilization of the community. Different localities, different communities offer varying challenges and put forward differing kinds of community leaders. The LPP model caters to changes and modifications in social mobilization tactics and strategies to meet specific needs and accommodate leaders (who have varying socioeconomic, institutional, and gender profiles) to lead the process of change within the community and mobilize the community for participatory development.

Box 12: Profiling the Agents of Change

The Lodhran Pilot Project has based the success of its ventures on the appropriate identification and capacity building of individuals who have risen from within the communities to act as the agents of change, and who have mobilized the communities for action and led the process of change. Profiled here are the views of some of the many individuals who are the true heroes of the project:

“People had lost trust in the government and were ready to do the needful themselves. Given the right incentives and training, people can do a lot to change their destinies.”

Qazi Asadullah

President, VSC, Basti Balouchan, Lodhran district, a teacher in a religious school (a madrassah) and local activist

“The attitudes of men are changing for the better and women are making their presence felt and are more aware of sanitation-related issues, even without enjoying a high literacy rate.”

Nasreen Bashir

Women’s Councilor, village Hari Chand, Vehari district, and a local activist and entrepreneur

“Community ownership ensures quality of work and reduces chances of corruption. After project implementation, the communities have now halved their health-related expenses.”

Mian Abdur Razzaq

President, VSC, Mian Pur, Lodhran district, Union Nazim, Council Qutub Pur, and an agriculturist by profession

“The motivation exists among communities; they just need to be trained and educated and a model like LPP generates among them a sense of ownership that guarantees success.”

Nadia Khan

President, Khawateen (Women’s) Welfare Organization, an NGO activist, Vehari district

“People are willing to invest their money and also construct their sanitation works. They are desperate for ensuring a better quality of life for themselves and their families.”

Mohammad Yousaf

School teacher, Basti Islampura, Kahror Pucca district

“The new local government system has helped mobilize women and they are now networking much more effectively to share experiences and strengthen their efforts.”

Zubaida Malik

Head Mistress, Zahra Public School, Vehari district, and a member of the women caucus group

‘Patan Taraqiati Tanzeem’

“Frustrated by my unsuccessful efforts at getting the government to act, I took matters in my own hands and the LPP model with active community involvement has now paid huge dividends.”

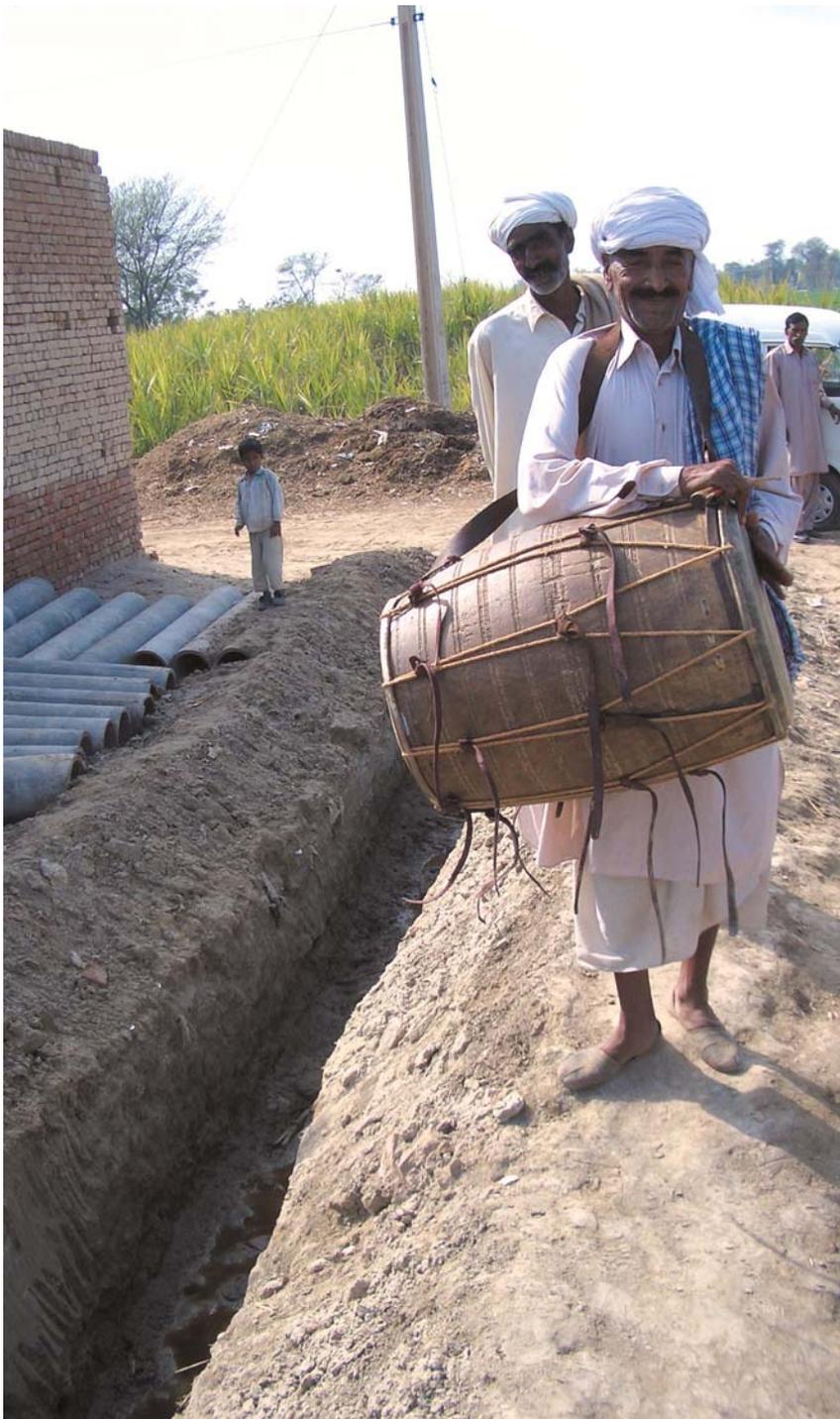
Chaudri Mohammad Ishaq

Local businessman, Vehari district

Some basic ingredients for successful social mobilization and transformation are presented in Table 3.

Table 3: Helping Hands		
The ingredients	The blend	The LPP recipe
Positive demand	A participatory model for improved community-based sanitation can only succeed if the demand for better sanitation exists within a community with a basic understanding of the benefits and costs of good and bad sanitation. The triggers for demand are usually a mix of deteriorating health, loss of trust in government, accidents, and so on. This demand-responsive approach is much more likely to produce more sustainable sanitation systems.	According to the LPP philosophy, the demand exhibited through contact with LPP indicates that the psychological barrier has been broken. If the demand is there, only then does the LPP extend help by structuring and explaining the technical, managerial, and operational aspects of improved sanitation.
Community involvement	The demand may exist but involving the communities in the effort for change is not an easy task. In motivating the communities to get involved, respected and influential community figures can persuade communities to trust and accept offers of cooperation from outside the community. These figures may be local neighborhood heads, religious leaders, teachers or elders, and so on.	The LPP experience has shown that, to ensure long term sustainability of actions taken, it is absolutely essential that from the communities, the local catalyst, or what can be termed as the agent of change , emerges to lead and manage the project with facilitation from the LPP.
Community empowerment	Once the community is motivated, the important step of empowering them comes next. For this patience, consistency, and transparency are crucial. NGOs and community-based groups can assume this role.	In the LPP model, the Village Sanitation Committee (VSC) is the vehicle for organizing and empowering the communities. The formation of the VSC indicates, according to the LPP philosophy, that the sociological barrier has been successfully broken. A key facilitative role is played by the LPP social mobilizer .
Community action	No one knows a community better than the people who live there. Once their local knowledge has been blended with training and education on problem solving, they can become the best partners in the project implementation and monitoring process. This ensures that the project initiatives are more durable, more efficient, and better maintained.	The VSC again provides the forum for consultation, debate, training and capacity building, decisionmaking, implementation, and monitoring. The LPP social engineer assists in breaking the technical and economic barriers by providing feasible, applicable, and affordable technical designs and cost estimates.

The LPP model has found success within a particular political and social context—a local government system that actively promoted private sector/community participation and communities facing more or less similar political, social, and financial challenges. However, for someone wishing to replicate the LPP approach and methodologies elsewhere in differing sociopolitical settings, it is important to identify some model and golden rules essential for social mobilization and transformation with reference to the LPP model, yet finding universal application. Discussed here are some key ingredients that would have to be fulfilled irrespective of the sociopolitical environment within which the venture is being attempted.



Box 13: Learning Lessons: Setting Landmarks

For those interested in emulating the Lodhran Pilot Project (LPP) philosophy, the LPP team shares some important lessons it has learned for optimizing the successes of community-based initiatives.

- Team work is essential for guaranteeing success.
- Community response is always positive if the field team exhibits discipline and honesty in its work.
- Community behavior can change from site to site. More literate communities may take a longer time to mobilize but, once convinced, they prove the best partners.
- Only full involvement and ownership of the community can lead to sustainability of actions taken.
- Indigenous skills have to be recognized and put to use as they can play a vital role in the successful execution of subprojects.
- Judicious utilization and management of local resources is a must.
- Motivating and inspiring leadership leads to success in optimum duration.
- The community-based initiatives require an inbuilt flexibility in the decisionmaking processes.

Tool Three: Innovating and Experimenting

The Lodhran Pilot Project (LPP) team had realized at an early stage of its work that unless the project costs were brought within affordable limits for the communities, the project was not going anywhere. Team members had very closely investigated the reasons for the failure of a large number of government-run schemes and found that in addition to the cost factor, there were serious issues related with the applicability and acceptability of the solutions being offered—in terms of the lack of innovation in the designs and specifications being used to meet the specific local needs, and a complete absence of any meaningful public consultation.

The LPP team innovated with the technical design of its sanitation model to reduce costs and attain higher

working efficiency and also decided to close the loop—sewage collection to engineered treatment/disposal (see Figure 4)—to achieve better environmental results. This would also add an incentive for the community to invest by offering the option of wastewater reuse in areas facing acute water shortage.

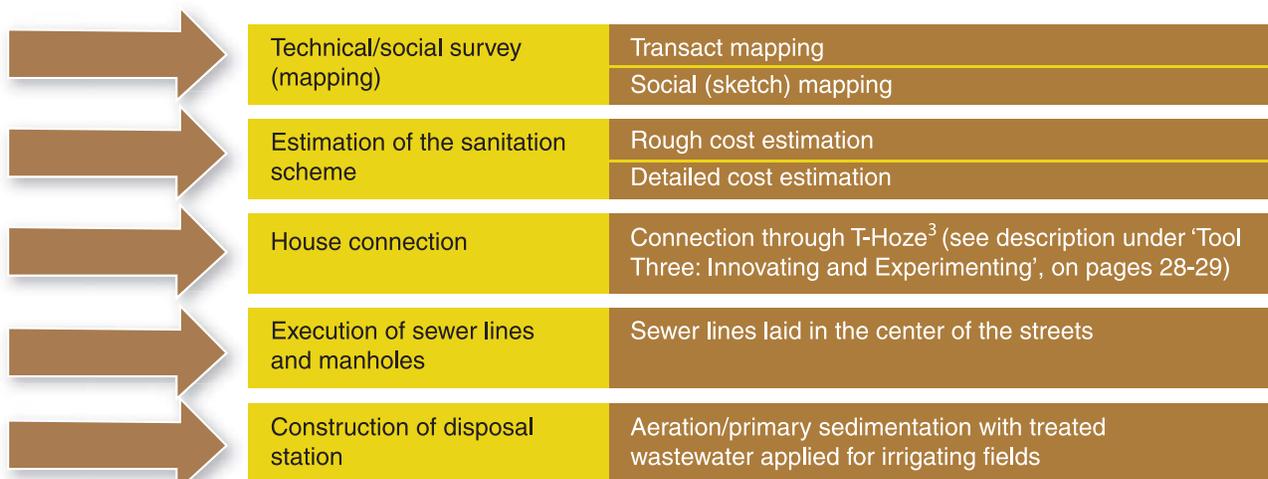
The governing factors behind the technical innovations in system design and project implementation and management procedures were:

- Reducing the material, labor, and supervision or overhead expenditures.
- Improving system efficiency.
- Making the process financially viable (wastewater reuse).

These objectives were achieved through:

- Mobilization of the social capital (elected representatives, government officials, community representatives).
- Use of locally available construction material and electrical or mechanical equipment (pumps, motors).
- Enhancement of local skills and employment of local labor.
- Elimination of the role of the contractor (community representatives filling the role).
- Promotion of volunteer input.
- Cost effective and high efficiency system design.

Figure 4: Technical Process: Systematic and Sequential Steps



³ The research and extension of the Lodhran Pilot Project has come up with a new solution that is both cost-effective and more operationally efficient: the T-Hoze (see description on pages 28–29).

The Technical Process

The steps involved in the physical development of the project are discussed in detail here.

Technical/Social Survey (Mapping)

The process is initiated by surveying or mapping the project area. Two techniques of mapping are employed:

Transact mapping is a tool used to describe location and distribution of resources, the landscape, and the natural slope of the land.

Social (sketch) mapping is a tool used to present information on the village's layout, infrastructure, demography, health patterns, and sanitation details.

The next step is preparing a map of the village that shows the features of both these mapping techniques. The streets and roads in the village are assigned numbers vertically or horizontally. Based on the survey results and market research, the project design and cost estimates for both the internal and external components are worked out. The LPP Master Plan is designed to cater to the villagers' sanitation needs for the next 25 years.

Estimation of a Sanitation Scheme

From the project design the estimate of the total length of the lines, number of manholes, the site and size of disposal, and the cost of the total project can be worked out. Two types of estimations are made:

Box 14: Mapping the Project Area

- Total streets of the village.
- Numbering on all the streets of a village.
- Indication of the slope of the streets.
- Length and width of the streets.
- Location of prominent places.
- Level of sewer lines in the streets.

- Rough cost estimation, based on a rough survey.
- Detailed cost estimation, based on a detailed survey.

The estimations are based on market rates. However, for Citizen Community Board projects, scheduled rates are applied.

House Connection

The LPP experience shows that the house connection is the most important factor in a low-cost sanitation project. The LPP model has placed responsibility of this work and related

expenditure on each household separately; it is not part of the overall project estimate. The quality of the house connection determines the functioning efficiency of the entire network—a proper house connection prevents solids from entering the lane sewer and beyond. In rural households, septic tanks are usually constructed for sewage disposal, but these are expensive solutions and not easy to take care of. The research and extension of LPP has come up with a new solution that is both cost-effective and offers much better operational efficiency: the **T-Hoze**.

Figure 5: Connection through T-Hoze

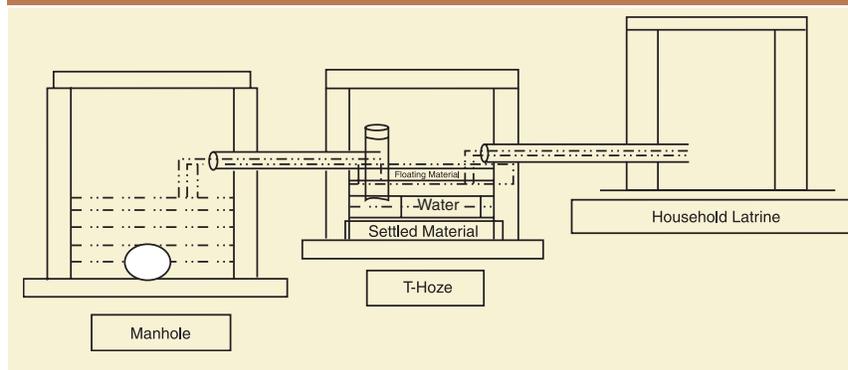
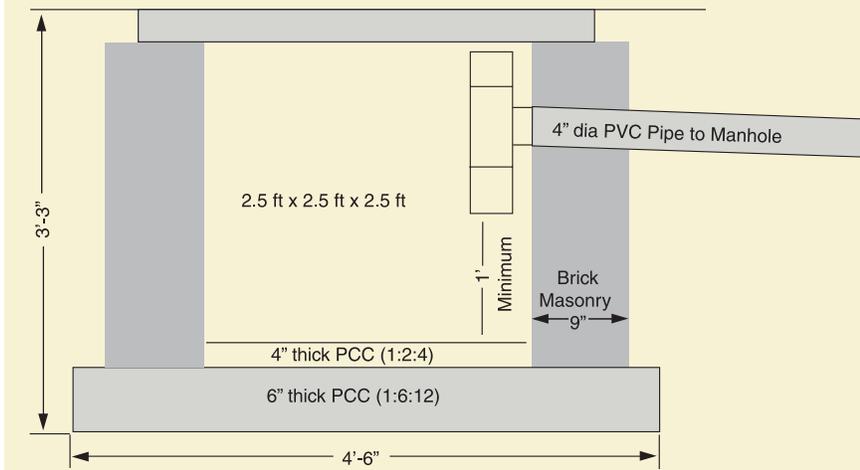




Figure 6: Section of a Typical T-Hoze for Household Connections



In this design, the house is connected with a small collection chamber with a T-joint that prevents solids from entering the lane sewer; the solids settle at the bottom of the chamber from where they can easily be removed. The size of the T-Hoze depends on the number of users. The size 2*2*3 is sufficient to cater to a household consisting of six individuals.

Execution of Sewer Lines and Manholes

As opposed to previously employed practices, in the LPP design, the sewer lines are always laid in the center of the street so that (a) connections from households from both sides can easily be connected; and (b) distance from foundations of households from opposite sides is equal so that no one has any objection.

Special care is taken in setting the gradients and alignments of the pipes in relation to the manholes. In case of the construction of manholes, shuttering is used; the manholes are made of concrete, which is more sustainable instead of the previously used bricks. The making of the manhole covers is started as a parallel activity to save time.

Disposal Station

The design option selected for the disposal works was based on enhancing the financial viability and acceptability of the sanitation model, in addition to adopting better environmental controls. After primary level treatment, the wastewater is used for irrigating fields—mostly fodder and not vegetables that are eaten raw. This was a new concept (as part of a sanitation scheme) for the local communities. The first step in the construction of the disposal station is the selection of the site. Ideally, the site selected is in close vicinity of a government water course so that the sewerage water could easily be used for irrigation. The direction of the wind is also considered in the design due to odor concerns. A screening chamber is provided to prevent any solids from entering the settling tank. The dimensions of the settling tank correspond to the calculations on the amount of sewage that will be generated (three options of separate sizes have been standardized based on experiences gained during the project). From the settling tank, the sewage is then pumped to the adjoining fields.

Figure 7: Concrete Manhole

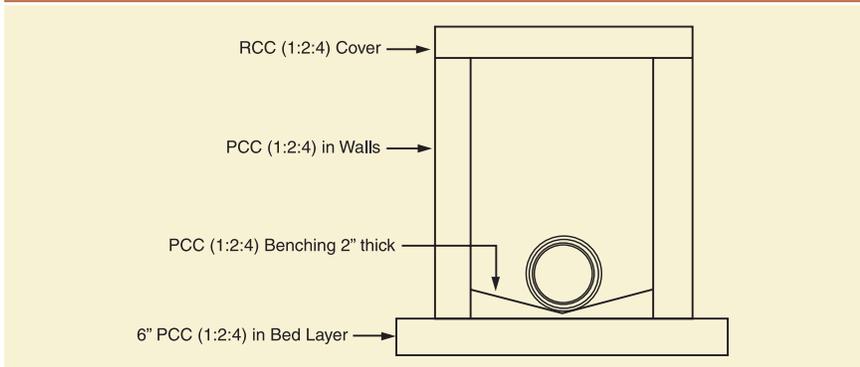


Figure 8: Disposal Work

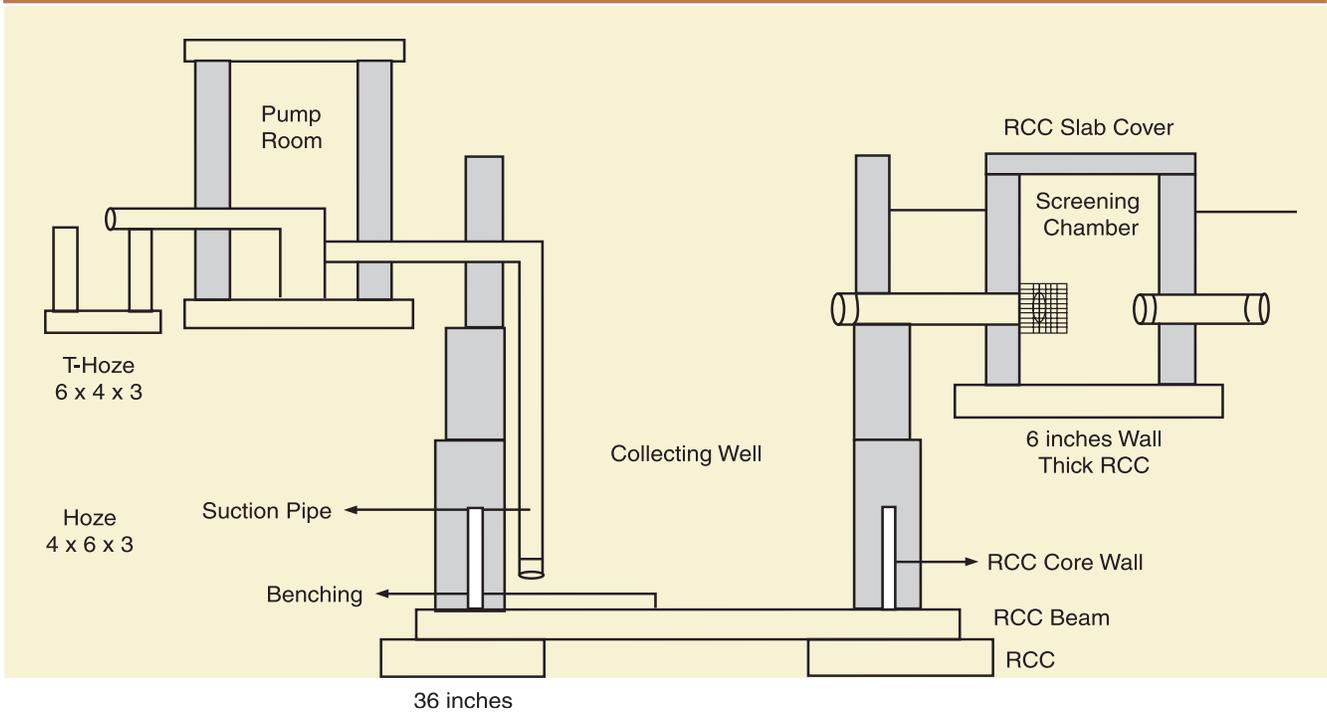


Figure 9: Aeration of Sewage: A Local Solution

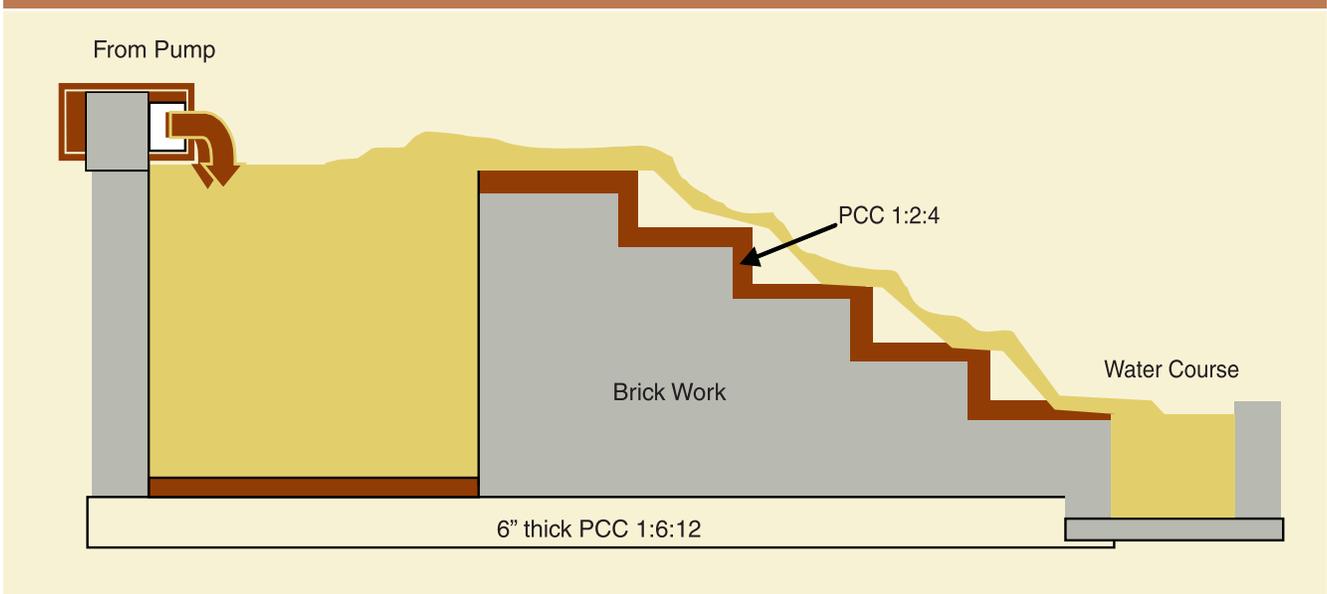




Table 4: Designing a Sanitation Project—Some Critical Considerations

Fixing a benchmark

Mapping and documentation

Identifying remote point

Ascertaining site and sizes of manholes

Calculating size of disposal well or tank

Surveying and levelling

Selecting site for disposal works

Calculating size of pipes and applying gradients

Computing working depth



Tool Four: Building Capacity

The Lodhran Pilot Project (LPP) team strongly believes that unless skills are transferred and capacity built in the relevant stakeholders, the sustainability and upscaling of the model cannot be secured. With this philosophy in mind, the team has focused attention on training and capacity building of the following stakeholders:

- Community;
- Local government representatives; and
- Engineers or technicians.

While capacity-building programs had been initiated since the early stages of the project, this component of the LPP's work got a boost when it was awarded by the World Bank, the Japan Social Development Fund-financed project, Participatory Rural Sanitation in Southern Punjab (PRSSP). The

Component B of the project—training, capacity building, and advocacy for participatory approach—deals

specifically with the training aspect and is divided into three subcomponents:

- Training of 150 associate engineers through a one-month residential course in participatory approach.
- Community (Village Sanitation Committee, or VSC) orientation workshops in 100 villages.
- Training visits of 400 elected councilors and local officials of 20 tehsil municipal administrations.

Outlining the Capacity-Building Process

The main aspects of the training and capacity-building programs being conducted for the various process stakeholders are discussed in brief.

Training Engineers

Imparting community-owned sanitation training to 150 associate engineers, who have passed out from Government

Colleges of Technology in southern Punjab, is an integral part of the PRSSP project. The training course aims to give the participants an understanding of the basic principles, concepts, practices, and methodology of social mobilization with a focus on awareness and understanding on the different techniques and skills used in the community-owned sanitation model. It is designed to assist in developing professional skills of young engineers, thus adding to their employment potential in development agencies as well as in the public and civil society sector. Applications of trainee engineers are invited through posting advertisements in the newspapers. Applicants are then shortlisted through interviews and by undergoing an aptitude test. The training program lasts one month; during training, free boarding and lodging facilities are provided. In addition, all trainees who attend regularly and participate in the program are given a Rs. 2,500 stipend.

Table 5: Stages of the Training Program—Associate Engineers

Stage	Focus	Duration
Stage 1	Theoretical content on concepts of social mobilization and community-owned sanitation Skills modules on interpersonal skills and documentation	15 days
Stage 2	Field attachment with project personnel	7 days
Stage 3	Field visit to a community-owned sanitation project	1 day
Stage 4	Presentation of field attachment	1 day
Stage 5	Final test/evaluation of participants; social evening	1 day
Stage 6	Graduation ceremony	1 day

During the training program, the whole process of a community-owned sanitation project is mapped. Training involves a highly comprehensive combination of theoretical sessions including social mobilization, motivation, communication, leadership skills, computer skills, field visits, and field attachments for demonstration. A high level of importance is accorded to providing the trainees practical exposure to skills, techniques, methodologies, and strategies involved in community-owned sanitation projects. For this purpose, they are divided into groups and attached with master trainers of the LPP as per the field attachment schedule. The focus of field attachment is on urban and rural sanitation models of community mobilization, drafting, mapping, case studies, and documentation. The training course is divided into six distinct stages (see Table 5). These six

stages are divided into 43 sessions, spread over 26 working days. At the end of the training program, the trainees are evaluated on the basis of written and viva/practical demonstration tests and computer tests, and are also ranked on the basis of class attendance, conduct, and level of participation.

The list of qualified participants is then circulated in relevant organizations to assist in their job placement. A number of successful students have already been accommodated in the LPP and other organizations.

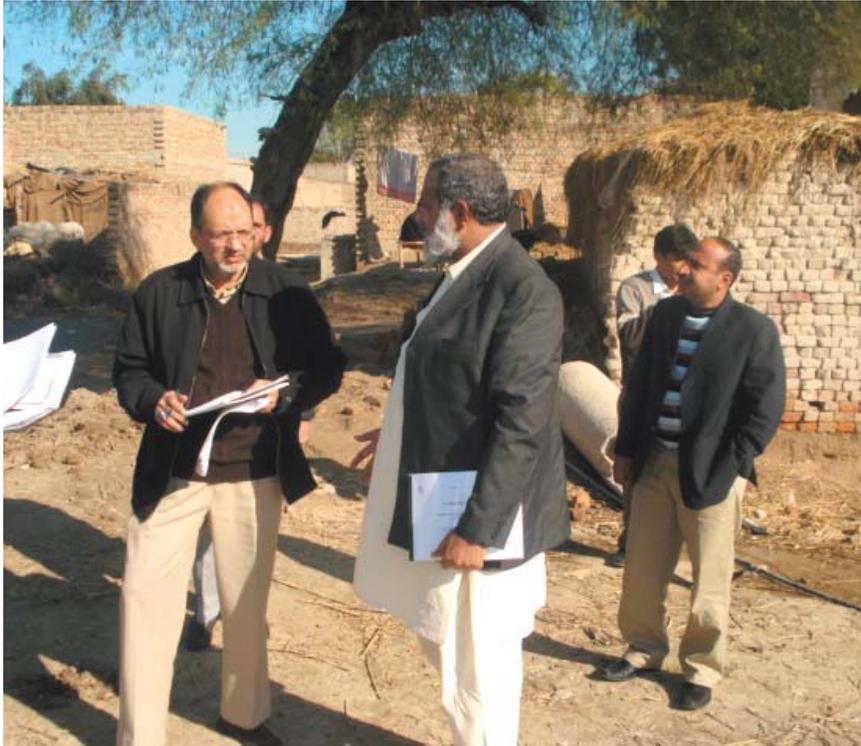
Training the Community

The VSC is the critical pivot around which the whole project revolves. Therefore, it is essential that the VSC members representing the local community are effectively trained in managing all the technical and financial

aspects of the project. Capacity-building of VSCs is also an integral part of the PRSSP project. The Human Resource Development Sector at the LPP is responsible for conducting training workshops for the VSCs. The training/orientation program spans three days (see Table 6). On the first two days, sessions deal with social mobilization, participatory development, gender sensitization, health and hygiene education, community participation, accounts and record keeping mechanisms, and the technical aspects of low-cost sanitation. Villagers are trained in how to purchase materials, check quality, do market research, store materials, supervise construction work, and so on. On the third day, a field visit of any completed subproject is organized. At the end of the field visit, certificates are awarded to the VSC members.

Table 6: Stages of the Training or Orientation Program: The VSC

Day 1	Day 2	Day 3
Register, introduce participants	Recap events of the first day	Recap events of second day
Introduce agenda, purpose of the program	Initiate gender sensitization with regard to sanitation	Make field visit of completed subproject
Present village profile	Detail technical aspects of low-cost rural sanitation	Distribute certificates
Introduce philosophy, methodology of LPP	Initiate financial and record keeping mechanisms	
Impart hygiene education		



Training Local Representatives

The LPP does not operate a specific training program for local government representatives. However, their capacity is built by bringing them in contact with the project and the communities that share their experiences with them. Briefing sessions are arranged at the LPP offices where the philosophy and

methodology of the LPP is presented. In addition, field/exposure visits of completed subprojects are organized. Many new projects have been initiated in this manner when a tehsil or union nazim, impressed by the LPP model, has requested its replication in his or her constituency. On occasion, orientation sessions are also arranged for interested elected representatives.

Special focus is placed on mobilizing women councilors and special orientation workshops are arranged.

Training Masons

In addition to building capacity among the key stakeholders, the LPP team conducts specialized training programs for masons. They are trained in technical aspects such as the proper methods of excavation, layout, alignment, laying of pipes, jointing, casting of manholes, making of manhole covers, restoration work, and so on. They are trained in managing construction sites, such as how to stock construction material (pipes, crush, cement, sand), and on how to prepare for emergency situations, such as when it rains.

Training Sewer Men and Sanitary Workers

The LPP has also shown its ability to rehabilitate many government-constructed sewerage schemes in Lodhran and Rahim Yar Khan (comprehensive sewerage scheme in Khanpur, for example). The sewer men belonging to TMAs are trained by the LPP in the desilting and rehabilitation of sewerage schemes.



Appendixes

Appendix A: Agreement between Village Sanitation Committee and the Lodhran Pilot Project

Members and office-bearers of the Village Sanitation Committee (VSC).....Union Council.....Field Unit.....hereby declare that they understand and agree with the objectives, policies, and conditions of the Lodhran Pilot Project's (LPP's) support; and bind themselves to complete the project within the set period, abiding by the following terms and conditions.

It is agreed that:

1. The VSC and community will not insist on needless changes in number or length of streets in designed map and that it will follow the estimates prepared by the LPP.
2. The VSC will deposit its estimated share into a joint bank account after collecting from the community.
3. Two VSC members and a representative of the LPP will be signatories of the joint bank account.
4. Every household of the village will contribute its share in the form of money or manual labor.
5. The LPP will deposit its share into a joint bank account on collection of 50 percent of the community's share.
6. Demand of funds or other works will be done through VSC resolutions upon which signatures of at least 80 percent members will be required.
7. Total estimated amount will be deposited into a joint bank account. The VSC will receive the funds for on-site work in form of installments. The installment will not exceed Rs. 50,000 at one time.
8. Second installment will be issued to the VSC on submission of complete vouched for details along with bills. The work done and bills must be verified by the LPP's site engineer.
9. The VSC will be held responsible for internal share. Any increase in amount due to change in market rates, natural disaster or accidents will also be the liability of the VSC.
10. The LPP will be held responsible for external share. Any increase in amount due to change in market rates, natural disaster or accidents will also be the liability of the LPP.
11. The VSC will be bound to work according to instructions given by the LPP's experts during construction.
12. During construction, the VSC will provide necessary assistance for overcoming any problems.
13. The following subcommittees will be constituted by VSC members:
 - a. Accounts Subcommittee
 - b. Collection Subcommittee

- c. Purchase Subcommittee
 - d. Supervisory Subcommittee
 - e. House Connections Subcommittee
14. All VSC members will obtain appropriate training before initiating work on sanitation scheme.
 15. Office-bearers or members of the VSC will not have a right to demand for payment against their services.
 16. The VSC will provide a room for establishment of site office during construction.
 17. The Purchase Subcommittee will obtain at least three quotations for purchase of every item costing more than Rs. 10,000; the item will be purchased at lowest possible price.
 18. It will be the duty of all members to check expenditure of the project from time-to-time to ensure transparency.
 19. Income and expenses, procurement, and any advance amount issued will be recorded properly in appropriate registers, which will be the responsibility of the VSC.
 20. The VSC will be responsible for presenting the project and its expenditures to every individual of the village, representatives of International Development Association or the LPP's representatives for inspection.
 21. The VSC will store all items to be used in the project at a safe place and necessary precautions will be adopted in transportation.
 22. The VSC will be responsible for suspension of work upon report of the LPP's site engineer in case of any performance against the design work; or otherwise the VSC will be responsible for any loss.
 23. The VSC, or any resident of the village, may report mistakes or carelessness of the LPP's staff in writing. In case of no report, the VSC will be responsible for loss.
 24. The VSC will select a suitable place for a disposal station during survey and assure its attainment before execution. The owner will be liable for providing a written agreement against usage of his property.
 25. Upon completion, the disposal station will be handed over to the landowner who will hold responsibility for its supervision, maintenance, and timely operations.

**Field Unit In-charge
Field Operations Manager
Project Coordinator**

**Finance Secretary, VSC
General Secretary, VSC
President, VSC**

Appendix B: Agreement between Landowner and Village Sanitation Committee (on Affidavit)

I, resident of..... C.N.I.C. No. hereby solemnly and sincerely declare that:

1. I am allowing the use of my land property.....for sewerage system. I will abide by all terms and conditions of the Village Sanitation Committee (VSC) and the Lodhran Pilot Project (LPP) till the continuation of this project; and I will not proceed legally or illegally.
2. I shall be responsible for in-time operations of peter engine, as well as its fuel and operating expenses.
3. I shall be responsible for keeping the disposal well empty up to the marked point. I shall also be responsible for maintenance of pumping machinery whenever a fault arises.
4. I shall have the right to use the sewage for my personal needs or to sell it to others.
5. I shall be responsible for the security of machinery, building, and well of disposal works.
6. I hereby again solemnly and sincerely declare that I have neither kept anything secret nor provided wrong information here.

President, VSC

Landowner

Appendix D: Details of Estimate

Item	Share of VSC	Share of LPP	Total estimate
Labor estimate			
Material estimate			
Total estimate			
Percentage share			
Details of Funds Provided by the Lodhran Pilot Project			
Date	DD check no./DD no.	Amount	Total amount

Date of survey	Date of application from community
Date of opening account	Date of signing of Terms of Partnership
Date of completion	Date of commencement
Saving if any	Actual cost of subproject
Signature of Secretary	Signature of President of VSC
Signature of Site Engineer	Signature of Treasurer

Appendix E: Abstract of Costs

Village	Union Council
Field Unit	Tehsil

Internal Abstract of Costs

i) Sewer Line

Description	Quantity	Unit	Rate (Rs.)	Amount (Rs.)
6" diameter sewer line				
Manhole—3' deep				
Dismantling and restoration of soiling				
Total				

External Abstract of Costs

i) Sewer Line

Description	Quantity	Unit	Rate (Rs.)	Amount (Rs.)
6" diameter sewer line				
Manhole—3' deep				
9" diameter sewer line				
Manhole—3' deep				
Manhole—4' deep				
12" diameter sewer line				
Manhole—5' deep				
Dismantling and restoration of soiling				
Total				

ii) Disposal Works

Description	Quantity	Unit	Rate (Rs.)	Amount (Rs.)
Screening chamber				
Well				
Pump room				
Hoze				
Water course				
Pumping machinery				
Total				

Miscellaneous Expenses

Description	Amount (Rs.)
Miscellaneous expenses	

General Abstract of Costs

Village	Field Unit
Tehsil	District
Household	Population

Internal abstract of cost		External abstract of cost	
Description	Amount (Rs.)	Description	Amount (Rs.)
Total— 1		Total—2	
Grand Total			

Field Engineer
Field Unit In-charge
Assistant FOM
Field Operations Manager
Finance and Administration Manager
Project Coordinator

Appendix F: Completion Proformas

Completion Proforma–A

Subproject	Field Unit
No. of houses	No. of streets
Date of commencement	Estimated cost
Date of completion	Completed cost

Item	Unit	Estimated	Work done	Difference	Justification
		Quantity	Quantity	Quantity	
6" pipe sewer					
9" pipe sewer					
12" pipe sewer					
Manholes 22" i/d					
Manholes 30" i/d					
Well					
Pump room					
Hoze					
Water course					
Pumping machinery					
Screen chamber					
Restoration					
Miscellaneous					

Field Subengineer

Field Unit In-charge

Field Operations Manager



Completion Proforma–B

Subproject	Field Unit
No. of houses	No. of streets
Date of commencement	Estimated cost
Date of completion	Completed cost

Item	Unit	Estimated			Work done			Difference			Justification
		Quantity	Rate	Amount	Quantity	Rate	Amount	Quantity	Rate	Amount	
6" pipe sewer											
9" pipe sewer											
12" pipe sewer											
15" pipe sewer											
Cement											
Sand											
Bricks											
Brick ballast											
Stone crush											
Jute bags											
Steel											
Carriage											
Labor											

Field Subengineer

Field Unit In-charge

Field Operations Manager

Appendix G: Social Survey: Summary

Village	
Union Council	
Tehsil (subdistrict)	
District	
Household	
Population	
Health facility	
Education facility	
Water supply facility	
Metal road facility	
Sewerage disposal (present)	

Field Unit In-charge _____

Surveyed by _____

Household Social Survey

Street no.	Name of household representative	Profession	M		F		Total	Available facilities												
			15	15	15	15		Latrine		Source of water										
								Yes	No	Electric pump	Handpump	DWSS	Any other							
								Shuttle	Shuttleless											

Water quality			Source of disposal			Health				Source of treatment		
Sweet	Salty	Brackish	Soak pit	Septic tank	Open drain	Epidemic (M)		Endemic (F)		Government hospital	Private hospital	Dispensary
						15	15	15	15			

My conclusion is that our people are willing to be mobilized and it is in their interest. If they do not do the development work they suffer. To save both their health and property, they have to make only a small investment, which they do willingly.

Dr. Akhtar Hameed Khan (Late)

Founder, the Comilla and
the Orangi Pilot Projects

Sanitation for all in rural areas, which was just like a daydream in 1998 (before the emergence of the LPP), has gained its beautiful interpretation in the form of Participatory Rural Sanitation in Southern Punjab (PRSSP), an irrefutable fact. This all is due to our firm faith in Almighty Allah and the saying: 'God helps those who help themselves.' My message for my nation is: "Miracles can be made possible with commitment, devotion, team work, and continuous struggle."

Jahangir Khan Tareen
Chairperson, LPP

Water and Sanitation Program- South Asia

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The preparation of this document has been a fascinating experience. It brought me in contact with a number of amazing and wonderful people involved in committed and selfless efforts to improve the health and well-being of their communities. Amidst adversities and faced with stiff social, cultural, and political challenges, these are indeed heroic efforts that deserve high praise and due recognition. As such, this document has been enriched by the contribution of a wide variety of people belonging to diverse backgrounds. It is unfortunate that all cannot be acknowledged. However, special mention needs to be made of the Lodhran Pilot Project (LPP) team that has proved as the key catalyst for change in this evolving experiment in citizen empowerment. I am greatly indebted by the vast knowledge and experience on the project and related issues that was enthusiastically shared with me by Mr. Barkat Ali Riaz, Project Coordinator, the LPP, and Mr. Khalid Warraich, Field Operations Manager, the LPP, and also the assistance and facilitation they provided during the field trip of the project sites. Of great value was the information provided by Mr. Naeem Haider, Mr. Abdul Aziz, and Mr. Mohammad Ali who head the field units of tehsils (subdistricts) Dunya Pur, Lodhran, and Kahrur Pucca, respectively. I have also greatly benefited from the expert advice and guidance extended to me by Mr. Raja Rehan Arshad, Lead Operations Officer, World Bank, and Dr. S. Tauqeer Shah, Technical Advisor, the LPP.

One quote that I read on the wall of the field unit office, tehsil Dunya Pur, stayed with me throughout my work. To me it aptly encapsulates the unique nature of public involvement in sanitation: 'Water is life but sanitation is a way of life'. Truly, the priority we place on improving our sanitation facilities will be a reflection of how we live and function.

Farhan Anwar

December 2009

WSP MISSION:

WSP's mission is to support poor people in obtaining affordable, safe, and sustainable access to water and sanitation services.

WSP FUNDING PARTNERS:

The Water and Sanitation Program (WSP) is a multi-donor partnership created in 1978 and administered by the World Bank to support poor people in obtaining affordable, safe, and sustainable access to water and sanitation services. WSP provides technical assistance, facilitates knowledge exchange, and promotes evidence-based advancements in sector dialogue. WSP has offices in 25 countries across Africa, East Asia and the Pacific, Latin America and the Caribbean, South Asia, and in Washington, DC. WSP's donors include Australia, Austria, Canada, Denmark, Finland, France, the Bill and Melinda Gates Foundation, Ireland, Luxembourg, Netherlands, Norway, Sweden, Switzerland, United Kingdom, United States, and the World Bank. For more information, please visit www.wsp.org.

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