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ORANGI PILOT PROJECT PROGRAMS

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 **OPP - RTI**

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OPP PUBLICATION

ORANGI MAP

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SECTION 1 -ORANGI PILOT PROJECT

1.Orangi Pilot Project (OPP)

OPP was sponsored by BCCI Foundation.It has been working in Orangi since April 1980.It publishes a quarterly progress report which contains financial statements and quarterly and cumulative tables of work.The 45th report has come out in April 1991.Besides numerous case studies and monographs have also been published.

OPP considers itself a research institution whose objective is to analyse outstanding problems of Orangi,and then, through prolonged action research and extension education, discover viable solutions.OPP itself does not construct sewerage lines,or set up clinics or schools or industrial homes etc.It only promotes community organisation and self management.By providing social and technical guidance it encourages the mobilisation of local managerial and financial resources, and the practice of cooperative action.

OPP is very fortunate,thanks to BCCI Foundation and other donors,in possessing both the resources and the autonomy required for innovative research,experiments, demonstration, and extension.

2.OPPs model programs

During the last ten years OPP has patiently analysed some basic problems and evolved the following model programs :-

- 1.A low cost sanitation program which enables low income families to construct and maintain modern sanitation -(pour flush latrines in their homes and underground sewerage pipelines in the lanes)- with their own funds and under their own management.
- 2.A low cost housing program which introduces stronger machine made concrete blocks and batten and tile roofing costing much less than reinforced concrete.
- 3.A basic health and family planning program for the segregated illiterate or semi literate low income house wives which teaches them

- * scientific causes of common Orangi diseases and methods of preventing them
- * methods of birth control
- * growing vegetables in their homes

And provides them with

- * immunization
- * and family planning services

4.A women work centres program which organises stitchers and other garment workers into family units dealing directly with exporters and wholesalers thus escaping from the oppression of petty contractors.It also inculcates managerial skills and cooperative action.

5.A program of supervised credit for small family enterprise units which increases production, employment, managerial skills and business integrity.

6.A school program which assists in the upgrading of the physical and academic conditions of schools established by private enterprise.

I shall briefly describe the performance of these programs in Orangi.

3.The Katchi Abadi of Orangi

But first I must introduce you to the "katchi abadi" (unplanned settlement) of Orangi.Settlement in Orangi began in 1965.After 1972 it grew rapidly.At present it extends to about 8 thousand acres.The settlers have bought land from dalals (touts) and built their houses without official help.

Orangi is Karachi's biggest 'katchi abadi'~ i.e a new unofficial settlement. A survey made in November 1989 shows the following figures :-

total	mohallas	lanes	houses
	110	6347	94,122
(OPP area)	66	3389	49,941

Orangi's population is estimated to be 7/8 hundred thousand. It consists of Mohajirs (immigrants from India) , Biharis (immigrants from Bangladesh),Pathan immigrants from northern areas,immigrants from Punjab , and local Sindhis and Balochis.They mostly belong to the working classes-labourers , skilled workers,artisans,shopkeepers,peddlers,clerks. Average family income is estimated to be around one thousand rupees per month.

4.The informal sector

Official agencies have provided some facilities- main roads, waterlines, electricity,a few schools, hospitals and banks.

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However the people of Orangi have to depend much more on informal sources.

6347 lanes have been laid and 94122 houses have been built without any official assistance from Karachi Development Authority.

Without any assistance from the Directorate of Education an impressive number of private schools have been established : (survey September 1989)

level	no	students			teachers		
		male	female	total	male	female	total
pre-							
primary	203	2905	2679	5602	10	243	253
primary	205	13323	11939	25262	204	440	644
secondary	101	12878	10589	23468	243	678	921
total	509	29106	25275	54331	457	1361	1818

The same sustained energy and wide scope is seen in transportation and medical arrangements.

Neither have the working classes waited for government planners, industrialists, or investors to create jobs for them. In fact only a small percentage are employed in offices, mills or factories. Most of them earn their living in hundreds of family enterprise units set up with their own savings. Thousands of their women and children also work for wages.

Responding to a little social and technical guidance given by OPP's low cost sanitation program these low income families have constructed (in the last eight years) with their own funds and under their own management, sanitary pour flush latrines in their homes and underground sewerage pipelines in their lanes : (march 1991)

	number	length (rft)	cost (Rs)
sewerage lines	4459	11,15,685	1,51,74,643
secondary drains	345	1,35,617	17,02,504
sanitary latrines	68794		3,43,95,500
total			5,12,72,647

In contrast to what the poor people manage to do for themselves, government planning for the poor seems slow and sterile.

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Familiarity with Orangi reveals that a town larger than Colombo or Gujranwala receives scanty services from official agencies. The people of Orangi depend mainly on "informal" sources. Land is obtained through dalals; credit, materials and advice for housing is obtained from thallewalas (block manufacturers). Self supporting schools teach their children. Quacks (physical and spiritual) treat their ailments. They continuously resort to the black market or the bribe market for business facilities or welfare amenities or peace from harassment.

That this informal sector and its black market is many times the size of the official sector indicates the weakness of government planning for the poor. At the same time it indicates the vitality of the poor and their skill in the art of survival. Besides their vitality is demonstrated by the presence everywhere of "anjumans" (associations) which lobby intensely all the time, presenting claims and guarding gains. It is further demonstrated by the growing consciousness, especially among the younger generation, of their collective vote power and street power.

SECTION 2 -OPP'S LOW COST SANITATION PROGRAM

1.The dilemma of sanitation and sewerage

The sanitation and sewerage problem in the katchi abadies presents a dilemma :

on the one hand without sanitary latrines and underground sewerage lines both the health and property of the residents is endangered;

on the other hand the current conventional cost, official or commercial, cannot be paid by them.

This dilemma cannot be solved by foreign aid.The hope of optimistic planners to upgrade katchi abadies with foreign assistance ignores the fact that the beneficiaries are in no position to pay the conventional cost,(which becomes higher in foreign aided projects).Besides foreign donors themselves are in no position to pay the total astronomical cost.

2.The problem of sanitation in Orangi - 1980

Poor sanitation is the chief characteristic of slums.In 1980 bucket latrines or soakpits were being used for the disposal of human excreta and open sewers for the disposal of waste water.We can label it as medieval sanitation.

Medieval sanitation was damaging health : typhoid,malaria, diarrhoea,dysentery and scabies were rampant.The children who played in the filthy lanes were special victims.Substantial portions of family incomes were spent on medicines.

Poor drainage was causing waterlogging and reducing the value of property.

Our investigation showed that the residents were quite aware of the twin problems of sanitation and drainage.They clearly saw the causes of damage to their health and property.

Then why did they not exert themselves to construct their sanitation and drainage as they had exerted themselves to build their lanes and houses?(They had built 94,000 houses).

3.The four barriers

Our research discovered four barriers :

1.The psychological barrier : Orangi residents firmly believed that it was the duty of official agencies to build sewerage lines as a free gift.Their leaders encouraged and confirmed the belief in free gifts or "free lunch" as the Americans say.

2.The economic barrier : the conventional cost for sanitary latrines and underground sewerage lines built by official or commercial agencies was beyond the paying capacity of low income families.

3.The technical barrier : the low income families had indeed built their houses, mostly with the advice of masons, and they had also built bucket latrines and soakpits. But neither the people nor their advisors, the masons, possessed the technical skill required for construction of underground sewerage lines.

4.The sociological barrier : construction of underground sewerage lines requires not only high technical skill but also social organisation for collective action. This did not exist in Orangi lanes in 1980.

4. Adopting the research & extension approach (R & E)

OPP's task was to remove the four barriers. As a first step a small office was set up with a team of social organisers and technicians.

OPP in fact presumed to become the research & extension (R&E) wing of KMC and KDA (Karachi Metropolitan Corporation and Karachi Development Authority), hoping that one day not only KMC but all municipal corporations will recognize the need for such a wing to assist low income homeowners. R & E has been extremely successful in the case of small farmers. Its assumptions are that

1. The small farmers can and should manage and finance their own farms
2. But assistance should be given to them in three respects :
 - a. research, e.g, HY varieties, improved methods & implements, plant protection, animal husbandry etc
 - b. extension, i.e, dissemination and demonstration of research findings to small farmers
 - c. provision of adequate and reasonably priced (some time even subsidised) services and supplies.

The position of low income homeowners in a katchi abadi is analogous to the small farmers and the above assumptions are quite valid in their case.

OPP has successfully tested the R & E approach for introducing low cost sanitation and low cost housing in Orangi.

There are four levels of a modern sanitation system

- 1.inside the house - the sanitary latrine
- 2.in the lane - underground sewerage lines with manholes and house connections
- 3.secondary or collector drains
- 4.main drains and treatment plants

OPP found the house owners willing and competent to assume the responsibility of constructing and maintaining all sanitary arrangements at the first three levels with their own finance and under their own management, like the small farmers. These three levels constitute 80 to 90 % of the system. The main drains and the treatment plant must remain, like main roads and water lines, the responsibility of a central authority.

Through R & E approach it became possible to reduce drastically the cost of construction and to persuade the house owners to accept full responsibility.

Research consisted in

- 1.simplifying the design
- 2.fabricating standardised steel shutterings
- 3.surveying and mapping
- 4.preparing models, slides and audio visual aids
- 5.preparing instruction sheets, posters etc

Extension consisted in

- 1.finding activists in the lanes
- 2.training lane managers and masons
- 3.providing accurate plans and estimates
- 4.loaning tools and shutterings
- 5.social and technical guidance and supervision

5.Removing the economic barrier

Of the four barriers the most formidable was the economic barrier or the high conventional cost of sanitary latrines and underground sewerage lines.

Yet for densely populated sectors there was no alternative to the modern sanitation system. To insist that slum dwellers should remain content with medieval sanitation (i.e bucket latrines, soakpits, and open sewers) is adding insult to injury. It is doubtful if the medieval system can be safely retained even in thinly populated villages. To impose it in congested townships like Orangi and Baldia is promoting disasters to health and property.

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For a whole year the focus of OPP's research was on the basic question: is it possible to lower the cost of sanitary latrines and sewerage lines to such an extent that the house owners of Orangi could afford to pay it.

It was found that the cost can be reduced to a surprising extent by

1. simplifying designs and methods of construction
2. by eliminating kickbacks and profiteering by providing free technical guidance to lane managers and enabling them to work without contractors.

To give an example: simplified designs and the use of standardised steel moulds reduced the cost of sanitary latrines and manholes to less than 1/4 of the contractors rates.

And after the elimination of the contractor's profiteering the basic cost of labour and materials came down to less than 1/4 of the conventional cost.

As a result of this research OPP could advise an Orangi family, owning a house on a 100 sq yd plot, that by investing another 1000 rupees they could have a sanitary latrine inside the home and underground sewerage line in the lane.

1. sanitary latrine	Rs 300
2. house connection	200
3. share of lane sewerage line	450
4. share of secondary drain line	50

An average Orangi family has invested 20-25 thousand rupees in their house. So the scale of this investment was not beyond their means.

OPP could now proceed to remove the other barriers. Without this drastic reduction in cost it would not have been possible to persuade the low income families to undertake the responsibility of self-financing, self managing and self maintaining the underground lane lines.

The drastic reduction in cost is possible only when construction is self financed and self managed without the corrupt and exorbitant middlemen.

People have to depend on the contractor because he has technical knowledge and tools. OPP trained the lane managers and gave them technical guidance, and loaned them tools and shuttering, thus enabling them to escape from kickbacks and profiteering.

6. Removing the psychological barrier

Removing the psychological barrier (viz the mistaken belief that they will get sewerage and sanitation as free gifts) did not prove as difficult as it appeared at first.

In the first place the house owners, contrary to the planners stereotype, were not destitutes. No doubt their incomes were low, but they had built their houses with their own savings. The house was their most valuable asset, and they were totally dedicated to its improvement. Soakpits and waste water were causing waterlogging, seriously damaging the houses and reducing their value. We found in the owners' desire to improve their real estate a powerful motivation for constructing sanitary latrines and underground sewerage lines.

A second equally powerful motivation was the protection of health, specially of their children. The mothers saw most clearly the connection between filth and disease. They soon realized that sanitary latrines and dry lanes would reduce disease and the consequent heavy expenditure. Another motivation was to banish for ever the expense and botheration of delinquent sweepers and overflowing soakpits.

When the families realized that with the investment of one thousand rupees, (an average one months income), they could immediately get these benefits to their health and property they decided not to wait for uncertain promises but do the work themselves. After all they had not waited for houses to be built for them (which was also being promised) by benign leaders. They had built their own houses, brick by brick, saving and investing month by month. They had done so because they urgently needed houses and considered house building as their own responsibility.

Now they were told that they should consider the lane also as their responsibility. They should consider the lane as an extension of their house. They should manage and finance the lane as they had managed and financed the house. At first there was some grumbling, but quite soon the message was accepted widely.

7. Role of social organisers and technicians

Everywhere in Orangi (as elsewhere) there are "anjumans", associations, societies, clubs, etc. Most of these are designed for lobbying and canvassing and not for constructive work. None of them could build a sewerage line. Therefore a new kind of organisation was created. The lane was made the unit of construction.

OPP's technicians surveyed the lanes, ascertained levels, prepared maps, plans and estimates. OPP's social organisers explained to the home owners in the lanes that for the sake of their health and well being they could themselves construct sanitary latrines and sewerage lines. They could get technical guidance from OPP and also tools and shutterings. But first of all they should join hands. Generally an activist was found in the lane who became a lane manager, held more meetings of the lane residents, created consensus, settled disputes, collected individual contributions, and supervised the work.

Social guidance removed the sociological barrier and technical guidance removed the technological barrier.

8. Progress of low cost sanitation in Orangi 1981-April-1991

OPP's sanitation program (the model of self managed, self-financed and self maintained sanitary latrines and underground sewerage lines) was presented to the people of Orangi in 1981. Its acceptance can be judged from the following tables :

It may be pointed out that in 1982, OPP's sponsor, the BCCI Foundation, invited UNCHS (HABITAT) to start a sanitation project in Orangi. From 1982 till 1989 OPP's sanitation program was restricted to only half of Orangi. The division was made as follows : (the ban was lifted last year).

	(OPP area)	(non-OPP area)	total
sectors	66	44	110
lanes	3389	2958	6347
houses	49941	44181	94122

As given in the 45th quarterly progress report the present position of low cost sanitation is as follows :-

CONSTRUCTION OF SEWERAGE LINES & SANITARY LATRINES

CUMULATIVE APRIL 1991

	OPP AREA	NON-OPP AREA
sewerage lines	3152	1307
(length rft)	760382	355303
secondary drains	261	84
(length rft)	111444	24173
sanitary latrines	46908	21892

PERCENTAGE OF COMPLETION

OPP AREA	
total lanes	3389
lanes with sewerage lines	3152
percentage	93 %
total houses	49941
houses with sanitary latrines	46908
percentage	93.9 %
NON-OPP AREA	
total lanes	2958
lanes with sewerage lines	1307
percentage	44.1 %
total houses	44181
houses with sanitary latrines	21892
percentage	49.5 %

PEOPLE'S INVESTMENT IN SANITATION (RS)

	OPP AREA	number	cost (Rs)	average
sewerage lines		3152	10050256	3188
secondary drains		261	1325178	5077
sanitary latrines		46908	23450000	500
NON-OPP AREA				
sewerage lines		1307	4541587	3742
secondary drains		84	232576	3030
sanitary latrines		21892	10016500	500
total cost (Rs)			14790663	

TOTAL ALL ORANGI -COST RS

sewer lines	15174643
secondary drains	1702504
sanitary latrines	34395500
total	51272647

Note : KMC has also made some investment in lane sewerage and secondary drains (through councillors).The comparison is interesting :

KMC INVESTMENT IN LANE SEWERAGE & DRAINS (RS)

	opp area	non-opp area
sewerage lines	9571507	4281660
average cost	19982	23787
secondary drains	4016520	1135040
average cost	47815	39139

9. DEMONSTRATION EFFECT

The demonstration effect is visible everywhere. Lane lines and sanitary latrines built with their own money, and under their own management are being maintained by the lane residents at their own cost. They have become accustomed to higher standard of sanitation for which they are willing to pay.

As a result of the intensive training of masons in the technology of sanitary engineering, and the widespread training of lane managers, the level of skill is now far advanced in Orangi and the people have become less dependent on OPP for social or technical guidance. The difference from other katchi abadies is now noticed by every visitor.

A clear demonstration has been made that the dilemma of modernising sanitation in katchi abadies can be solved by mobilising managerial and financial resources of the house owners themselves by providing them social and technical guidance.

It has been demonstrated that the residents of a low income katchi abadi are quite willing and capable of undertaking the internal development of sanitary latrines, lane sewer lines and even some of the secondary drains. Internal development constitutes 80 % of the cost of sanitation. Hence it becomes easier for the municipal corporation to undertake the external development of main drains and treatment plants.

It has also been demonstrated that the low income residents properly maintain at their own cost the sewer lines they have built with their money and management. Proper maintenance of thousands of small lane sewer lines would be impossible for the municipality.

10. Replication of the Orangi pattern

At last after so many years the Orangi pattern of self managed and self financed low cost sanitation is being replicated outside Orangi.

Last year several NGOs in Karachi have adopted this approach (chanesar goth, manzoor colony, greg- mauripur etc). Their distress was very great on account of overflow of soakpits and open sewers. Their efforts to persuade the municipal corporation to build sewer lines for them had failed. So they came to observe the work that has been done in Orangi and copied it easily.

More significantly the Unicef has accepted the Orangi pattern of low cost self financed and self managed internal sanitation development as a model for the Unicef Urban Basic Services Program. They have officially appointed OPP-RTI as consultant. OPP-RTI is guiding UBS sanitation work in three katchi abadies of Sukkhur. It is also training engineers, and social workers sent by Unicef from various other cities.

The World Bank team for the shelter program is proposing a similar arrangement.

Above all the mayor of Karachi visited the Orangi lanes personally and after many meetings has issued directives that the lane residents of katchi abadies should be organised to undertake internal sanitation development while the municipal corporation should quickly complete the external development.

The demonstration in Orangi has convinced the mayor, Unicef and World Bank that assumption of responsibility for internal development by the low income residents

- drastically reduces the cost
- cuts out corruption
- speeds up the work
- and ensures its maintenance.

It is being discovered that the research and extension approach, the giving of social and technical guidance, and the mobilisation of local managerial and financial resources is as acceptable in other katchi abadies as it was in Orangi. There is no doubt that the poor people want to become partners in their own development if the planners would only take the trouble of inviting them to participate.

SECTION 3 - LOW COST HOUSE BUILDING PROGRAM

1. Official strategies for housing the poor

In Karachi since 1960 three strategies have been followed to cater to the housing needs of low income groups :

A. Housing colonies : Government undertook the construction of large housing colonies complete with all services on the outskirts of the city (Landhi & Korangi) and moved inner city squatters. To finance these ambitious schemes the state raised loans from national and international agencies at low rates of interest. Beneficiaries were expected to repay the cost of construction over a fifteen/twenty five years period.

More colonies could not be built because the squatters kept coming in ever increasing numbers, very little could be recovered from the beneficiaries, and enough foreign aid was not available.

B. Site & Services Program -(Metroville project)- Given the impossibility of constructing housing colonies for the poor, the planners aimed at selling land developed by official agencies to lower income groups.

The Metroville projects failed to benefit the target group because the minimum cost for a developed plot of 80 sq yards amounted to Rs 6,000 -a price which few squatters were willing or able to pay. Consequently the metroville plots remained either vacant for a long time or were occupied by speculators or middle class buyers. This can be seen in the Orangi Metroville ,where 4131 plots developed in 1973 remained vacant until 1978, while ironically just around it 30,000 houses were built illegally by the poor.

C. State turns developer : The latest strategy is that the state itself has now turned into a developer. This means that projects are announced (Surjani Town and Shah Latif Town) before they are physically commenced and the public is invited to apply for plots with an advance payment, and pay in instalments as the work proceeds.

This form of development, though ostensibly meant for low income groups, does not really cater to them because

1. they want the land immediately and cannot wait for many years
2. and they do not know how to fulfil formalities and deal with state officials.

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Plots allotted in Surjani and Shah Latif Town in 1979/1981/1983 have not been occupied as yet.

2. Failure of Official Agencies

In Karachi there are two official agencies concerned with housing :

Karachi Development Authority (KDA) and
House Building Finance Corporation (HBFC).

KDA develops and allots land and also builds colonies, while HBFC extends credit for building.

Besides there are numerous commercial developers and builders.

KDA and the Commercial Builders have done an enormous amount of building, but they have done little for housing the lower classes. Similarly out of the billions disbursed by HBFC very little has percolated to katchi abadies.

But as even people of the lower class too must live in houses they have built katchi abadies (over 400 now in Karachi) and the benign government has agreed to "regularize" them.

In fact we can almost say that the real strategy of our planners for housing the poor is that the poor by their own efforts should create their own katchi abadies and build their own houses.

3. Housebuilding by the poor - People's agencies

In the katchi abadi of Orangi in the last twenty years 6347 lanes have been laid and 94,122 houses have been built. The owner-occupiers of most of these are members of working classes. This vast task has been accomplished not with the help of official agencies (KDA, HBFC, Commercial Builders), but of non official (informal or peoples) agencies.

For the low income families of Orangi

A. "Dalals" have performed the functions of KDA. They have acquired land, developed, subdivided and allotted it. Further they have arranged supply of water and transport and police protection.

B. "Thallas" have performed the functions of HBFC and Building firms, making building components, supplying building materials (cement, steel etc), giving credit and advice.

C.Masons have performed the functions of architects, engineers, and contractors.

4.The "dalals"

It would be interesting to give a profile of the dalals who may appropriately be called the katchi abadi development authorities.

The dalals are private entrepreneurs who have learnt the art of collaborating with and manipulating our greedy politicians and bureaucrats. With the latter's costly patronage the dalals secure possession of tracts of land, buy protection against eviction, and obtain water and transport facilities.

Planning by dalals (katchi abadi development authorities) is done as far as possible in accordance with KDA regulations, so that regularisation at some later stage may pose no problems. Prize plots for shops etc are held back for speculation. In some cases these may belong to the helpful group of officials.

The price of the house plots is made cheap enough for the poor to buy in one instalment. To make this possible the dalal may even forego his profit and depend on speculation of prize plots for making money.

The dalals provide poor people with immediate possession of land, with water, protection from eviction, and transport facilities. In addition they also arrange the setting up of a building component manufacturing yard -"thalla"-.

The whole process gives considerable political power to the dalals and they are wooed by politicians. It often happens that the number and size of katchi abadies increases remarkably just before elections.

5.The "thalle walas"

While the dalals acquired, developed and allotted plots, the thallewalas provided building components and materials, and credit and technical advice. There were more than 200 thallas in Orangi. The thallewala was the retail agent of cement and steel wholesalers. He was closely associated with "lohars"- fabricators of grills, windows and doors - and with masons. He also rented out tools and accessories.

This combination of supplies, credit and technical guidance, enabled the thallewala to serve the low income house builders far more efficiently than any HBFC and at much less cost than any commercial builder.

Similarly the services of masons were much cheaper than the charges of architects, engineers and contractors.

4. Defects of Orangi houses

Surveys showed that

1. Blocks made manually at the thallas were sub-standard -brittle, not properly compacted and cured.
2. Work of the masons was faulty in design, alignment, and laying of foundation.
3. On account of weak blocks and defective masonry work 40% of the walls were cracked. Sulphate attack was widespread.
4. Masons were ignorant of proper orientation for ventilation.
5. The owners built their houses incrementally, beginning with one room with tin or asbestos roof. Later when they wanted to add another floor the entire old structure had to be demolished, thus wasting the initial investment.
6. The worst problems were the waterlogged soakpits, the stinking bucket latrines, and the waste water puddles in the lane.

5. OPP's research & extension approach

In the beginning sanitation not house building was considered to be the more urgent problem. Waterlogged lanes and soakpits were destroying the health of the house owners and the value of their property. OPP came to the conclusion that in place of the disastrous medieval sanitation (bucket latrines, soakpits, and open gutters) Orangi should have modern sanitation (flush latrines and underground sewerage lines).

How the low cost sanitation program was introduced, and how it was accepted and implemented by the low income residents of Orangi has been described above in section 2.

After the success of the sanitation program OPP started a housing program in 1986 following the same R & E approach. Surveys showed that poor peoples houses in Orangi had the following defects :-

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1. use of sub standard manually made thalla blocks - the main building components for walls and foundation - caused cracks.
2. faulty construction techniques due to the ignorance of masons
3. faulty ventilation and sanitation
4. need for alternative low cost roofing and load bearing walls.

Two years were spent on research on these problems and the next two years on extension of research findings.

Research consisted in

1. upgrading the local thallas
2. evolving standard construction design & techniques
3. preparing standardised steel shutterings
4. writing manuals, and instruction sheets
5. preparing audio visual aids
6. constructing demonstration models

Extension consisted in

1. finding thallewalas willing to participate in research and development (R & D)
2. training masons - teaching them improved design and construction techniques and the better use of tools
3. lending tools and shutterings
4. providing accurate plans and estimates
5. technical guidance and supervision of construction

R & E have reduced the cost and improved the quality of construction.

6. Improving the thalla made blocks

There were about 200 thallas making concrete blocks by manual process. Due to poor compaction and curing and improper mixing of cement and concrete the blocks were brittle, prone to weathering and sulphate attack. These sub standard blocks were capable of bearing a load of 100 psi which is 1/8 of what is required for good construction.

Being the major building component the first step was to improve the quality of blocks made in the thallas. For uniform mixing, firm compaction, and curing, block making was mechanized. After six months of engineering research a block making machine was perfected in 1987.

Instead of a large factory OPP's mechanization was on a miniature scale, suitable for adoption by Orangi thallas. All the machines - concrete mixer, vibrator, pump, and moulds - were made locally at a total cost of Rs 75,000.

The machine made blocks were 4 times stronger than the hand made blocks but were sold at the same price, because mechanization trebled daily production - from 700/800 to 2000/3000. The load bearing capacity of machine made blocks was 800/1000 psi.

OPP did not set up its own thalla, but passed on the research results to private thallas. In 1987 four private thallas were mechanized with OPP supervision and loans. Upto March 1991 they have sold 5.5 million machine made blocks, 70% to customers from outside Orangi. Following the example of the four mechanized thallas 23 other thallas have adopted the machine making process without any loan from OPP.

7. Alternative roofing design

After improvement of the blocks, research was focussed on alternative roofing design - with batten and tiles/slabs.

The practice of incremental building has created a special problem for low income house owners. They built the ground floor room with a tin roof. If at a later stage they wanted to add another floor they had to demolish the old structure entirely because the walls could not bear the load of RCC roof. Besides RCC construction was quite expensive. Few could afford first the cost of demolition and then RCC roofing.

One whole year of engineering research was needed (including visits to batten/tile factories in Punjab - in which investments of millions of rupees have been made) to miniaturize the process in the same way as block making. Finally only Rs 60,000 were required for moulds, vibrators, and curing tanks. This investment added a new line of production to the block making thalla. It could now also manufacture and sell pre-cast battens, tiles and slabs. With these a roof could be constructed at almost half the cost of RCC (Rs 27 : Rs 50). The construction was also easier and quicker than RCC.

The first thalla to whom OPP's machines and moulds were handed over (as a loan of Rs 55,000) started production in March 1990 and by March 1991 has sold thousands of rft of battens and slabs. A second thalla has also gone into operation after taking a loan of Rs 75000.

With a little re-enforcement old walls of a tin-roofed room can bear the load of a batten/tile roof. Many low income families are now eager to replace the uncomfortable tin sheets and add another floor.

8. The pre cast staircase

Together with the batten/tile roof the design of a stair case built with precast slabs has been introduced. Its components will cost Rs 2000 compared to Rs 4000 for RCC stair case. The pre cast slab staircase will take less space and only 3 days for construction compared to the 15 days for RCC stair case.

9. Present package of advice - load bearing technology

Thus in four years one phase of R & E for lowering cost and improving quality of Orangi houses has been completed. The present package of advice is as follows :-

- * appropriately designed in-situ foundation for a minimum ground + 1 floor construction
- * 6" thick load bearing walls of machine made blocks
- * batten/tile roofing
- * precast staircase

This load bearing construction is 1/3 of the cost of RCC.

- * proper orientation and ventilation
- * sanitary latrine and covered drains

By March 1991 - 59 demonstration units have been constructed and more requests are now pouring in.

11. Masons training

Much time and money has been spent on the training of masons by OPP, through class lectures, meetings, instruction sheets and leaflets and manuals, and also on job supervision. 96 masons have been trained and more are being trained. As a result there are now skilled masons in Orangi who have learnt better techniques of construction, e.g. importance of levels, compaction of foundation, joints in walls, damp proofing etc.

CONCLUSION

OPP first upgraded sanitation in Orangi and then took up the upgrading of technical competence of thallas and masons.

If OPP had more resources it could enlarge credit capacity of thallas and contracting capacity of masons.

OPP kept away from the dalals. They are secret allies of our rulers. It may be dangerous for an NGO to interfere in the affairs of development authorities - official or unofficial.

SECTION 4 - HEALTH & FAMILY PLANNING PROGRAM FOR
LOW INCOME HOUSEWIVES

1. Two causes of ill-health in Orangi

In June 1984 OPP started a pilot program of imparting basic health education to low income house wives. In Jan 1985, at the insistence of Dr Sheila McCraw of ODA, family planning education was also included in the program.

Our research showed that incidence of disease was very high in Orangi. Typhoid, malaria, dysentery, diarrhea, scabies were very common. There was very high infant and mother mortality.

There were two principal causes for the prevalence of so much ill health : the first principal cause was the lack of sanitation. Open sewers, exposed excreta, and garbage dumps, spread harmful germs, polluted water and food, bred mosquitoes and flies. The second principal cause was the ignorance of our segregated, illiterate or semi literate poor women of modern hygiene, of the causes of disease and its prevention.

The low income families of Orangi were paying a high price for the lack of modern sanitation and for the ignorance of modern hygiene. Sickness in Orangi, as elsewhere in Karachi, is very expensive: treatment of a child's typhoid may consume more than a month's income of the family. And there were so many children and so much typhoid.

One paradox revealed by survey research was that as far as clinics are concerned (including private doctors, homeopaths, hakims, and quacks) the katchi abadi of Orangi had proportionately more 'medical facilities' than many cities of Pakistan. A sample survey showed that a substantial portion of the income of 500 families was spent on 'doctors'. Clinics and quacks were doing their best to cure disease and the poor people of Orangi were paying them handsomely. But very little was being done to prevent disease or remove the basic causes of sickness.

OPP's programs undertook first to introduce modern sanitation, and then to teach the house wives the scientific causes and prevention of common Orangi diseases.

2. Popularising modern sanitation

How modern sanitation was popularised has already been described. Some 'experts' recommend that low income bastis can do without sanitary latrines and underground sewerage. In the opinion of these experts bucket latrines, soakpits, and open sewers are good enough for basti dwellers.

Surely these experts are aware that the high incidence of disease was controlled in the nineteenth century in the British Indian army, or in London or Paris only after the introduction of modern sanitary arrangements. Can we really ask our poor people to be satisfied with medieval sanitation while we, the elite, have modern sanitation? Can we really ask them to stew in their own juice?

We found that the common people of Orangi were quite aware of the connection between filth and disease. Improvement of their health and improvement of their property were powerful motivations for self finance and self management of sanitation. We also discovered that very often the wives were more concerned than the husbands because the heavy burden of illness (nursing and expense) fell mainly on wives. We saw many examples where reluctant husbands were forced by their wives to pay the sanitation contribution.

3. Popularising the concept of prevention - the obstacles

The illiterate or semi literate women of Orangi are different from our emancipated ladies in two important respects: unlike our ladies the poor women of Orangi are truly traditional and truly segregated.

Now the traditional outlook teaches that disease is a mystery or perhaps the work of evil spirits. Orangi women do run readily to a doctor or an exorcist or seek the intercession of ancient or living pirs. But usually they are ignorant of the real cause of disease and are unfamiliar with the concept of prevention.

The traditional viewpoint about women is that women should remain in 'Purdah' (segregation), while the men should feed and clothe them. A wife should regard her husband as 'majazi khuda' (human god); she should produce as many children as possible; and she should firmly believe that the Good God will always provide for every one of them.

Traditionalism imposes segregation and segregation enforces traditionalism. Segregation makes illiterate or semi literate women almost inaccessible to outside agents of change. Traditionalism fortified by segregation makes them distrustful of the outside agent of change.

Of course the new social and economic forces and urban pressures are disrupting and destroying both traditionalism and segregation. But the poor Orangi women are caught on the horns of a dilemma: it is becoming more and more difficult to follow the traditional code of conduct; and yet when they have to discard old conventions they do it with a guilty conscience.

Meanwhile, during this period of transition, any program which seeks to promote new attitudes and practices among the tradition bound segregated women of low income families, must find answers to two urgent questions : first how to gain access and secondly how to create trust ? A third question arises in the case of programs which, in addition to advice and instruction, also include supply and services. That question is how to build an efficient and convenient system of delivery for this strange clientele : the segregated house wives?

OPP is fortunate that with the help of donors favouring inovative research it has found some answers to these nagging questions. The full story of this exploratory research can be read in OPP's quarterly progress reports. Here I can only briefly relate the highlights.

4. Assumptions of the program

The health and family planning education program was started with the following assumptions :

1. In the process of changing attitudes and opinions of segregated women the main problem for the outside agent of change is access. Custom decrees that women should stay at home. Generally they go out only in emergencies or on special occasions.

We found that 'welfare centres' become ineffective on account of customary segregation. To be within real reach of segregated women a 'welfare centre' or family planning clinic should cover no more than 20 or 30 lanes, which requires that there should be 200 to 300 centres for the 6000 thousand Orangi lanes.

2. Instead of a fixed centre or clinic OPP introduced a new system :

- A. mobile training teams
- B. a selected activist family or contact lady for 10 /20 lanes
- C. regular scheduled meetings at the activist home
- D. formation of a neighbourhood group by the activist

Each mobile team consisted of a lady health visitor and a social organiser. The teams were directed by a lady doctor. The teams were provided with transport and they held as many meetings as possible on every working day

3. In the beginning it was considered advisable to hold separate meetings for family planning. The separation was made because it was found that, although in the general meeting there were many women who were eager about birth control, there were also a few who were belligerently inclined to raise traditional objections and browbeat the needy ones.

As in our country discretion is the better part of valour we did not tangle with our male chauvinists, but left them to be tackled by their wives.

5. Insights gained

A. Organisation

1. As initially assumed it was very important to gain real access. One year's experience proved that not only the need but also the awareness of the need was already present. The obstacle was the lack of fruitful contact between the extension or change agent and the potential adopters.

2. The creation of a bond of trust was as important as the creation of access. The segregated women of Orangi had pre-industrial attitudes: they dearly cherished personal relationship and personal advice.

3. The creation of the bond of trust depended on the frequency of contacts between the educating teams, the activist contact lady and the neighbourhood groups.

4. The contact lady activists proved essential links. As friendly neighbours they became trusted advisers and conveners. They eagerly welcomed the teams and cooperated fully. The neighbourhood meeting was not a serious challenge to the tradition of segregation.

B. Family planning

1. Unexpectedly after six months the subject of birth control became ideologically non-controversial in the neighbourhood women meetings. At the request of the groups themselves separate meetings were discontinued and family planning became a common topic.

2. It became necessary to arrange a decentralised system of delivering supplies. For the men the chemist shops were readily available as agents and supplies were delivered to them on cash payment. But Orangi women cannot go to a chemist shop to purchase contraceptives.

For the women the group activist, the contact lady, became an ideal distributing agent. An intimate neighbour she became a permanent and confidential source of supply for the members of her group. IUD and ligations were taken care of by LHVs in the mobile team.

3. The greatest change was the emergence of birth control adopters, specially IUD and ligation adopters, as strong advocates to their neighbours of the practice of birth control.

6. Revised model

Since January 1985 OPP's basic health and family planning education and services were confined to 3000 families in order to fully test our approach and ascertain the response of segregated housewives. Much has been learnt : how to create access, how to establish a bond of trust, how to build a convenient delivery system, how to spread the knowledge and practice of disease prevention and family planning among tradition bound segregated women. Above all how to reach out to large numbers of clients.

Now on the basis of survey research we have come to the conclusion that the mobile teams and neighbourhood group meeting in activist family homes is quite effective. Among the 3000 families, as a survey by Dr Fauzia of Aga Khan medical college shows, over 95% children are immunized, 44% families practice birth control, epidemic diseases are controlled and hygiene and nutrition improved.

We can say that just as sanitary latrines and underground sewerage line have changed external conditions, similarly disease and birth control education have changed the mental outlook of 3000 families. We confidently invite a survey to compare the attitudes and practices of these families and their disease and birth figures with the attitudes and figures of other groups lacking sanitation and health education.

In the light of our experience we have now revised our model to reach out to larger number of families. Instead of continuing to visit the same families for a long period of time we have prepared a three months course on

- prevention of common Orangi diseases
- methods of family planning
- improved nutrition and hygiene
- kitchen gardening

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20 family activists are selected every three months and neighbourhood group meetings are held four times a month in the activists home. Upto 15 women are attending the training meetings. Such is their eagerness to learn that every participant is paying one rupee to the activist lady for attending the meeting.

Immunization service is provided in the meetings and the continuation of family planning supplies is assured by enrolling the activist lady as an agent.

It is hoped that the existing four teams will be able to train 2/3 thousand families every year. However it is possible to raise this number to 4/5 thousand by adding four more teams without adding to the cost of transportation.

At present the budget for the annual health program is Rs 370000 (\$ 18,000). With four more teams it will go up to Rs 500000 (\$ 25,000). The average annual cost of teaching prevention of disease and birth to one low income family would thus come to Rs 150 (\$ 7.5).

SECTION 5 - PROGRAM OF WOMEN WORK CENTRES

1. Background research

The program of Women Work Centres (WWC) was started in March 1984. After five years of intensive efforts it became self managed and self financed.

Based on the quarterly progress reports (18 to 39) the story of these five years of struggle and growth is related in a monograph published by OPP in December 1989. The second chapter of the monograph summarises the objectives, the approach, the initial difficulties and frustrations. The third chapter gives the highlights of consolidation and expansion, along with the lingering problems during the second and third years. The fourth chapter describes the push towards autonomy in the fourth and fifth years. The fifth and final chapter outlines the present position of the completely autonomous and solvent WWCs.

OPP was aware of the importance of promoting economic programs. But our first efforts to rehabilitate Banarsi silk weavers or other artisans were miserable failures on account of our ignorance of Orangi and its residents. The sanitation program made us familiar with Orangi's social and psychological factors. In 1984 we decided once more to start model building research in the economic field.

This time we began cautiously with market surveys. We realised that the traditional patriarchal pattern of exclusive dependence on the earning of the father was being shattered by the rising cost of living, uncertain employment etc. In Orangi wives and daughters were being forced to work in order to supplement family income.

In fact we found that Orangi was the biggest pool of cheap women and child labour in Karachi and thousand of women and children were already engaged in some kind of 'gainful employment'. But the terms and conditions of work were extremely onerous.

We studied the Social Welfare 'Industrial Homes' and Training Centres, and understood their limitations. We came to the conclusion that instead of introducing new crafts or teaching new arts we should first assist those who are already working for the market. We should teach them to protect their interest, and upgrade their productive and managerial skills chiefly through social and technical guidance.

2. The stitchers of Orangi

The numbers and categories of depressed women workers are very large indeed. The problem is vast. At first only one category could be chosen. We selected the largest category, viz : the stitchers. Several hundred Orangi women were earning a little money with their sewing machines - the majority were doing simple stitching for contractors.

Large quantities of cheap cloth goods, like shopping bags, yellow dusters, kitchen towels etc are exported from Karachi to Europe and America. The exporters engage petty contractors who employ women and children. We could not find out the exporters margin of profit; but we did find that the contractors were keeping upto 50 % of the exporters wages for themselves. The contractors were not only giving unjustly low wages to the helpless women; they were also cheating them in other ways and sometimes even harassing them sexually.

3. How to help the stitchers - support organisation

After the survey research OPP's action research explored ways and means of helping the stitchers - evidently the poorest and most distressed section of Orangi. First a supporting organisation was set up - now registered as a Trust. It assumed the contractors functions (without the contractors profit) - to procure orders from exporters, to distribute the work, to ensure quality and punctuality, to make delivery to exporters and collect payment for wages.

It set up 'Work Centres with both simple sewing machines and industrial machines. It arranged the training of workers as well as supervisors and managers from among the stitchers. It obtained donations for the equipment of the centres, and for distribution of machines to indigent stitchers.

4. How to help the stitchers - women work centres

For organising, training and servicing the stitchers 'women work centres' were set up. OPP's women work centres (wvc) were quite different from Social Welfare and philanthropic 'Industrial Homes'. A WVC was managed by a family. It was located in their home. The supporting institution, OPP, did not pay any salaries or rent. From the very beginning the aim was to make the WVC self supporting.

OPP's staff brought the exporters assignment to the WWC which was allowed to charge a small commission for supervision and overheads. OPP insisted that the managing family's main income should come not from the commission but from wages earned by members of the family by working on the machines themselves.

A WWC was equipped with some industrial machines and sewing machines for 10 to 15 workers. However the more important functions of the WWC were distribution, collection, checking, finishing and packing of the exporters orders. It was also in the truest sense a 'learning by doing' training place. Stitchers from the neighborhood came to the WWC for receiving and delivering assignments which they completed in their homes at their leisure. Thus they were saved from much inconvenience and harassment. OPP staff regularly examined the WWC's accounts and the payment cards of the stitchers to ensure that they got a full and honest share of the exporters wage. Frequent meetings of the stitchers were held for health education and general information.

5. Problems and difficulties

The WWC program was not easy to implement : it faced many problems and difficulties :

An insidious problem was how to avoid the pitfalls of philanthropy and paternalism. There was a great hunger for doles and subsidies. OPP had proclaimed that it was not a profit making enterprise; at the same time it had neither the capacity nor the inclination to distribute doles. We had made it quite clear that WWCs were not to become permanent pensioners like the welfare industrial homes.

Unlike the industrial homes they had to become competitive and get into the mainstream commercial market, by acquiring the good will of the exporters through quality and punctuality. This was a hard message which often roused resentment.

To upgrade the skill of stitchers, to ensure quality and punctuality was a hard job. New stitchers were inclined to be both tardy and slovenly. At the same time there was continuous grumbling about wages. There was neither loyalty to the supporting institution nor work discipline. OPP was seriously handicapped by its welfare association. At first the best workers did not join the WWCs. They wanted to remain loyal to their old contractors.

OPP had to labour like a physiotherapist : uplift the unskilled, the weak and the unenterprising. It was not only hard work ; it caused much financial loss. However gradually in the second and third year the bunglings, grumbling and losses grew less and less. A disciplined cadre of skilled stitchers began to emerge.

Our third difficulty was the behaviour of our patrons - the exporters and contractors. They generally tried to offer lower rates and some of them wanted to treat the non profit seeking OPP as knaves treat fools : playing tricks, delaying payments etc. As WWCs grew stronger we got rid of the tricky customers, and dealt only with reliable parties.

Another ominous difficulty was the disturbed condition of Karachi. Orangi was a specially explosive area because large numbers of Pathans, Mahajirs, Biharis, Punjabis , Sindhis and Balochis lived in close proximity to each other. Undoubtedly in fratricidal riots the poorest suffer most. The presence of a support organisation proved a great boon during such times of trouble. OPP's managers and vehicles rushed to the exporters during curfew relaxation and kept the WWCs supplied with orders. The ominous threat of riots and curfews still hangs over Karachi and the people of Orangi should learn to live with it.

6. Consolidation and expansion

OPP's aim was to improve the condition of the stitchers. However this could be done only within the market frame work and not with doles and stipends. The only real safeguard for the stitchers was to ensure the flow of work and wages. If work and wages stop not much else can be done.

The market situation is not an easy one for the stitchers. Work is seasonal and its volume and rates are subject to the vagaries of international trade. Besides there is cutthroat competition.

There is little possibility of supporting stitchers indefinitely with subsidies as the handful of workers in the charitable industrial homes are supported. The only way to safety is through competitive skill and cooperative loyalty. In the third year a network of competitive WWCs and a cadre of skilled stitchers and managers began to form.

The WWCs proved themselves to be economical units. In the first place their overhead expenditures were quite low. Rent was saved by location in the family home. The whole family participated in production and supervision. Most workers were close neighbours. Work hours were conveniently flexible. Some time work continued till late in the night.

A WWC managed by a committed family for its own benefit and for the benefit of close neighbours is a good model. It is also far more congenial to the segregated muslim women than the factory or the contractors workshop. WWC's were helping the weakest and poorest section of Orangi society. Enquiries showed that where the contractor was previously paying Rs 15 WWCs paid Rs 20 or more to the stitchers. Case studies published in our urdu journal show that some stitchers were the main support of the family because the husband was unemployed or a drug addict or a chronic invalid. Others were widows.

7. "Weaning"

By the fourth year WWC had become competitive wage earners. They had plenty of orders from exporters who were reliable pay masters. The managers had learnt to supervise the stitchers strictly; losses due to defective work had been reduced. Now we began to push the centres towards full autonomy- financial and managerial. We explained to them that now that they were strong enough to carry their burdens on their own shoulders they should no longer depend on OPP's support, and they should not demand that OPP should subsidise them for ever. We suggested that they should form a managing committee, hold frequent meetings and take over the functions of the supporting institution.

The curtailment of support and subsidies, or the assumption of full financial and managerial responsibility, was not welcomed gladly. It went against our feudal traditions of dependence on patrons. At first WWCs resisted the push towards autonomy as a child resists weaning.

With the same persistence with which we had trained and helped the WWCs in the first three years, we kept pushing them towards independence in the fourth and fifth year, till in the sixth year the support organisation was disbanded and all subsidies disappeared.

8. Wages earned by WWCs -1984-989

OPPs women work centres were established gradually. But they grew steadily. The following table gives the amount of annual wages earned from march 1984 till june 1990 :

year	wages (Rs)
84	40615
85	421880
86	1058360
87	1603271
88	1424112
89	2411000
90(6 months)	1205700
cumulative	8124823

8. Present position of WWC program

There is no longer any support budget for staff, or transport or advances.

For purchase of machines, equipment etc, WWCs can get loans from Orangi Trust.

WWCs are paying instalments for machines supplied to them by OPP. Of the total loan of Rs 5,52,691 the old work centres have repaid Rs 1,43,585. (March 1991)

After five years the WWC's promoted by OPP have considerable assets - financial and managerial. Their reputation is well established and they are getting orders directly from exporters.

The emergence of talented lady managers of WWC can be regarded as a remarkable achievement of the program. Another remarkable result is the formation of new stitchers family centres. There are now (March 1991) 87 stitching centres to whom Rs 8,93,880 have been given in loans and Rs 200370 have been recovered. Besides there are 16 women work centres who have taken Rs 3,14,500 and repaid Rs 1,60,600.

The Women stitching centres have taken over the functions of misbehaving contractors.

For the setting up of the old WWCs much energy and money was spent by OPP. The new WWCs make no demand for OPP's time or subsidy. They do not demand canvassing by OPP for orders from exporters, or transportation service.

They do not demand free equipment or fixtures or compensation for losses.

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Their only demand is for a loan which they start repaying in monthly instalments.

And they perform the functions of contractors in a friendly neighbourly manner without cheating or harassing the women workers. The presence of women managers and the location of the centres in family residences in the neighbourhood has made the profession of stitching quite respectable. Previously it used to be considered degrading.

SECTION 6- ECONOMIC PROGRAM FOR FAMILY ENTERPRISE UNITS

1. OPP's latest pilot project -(Sep 1987)

After successfully organising hundreds of stitchers into women work centres OPP started a pilot project for helping family enterprise units. Hundreds of families in Orangi are maintaining themselves by small enterprises, mostly located inside the family dwellings, utilising the labour of their women and children. This is a very competitive pattern in poor countries. Its advance form can be seen in Hongkong. Orangi family enterprises operate in the informal sector and receive very little help from banks or other official institutions.

A gradual strategy has been adopted : first individual enterprises are being selected for closely supervised credit. Then pre-cooperative groups are being formed. Finally reliable groups may be registered as cooperative societies.

It is realised that that at present there is no tradition of loyalty or business integrity among the prospective clients. Our common people have been deceived and cheated so many times that they are no longer faithful to any institution and are in their turn quite ready to deceive and cheat.

Cooperation depends on sincere activists. Existing leaders are more interested in serving their own interest rather than the interest of others. Therefore it is essential to promote and wait for the emergence of sincere activists from among the loyal clients.

Evidently the creation of loyalty and integrity and the training of activists requires great patience and involves many risks. The real test of loyalty and integrity is timely repayment of loans and increased production. Previous experiences of small loan programs have not been very encouraging.

2. Objectives of the family enterprise program

The broad objective of course is the uplift of family enterprise units which in Orangi employ the largest number of workers and offer the quickest and cheapest scope for expansion. But the workers have no tradition of loyalty to banks or of mutual aid or cooperation

OPP and Orangi Trust have started this pilot project with supporting grants from the Federal Bank for Cooperatives and the Swiss Development Corporation and a line of credit agreement with the National Bank of Pakistan.

The objectives of the pilot project are to

1. discover efficient methods of management
2. identify correct criteria for selection
3. learn the art of supervising family units
4. learn the art of recovering small loans
5. create honest and loyal clients
6. promote formation of real cooperatives

3. Position on 31 March 1991

The following tables give a birds eye view of the performance of the project since sep 1987 till march 1991 :

Assets & liabilities

assets		liabilities	
loans due		nat bank loan	881694
fam ent loans	4188143	wom bank loan	477500
other loans	593970	opp loan	500000
building	500000		
bank bal	95183		
total	5377296	total	1859194
net assets	3518102		

CUMULATIVE LOANS & RECOVERIES POSITION - MARCH 1991

HEAD	UNITS	LOAN	RECOVERY	BALANCE
FULL RECOVERY	243	2409411	2409411	0
CURRENT ACCT	530	6918116	2128986	4789130
TOTAL	773	9327527	4538397	4789130

Of the 773 loan units 685 are family enterprise units and the remaining 88 units are classified as other loans consisting of interest free loans to old Women Work Centres, to OPP staff for motor cycles, to school teachers for training etc.

ANNUAL ISSUE & RECOVERY-(UPTO MARCHJAN 1991)

YEAR	UNITS	LOAN	RECOVERY
87-88	107	1175475	913612
88-89	95	1117450	885320
89-90	182	1971900	1206895
90-91	301	3563880	634735
TOTAL	685	7828705	3640562
OTHER L	88	1488822	897835

CATEGORIES OF PROFESSIONS

CATEGORY	UNITS	LOAN	REPAID
AKRSP RURAL LOANS	5	517000	392800
BAKERY	1	10000	3200
BANARSI WEAVERS	52	439500	243855
BUFFALO BARAS	4	190000	124500
CARPET MAKING	4	52000	48700
CLINICS	5	51000	4100
WOM CONSUMER STORES	29	341000	104000
COSMETICS	6	67600	29550
DIEMAKERS	13	168000	87000
ELECTRIC STORES	28	241000	129750
EMBROIDERY	4	30000	11600
FLOWER(PAPER)WORK	7	46000	20850
HAIRDRESSING	4	58000	11000
HOUSEBUILDING	27	465300	150550
INDUSTRIAL HOMES	6	125000	27900
KITEMAKERS	4	25200	15850
LEATHER WORK	4	85000	36000
MEDICAL STORES	9	182000	88700
MOULDING	16	167500	86550
NURSERIES	2	29000	1000
PACKING	8	71000	26800
PAINT BRUSH MAKERS	4	40500	27400
PAN SHOPS	10	85000	35400
PRINTERS	10	103000	41300
SCHOOLS	18	375000	258300
SHOEMAKERS	29	277500	181682
STATIONARY SHOPS	7	110000	49600
STITCHING CENTRES	87	893880	200370
STORES(GROCERY ETC)	78	807900	318000
SUPPLIERS	11	118700	79295
TAXIS/MOT CYC	14	242700	97400
THALLAS	2	113000	5300
THELEWALAS	143	659925	392415
THREAD WORK	2	62000	20000
TYPING INSTITUTES	5	77000	49655
VIDEO SHOPS	9	187000	65945
WOMEN WORK CENTERS	16	314500	160600
TOTAL 37 CATEGORIES	685	7828705	3640562
INT-FREE OTHER LOANS	88	1498822	897835

5.Bad debts

The recovery of instalments is closely monitored with the help of a monthly computer print out. After careful enquiries the bad debts of the first two years have been calculated as follows :-

year	loan	units	b/debts	units	%loan	%units
y87	1175475	107	87400	13	8%	12%
y88	1117450	95	20999	5	2%	5%
tot	2292925	202	108399	18	4.8%	9%

Of the 13 bad debt clients of the first year 9 absconded from Orangi, which shows our poor selection. Of the 5 clients of the second year 4 died and one became a chronic invalid, but none absconded.

6.Defaulters

In the meanwhile we have carefully compiled a list of those clients who are not making regular payments -the "defaulters."

We find that there are three kinds of defaults :

- wilful default due to dishonesty
- default caused by misfortune
- default caused by foolishness.

We will have to bear with the misfortunes and foolishnesses of our clients patiently.

But we will try to eliminate or pursue the dishonest defaulters by

- consulting our loyal clients about selection
- and mobilising them for recovering defaults.

We must remember that giving loans without any collateral involves great risks and there would be more bad debts in the coming years. We hope that the equity capital which is being built up by us on account of the generosity of our donors will earn enough income to cover bad debts, which we hope will not exceed 5%

Here is the table of "defaulters"- (March 1991)

defaulters	no	loan	repaid	balance
dishonest	26	357500	95500	262000
unfortunate	16	162150	76317	85833
foolish	14	164000	70720	93280
total	56	683650	242537	441113

7. Our clients

On the whole we can say that our clients have not disappointed us too much. We made too many mistakes in the initial selections. Most of the dishonest defaulters belong to the first or second year.

By March 1991 out of our 773 clients 243 (30 %) have repaid their loans in full. Of the current 530 only 56 are defaulters, to be pursued and reminded. We are hopeful that a substantial amount will be realised from them. The defaulters (56) constitute 7% of the total (773) and 10% of the current (530) accounts. The remaining 474 (90 %) are fairly reliable. And at least 100 (20 %) faithfully come to our office to make their payments with thanks.

8. Formation of cooperative societies

As noted above there is no tradition of cooperative association among the family enterprise units operating in Orangi. The pilot project is trying to lay the foundation for such a tradition by inculcating higher standards of work and business ethics among the clients. It is a painfully slow process because it depends first on the formation of homogenous groups of production units, and then (even more) on the emergence of activists who will work for the common cause, rather than use their ability exclusively for their own advancement.

The first real cooperative group has formed among the Banarsi weavers. They have started cooperative purchase of raw materials for their members and the cooperative sale of their finished products. In only three months (jan, feb, march) they had a turnover of Rs 5,44,531.

9. Promotion of women entrepreneurs

A very important function of the pilot project is the promotion of female entrepreneurs - first among the stitchers, and now in other units too. OPP is in the fortunate position of having a strong women section with intelligent and dedicated staff.

Orangi Trust has entered into an agreement to borrow from the First Women Bank for financing women managed units. For this purpose the Trust has deposited Rs 200,000 in PLS account with the Women Bank against which the Bank will advance upto Rs 500,000 for loan to women units.

Beginning in December 1989 till March 1991 loans amounting to Rs 7,16,000 have been advanced to 71 units managed by women entrepreneurs. They have repaid Rs 1.33,900 of their loans and Rs 27,900 markup. Orangi trust has repaid Rs 2,38,500 to Women Bank.

On 31 March 1991 there were the following women entrepreneur units :

women units	number	loan	repaid
general	131	1463080	358580
women bank units	71	716000	133900
wom consumer stores (NORAD))	29	340000	85750
outside orangi (BCCIF)	43	448500	54700

10. Expansion outside Orangi

In August 1990 Mr Imtiaz, SG BCCI Foundation, asked OPP to extend these self help income generating projects to sectors outside Orangi. For this purpose the Foundation sanctioned a revolving fund grant of Rs 2 lakhs in August 1990 and a further grant of Rs 3 lakhs for the next year.

The following procedures were followed :

1. To begin with selection and supervision was entrusted to OPP lady staff members, (as careful selection and close supervision was essential at the initial stage).

2. Experience of selecting and supervising gained in Orangi was utilised :

selection criteria -

1. honest reputation
2. work experience
3. prospect of increased income

supervisor's role -

1. visit to every unit every week
2. monthly recovery of instalments
3. complete record of visits and recoveries.

3. As in Orangi preference was given to working families operating with their own and neighbours labour.

4. Other terms and conditions, size of loans and number of instalments, were also the same.

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From August 1990 till March 1991 43 loans have been issued in 10 sectors outside Orangi for 8 categories of enterprise: bakery, consumer stores, stitching, maternity homes, clinics, hairdressing, industrial homes, women work centres.

Total amount of loans issued = Rs 4,48,500 of which Rs 54,700 has been repaid along with Rs 10,700 markup.

11. BCCI Foundation self help revolving fund

It is too early to determine the percentage of defaults and bad debts (which are inevitable considering the nature of our clientele, and the absence of collateral).

However by looking at the recovery of instalments of loans given from August 1990 till March 1991, it seems that almost all the loanees are quite loyal. Rs 54,700 has been repaid punctually. The excellent record of recovery is mainly due to the fact that the loanees are being visited regularly by OPP ladies.

In order to create community spirit the loanees of each sector are being encouraged to hold meetings. They are also being consulted about new loans from their area. Some of them are assuming the role of activists.

Village loans : OPP is extending its program of social forestry to the adjoining goths. A very good nursery has been established in Ramzan Goth. Its manager, Ramzan Janu, is lame but very energetic and capable. We have taken special care to train him in OPP nursery and given him all the equipment and plants he has needed. The other two loanees are landless persons who are earning their living as thele walas or vendors.

12. Budget & actuals -1990-91-92

The family enterprise supervised credit program is conducted by a registered institution -Orangi Charitable Trust.

Given below are the receipts and expenditure budgets and actuals of the Orangi Trust.

BUDGET 90-91	ACTUALS 90-91	RECEIPTS ORANGI TRUST	BUDGET 91-92
(upto March-year ends 31 may)			
200000	100000	SWISS DEV CORP	200000
150000	101467	FED COOP BANK	150000
80000	80000	CEBEMO	80000
80000	231255	MARK UP LOANS	350000
	33	MARK UP SP ACCTS	50000
1500000	3677705	NBP LOANS	2500000
500000	716000	WOMEN BANK LOANS	1500000
1200000	1654751	RECOVERY FE LOANS	3000000
200000	110935	RECOVERY OTHER LOANS	130000
40000	33000	RENT INCOME	40000
	45925	MARKETING	
150000	321750	AKRSP DONATION	
55000	102000	RTI DONATION	
	400000	BCCIF SH REV FUND	400000
		BCCIF RURAL FUND	400000
	500000	NORAD	
4155000	8074821	TOTAL	8800000

(*actuals upto 31 march-year ends 31 may)			
BUDGET 90-91	ACTUALS 90-91	ORANGI TRUST EXPENDITURES	BUDGET 91-92
60000	52250	DIRECTOR/FHUDA	65000
48000	42040	JT DIR/HAFEEZ	52700
26000	22805	MANAGER/CHOHAN	30300
22500	19845	ASST MANAGER/HANIF	25200
27300	23875	SECRETARY COOP/ASIF	29800
15600	20275	MANAGER NHUDA	30700
12000	10450	ACCOUNTANT/SAMINA	
12000	10000	LEGAL ADVISER/SAK	12000
18000	15321	DRIVER/ASGHAR	21600
12000	13136	POL/JEEP	15000
6000	16433	S&R/JEEP	15000
4000	6400	AUDIT FEES	6000
6000	5386	PRINTING	6000
3000	0	TRAVEL ALLOWANCE	3000
15000	8242	LEGAL EXPENSES	15000
10000	3845	TRAINING	10000
6100	6533	MAINTENANCE	6000
21500	16608	COMMISSIONS **	25000
325000	293444	TOTAL	368300
DONATIONS			
105000	245000	AKRSP	
10000	28931	OTHERS	15000
115000	273931	TOTAL	15000

BUDGET	ACTUALS	EXPENDITURES	BUDGET
Y90-91	Y90-91	LOANS & REPAYMENTS	Y91-92
1500000	3563880	FAM ENT LOANS	3600000
1500000	3041013	REPAYMENT NBP	3000000
200000	238500	REPAYMENT WOM BANK	1000000
50000	41469	MARKUP PAYMENT	100000
250000	250000	REPAYMENT AKRSP	
200000	0	REPAYMENT OPP	500000
	75000	MARKETING	
3700000	7209862	TOTAL	8200000
	108399	BAD DEBTS	200000

ABSTRACT			
325000	293444	OPERATIONS	368300
115000	273931	DONATIONS	15000
3700000	7209862	LOANS & REPAYMENTS	8200000
0	108399	BAD DEBTS	200000
4140000	7885636	TOTAL	8783300

SECTION 7 -ORANGI SCHOOLS -EDUCATION PROJECT

1.Orangi Schools

A survey made in November 1989 shows that Orangi has
110 mohallas
6347 lanes and
94122 houses.

Another survey made at the same time shows that there are
203 pre primary schools
261 primary schools
121 secondary schools.

These are formal schools teaching the recognised
syllabus. Besides there are
dini madrasahs (religious schools)
informal tuition centres and
technical institutes.

Their exact numbers have not been ascertained, but they are
estimated to be several hundred.

2.Official and private schools

Of the total 585 formal schools a comparatively small number
have been set up by official agencies while others have been
set up by private enterprise :

schools	official	%of total	private	% of tot
preprimary	0	0	203	100 %
primary	56	21.5 %	205	78.5 %
secondary	20	16.5 %	101	83.5 %
total	76	11.0 %	509	89.0 %

The figures are quite eloquent. Low income families of Orangi
got only 11.0 % of their formal schools from the benign gov-
ernment while they set up 89.0 % of the formal schools them-
selves, besides hundreds of dini madrasahs, tuition centres
and technical institutes.

This prevalence of self help and private enterprise in the
field of education is very similar to the picture in housing
or health or economic employment.

3. School students

Let us look at the students going to the 585 formal schools:

schools	total	official	%	private	%
preprimary	5602	0	0	5602	100
primary	42049	16787	39.9	25262	59.1
secondary	32940	9473	28.7	23467	71.3
total	80591	26260	32.5	54331	67.5

We do not know what percentage of Orangi children are going to formal or informal schools. But obviously many parents are willing to pay fees to private schools which are flourishing in Orangi.

The desire for educating their children is specially obvious among the mohajirs and biharis who have an exclusively urban background. However even the rural immigrants soon acquire the same desire and the presence of schools in the vicinity encourages them.

4. Male and female students

The low income families of Orangi are almost as keen on educating their girls in formal schools as they are on educating their boys.

The table given below shows the percentage of male and female students in the formal schools : (54 : 45).

This rise in female schooling is bringing radical social and economic changes in Orangi.

	schools	students	male	p/c	female	p/c
pre-primary	203	5602	2905	51.85	2697	48.14
primary	261	42049	22896	54.45	19153	45.54
secondary	121	32940	18491	56.13	14449	43.86
total	585	80591	44292	54.95	36299	45.04

5. Male and female teachers

The number of male and female teachers employed in 585 formal schools is as follows :

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formal	schools	teachers	male	p/c	female	p/c
pre-primary	203	253	10	3.95	243	96.05
primary	261	980	362	36.9	618	63.06
secondary	121	1156	371	32.0	785	67.90
total	585	2389	743	31.1	1646	68.89

It can be seen that Orangi schools provide employment to 2389 teachers (apart from auxiliary staff). This is a substantial number.

The surprising fact is the percentage of male and female teachers - 31% male and 69 % female.

The percentage of female teachers is higher in private schools :

private	schools	teachers	male	p/c	female	p/c
pre-primary	203	253	10	3.95	243	96.05
primary	205	644	204	31.7	440	68.32
secondary	101	921	243	26.4	678	73.62
total	509	1818	457	25.1	1361	74.86

It is 75% of the total. Even in secondary schools it is 74%.

The percentage in official schools is as follows :

official	schools	teachers	male	p/c	female	p/c
pre-primary	0	0	0	0	0	
primary	56	336	158	47.2	178	52.98
secondary	20	235	128	54.5	107	45.53
total	76	571	286	50.1	285	49.91

6. Significance of female teachers

The fact that the Orangi schools have a majority of female teachers has a dual significance :

1. Girl teachers accepted lower salaries and thus made it possible for private entrepreneurs to establish self-supporting schools without any subsidy from the government and without charging high fees from the parents. Quite clearly private schools in Orangi are based on the sacrifice (or exploitation) of educated girls, in the same way as the garment industry or the carpet industry (which earn millions of dollars for Pakistan) are based on cheap female labour.

2. The dominant presence of lady teachers in the schools removed the traditional muslim inhibition against sending girls to school.

7. Segregated and coeducational schools

The absence of the old traditional inhibition is apparent in the Orangi schools by the 45 % presence of girl students. Most Orangi parents no longer insist on separate schools for girls. Most of the schools are co-educational, even at the secondary level:

segregated	official	private
pre primary girls only	0	9
preprimary boys only	0	10
primary schools girls only	14	9
primary schools boys only	13	12
secondary schools girls only	5	14
secondary schools boys only	13	12
total	45	66

coeducational	official	private
preprimary	0	184
primary	29	184
secondary	2	75
total	31	443

percentage of segregated and coeducational schools

	official schools		private schools	
	segreg	coed	segreg	coed
preprimary	0	0	9.3	90.7
primary	48.2	51.8	10.2	89.8
secondary	90	10	25.7	74.3
total percentage	59.2	39.8	12.9	87.1

8. Girl teachers of Orangi

Girl teachers of Orangi schools do hard work for small wages. One cannot but admire them for their empathy with the children and their gentle manners. Many of them are determined to get more training and higher degrees.

Their work in the schools, their studies, their guidance of the students, and their independent earnings, give them a new confidence, an emancipated status. It is a non-aggressive, non ostentatious, refined and modest emancipation, which is

getting accepted in a highly conservative environment.

Just as the old segregation created a vicious circle - few educated girls, few female teachers, few schools, no co-education, high female illiteracy - the new emancipation is creating a virtuous circle - more educated girls, more female teachers, more schools, and higher literacy. The preponderant presence of lady teachers in the Orangi schools is persuading the parents to send their girls to schools. The customary apprehension about the safety of daughters is no longer valid if the majority of teachers in the schools are themselves ladies.

Not separate girls schools, but a majority of lady teachers in co-educational schools is a realistic approach for spreading female literacy. The girl teachers of Orangi are showing the way out of a national dilemma.

9. Scale of fees in private schools

Survey of a sample of 242 private schools showed the following scale of fees (per month).

fees	pre-prim	primary	secondary	total
Rs 10-20	2	17	3	22
21-30		72	23	95
31-40	1	34	51	86
over 40	3	12	24	39
	6	135	101	242

For the majority of schools the monthly fee is between 10 and 40 rupees. A concession is generally allowed if there are more than one student from the same family. There are other concessions too and much flexibility in payment.

10. Sample of an annual budget

a private school (primary -332 students)		an official school (primary-230 students)	
staff			
10 teachers	48,000	9 teachers	1,68,000
1 peon	4,800	1 peon	14,400
1 aya	7,800		
1 driver	9,600		
total	70,200		1,82,400

other expenses

stationary	15,000	paid by govt	
electricity	4,000		
telephone	1,200		
water tax	400		
doctor	600		
building	5,000		
contingent	6,000		
<hr/>			
total	32,200	(Hdmasters estimate)	20,000
grand total	1,02,400		2,02,400
<hr/>			
cost per student	Rs 308		Rs 880

(It was observed that the private school are maintained in better condition while the official schools need repair and white washing. This may be the result of over centralisation in the case of official schools.)

11. How private schools were set up - incrementally

The establishment of private schools in Orangi began about fifteen years ago. The older schools are now in flourishing condition with considerable assets. However the expansion has taken place incrementally year after year. The following interview with Mr Moin Siddiqui may be regarded as a typical case study of the growth of private schools:

Mr Moin Siddiqui is the founder president of Almoim Education Society which runs Eurasia Public School in sector 13 F. It has 830 students (430 boys and 400 girls), 25 teachers (2 male and 23 female) of whom 20 are trained. Mr Moin says -- "I was employed in a government office and initially I had no idea of starting a school. However as I was free in the afternoon, I decided to open a tuition centre in 1977. At that time there was only one govt primary school and most children could not get admission. The time of my tuition centre was from 3 pm till 10 pm. I collected five children from the neighbourhood and fixed the fee at Rs 5 per month. To my surprise the number of students grew to 100 in the very first month. I engaged two teachers, one of whom was a lady. I had to engage a lady teacher because many girls came to the tuition centre. As the number of students increased I decided to set up a regular school.

"Now in 1977 there was a drug den in our locality. The drug peddlers thought that if the people became educated they would oppose drug use. The peddlers asked us not to start a school and threatened us. I fought with them once or twice and discovered that the police fully supported the peddlers. However some of the residents became my supporters and helped me in setting up the schools.

We hired some rooms from the mosque committee for the new school. The drug peddlers influenced the Committee to eject us from their rooms, but our supporters came to help us and the school continued. Later on they elected me as the chairman of the mosque committee too.

Now our locality has good sanitation and water arrangement, the children are going to school and conditions are better.

12. A new school in the making in a new sector

The same incremental process of growth which the Eurasia Public school followed in 1977 in sector 13 F can be witnessed in the case of Daanish Public school started in 1986 in Mansoornagar, a newly developing sector of Orangi. Mansoornagar today is facing the same problems which old sectors had to face at their beginning - lack of water, roads and transport. And the settlers of Mansoornagar display the same eager desire for educating their children and the same willingness to cooperate with private school organisers.

Ms Zeenat is the lady entrepreneur who has set up the Daanish Public school in Mansoornagar. Here is her story :

"I did my matriculation in science in 1983 and my intermediate in 1985. When I was in ninth class I opened a tuition centre in my home. My teachers encouraged me to develop my teaching talent. In 1987 I started a school in sector 11-1/2. Soon after I shifted to Mansoornagar where there were no schools. We have rented a building with five rooms for Rs 500 per month. There are 175 students and five teachers in our school. The fee for nursery and KG classes is Rs 20 and for primary classes Rs 25/30. The parents have helped and cooperated in every way. There is need for more schools here. The families are very hardworking. Many have workshops inside their homes and everybody joins in the work."

13. Handicaps and advantages of Orangi private schools

The handicaps of Orangi private schools are quite obvious:

1. Buildings are sub-standard. There are no playgrounds.
2. Teachers are grossly underpaid.
3. Many teachers are untrained.
4. Library use and visual aids are uncommon.

The advantages are also obvious :

1. Private schools are integrated with neighbourhood communities - a real response to their need and based on their moral and financial support.
2. Being dependent on local support, the administrators of private schools unlike the administrators of official schools, are not unconcerned with parents and guardians.
3. As private schools have to survive in a climate of competition their administrators cannot afford blatant neglect of school premises or school work.
4. Private schools are judged by the guardians by examination results. Therefore the students get better attention and perform quite well in examinations.
5. Class sections are smaller and better supervised in private schools than in official schools. It can be inferred from the figures :

official schools	number	students	per school av
primary	56	16787	299
secondary	20	9473	473
private schools			
primary	205	25262	123
secondary	101	23467	232

6. The best advantage of private schools is their capacity to grow and expand in a competitive climate.

14. OPP's Education Project

OPP tries through social and technical guidance to improve or upgrade whatever the people of Orangi are doing themselves in housing or sanitation or women work or family enterprise.

In 1987 with assistance from Aga Khan Foundation OPP started an Education Project whose objective was to

upgrade the physical conditions and academic standards of private schools.

Physical improvement was to be made with loans from Orangi Trust and advice from OPP's Sanitation and Housing Program.

Academic improvement was to be made by

1. teacher training
2. use of libraries
3. use of audio visual aids
4. publication of manuals and guides

It was intended that the Project should be managed by a registered society, and more schools should join every year.

OPP's Education Project has made some progress :

1. 13 schools joined the project
2. Physical improvements were made with loans and technical advice.

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3. academic improvements were made through teacher

training, use of libraries, and visual aids.

Manuals and guides were published.

(Note : Details can be seen in the quarterly progress reports - 30 to 42).

But more schools did not enroll.

A society was not registered.

Last year Aga Khan Foundation terminated its annual grant of Rs 1,00,000 which was being used to develop pilot programs of teacher training, library and audio visual use, and publication of manuals and guides.

However OPP will continue to support the dual objectives of upgrading the physical conditions and academic standards of as many private schools as possible.

OPP PUBLICATION

- 1. Gradual Development of Sectorol sewerage plan. The story of Alfatah colony : Dec'84
- 2. The low cost sanitation program of the Orangi Pilot Project and the process of change in Orangi by Arif Hasan : Feb'86
3. Role of thalla (building component manufacturing yard) in housing by Perween Rahman, Hafeez Arain : Dec'86
4. The housing programme of the Orangi Pilot Project by Arif Hasan : Dec'86
- 5. The low cost sanitation programme of the Orangi Pilot Project : Six question by Arif Hasan : April'87
6. Women Work Centres Story of five years 1984-9189 by Akhter Hameed Khan : Nov'89
7. A practical field work at the Orangi Pilot Project Karachi, Pakistan by A.M.J Verheijen : Jan'90 Rotterdam
8. My Development Education by Akhter Hameed Khan : April'90
9. Orangi Pilot Project models by Akhter Hameed Khan : Aug'90
10. OPP's concept, methodology and programs by Perween Rahman and Anwar Rashid : Aug'90
11. House building by low income families in Orangi by Akhter Hameed Khan : Aug'90
12. A survey of Orangi school by Research Section : Sept'90
13. OPP's Economic Programs, women work centres, family enterprises units by Akhter Hameed Khan : Feb'91

Note: 1. The price of each book is Rs. 10
2. Books can be sent on request.

Orangi KARACHI CONSTRUCTION OF UNDERGROUND SEWERAGE LINES

(Financed and managed by the residents) APRIL 1991



STATISTICAL DATA APRIL 1991

	OPP Area	Non-OPP Area	Total
MOHALLAS	66	44	110
LANES	3389	2958	6347
HOUSES	49941	44181	94122
Sewerage Lines			
Lanes	3152 (93%)	1307 (44%)	4459 (70%)
Sec. Drains	261	84	345
People's Investment (Rs.)	34825434	16047213	50872647

KEY

Underground Sewerage

Open Drain (K.M.C.)

OPP - RTI

ORANGI PILOT PROJECT
RESEARCH AND TRAINING INSTITUTE

1-D 26, DAULAT HOUSE, ORANGI TOWN, KARACHI.

over-ay of Aerial photograph
0KM. 1KM. 2KM