

Energy Efficient Free Housing for Disaster Affected Areas



Pakistan: Housing Scenario

There are 19 million houses in Pakistan out of which 67 percent are in rural areas, while kaccha and semi pakka houses account for the 39 and 40 percent of total housing stock respectively. The room density for Pakistan is nearly 3.5 persons per room while it is 1.3, 1.1 and 0.5 in the case of Turkey, China and USA respectively. (source: population census organization)

Pakistan's annual requirement for construction of houses is more than 500,000 housing units to meet the backlog in 20 years. At present the number of housing units being constructed is only 300,000. The demand and supply gap is resulting into serious repercussions for the society as it had changed more than half of Pakistan urban land into squatter settlements and is eating away the agricultural land of the country.

Sindh Perspective

Surveys by national non government organizations and international agencies indicate that 40% of the population of Sindh is chronically poor. This mammoth proportion of population, which is scarcely able to arrange two square meals a day, is unable to purchase houses for their families.

Housing Indicators Sindh

Total Housing Units	5,022,392
Persons Per Housing Unit	6.00
Person Per Room	3.37
Single Room Housing Units (%)	56.94
Two Rooms Housing Units (%)	23.87
3 - 4 Rooms Housing Units (%)	15.62
5 & more Rooms Housing Units (%)	3.56
Pucca Housing Units (%)	46.69
Owned Housing Units (%)	76.90
Housing Units having Electricity (%)	70.08
Housing Units having Pipe Water (%)	-
Inside	37.17
Outside	4.53
Housing Units using Gas for cooking (%)	32.43
Housing Units with Separate Kitchen (%)	34.60

Source: Population Census Organization
(based on 1998 census)

Housing Programme: UNDP GEF SGP and Sindh Government Collaboration

The Government of Sindh has launched peoples' housing programme. People's Housing Cell, has been established to provide for the housing needs of the poor who either do not have their own houses or their houses are in dilapidated condition posing risk to their life and property. UNDP GEF SGP has signed an agreement with Peoples' Housing Cell to replicate 500 energy efficient low cost houses in the disaster hit coastal belt of Sindh (Badin, Thatta and Karachi). The houses will be provided to the poor families free of cost. UNDP GEF SGP possesses over 10 years research and execution experience of already piloted low cost energy efficient housing units through its partners in District Thatta and Badin.

RDF under a memorandum of agreement with UNDP GEF SGP will construct 260 houses for the poor communities of Thatta and Karachi as per list below:

List of Villages for Housing Interventions

Villages	Taluka	No. of Houses
Jaffar Jamari	Jirk, Thatta	25
Ali Muhammad Jokhio	Jungshahi, Thatta	25
Jumo Karmon	Keti Bunder	10
Muhammad Kumbhar	Keti Bunder	10
Qasim Jat	Ghora Bari	20
Usman Jalbani	Ghora Bari	10
Garhi Bhit	M P Sakro	30
Gul Hassan Samon	M P Sakro	30
Rehri, Ibrahim Haidry	Karachi	70
Sandspit (Kaka Pir)	Karachi	30
	Total	260



The field teams of the organization have visited these villages and come up with following socio economic indicators of the beneficiary households:

- The average household size is 5.6 persons
- The average income of each household is Rs 3,640
- The 42% households are involved in labour, followed by 26% in fishing and 18% are farming households.
- There are almost 5% household having their livelihood source through low grade government employment, 4% involved in livestock herding, 1% domestic workers and 1% shop keepers

Components and Features of Energy Efficient House

The proposed low cost house is a unique housing solution combining in itself a blend of disaster risk reduction, energy efficiency and low cost features that especially suit to physical conditions of disaster prone areas of Thatta and Karachi.

The house will comprise on the following components:

- Two bed rooms measuring 11'.3"X11'.3"
- Verandah measuring 10'X24'
- Kitchen measuring 4'-0" X 10'-6"
- Wash Area measuring 4'-0" X 4'-9"
- Toilet measuring 4'-0" X 4'-0"
- Animal Shade 11'-0" X 14'-6"
- Kitchen Garden measuring 11'-0" and 6'-0"
- One Handpump

Profile of Professor Jawed Shah

Syed Jawed Shah is a retired Professor and visiting faculty of NED University, Karachi. He is currently working as Chief Technical Advisor of UNDP GEF Small Grants Programme. Professor Jawed Shah is the only Pakistani Scientist introducing energy efficient disaster resistant housing in the country. He has several products related to energy efficiency, engineering and innovative technologies on his credit. He has served in several organizations of national and international repute and achieved several distinctions and awards.



Unique Design of Energy Efficient House

The following features make the design an energy efficient, disaster proof and low cost model:

Arched Foundation to address the problem of seepage, dampness, salinity and cost effectiveness



Pyramidal Roof which is thermal efficient, damp and leakage proof, light weight and economical wooden roofing design as compared to conventional roofing



Compressed Earth Block is consisted of ordinary soil with less content of clay; generally mouram soil is used with 5% to 6% lime or cement at optimum moisture content



Wire Reinforced Brick Block Masonry to ensure quality, cut down masons cost, speed up the work progress, make the construction simple and provide the provision of wire reinforcement to make the structure safe against earthquake and high wind and lateral pressure



Institutional Roles and Responsibilities for the Housing Project



Role of Peoples' Housing Cell

- ensure timely availability of funds
- identification of villages and beneficiaries
- periodic monitoring of the housing project

Responsibilities of Community

The community will be responsible for:

- excavation of foundation and earth filling
- providing water for construction purposes
- providing space for storing/placing construction material and its security
- providing plots as per the requirement of construction plan
- providing temporary residence for beneficiary households, dismantling of old house and debris management
- responsible to provide suitable plot for construction of 5 houses in a row/at one place
- signing a 5 years agreement of not selling the house to any other party
- providing living space for mason and labour up to the completion of construction
- forming community based organization (CBO) to work for the social development, health and hygiene of the communities
- ensure full cooperation for the timely completion of the project
- resolving arising issues with regard to social conflicts, community contribution, land donation and arrangements for future operation and maintenance of the project

Role of UNDP GEF SGP



- propose changes in drawing/design of the houses and get approvals from People's Housing Cell based on site requirements
- construct platform for manufacturing of compressed earth block and hollow blocks
- inventing and manufacturing of multiple block making machines
- provide technical assistance from time to time to technical team of RDF
- ensure timely disbursement of funds to RDF
- monitor the project periodically

Responsibilities of RDF

RDF will be responsible for:



- carrying out baseline survey for the master plan of the village
- construction of houses and development work in village will be the responsibility of RDF
- taking final decision for construction after analyzing all requirements
- utilizing funds in an efficient, timely and transparent manner
- accomplish all the development works in a qualitative manner

The Organization

Research and Development Foundation (RDF) is a non government, non-profit and non discriminative action research and social development institution registered under Societies Act 1860. RDF is working in the country with the aim to support local indigenous institutions to build a discrimination free society.

RDF's vision is of a value based progressive and a just society free from all discriminations based on caste, colour and creed.

The institutional mission of RDF is to support and strengthen the society at the bottom of the pyramid by generating knowledge, providing participatory innovative solutions, facilitating access to resources and services for the poor, marginalized and disadvantaged. RDF firmly believes and is actively involved in promoting human rights, dignity and gender equity through poor people's social, economic, political and human capacity building.

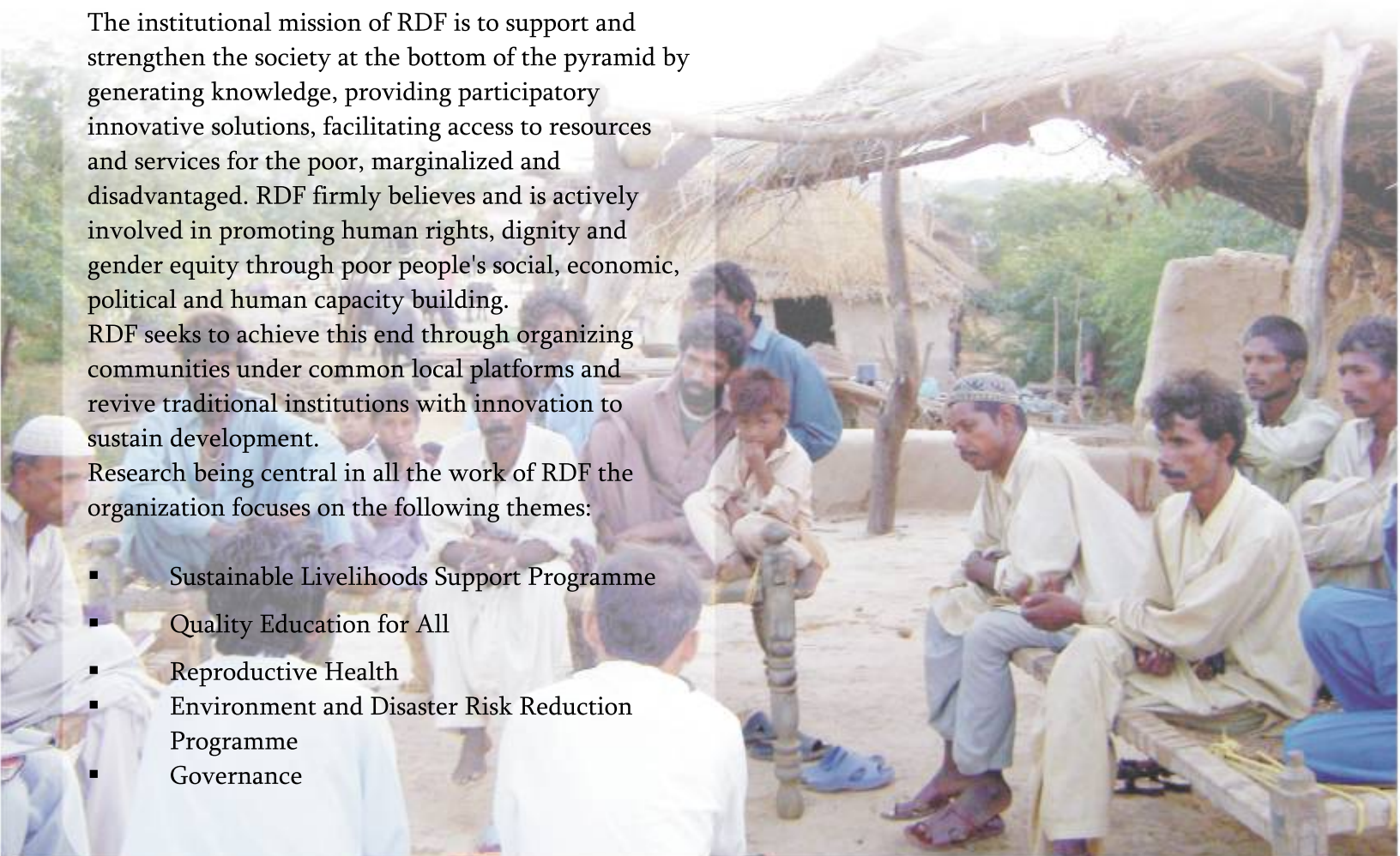
RDF seeks to achieve this end through organizing communities under common local platforms and revive traditional institutions with innovation to sustain development.

Research being central in all the work of RDF the organization focuses on the following themes:

- Sustainable Livelihoods Support Programme
- Quality Education for All
- Reproductive Health
- Environment and Disaster Risk Reduction Programme
- Governance



Research and
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Aerial view of housing works in village Jaffar Jamari

Glimpses of works under progress



Mr. Zia -ul-Islam, Chairman Peoples Housing Cell and Mr. Masood Ahmed Lohar, National Coordinator, UNDP GEF-SGP monitoring work progress



Mr. Nazar Hussain Mahar, Additional Chief Secretary (Dev) Sindh discussing design with Professor Jawed Shah and visiting ongoing works in village Jaffar Jamari



Mr. Hameedullah Jan Afridi, Federal Minister for Environment along with Mr. Imtiaz Inayat Illahi Federal Additional Secretary, environment visiting Model House at Thatta