

Green KaravanGhar

The low-carbon footprint, low-cost nucleus house

IMPLEMENTATION REPORT

District Swat, Khyber Pakhtunkhwa

August 2010 - February 2011



I N T R O D U C T I O N

Heritage Foundation, established in 1980, is a Pakistan-based, not-for-profit, social and cultural entrepreneur organization engaged in research, publication and conservation of Pakistan's cultural heritage.

The Foundation has been instrumental in saving a large number of heritage treasures and, as UNESCO team leader 2003-2005, undertook the stabilization of the endangered Shish Mahal ceiling of the 16th c. Lahore Fort World Heritage site.

Since 2000, its outreach arm KaravanPakistan has involved communities and youth in heritage safeguarding activities.

As part of Heritage for Rehabilitation and Development programme, work on several projects has been undertaken in partnership with Nokia and Nokia Siemens Network for rehabilitation of communities, particularly women, affected by the Great Earthquake in Northern Pakistan. The establishment of KaravanPakistan Institute for Research and Training (KIRAT) in 2008 has helped in carrying out research and training on varied aspects of the earthquake affected areas.

In 2009, the Foundation provided humanitarian assistance to Swat IDPs. From February to June 2010 through UNESCO-UK Aid project, the Foundation worked with 500 women for the revitalization of artisanship in several union councils of Swat.

After the Great Flood that affected all parts of Pakistan, through funding from various sources and 60% funding from the Scottish Government through Glasgow University, 266 housing units (GKG) have been constructed from late September 2010 to February 2011. The units have been designed as low carbon footprint, low cost units which are built with household participation in order to achieve a sense of ownership and pride.

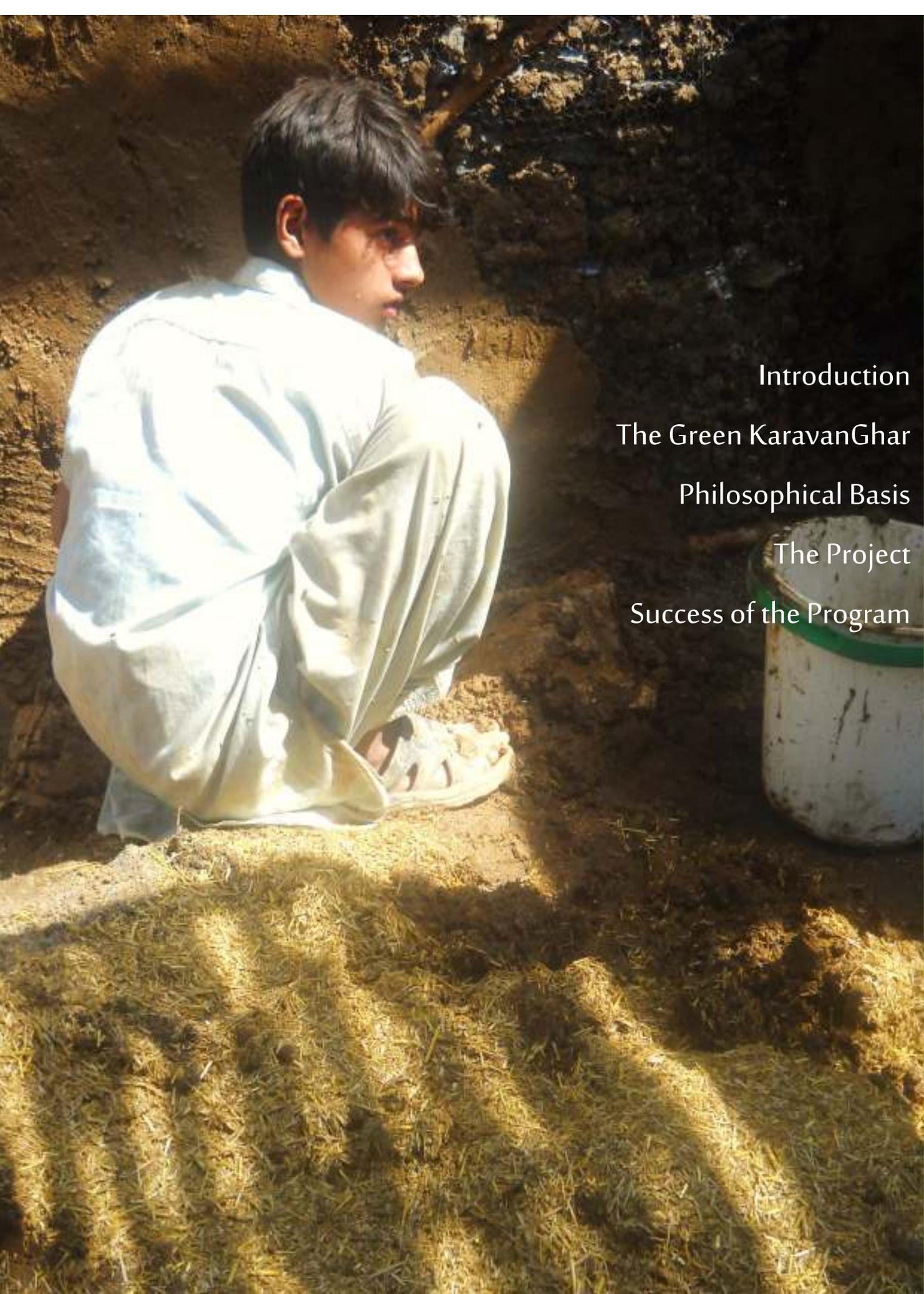
The present report provides details of the project which was carried out in Swat, mostly in post-conflict Upper Swat.

V I S I O N

To promote heritage and culture as a basis for rehabilitation, income generation and development.

M I S S I O N

The mission Swat is to provide immediate low carbon footprint, low-cost housing to post-disaster communities to enable them to re-start their lives and achieve self reliance.



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Introduction

Background

Swat, once a verdant land of peace and promise, was shaken by militancy and strife in the last few years. After the launching of military operation in 2009, forcing a huge exodus into relief camps, it again suffered the onslaught of nature's fury when the flood waters washed away many settlements.

The association with Swat communities of the Heritage Foundation volunteer wing, the Karavan Volunteers, began when we set up camp for Internally Displaced Persons (IDPs) at Shaikh Shahzad Camp in Mardan. Working mainly with women and children, the project began with the distribution of food and non-food items that had been collected through the generosity of friends and well wishers. In cooperation with the camp authorities, lead by Mr. Muddassir Malik, community kitchens were constructed, providing a cool haven in the intense heat of Mardan. The speedy construction of the superstructure was based on the use of sustainable materials, such as bamboo, mud, lime and matting that provided eminently suitable accommodation.

In addition, a large tent was set up as an assembly venue for women where activities such as sewing for livelihoods, literacy classes, and instructions on hygiene practices were carried out. In another large tent daily classes were held for children to encourage sports and crafts activities. The assembly tents were 'summarized' i.e. made cool through the use of sustainable construction materials on the same pattern as the community kitchens. Since many

IDPs had arrived near the Heritage Foundation Base Camp in Hazara, they were also provided as much assistance as possible, while those residing in Abbottabad were provided machines and garments, gifts for children and food items.

Having had close interaction with the brave women and children of Swat, in spite of the harsh conditions in the area, we took up the gauntlet when the opportunity was presented to provide further assistance – Though in fact it was with considerable trepidation that the project of crafts and livelihoods was undertaken. Since the women, by returning to their homes in early 2010, had shown their determination to withstand the onslaught of militancy, we felt it was now our duty as a civil society organization to be on hand during their hour of need.

Post-Disaster Strategy

Since a massive earthquake struck in October 2005 the support provided to traditional bead craft, under the Heritage for Rehabilitation and Development Program organized by Heritage Foundation-Nokia-Nokia Siemens Network,

has led to women's empowerment and better quality of life. We were therefore confident that a programme organized on similar lines for revitalization of traditional crafts would also lead to income generation and empowerment of women.

Initially, the UNESCO-DFID program requirement of achieving craft training of 500 women in just over three months seemed unattainable. Even under normal circumstances the task of identification and selection for training of such a large number of skilled women from marginalized communities seems daunting. Usually, it would take several months for training and awareness regarding acceptable quality of artisanship and product finishing. The realization of these objectives in post-disaster Swat, where militancy continued to surface, required a great deal of grit, and a resolute determination for showing solidarity and support at this perilous juncture in Swat's history.

The programme structure was designed with sensitivity towards prevalent norms and ground conditions, along with built-in motivational factors to



Children's gathering, Marghazar, August 2010

ensure enhanced results. The outcome was beyond our expectations. The women came forward with extraordinary zeal to make a success of the programme. They worked hard to become skilled and made products that they had not been aware of – indeed had never seen before. Through the project selected for further training in 6 union councils over 300 became proficient with embroidery products, while another 200 women, who had been provided with small household handlooms, became instrumental in revitalizing handloom industry of Islampur. A majority of the women trained through the programme have become wage earners through their craft skills. The women from our programme are now providing handloom skills to women in Upper Swat, in the Women's Center built by HF in Biha, and a vocational training centre built by Pakistan Army in Piyochar.



Women at the Karavan Mini Craft Centre in Swat, 2010

The next major disaster that hit the country was the 2010 floods that played havoc with lives of millions of people. Swat was the first victim of the devastating floods. Having had considerable experience in working with post-disaster communities, Heritage Foundation felt compelled to provide relief in the form of food packages and household goods to 500 affected families in Lower Swat, who had been part of the Crafts programme earlier in the year. Soon it became clear that more than rations and supplies were needed on an urgent basis – it was a roof over their heads that most families were in desperate need of.

HF immediately began to review options for shelter. Having built almost 1200 KaravanGhar (emergency units) after 2005 Earthquake utilizing salvaged



Experimental Unit, Green KaravanGhar, Heritage Foundation Base Camp, Mansehra, 2010

material from collapsed houses, HF had continued to experiment with local materials and techniques over the years. Among the most promising was the experimentation with bamboo structures that was being carried out at the KIRAT Campus, HF Base Camp in Chattar, Hazara. A single room accommodation 15'x10' was constructed on priority basis for the flood affected, which was completed through the cooperation of Civil Engineer Mr. Amin Tariq.

Green KaravanGhar

The Green KaravanGhar thus evolved as a robust, low carbon footprint, low cost unit that could be built quickly in order for the communities to restart their lives on an immediate basis. During the winter of 2011 it has successfully proved to be strong enough to withstand loads of 3'0" of snow as well as excessive rain. The philosophical basis of the Green KaravanGhar is the use of local materials, engagement of local workforce, involvement of community and student volunteers.



Interior of a GKG



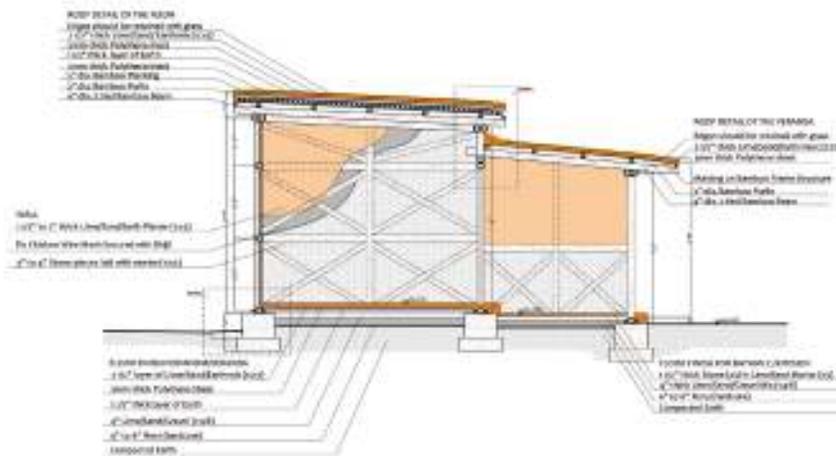
The proud owners of GKG Unit 15, Biha

us to reach out not only in Swat but also in Sindh. Due to the efforts of so many of our friends and well wishers, instead of building 250 one room units, as had been envisaged under the Scottish Government Funds, we have been able to provide 266 houses, which include a room size 18'x10'3", a 7'0" wide veranda, a kitchenette, a W.C. and a Washroom. As this report is being compiled, work has been undertaken in Khairpur, Sindh, where 100 GKG units are under construction through the support of Architecture for Humanity, USA and Swiss Pakistan Society.

The work in Swat, particularly Upper Swat, would not have been possible, had it not been for outstanding hospitality and facilitation provided to us by Maj. Gen. Javed Ramday, Div. Commander, Upper Swat. Those who we would like to acknowledge include Brig. Kazi, Col. Kiyani, Col. Ayub, Col. Irfan, Major Tariq, Major Tasneem and Hav. Boota, and particularly members of 70 Punjab Regiment who were our host throughout the entire work carried out in Upper Swat. My thanks are also due to Heritage Foundation's field teams for their hard work, particularly Mr. Naheem Shah, who lead the teams in Swat and Ar. Mariyam Nizam for coordinating the project in Karachi.

It is our belief that the GKG emergency housing is but the first step towards self reliance, through income generation, higher literacy rate, primary and preventive healthcare, skill enhancement, tapping of renewable energy sources and maximizing natural and heritage assets. It is my hope and wish that this model will lead to a change in mindset in order to address the crucial issues being faced by the country.

Yasmeen Lari, Sitara-i-Imtiaz
 Chair & CEO, Heritage Foundation
 Karachi, March 2011



Section AA

The Green KaravanGhar

In the aftermath of the floods a three-phase program was begun by the Heritage Foundation: Immediate relief, Shelter and Women's Empowerment. On news of the devastation, immediate relief was arranged for the affected people. Packages with Food and NFIs were dispatched to 500 families in Swat that were to cover above 200,000 meals. As news of the extent of damages came into view, it was obvious that immediate relief could only be the first step in the relief efforts – a roof over their heads was needed on an immediate basis. For initiating a shelter program damage assessments were undertaken, in order to identify the worst-hit areas and the extent of damage. This involved travelling to areas that were remote and accessibility was near impossible. Project Manager, Naheem Shah who had travelled from the Base Camp in Chattar, Mansehra with immediate relief packages carried out an initial site study. Marghazar, a small remote village near Islampur was the first site selected for construction of the GKGs.

Experimental Work

An experimental unit was undertaken at the Heritage Foundation base camp under the guidance of Ar. Yasmeen Lari in August 2010. This unit was a result of the work with indigenous materials and techniques that had been pursued ever since the first Karavan-Ghar was built in November 2005 in the earthquake area in the Siran Valley, Mansehra. In the aftermath of the Earthquake 2005 that devastated Hazara and Azad Kashmir, the setting up of KaravanPakistan Institute for



Completed GKG Unit 28, Upper Matta



Artisan trainees prefabricate beams and joists



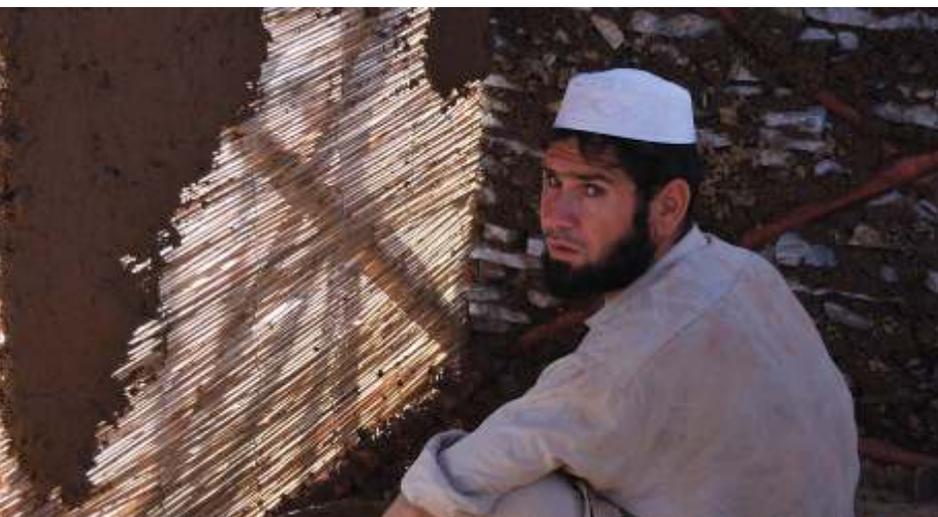
Artisans Work on Dhijji infill with Stone



Securing matting to veranda walls



Detail of roof-wall joint inside a GKG



Family member plasters the walls of his GKG

Research and Training (KIRAT) at HF Base Camp, Chattar, Distt. Mansehra, provided the opportunity for large-scale experimentation in the use of indigenous materials and construction techniques e.g. lime and mud, wooden dhijji (cross bracing) and bamboo.

Heritage Foundation (HF) began constructing a unit utilizing materials such as stone and wood from the debris of collapsed houses, along with the use of lime (instead of cement) in mortars, with provision for bond stones, G.I. sheets in corners and horizontal bracing in stone masonry walls. Galvanized sheet roofs were used due to scare of mud roofs that had collapsed during the earthquake. In 2007, bathrooms for executive tents were constructed at KIRAT. These were inspired by the traditional indigenous building technique known as Dhijji, in the Hazara region, which had withstood the tremors.

Later during the year, a rehabilitation project known as the Destiny Makai Ki Roti involved the establishment of low cost kitchens. A design was developed with wood horizontal and cross bracing (dhijji). As the mix was refined an improvement on the application of Mud/lime mortar and plaster was visible. The construction of the kitchens provided enough expertise to the team at the Heritage Foundation Base Camp in Dhijji infill walls, yet the use of G.I. sheets still posed a problem to Ar. Yasmeen Lari. The construction of a couple of utility buildings provided the opportunity to test whether a water tight mud roof could be constructed. From that day on, Heritage Foundation discontinued the use of G.I. sheets for roofs.

The design of Research House consist-

ed of stone masonry walls with timber horizontal bracing and posts, timber joists and purlins. This was the first structure with large spans in which mud roof was applied over diagonal semi circular pinewood logs.

As part of the Hygiene Awareness Program, one hundred and thirty seven bathrooms were constructed with dhijji walls, wooden planks and mud on roof while local stone was utilized for flooring. By early 2009, the construction of community kitchens in IDP Camps in Mardan proved to be a great step toward the 'green' building methodology. The design of a bamboo structure was done while sitting in the Mardan Camp by Yasmeen Lari. To everyone's surprise, the use of bamboo resulted in speedy construction –within 3 days the community kitchen was ready – the use of matting and application of mud/ lime plaster provided insulation to provide a difference of almost 10 degrees in outside and inside temperatures.

The question now was, could bamboo be used in earthquake areas. A small store was designed, for which plinth beam and ring beams in timber, as well as timber joists for roofs were suggested. These were employed but construction of a complete bamboo structure was taken up as the new challenge. The Winter House, with a diameter of 16' was constructed with bamboo supports in the earthquake area. Structural advice was still to use timber plinth and ring beams and wooden joists. HF architects decided to use bamboo ½ strips for roof planking and lime/mud roof finish. For the first time experimentation with stone filling in dhijji cross bracing was also undertaken.

Based on the design of the Winter

House with 16' diameter, an experimental unit was constructed in the HF Base Camp. Since HF's requirement was to make the entire structure without the use of wood, extensive studies were undertaken and solutions were found which obviated the use of timber. This unit was later to be converted into the Green Women's Centre that was used as part of the rehabilitation and reconstruction undertaken in both Swat and Sindh after the floods.

The findings from these experimental buildings that are clear from 'The Journey to the Green KaravanGhar' resulted in the decision to do away entirely with the use of timber and galvanized iron sheets. It was decided that in the experimental unit only those materials that were low in cost and had an extremely low carbon footprint will be employed. Bamboo, a species of grass that is fast growing, extremely strong and environmentally sustainable, was selected as the main construction material. Stone was to be used for foundations and dhijji (cross bracing)

infill, while different mixes of mud and lime were utilized as mortar and plaster. With nominal use of cement and steel bolts, and an increased use of indigenous and sustainable materials, the unit was immediately dubbed as the Green KaravanGhar.

Construction material issue forms to artisans and household members, along with workshop and construction manuals were completed at the Heritage Foundation Head Office in Karachi by Ar. Mariyam Nizam.

Grants

Donations from various sources kept pouring in as the initially envisaged 100 unit project grew to 250 and then larger still. Among the first major grants that were received for Swat was from the Scottish Government through the Glasgow University. The grant was significant as it provided funding for 250 single room units of size 10'x15'. Additionally, the fact that the Scottish Government reposed confidence in a low cost sustainable construction - even



Winter House, Heritage Foundation Base Camp



Household members help bring material to site



Community members prepare mud lime mixes for mortar



HF team teaches local members how to secure bamboo matting to structure

today the GKG cost of less than Rs. 50,000 is far lower than other emergency shelters being built. It also provided the opportunity to expeditiously reach out to affected families and became the starting point for other rehabilitation efforts. Other donors, friends and well wishers, that provided immediate help, made it possible to increase not only the size of the room envisaged under the Scottish Government grant, but also add further accommodation in the form of a verandah, kitchen, W.C. and washroom to meet the requirements of the community.

Swat Scenario

The selection of Swat was motivated by it being the first areas to be devastated by the 2010 floods, as also because of Heritage Foundation's association with women of Swat in the past. The work was first taken up in Marghazar, an area close to Islampur, where a thunder burst had washed away over 40 houses completely. Marghazar in Lower Swat is extremely picturesque and has been comparatively peaceful. While most houses were dispersed on hills with difficulties in delivery of materials, others were strewn with big boulders that could only be removed by cranes and the danger of continuous water seepage persisted along with removal of silt. In spite of all these and other impediments work was carried out at an amazing speed and the GKG structure was completed by midday 29th August, 2010 and was ready for the final inspection by the beginning of September. The inspection of prototype GKG at Marghazar included a visit by DCO Swat, Mr. Atif Rehman who appreciated the design of the Green KaravanGhar, which he said blended well in the environment. As a result meetings with UN-Habitat and World Food Programme were arranged by the DCO leading to the decision to

begin construction of the GKG units.

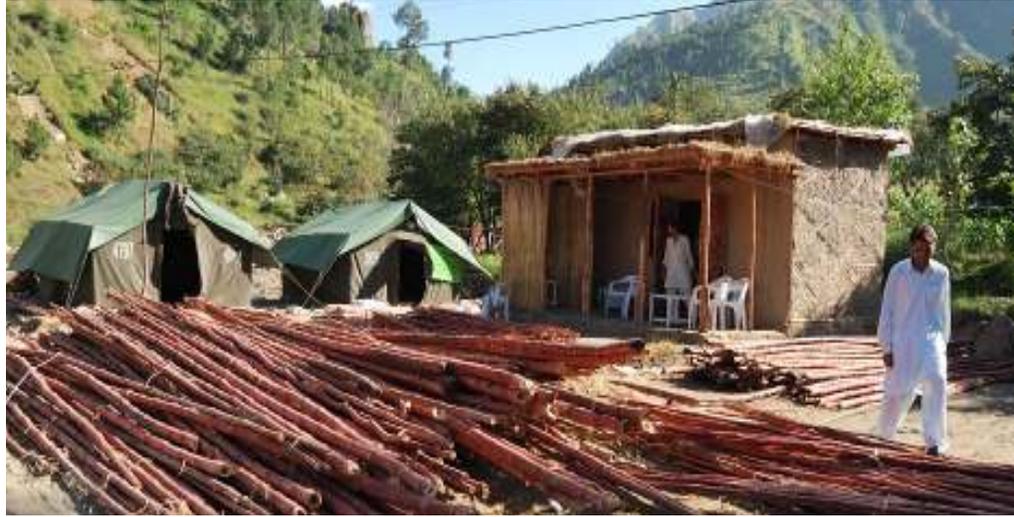
Soon it became clear that the devastation in Upper Swat had affected a far greater number of families. On the request of Pakistan Army and District Government officials to initiate rehabilitation in the region which had faced turbulent times GKG construction was simultaneously taken up in Matta area. The challenges in Upper Swat were far greater. In addition to the difficulties faced in accessing high mountainous terrain and dispersed households on remote hill tops, the issues of curfew, escaping militants, and occasional shootings had to be contented with. Pakistan Army, particularly 70 Punjab Regiment in Chuprial provided exceptional facilitation in the form of accommodation and security to student volunteers and other professionals who arrived periodically to help in monitoring and supervision of the construction of over 200 units.

Heritage Foundation, relying on its key dedicated personnel, has been consistently able to serve in the remotest post-disaster areas. Since the winter was round the corner, those living on the mountain tops of Upper Swat were extremely vulnerable. It therefore became essential to work out ways to reach out to them, even though the terrain and conditions were extremely challenging. The fact that Heritage Foundation has successfully completed its assignment of 266 housing units, speaks volumes for its field teams, headed by Project Coordinator, Naheem Shah. Nature has also tested the GKG units in Swat. There was 3 feet of snow on the roofs and excessive rains during the month of February and the units withstood it.

Philosophical Basis

Drawing upon experiences in working with post-disaster communities, the following formed the philosophical basis of the post-flood project:

- Use of indigenous resources, heritage and traditions for rebuilding
- Use of sustainable materials for Low carbon footprint, low cost housing units
- Optimizing use of building materials available locally
- Maximizing utilization of indigenous techniques and local workforce
- Through improved methodologies and safe buildings, restoring confidence in local building techniques
- Design to correspond to lifestyles, income group and cultural context
- Maximizing community participation; fostering sense of ownership and pride
- Enabling communities to build low cost, low-tech structures themselves according to their needs
- Conservation of environment, tangible and intangible heritage
- Economic regeneration through improved vernacular construction, local materials and workforce



Bamboo Workshop



Prefabrication of Bamboo at workshop



Completed Demo Unit Marghazar Swat, 2010

The Project

The parameters for shelter and rehabilitation consist of the following:

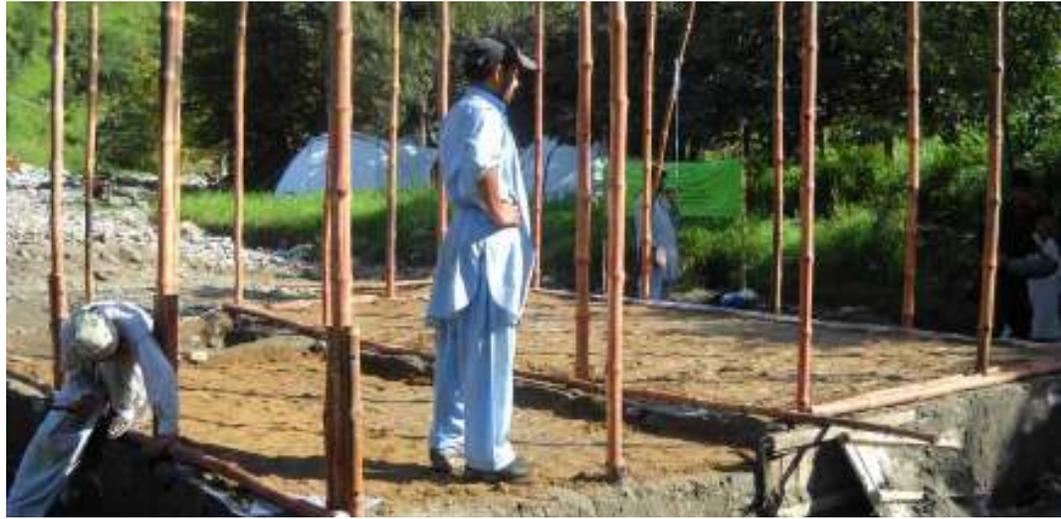
- Low carbon footprint, low cost shelter – the Green KaravanGhar - as the starting point for rebuilding lives
- Revival of livelihoods for women’s economic empowerment crafts and agro-based products
- Primary hygiene and health care regimen by instilling requirements of clean water, hand-washing and hygiene procedures
- Literacy among adults particularly women as well as children.

The Green KaravanGhar has been designed around four components:

- Guidance through HF trained skilled Artisans Team
- Training and capacity building of local artisans
- Student volunteers
- Community participation including tasks performed by women

Skilled Artisans’ Team

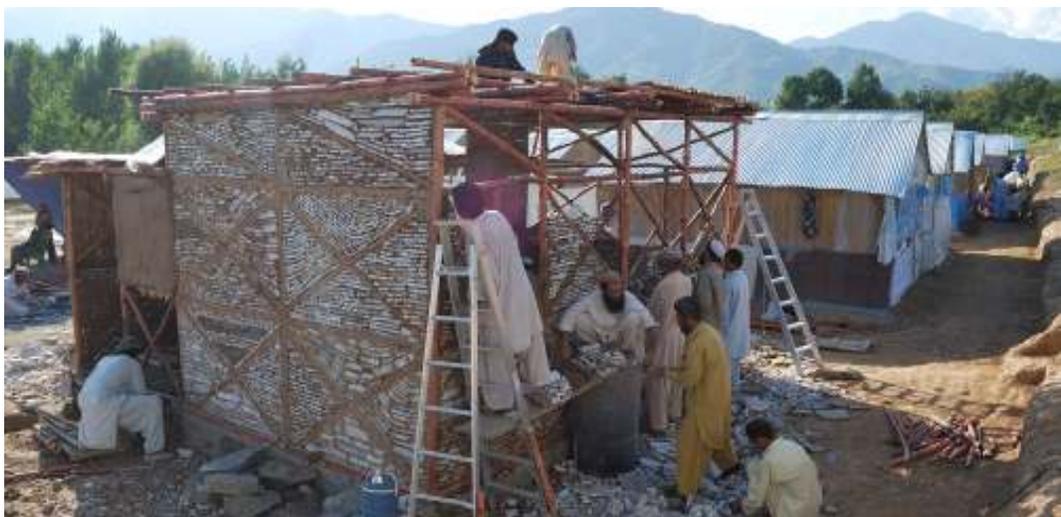
To begin work in Swat, a team of skilled artisans consisting of two carpenters and two masons, trained at the KIRAT Campus, HF Base Camp, were mobilized from Mansera and Mardan. Among the first steps were to set up a tent camp and a workshop for assembly of bamboo components. A demonstra-



HF skilled artisans erect bamboo posts



Two GKG units constructed side by side for a joint family



Artisan teams, trainees and community members work together to complete Demo Unit in Korey

tion unit was taken up and visits by Ar. Yasmeeen Lari, Engr. Amin Tariq and others ensured that the construction of the unit was being carried out with utmost care. Periodic visits from district government officials and other dignitaries and professionals proved instrumental in providing feedback and advice on the use of construction materials, methodology and technique.

The Heritage Foundation team of skilled artisans was organized to train local skilled artisans. The training process required the trainees from helping around the site, to laying stone masonry foundations, participating in prefabrication and assembly of beams, joists, doors and windows and finally in the erection of superstructure. They were specially trained in construction of dhijji (cross bracing) methodology along with filling with stone. During the course of construction it became clear that the infill with stone was excessively time consuming requiring a great deal of effort, that was also adversely effecting the timeline set for the project. As an alternative, bamboo matting, which had been utilized successfully by HF in the Community Kitchens in Mardan IDP Camps 2009, with layers of mud/lime plaster, was now used. Because of this decision, in addition to speedy completion of housing units, the materials provided sufficient insulation. Although initially only one room units were envisaged, however, in view of assessments of family size and local traditions, further accommodation in the form of a veranda, kitchen, bath and WC were added.

Local Artisans – Training and Capacity Building

The success of the Green KaravanGhar is not embedded in the accomplish-



Community member assist in excavation of foundations and laying pad



Household members mixing ortar and dressing stone for foundations



Laying stone in veranda, kitchen, WC and bath

ment of completed units; it lies in the successful training of artisans in skills that can be employed once the programme is completed. At the beginning of the programme, the HF skilled artisan team included a mere four persons who prefabricated, erected and completed a unit in the eight day timeline. Training sessions and dedicated work on site has led to the successful training of nearly forty local community members in the GKG construction methodology. Stone masons were taught methods of dressing the stone and laying it with proper bonds as well as making a foundation pad and mixing the correct amounts of materials for mortar. Carpenters were trained to specialize in bamboo construction in the several stages of its preparation. From curing to cutting, assembly, bolting and prefabrication of elements as well as the erection and tying together were all part of training sessions that were organized. These field training sessions provided hands-on experience in working with the materials. This methodology not only helped in expediting the process of training but helped in speeding up the construction time as well.

In an interesting sequel, artisan trainees trained in Swat, later travelled to the province of Sindh, where they are engaged not only in erection of GKG Sindh, they are now training local artisans in the technique that they had learned just a few months ago. Heritage Foundation believes that this training programme not only benefitted the flood affected people by giving them homes to live in but also helped generate income and train local semi skilled labour to successfully manipulate a material that is easy to use but requires proper training in implementation.

Student Volunteers

A built in feature of the Green KaravanGhar was the involvement of young students. Discussions with Pakistan Council of Architects and Town Planners (PCATP) and Institute of Architects, Pakistan (IAP) to engage universities and architectural students were held. Invitations were sent to architectural students in their third or fourth year of professional education to come forward and assist the Flood Relief Effort. The students were to be instrumental in carrying out layout and monitoring the construction of the units.

National College of Arts, Lahore was the first in their response and dispatched 15 students over a period of several weeks in groups of three. Travel was sponsored by Heritage Foundation, while accommodation was facilitated by the Pakistan Army. Each student received a Volunteer Kit that contained a jacket, a logbook, a construction manual and tools such as a measuring tape, plumb line and wooden triangle to take measurements and check the layouts. The students helped in scouting sites for construction, marking lay outs and providing general instructions on site. This not only gave the students the much needed field experience but also helped promote the concept of literacy for both boys and girls amongst the local community. Students interacted with young adults from Swat, involved women and children in discussion and carried out basic surveys of the surrounding areas. The interaction was extremely valuable since the students brought with them positivity and their interaction with the local community created a much needed hope of future endeavours where young Pakistanis could continue to help their compatri-



Student Volunteers at Korey Camp



Student Volunteers travel to remote villages in Upper Matta



Women's Assembly in Upper Matta



ots in adversity. The students received certificates of participation and an experience of a life time.

Community Participation including Women

For any housing programme to be successful, it is of vital importance that it be embraced by the local community. It was made clear from the beginning of the GKG initiative that the units would be built on participatory principles. The household members must clear and level the land and begin to excavate the foundation based on the layout marked. This made the beneficiaries equal stakeholders in the construction of their Green KaravanGhar.

Based on surveys conducted by the Government, post-floods the identification of a beneficiary household was undertaken. A layout of the house was marked and members of the household were asked to excavate the foundations. The Heritage Foundation teams of artisans were instructed that they should begin work only when beneficiary

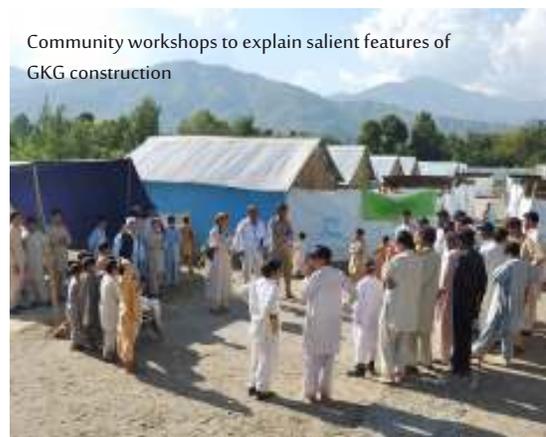
families had completed the excavation as an expression of their desire for a GKG. The members would also assist in laying out the foundation pad and the stone masonry. They would assist by carrying building materials, mixing mortars and finishing the unit with layers of plaster. Since women are traditionally skilled in laying mud plaster, the fact that GKGs relied on finishing the structure with mud plaster, it provided an opportunity to women also to participate in finishing their house. The whole household would have a sense of pride and ownership by the time the GKG was finished.

Community Workshops

In addition to others in the team, Ar. Yasmeen Lari conducted workshops with the owners of houses, explaining them the salient features of construction. She informed that the owners needed to be fully aware as to the kind of housing unit was being constructed and the material and services that Heritage Foundation teams were to provide. She also asked them to



Community assembly to collect feedback from owners living inside GKGs



Community workshops to explain salient features of GKG construction



supervise their own unit, pointing out the critical aspects that must all be complete. This methodology helped in greater participation of households, more effective monitoring and transparency, at the same time ensuring that all required provisions were in place. A system of reporting ensured that any complaints were immediately redressed. The second tier of reporting was put in place by asking Army teams to visit each house and report back if there were any complains.

Household owners received blankets, bedding, clothes and kitchen utensils once they had completed the unit and were ready to move in.

Program Success

The innovation brought about through the use of bamboo, mud and lime is something that has not so far been implemented by any other organization. The lessons learnt from the post-earthquake work, and built into the bamboo structural system, have resulted in not only a very strong and resilient structure, the lesson of tradition through the use of mud and lime has resulted in well insulated houses at an extremely low cost. Another positive feature of the GKG is its ease of adaptability, and the possibility of incorporating changes according to site conditions and requirements of family. The key to fast construction is the organization of all tasks. For example, as the hurdles of the site were countered, a great deal of effort was expended on organizing the bamboo assembly activity at a central place. Separate teams were organized to prepare pre-cut and prefabricated bamboo elements for speedy delivery at sites where the foundations had been

completed. The innovations brought in completion of roofs, from better tying methods to use of smaller diameter bamboo etc. also speeded up the completion of the units. The organized effort became so successful that by last fifty units, foundations, erection of structure and roof along with dhijji infill could be completed in a record time of three days.

Regular interactions with the local community have provided extremely positive feedback from the people who were living inside the GKG. The units are said to be warm retaining heat from not more than a small fire. Most of the units have had to withstand more than three feet of snow and other natural extremes such as wind and storms. Heritage Foundation is confident that the units will be resilient against most of the annual climatic extremes.

The project allowed interaction of various groups due to its ease of understanding of the structural assembly as well as the common, local materials

that are used. GKG team of students, professionals and artisans travelled from one village to another and held meetings and assemblies with the local community. On the one hand, it helped in dispersion of knowledge about GKG construction mechanism, it also helped in understanding the cultural norms of remote communities. The men in the area mostly leave their homes to travel to larger cities for work; it is the women of Swat who have to contend with raising the family under most challenging conditions. These hard working women have been found to be eager to learn new trades and undertake activities that would increase the earnings of the household. The family sizes are large and the extreme poverty has caused a vast majority of children to be left uneducated. Accordingly, Heritage Foundation is building community assembly areas where basic literacy classes and training sessions for women livelihood activities such as handicrafts and agro-based products could be held. Two Green Women's Centres have been built



Interior GKG unit



in Biha and Korey. These Women's Centres are already operational where training in handlooms and other skills are in progress.

Monitoring

Visits by Professors Dr. Peter and Dr. Azra Meadows, GOC, Swat, and various other dignitaries ensured that the project was closely monitored for quality and transparency of funds being deployed. After countless visits by Ar. Yasmeen Lari to remote villages and training of more than eight teams of local artisans and involvement of more than 1000 household members the Green KaravanGhar could easily be termed as a story of success in the Heritage Foundation's three tier programme in Swat.

After the successful completion of 266 Green KaravanGhar, a community assembly was held in Biha, Swat on the 5th of March, 2011 upon the visit of the eminent professors from the University of Glasgow, Dr. Peter Meadows, SQA, and Dr. Azra Meadows, OBE, along with Hon. Project Director, Yasmeen Lari. The Green Women's Centre in Biha was completed along with the installations of handlooms and a women's assembly took place at the GWC. The centre was inaugurated by Dr. Azra Meadows. The GWC at Biha has been supported by Ms. Fareeda Nishtar, President, Peshawar Floral Arts Society and Scottish Pakistan Association.

The valiant efforts of HF staff, volunteers and the local population of Swat helped house the flood affectees in a very short time period considering the enormity of the task, as was the Pakistani Army's unconditional support and facilitation of Heritage Founda-

tion. Heritage Foundation Pakistan has expanded its GKG efforts to other flood affected areas in Pakistan and has received the same enthusiastic welcome from all sectors.

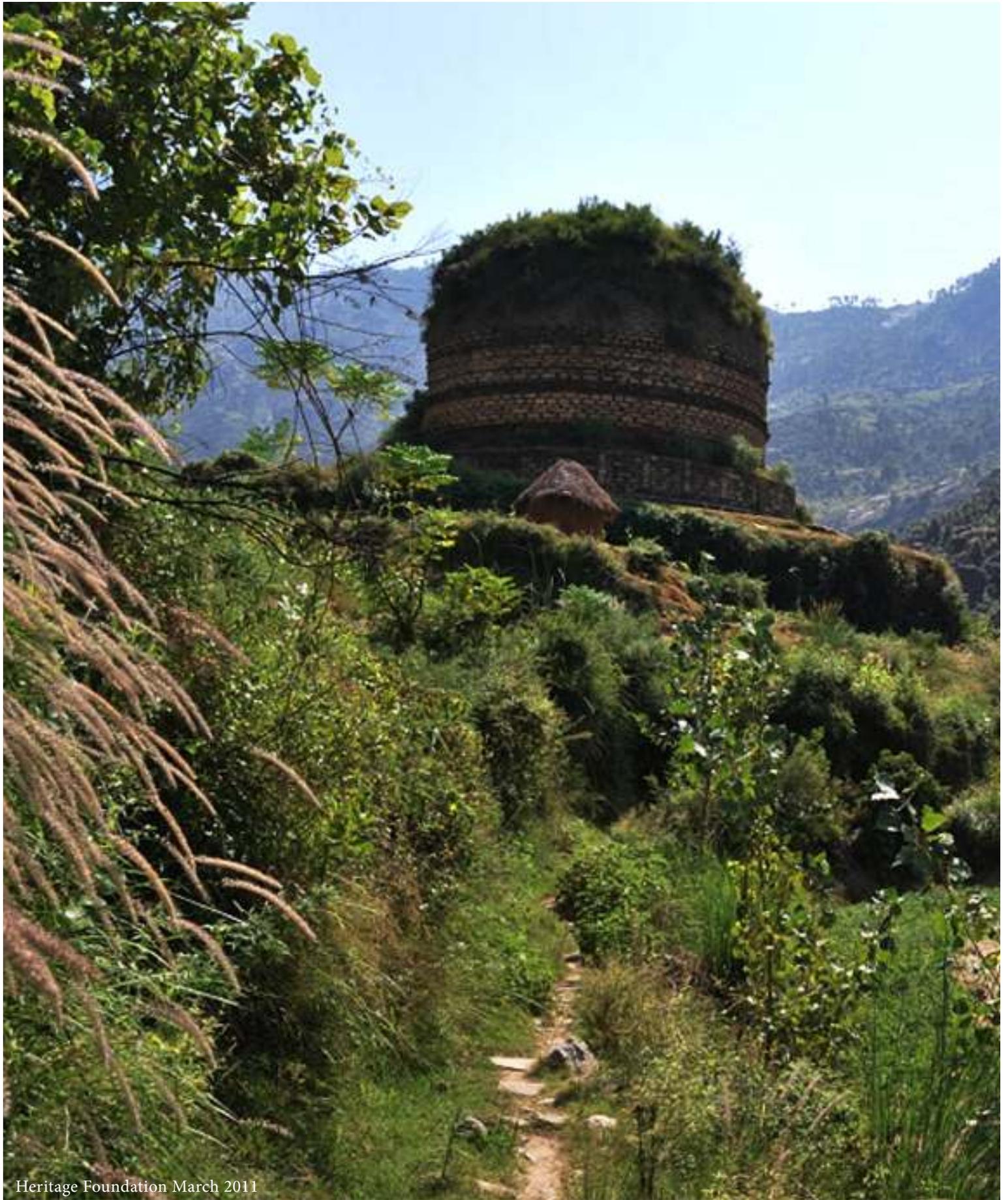
The Heritage Foundation Team is currently involved in carrying out Phase -Three of the programme, where two Green Women's Centres mentioned above are being furnished with handlooms and spinning wheels. Women and youth empowerment strategies are being worked upon. This will include training in livelihood activities such as embroidery, handloom and other handicraft products as well as agro based sustainable products that can be marketed at local and nationwide markets. Linkages with national and international brand names are being worked upon, but will require further study. As part of Rehabilitation, a Karavan Online Classroom and mobile computer lab is also being equipped. This will be a small van that can travel within a Union Council and provide schools with access to internet and computers, hence providing computer literacy classes and involve children and the youth in activities that provide a window to the world.





Heritage Foundation would like to thank the following for their support which contributed in completing 266 GKG Units in Swat:

- | | | |
|-------------------------------------|--|--------------------------------|
| 1. Alina Mirza | 13. Malcolm Green | 25. Samina Masood |
| 2. Anjum Zafar Nadeem Patel | 14. Mauvis Gore | 26. Saud Mehmood |
| 3. Bushra Jamil | 15. Murad Jamil | 27. Scottish Government Fund |
| 4. Clare Meadows | 16. Naseem Anwar | 28. Shaheen Salahuddin |
| 5. Commtel | 17. Nuzhat Mehmood | 29. Shahnaz Yasub Dogar |
| 6. Dr. Azra Meadows | 18. Pakistan Institute of Interior Designers | 30. Shahtaj Sugar Mills |
| 7. Dr. Peter Meadows | 19. Parveen Rashid | 31. Shama Usman |
| 8. Farida S. Akbar | 20. Raymond Stoddart | 32. Sharaf Shipping Agency |
| 9. Haaris Haque | 21. Rose Mary Harley | 33. Tariq Durrani |
| 10. Information Systems Association | 22. Rupert Ormond | 34. Transparency International |
| 11. Jan Muhammad | 23. Saad Rashid | 35. Usman Siddique |
| 12. Khurram Zaeem | 24. Salma Imtiaz | 36. Zainab Burney |



Heritage Foundation March 2011

