

### Progress on zero carbon footprint mud brick vaults

Yasmeen Lari's mission to create zero carbon footprint structures is moving forward well. Even though stabilized mud walls and multiple bamboo KaravanRoofs are extremely successful (dubbed in Sindh as KatchaKot or the Unfired Clay Fortress due to their strength in withstanding flooding and excessive rain), there is some embodied energy in transportation of bamboo to the site. Many people have also raised the issue of availability of bamboo. It is interesting though that since 2009 when HF began to use bamboo structures quite extensively - from Swat in the north to Khairpur and Tando Allahyar in the south - this year the purchase price of bamboo has been the lowest. Quite remarkable since last year has seen an exponential rise in the use of bamboo, because of Lari's insistence on using bamboo in place of industrialized materials such as steel joists, or wood in order to avoid depletion of forest reserves. While it is essential that bamboo farming should be undertaken as extensively as possible, It is interesting that market forces are at work, and bamboo growers are already catering to the extra demand.

In order to build zero carbon footprint buildings, to be undertaken with funding provided by South African Charity Spiritual Chords, experimentation has been carried out on adobe vaults with great success. Although Ar. Yasmeen Lari had used mud brick vaults in her project in Bhawalpur in 1981 (published in her book "Traditional Architecture of Thatta") it had not been possible to widely popularize it. With the implementation of the mud vaulted roofs for HF office and for the ground floor of Murad Jamil Literacy Centre at Moak Sharif, designed by Ar. Lari, it would now be possible to build vaulted structures in Sindh, that carry no embodied energy and rely entirely on unfired clay. Limited use of quick lime in the base and in external renders is the only other element in the construction of the kubba (dome/vault) health centres that are under construction in various villages with funding provided by the Muslims of South Africa through Ms. Safeeyah Moosa of Spiritual Chords.



*mudbrick vaults of Literacy/ParhoPakistan Centre at Moak Sharif*