



AKAA, 1986, rehabilitation of ksour, Draa Valley

REHABILITATION OF KSOUR, DRAA VALLEY, MOROCCO

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So many projects have been nominated for the Aga Khan Award that quite a number of them have reached the final stages of screening and been reviewed by the technical reviewers. A few of them won the Award and thus received attention through publicity. However, those which did not make it did not enjoy such attention, although there is much to learn from them. This is one of the hidden assets of the Aga Khan Award.

The Aga Khan Award is building a library of technical reports with full documentation of important projects that did not have the chance of winning. When those materials become accessible, they will be a valuable source of education for both professionals and academicians. This paper will give one example of an excellent project that was nominated and reviewed twice but failed to win.

In 1986 Mr Raoul Snelder was the Technical Reviewer for the rehabilitation of ksour, a job which I inherited in 1989. I had the opportunity to learn a tremendous amount from reviewing the project. This case stands as a good representational example of the many excellent projects that are not yet known to professionals.

The ksour (plural of ksar) are compact fortified villages which are closely built on the edge of the oasis-like river beds, against inhospitable and barren mountainous backgrounds. The ksour are built of mud and are lived in by a sedentary farming population. The compact fabric has an urban appearance that is marked by *burjs* (towers). The fundamental problem with the ksour was that the outstanding traditional mud architecture was decaying through lack of maintenance, which in turn was caused by a tendency of exodus.

More than twenty-five years ago Monsieur Jean Hensens, with the assistance of Moroccan technicians, studied and proposed the 'Draa Valley Project'. The concept of the project was self-help, taking advantage of the tradition building skills of the local population that was largely under-employed, to preserve the dwindling heritage of traditional mud architecture. The project did not aim to take care of all problems; its strategy was to provide an impetus which might help stop the exodus which was decaying the ksour. To preserve the physical form, there was minimum intervention, which meant maximum participation, and this was a shortcut for a higher quality environment. Nevertheless, there are many

inevitable problems that are beyond all involved individuals' control – such as drought. For a passerby, the project may not appear to be as successful as it is. The residents' poverty camouflages reality. A comparison between those ksour that were renovated by the project and the ones that were not, and the sharp contrast between their physical quality and their residents' condition, reveals the initiators' originality, especially if one considers that the project commenced only twenty-five years ago.

The Ksour and their Site

Although the climate is harsh during summer, where the average maximum temperature is over 30°C for seven months and reaches 44°C in July, with the average minimum of 10°C during four to five months of winter and reaching as low as 3°C in January, the ksour managed to respond to this harsh climate. The *iksar* houses offer an excellent environment during most parts of the year. The residents proudly argue that the temperature remains constant during all the seasons, as streets are continuously ventilated by a cool flow of air. However, diurnal variation – as a monthly average – is rarely less than 15°C or more than 18°C which means that traditional houses offer a good environment during most of the year. Hot winds charging the air with dust and sand are not unusual.

Annual rainfall declines as one descends into the pre-Saharan region, coming from Marrakesh through the Atlas Mountains. Some years there is hardly any rain at all, thus rain-dependent agriculture is not possible.

The south-east side of the Anti-Atlas is a desert that accommodates some fertile valleys such as the Draa Valley (Wadi Dar'a), the Gheris, the Dades and the Ziz. The melted snow creates a linear oasis river bed in which water is used for irrigation for most parts of the year. The Draa River reaches its mouth (Mhamid) only in years of comparatively heavy rainfall. The seventeen renovated ksour are located between the towns of Agdz and Zagora (land area of ninety-four kilometres) where the site is fairly flat and the valley drifts towards a backdrop of distant mountains.

If the relief of the Draa Valley is shallow, the ksour will dominate the surrounding environment as they are located on high ground. The existing approach is from the main road where the lack of vegetation contrasts sharply with



the traditional original entrance from the green oasis. Some ksour lie on the edge, or in the middle of the oasis. Most ksour in the Draa Valley can be easily reached from the main road between Ouarzazate and Zagora (162 kilometres) which runs along the edge of the oasis.

The original ksour form is open to many theoretical speculations. One of the most likely explanations is that they came with the Arab and Arabised Berber tribes (for example, the Beni Hilal who arrived in the twelfth century, the majority of whom crossed the Atlas Mountains while a few remained in the valleys; the Beni Ma'qul who came between the thirteenth and fourteenth centuries, some of whom currently live in Zagora and Asrir; and the Beni Hassan who have mostly remained in the desert). Supporting this theory are the many Arabic names of the ksour. This hypothesis may also explain the similarity between the Yemeni architecture and the ksour. Another functional explanation is that nomads and sedentaries have lived for centuries in intimate but sometimes antagonistic and interdependent relationships, which may have given the ksour their present form.

There are no clear patterns to the streets of the ksour. However, the narrow streets are sometimes laid out according to a grid-like pattern or with a few dead end streets connecting the main streets. The most interesting architectural feature is the lighting inside the ksour. Streets are often covered with long overpasses or *sabats*, creating narrow, dim streets and sometimes totally dark dead end streets. The reason, they say, is that flies usually avoid darkness. With dates (which are sweet) being the main source of food, and the hot climate, the inside of the ksour is the only place for flies to retreat to. To solve this, the residents maximise dark spaces. The ksour's darkness and the residents' ability to control light within houses and public spaces against the bright desert light is perhaps the most innovative feature of this type of architecture. Sometimes the lights in the streets in between the *sabats* are like spot lights in a tunnel, while the light of the courtyard inside the houses is like a spotlight in a cave.

Burjs mark the ksour's defensive walls. They are placed regularly on the outer wall or on the houses of the wealthy. Each tower can have a different decorative style and they are usually extensions of staircases.

The typical house is usually a two-storey building which is constructed on 150 to 250 square metres. Houses of the well-to-do can be of three-storeys (but rarely more), with the top floor doubling-up as a roof terrace. Here there are a few other rooms which serve as bedrooms. Doors between roof parapets allow the residents to move from one house to another, especially the case amongst houses of close relatives.

Long narrow rooms are arranged around the central square or rectangular open space, in which four to eight thick square- or L-shaped columns surround a central courtyard. Sometimes there are no walls between spaces

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around the courtyard, thus forming one large space with the columns in the centre marking the light well. The court is usually walled by a less than one metre high parapet above the roof terrace which receives a modicum of light controlled by the placing of mats on the opening.

Users

Hensens put the number of ksour-dwellers in the Draa Valley in 1971 at 124,000 living in 350 ksour of diverse sizes; while the number of the people who benefited directly from the project amounting to approximately 20,000 to 25,000 (or about 18% of the total initial target population). The population of one of the ksour that benefitted from the project (Asrir) is 1,500-1,800. The majority of current users are farmers in the low to very low income category. The economy was delicately balanced in the past and was based on farming. The oasis dwellers grow barley, sorghum, wheat, vegetables, olive trees and some other fruits, the most important being date palm. Dates are very important for the economy. A family in ksar Asrir could own anything from 100 to 200 palm trees. One tree would give up to 100 kilogrammes/year of dates. The highest quality date is usually sold for 10 DH/kilogrammes (in 1988), the middle quality (worth 7 DH/kilogrammes) is stored and consumed by the inhabitants and the lowest is fed to the animals. The leaves and the wood of palm trees are used for building materials, flat dishes, deep baskets and firewood. Livestock consists of cows, donkeys, sheep, goats and chickens.

The Problem

The Moroccan five-year (1968-1972) development plan combined the policy of agricultural development with an agricultural investment code and a plan for important hydraulic projects. The regions affected by this were to experience changes from a subsistence oriented production to an industrialised commercial agriculture. The plan was that with increased revenues in those rural areas, modernisation of the rural habitat would stimulate production and create employment, thus reducing a rural exodus to towns. A programme to construct 60,000 new houses throughout Morocco was included. The restoration and renovation of 30,000 houses in the ksour valleys were included in the five year programme. Assistance was requested from the World Food Program (WFP) in rural housing developed schemes, in the hope that this would improve the living conditions of the farmers affected by agrarian reform, and the redistribution of land in the areas earmarked for development.

Although the oasis in the region is known to be the richest in water in North Africa, the prolonged droughts and the new ecological conditions created by the dam near Quarzazate, and a palm tree disease combined with the population growth and the increased number of settling nomads have all affected the local economy.

The migration of the wealthy to cities leaving their farms to be exploited by farmers (*khammas* or *rabba'*) on rent contracts who may not care about the properties as owners do, and the out-migration of craftsmen whose skills are better rewarded elsewhere, are other major factors that affected the economy negatively. Thus, it can be said that the region is not sufficiently equipped to support the growing population. Compared to the cities, the majority of the population living in the ksour live at a substandard level. The poorest living in a city can at least re-use an old piece of furniture, but in the ksour even this privilege is denied. Most houses have no furniture other than dishes and a mat. The new influences on the Draa Valley societies and the strain on the traditional delicately balanced economy affected the socio-cultural situation to such an extent that it resulted in migration – this area is thought to have the highest migration rate in Morocco.

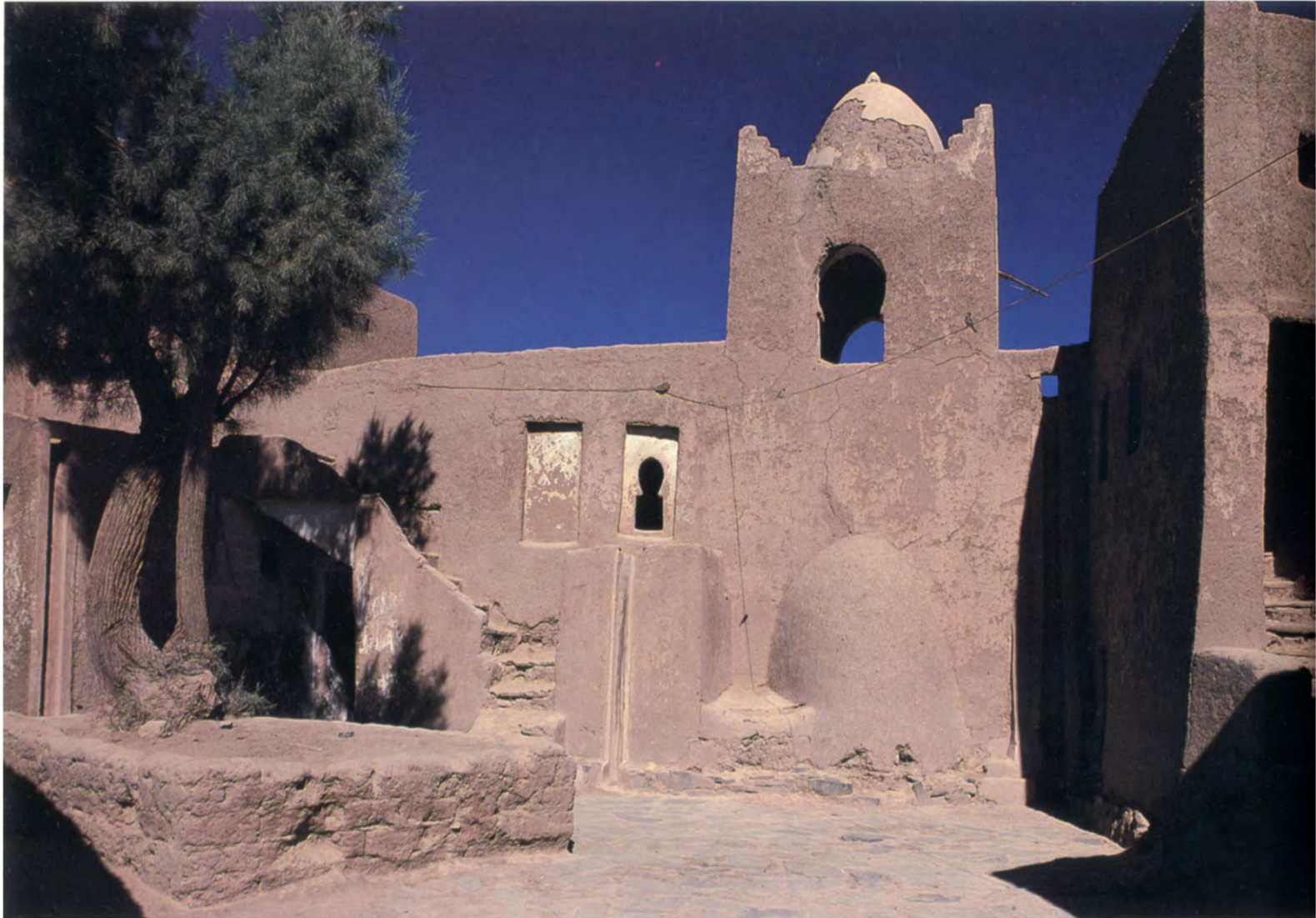
Since the mid 1970s government expenditure has increased in the region. The reason is purely political as the government hopes this will re-establish Morocco's authority over the former Spanish Sahara. Major towns like Quarzazate and Zagora experienced considerable change during the seventies, however, with little impact on the ksour populations. For example, the large new Hotel-Club Reda Zagora (with over three hundred beds) was built recently in the town of Zagora – none of the local labour force, it seems, was used in its construction.

A Solution

A group of architects who had gained experience in traditional mud construction in Marrakesh in previous years, created a favourable climate for the Draa Valley Project and it is said to have been a factor in the creation of the CERF (Centre d'Experimentation, de Recherche et de Formation). The Minister, as well as top level civil servant gave considerable freedom to the architects and other personnel of the CERF for the project's formulation.

During the first phase some pilot studies and experimental projects were carried out. The ksour were carefully analysed and the necessary materials and expenses of labour for rehabilitation and upgrading were identified for each ksar, in consultation with the local authorities. Even the needs of individual houses, such as private waterwells, and the needs of the community, such as collective stables and public buildings, were estimated. Those proposals were then discussed with the villagers concerned, and accordingly a final plan was prepared for each ksar. The responsibility of implementing the plan in the seventeen ksour in the Draa Valley was delegated to the Marrakesh regional delegation of the Direction de l'Urbanisme et de l'Habitat (1971-75).

The three general objectives were: the rehabilitation of the ksour in the Draa Valley, in order to maintain and upgrade valuable housing stock and to create a unique habitat with considerable potential for the tourist industry;



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to plan for future harmonious extensions of the ksour; and to reduce under-employment and rural exodus.

The WFP were closely connected to the main objectives this project was trying to implement. The majority of the project's beneficiaries were rural low-income households, the group the WFP is meant to help in the first place; the self-help approach and creation of jobs for the under-employed population fitted the WFP guidelines; and the agricultural development projects being carried out at the same time as the project could qualify as an early example of the integrated development approach.

Implementation

The local population carried out the work as an assisted self-help project, as well as a small enterprise. Skilled labourers or builders (*mu'llimin*) were paid 7DH (in 1989, US\$1 = 8.24DH) and one food ration a day. Unskilled workers (*kbuddam*) were paid only one daily ration which was: 400 grammes of wheat or wheat flour; 20 grammes of condensed or dried milk; 30 grammes of vegetable oil; 20 grammes of sugar; and 2 grammes of tea. Builders who participated in the project say that the value of one ration when sold was almost half the daily paid wage, ie: 3.5DH.

The project aimed to improve hygienic conditions. For example, stables were built outside the ksar for the cattle, who were traditionally brought into the houses. It also aimed to enhance the quality of the public domain by paving streets and private properties, and rebuilding ruined houses or renovating those in need of maintenance. The functional requirements were to initiate, prepare and monitor the renovation of ksar houses in order to upgrade the quality of the built environment. In this process, maximum use has to be made of local manpower and local materials. Public spaces and communal buildings were to be maintained; functional requirements were to be modified in order to create a more sanitary environment, such as reusing ground floors that functioned traditionally as stables and latrines; and water supply was also to be improved.

The original five-year plan of building 60,000 traditional houses and renovating 30,000 dwellings, requiring a total of 150 million individual food rations, was reduced to 28,700 units. The renovation in the villages was reduced to 4,530 units. Furthermore, the total of 4,374 units representing 69.5% of the target have been covered in the ksour (seventeen ksar in the Draa Valley and three in Ziz).

The infrastructure works serving the twenty ksour included: building thirteen mosques, three Qu'ran schools, 583 stables and 212 septic tanks; creating fifteen gateways; digging nineteen wells; reconstructing 455,000 square metres of side walls and 1,500 meters of water courses for supply and irrigation; and paving 95,000 square metres of streets and public squares.

However, the fact remains that the ksour need constant

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maintenance and the notion that they are no longer the answer to people's aspirations are inevitable questions. The gap between the inhabitants' contemporary requirements and the degree to which the ksour provide satisfaction is indeed the major problem in this type of project. Nonetheless, the gap is relative, depending on the family's wealth. In a few cases the ksar is deserted or left to farm-workers (*khammasin* and *rabba'in*); in other cases the ksar is kept as a secondary residence or a reception house for visitors.

The project also fell prey to some miscalculation: although it aimed to stable livestock outside the ksour, some users still brought their livestock into the houses, claiming that the outside stables were not sufficient in number. The users also connected a number of stables by knocking down walls to form one large one. Furthermore, although the project provided communal water wells with pumps, some wells were not used; this meant that either the wells were misplaced or caused conflict among users and were thus abandoned. When streets were paved, some of the house levels remained lower than street level. No matter what, such problems are inevitable.

I have entered many buildings which had not been maintained for a long time (in one case sixty years) and their interiors were still in a good condition! The main problem of mud as a building material is its susceptibility to rainwater and thus its need for frequent exterior maintenance. Some of the renovated houses in this project (thirteen years ago) do need a little maintenance. In this respect, considering rainfall in the region (less than 100 millimetres), one may argue that rather than using other building materials which will need less frequent maintenance but cost more, one should continue using the mud technique to invest in future employment, unless an affordable breakthrough in technology is found.

Achievement of Objectives

Users are definitely optimistic. The sharp contrast in terms of quality between the renovated ksour and the ones that

are not, tells the whole story. Those who live in the renovated ksour are interested in maintaining their properties. Those living in the ones that are not, are reluctant to invest in their properties because of the deteriorated public spaces. According to Raol Snelder (p15 of the report), 'the project's physical achievements are well integrated in the traditional environment and an effort has been made to allow for the inevitable change in the attitudes, the needs and the aspirations of the users. Renovation work has been carried out in a sensitive way in a unique habitat'.

The project's achievements have stimulated pride in the beneficiaries and in ownership amongst the residents. Therefore, one of the major objectives of the project – establishing a working relationship with the communities involved – has been achieved. Interviewed users' responses have been pleasingly positive.

One of the project's objectives was to maintain traditional craft in the region by employing a considerable number of craftsmen. This objective was accomplished for a certain period, but craftsmen (especially the younger ones), who had a chance of making a better income in richer regions, are steadily leaving the valley, a trend this project cannot stop.

When the project was initiated in 1968 it was certainly an original concept and it still is for many decision makers of the Third World countries. The principles of rehabilitation through maximum utilisation of local resources led to minimum external intervention. Minimum external intervention obviously means maximum local participation, a shortcut for high quality environments.

This paper was developed from a technical review report submitted to the Aga Khan Award in 1989, based on a one week site visit to the Draa Valley and on documents provided by the Aga Khan Award for Architecture. Among these are the Technical Review Report of Raol Snelder and some Moroccan and WFP official documents.