

TRADITIONAL VS. MODERN RECONSTRUCTION PRACTICES

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Abstract

There are no foolproof formulae in post-disaster reconstruction. One always needs to be creative, flexible and use common sense: Afghanistan was no exception after more than twenty-three years of civil wars flanked with drought. Task groups developing schools design drawings made provision for both, mud and concrete structures according to locations and the implementers...

Whenever waves of destruction damage basic infrastructures, communities are severely affected in the aftermath of a disaster, be it natural or man-made. Reconstruction activities aim to alleviate suffering and restore conditions conducive to quick recovery and self-reliance.

During reconstruction, aid workers face an extremely complex choice of responses to effectively and efficiently assist communities. The challenge is to manage adequately resources (human, materials, budget...) within a given time frame and to overcome constraints like accessibility, agency internal procedures, cultural legacy and more importantly, needs/appropriateness to transfer technology: traditional versus modern reconstruction practices...

Attempting to provide a technical analysis (pros and cons), this paper also covers socio-economics of an intervention designed to reconstruct schools, health centres, and public buildings.... It answers questions related to impact, sustainability and stakeholders...

Keywords: Flexibility; creativity; recovery; self-reliance; resources; stakeholders;

INTRODUCTION

Geography, climate and society

Afghanistan is located in central Asia down south of the group of former soviet republics, now independent states, between 29° N and 38° N latitudes and 61° E and 72° E longitudes (Fischer, 1968). It is surrounded by Turkmenistan, Uzbekistan and Tajikistan in the north, by China in the Northeast, by Pakistan in the east and south and by Iran in the west. Covering an area of about 652,225 square kilometres, Afghanistan comprises thirty-two administrative divisions (provinces) falling under

six major regions (Kabul [Central region], Jalalabad (East region), Kandahar [South region], Herat [West region], Mazar [North region] and Kunduz [North-eastern region]).

With a climate mostly dry and continental, Afghanistan experiences extreme differences of temperature between winter (down to -25°C) and summer (up to $+48^{\circ}\text{C}$) in some areas. The monthly mean average temperature ranges from 25° to 28°C in Kabul for example. In addition, the widespread variety of terrains results in a range of different climatic types. The areas, such as north-eastern and central Afghanistan, lying over 2400 meters above sea level have long winters (over six months). At altitudes ranging between 1,300 and 2,400 meters above sea level (like Kabul), the climate is almost temperate; four seasons are clearly marked, and the annual precipitation has been on average up to 400 mm.

Altitudes ranging between 900 and 1300 metres are characterized by hot summers and annual precipitation usually below 200 mm. In areas laying at an altitude below 900 meters, it is less than 100 mm and the climate is dry and hot.

This climatic diversity is reflected in the country's vegetation and landscape. Deserts alternate with fertile cultivable areas, haut-plateaux and mountains as you travel from southwest to the north and northeast. The texture of the soil varies very much too - from clay to rock: limestone, sandstone, argillaceous marls, loams, gneiss, quartzite, salt and slate...

"The Hindu-Kush (which reaches up to 6,300 m. in Nuristan) is the great dividing wall between the northern and southern parts of the country which can be crossed by way of several high passes..." (Fischer, 1968).

Tectonic faults in the Hindu-Kush that run up to Pakistan explains the intense seismic activities that have occurred repeatedly over the years. Earthquake tremors of magnitude up to 6.3° on the Richter scale recently disrupted life in Narhin (Baghlan province). Houses, schools, health centres were destroyed, mountains slide blocked roads and several people were killed.

The exact number of inhabitants today is very sketchy due to the migrations essentially linked to wars and drought recorded in a cyclic manner over the past twenty-three years. An estimated 25 millions are said to be living currently in Afghanistan with at least 30% living in the main centres. There has been no formal census for years in this part of the world; Mohammed Daud's government organized the last one in 1974.

The main components of the Afghan population are: Pashtuns (Pathans?), Tajiks, Hazarats, Uzbeks and a number of other minority groups.

Religion is very much entrenched now in the culture of this society, which is quite conservative; women do not appear to play a forefront role as men do. The majority

of Afghans is of Islam affiliation (Muslims); a very small component of the population is known to practice Hinduism, Sikh religion or Christianity. The last is emerging again among youngsters specially; this might be the result of exposure during years of forced exile.

Despite the disparity in their origins, Afghans do share the same building skills and techniques as well as form of settlements. In general, they are very much linked to the type of soil and the climate of the location where they live. Their traditions and customs remained pretty unchanged over the years, especially in remote rural areas (Fischer, 1968).

Context of an intervention

Compounded effects of more than twenty-three years of war and civil unrest have not spared the social system, as a whole and the Education system in Afghanistan, in particular. Approximately 70% of the population live scattered in rural areas where you find 75% of schools infrastructures. When the conflict started in 1978, for instance, only 37% of boys and 8% of girls were enrolled for primary school level. In 1980, already, the over 25 years-old population had no schooling and only 0.3% had completed the first level (UNESCO, 2000).

The establishment of a regime ruled by Talibans that further banned girls from schooling, led to the closing down of many formal schools country wide. Many facilities were converted into military facilities/barracks or administrative offices. To cope with this situation, communities resorted to learning opportunities outside official school buildings and even outside the schools systems; thus resulting on the proliferation of home-based schools under either Non-Governmental Organizations (NGOs) or communities self-funding.

Signed on December 5th, 2001 under the auspices of the United Nations, the Bonn agreement set conditions for a new beginning in Afghanistan, insuring a fair representation of all the segments of the civil society including the warlords' leading main factions. The international community secured a peace deal, which was followed by a huge pledge of funds for reconstruction of the entire country. The transitional government was handed over power on 21/12/2001 and an interim was elected six months later to run the country for a two-year term.

Nowadays, an increased interest for education, especially among girls, has been noticed. In the meantime, most buildings were poorly maintained or destroyed during the conflict. Rebuilding the entire education system in Afghanistan is a priority for the Transitional Islamic Government of Afghanistan. The United Nations Children's Funds (UNICEF), whose March 2002 'Back-to-School' campaign has attracted more than 3 million children to the schools, remains committed to support the reconstruction effort. In 2003, at least an additional 1.5 million more came back to school. Equally, more families choose to return home as fighting ceased with the

hope for a better future. This influx of population increased the pressure on existing social structures (housing, health facilities, roads, food and labour markets...) that were already in a state of advanced disrepair and were no longer adequate for the service they were meant to provide.

At present, 80% of school buildings are in dire need of different levels of repair ranging from minor/cosmetic repair or need for additional classrooms to complete infrastructure reconstruction. A rapid assessment of learning spaces (RALS) conducted to facilitate the “back-to-school” II campaign has revealed that more than 60% of school buildings are completely destroyed or schools never existed with a building (lessons provided in the open, in mosques or in private houses...) and almost 52% of schools visited were without any source of water whilst 75% had no toilets or latrines at all (UNICEF, 2002).

To respond efficiently and effectively to this growing emergency, the assistance community, under the leadership of the United Nations and with the strong support of numerous donors, has considerably expanded its presence in Afghanistan. Reconstruction of the country is a real challenge, as is the coordination of all efforts simultaneously deployed by so many stakeholders. To add to the equation, security conditions are still volatile and precarious. Poor road conditions and inaccessibility of many areas during the harsh winter increase the likelihood of failure during an intervention.

CONSTRUCTION IN AFGHANISTAN

Current practice

Shelter can be ranked among the most basic need human beings have ever felt over the ages. Day after day, both sedentary and nomadic populations systematically accumulate property that measures their wealth. The magnitude of this activity is not, indeed, the same for the two groups and gives an indication on shelter requirements in term of size, strength and shape... In fact, one should be able to see how building techniques characterized people’s cultures, eras, and civilizations through a quick historical review of human living habits.

Welfare of populations goes with their sufficient access to a panoply of adequate facilities such as shelter, schools, health centres and roads... Practice of good management of resources is the key for environmental engineering as a tool meant to improve human welfare .

In Kabul, the Russian types of apartments made of pre-cast concrete panels assembled “in situ” constitute the symbol of state sponsored housing scheme. However, the old city and the rest of the town present different features for accommodation. The Afghan entrepreneurship is tremendous and the real individual

or familial income per year is a determinant on the kind of shelters people built. Generally, the Government has imposed a nice cadastral layout with main roads well defined before actual occupation of land - with the exception of some new and poor quarters where people grab land anarchically. The upper market areas are self-built and consist of one to two storeys classic buildings with stone masonry foundations and a combination of concrete superstructures (beams, columns and slabs) and bricks or stone masonry for outside walls. Roofs are made of concrete slabs or wooden frames covered with corrugated or flat iron sheets. On the other hand, on the outskirts of Kabul and in deprived areas, savings on the building costs are made whenever possible; for walls and foundations, they resort to dry stacked stones, stones with mud joints, burnt mud bricks with mud joints, raw mud bricks or compacted layers of mud. The roof is usually rendered with a mix of mud with grass or cow/sheep dung arranged in layers on top of wooden branches; rooms are acceptably cool during summer and require reasonable heating during winter. Plastering is made normally with the same mixture if cement mortar cannot be provided. Maintenance and operation of such structures are less expensive but require a sense of ownership for common facilities and considerable dedication for private ones. For example, once a year, an additional layer of one to two centimetres of local mud plaster guarantees the overall good status of the construction.

Several Government buildings countrywide were constructed before the 1950's; they have very thick bricks walls (50 to 100 cm) and a lot of woodwork for slabs, beams and roofs. The arrangement of wood posts is often a real piece of Art. Mud is used from time to time for the insulation and waterproofing of the roofs. The same patterns as described in the previous paragraph and in the above lines are also found in the main centres. The rest of the country is built the same way with local materials and techniques; glazing, lighting and tiling are more and more integrated if owners can afford to do so. In the Hazarajat area near Bamyan, people do still live in grottoes carved in the mountains up to recent days. In the east and the southeast, exclusive use of timber is the first choice for erection of shelters. In regions infested by termites, which imperil the lifespan of wood poles or where wood is not available in sufficient quantity, brick domes replace flat roofs.

“Groupe énergies renouvelables et environnement” (GERES), a French non-governmental organization is trying since 2002 to introduce energy saving structures using as much as possible the very same local materials. For an extra 8.2% of the original cost, special attention was paid towards adequate orientation of building openings (doors and windows and internal ventilation), use of double walls (external 50cm stones load bearing wall separated with 10 cm insulation made of sawdust from a 10 cm burnt bricks wall built inside) and use of roof insulated with reeds and straw. Through a partnership AFRANE-UNICEF, such a pilot project was implemented in Charikar to shelter the teaching staff of Hora Jalali school (GERES, 2003).

Many other organizations are pursuing active research to improve construction techniques exploring appropriate technologies. For example, the Young Afghan Professionals for Reconstruction and Development has developed in Wardak province a light thin-shell roof design and tried to disseminate practical waterless toilets...

Post- crisis management

As has been mentioned above, Afghanistan has experienced both natural disasters (drought and earthquakes...) and man-made disasters (wars and civil unrest). Drought prone-areas are Bamyan, Badghis, Ghor, Faryab, Jawzjan, Saripul, Balkh and Samanghan. After initial assessments, the Government usually establishes a priority list of sectors of intervention; at that stage, the link is made with the beneficiary populations. The United Nations agencies and funds, as well as non-governmental organizations set up task groups that support the government in these identified sectors.

Most projects incorporate a two-pronged approach to alleviate or mitigate the impact of disaster, be it war, drought or earthquake:

- (i) Service delivery through reconstruction and upgrade of facilities coupled to supply of equipment and
- (ii) Self-reliance and project sustainability through reform of structures or on-the-job training and capacity building of staff in charge of specialized states entities.

One can argue if when reconstructing one should restore structures the ultimate goal is to re-establish these structures as they were prior to the damage or the destruction. Experience shows that as beneficiaries of a humanitarian programme, people tend to acquire the most out of the deal. Experience shows as well, that introducing new techniques or new construction materials is also a unique opportunity to improve people's welfare. Nonetheless, one needs to carefully analyse the appropriateness and the cost-benefits that derive from such an exercise.

If one looks closely to the Afghan Education system that requires, at least, a thousand schools to be rehabilitated or newly built every year, diversification of the range of interventions in the building techniques can determine how successful the operation can be and how well, population can be reached too.

The development of standards for school construction in Afghanistan is a very complex issue. What are the acceptable sizes for a classroom that could accommodate as many students as possible, since the number of trained teachers is limited, without compromising on the likelihood of acceptable learning conditions? Which materials should be used to safely span these classrooms in areas difficult of access for cement, or other materials? What is the time frame for the completion of

the expected output? How do regional microclimates (exposure to sunshine, predominant winds, available local materials, and mean temperatures...) correlate with the building design (size of openings, orientation, shape and height...)? Are materials and design insuring that buildings are earthquake resistant? Such discussion goes beyond technical perspectives as it also covers social, economic and cultural parameters, which have to be taken into consideration during the development of guidelines and standards. Clearly, the designers need to be culturally sensitive and insure that providing separate entrances to toilets or, separate facilities insures girls' privacy in mixed schools. The smallest the walking distance between home and school will be, more parents would be willing to enrol their girls in schools

It has also a political connotation: more you built schools; more the authorities would win the electoral sympathy. Mutatis mutandis, the same applies for health structures and other infrastructures.

Impact on the local economy

It is true that major development projects achieve a great input in the beneficiaries' basket when their designs include an intensive use of local labor. They usually achieve this by a division of a given work into simple tasks so that they can offer a big number of paid jobs to the community and effectively inject money in the local market. Furthermore, better results can be obtained with a fair distribution of the same money into the community when local materials are intensively used. It usually drives the demand for these materials higher (which gives their producers a reasonable market); in addition, the beneficiaries can access easily the materials for their own needs and insures, with less dependence on donors, the maintenance of new structures, providing that accompanying measures are properly set, i.e. appropriately timed and adequate training (UNOPS, 2003).

CONCLUSION

In Afghanistan, information is notoriously difficult to collect and frequently, it is not reliable. Modern building techniques cost substantially more at the inception of any projects. To supply remote rural sites where the bulk of the population lives with imported materials or transplanted ones like stones in a desert area is prohibitively costly. Supply chains are not always available to facilitate maintenance - assuming that the beneficiaries have got means to purchase defective items that are accidentally damaged or affected by the normal wear and tear .

After conducting an in-depth study of the capacity of implementing partners and contractors, it appears that the best way to succeed in reaching the remote and forgotten populations, is to design activities that would benefit the highest number of

the most deprived in a self-reliant manner instead of radically improving the quality of services for fewer people.

For a more successful humanitarian operation, it would make sense to spread the resources over several projects that could facilitate the highest involvement of the population with their own natural environment as opposed to the hi-tech kind of projects. The latter should only allow bridging the first weeks of an emergency before the situation settles down a little. Projects should be encouraged that will empower poor and vulnerable groups through participatory partnerships, learning by doing, information sharing and training. Improved traditional practices have far more reach than modern practices as the maintenance aspect and the sustainability of the investment can be better dealt with .

In the aftermath of an emergency, peasants could all manage to rebuild their own homes faster than they could do if they have to wait for an agency to build them for them. Most of the time, agencies have limited human and financial resources that are bound by internal procedures. Communities would eventually need to get the right and timely guidance and the basic items they cannot afford by themselves.

It always takes innovation, creativity, flexibility, know-how and most importantly, systemic transfer of adequate technology in a timed manner. Whilst high standards are obviously desirable, they should be adapted as much as possible, in accordance with financial constraints and the local setting .

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