HISTORICAL CASE STUDY

INDIA 1935 / EARTHQUAKE

KEYWORDS: Governance, Urban, Disaster Risk Reduction

CRISIS	Quetta Earthquake, 31 May 1935, India (now part of Pakistan)
TOTAL PEOPLE AFFECTED[1]	Approx. **71,000**
TOTAL PEOPLE DISPLACED[2]	At least **31,500**
TOTAL HOUSES DAMAGED[3]	Over **14,000**
LOCATION	Quetta Municipality, British Baluchistan (now Balochistan Province, Pakistan)
PEOPLE SUPPORTED	**13,000 individuals** given shelter **31,500 individuals** evacuated **26,000 individuals** given financial or in-kind livelihood assistance

Map of Baluchistan, c. 1908.

PROJECT SUMMARY

In 1935 a major earthquake destroyed Quetta, a city on colonial India's north-western frontier. The military and civilian authorities successfully organized shelter, food and medical attention for at least 13,000 survivors, before evacuating 31,500 survivors to other parts of India. Through a very centralized, top-down approach, Quetta was reconstructed according to a new, aseismic building code.

TIMELINE

MAY 1935

1936

1937

RELIEF | TRANSITION | RECONSTRUCTION

JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR

1. 31 May 1935: **Displaced people's camps established: Race Course Camp (c. 10,000), Hazara Camp (c. 3,000). Martial Law is declared.**
2. 2 Jun 1935: **Evacuations of civilian survivors begin by train. Survivors dispersed through the damage area are taken to the Race Course Camp.**
3. 3 Jun 1935: **Health cordon established to prevent contamination from decaying bodies. Viceroy's Relief Fund opened for donations.**
4. 12 Jun 1935: **Race Course Camp population reduced to c. 4,000. All injured survivors evacuated.**
5. 14 Jun 1935: **C. 31,500 people evacuated; evacuations cease.**
6. 28 Jun 1935: **Civilian rule replaces Martial Law.**
7. Late Jul 1935: **New camp constructed outside Quetta; Race Course Camp closed. Quetta Reconstruction Committee formed (central government).**
8. Early Aug 1935: **Hazara Camp's population moved to camps in villages outside the city.**
9. Dec 1935: **Race Course Camp reoccupied by c. 7,000 people. Approx. 8,000 people are in other camps and dispersed around Quetta.**
10. Mar–Apr 1936: **Municipal authorities begin limited reconstruction of commercial buildings. Four residential areas (wards) opened for reconstruction.**
11. 15 May 1936: **Four more wards cleared, provided with water and street lighting. Temporary buildings put up.**
12. 25 May 1936: **Authorities complete "Tin Town" -- tin huts on the outskirts of the city – to accommodate 3,000 people.**
13. 1 Jun 1936: **Brewery Camp closed and residents moved to "Tin Town".**
14. 19 Jun 1936: **Temporary Building Code published. Property owners permitted to put up temporary structures.**
15. End Jun 1936: **Five more wards opened.**
16. 15 Dec 1936: **All rubble cleared. Quetta's population returns to pre-earthquake levels.**
17. 1 Feb 1937: **Remaining residential wards opened for reconstruction. Permanent Building Code comes into effect.**

STRENGTHS

+ Decisions were taken quickly by decisive leadership.
+ The army organized quickly to reach survivors.
+ The medical response was prioritized effectively.
+ Health authorities took proactive measures against major epidemics and prevented contamination.
+ A new building code was defined and enforced.

WEAKNESSES

- Non-existence of a plan for the provision of shelter.
- Inappropriate design of temporary shelters.
- The two camps had far lower capacity than needed.
- Complex administration of the relief fund due to slow communication led to long delays in releasing financial support.
- Differential relief was given on a racial basis.

QUETTA CONTEXT

Quetta in 1935 was a garrison town on the western border of Britain's Indian empire. Its population had tripled between 1885 and 1935 and the town was home to troops, civil administrators, immigrants from elsewhere in India, indigenous inhabitants and merchants.

Quetta's population was spatially segregated into three areas, according to occupation and race.

- The Cantonment with military personnel, divided into (white) British, Indian and "Gurkha" (Nepalese) segments. It featured wide streets and open spaces. South of a small waterway were two further areas.
- The Civil Lines for high-ranking government servants, largely British. Dwellings here were spacious bungalows built to a high standard.
- The Municipality, the most populous area, was home to Indian civilians. Buildings were tall and constructed from mud or brick cemented with poor mortar, while streets were narrow and congested.[4]

SITUATION AFTER THE EARTHQUAKE

A magnitude 7.6 earthquake struck at 03:03 am on 31 May 1935. The shaking was strongest south-west of the waterway, in the Civil Lines and Municipality, due to the low-lying alluvial soils that were waterlogged, amplifying the earthquake waves. In the Municipality, the problems of escape and rescue through narrow, debris-filled streets raised the mortality rate. The Civil Lines were also badly damaged, but large open spaces enabled survivors to get clear of dangerous structures. Most parts of the Cantonment, built on dryer soil with well-constructed buildings, survived the earthquake.

INITIAL RELIEF EFFORTS

The army commander declared martial law with the assent of the head of the civilian administration. Troops were sent to dig for survivors and transport the wounded to the military hospitals, which were not badly damaged. The army prepared a camp for displaced survivors on the Race Course, a large open space.

Later, the military authorities put a cordon around the city, enforced by fences and troop patrols, which only allowed officially-sanctioned rescue and salvage workers to enter. This was explained as a public health measure, due to the hazards posed by decaying bodies, but angered volunteer aid organizations and those who wished to salvage their property. Non-official sources report self-rescue among neighbours as well as help from troops.[5] Accusations that the authorities failed to save lives though inefficiency or callousness were repressed.[6]

EMERGENCY SHELTER, CAMPS AND EVACUATION

The skeleton of the Race Course camp was established nine hours after the main shock. Survivors were brought in on foot and by truck. The army provided some tents in the camp, while others had to piece together makeshift shelters from available materials, such as canvas roofs.[7] An estimated 10,000 people sheltered at the camp.[8] Military doctors took charge of sanitary arrangements and medical care there and the water supply was chlorinated.

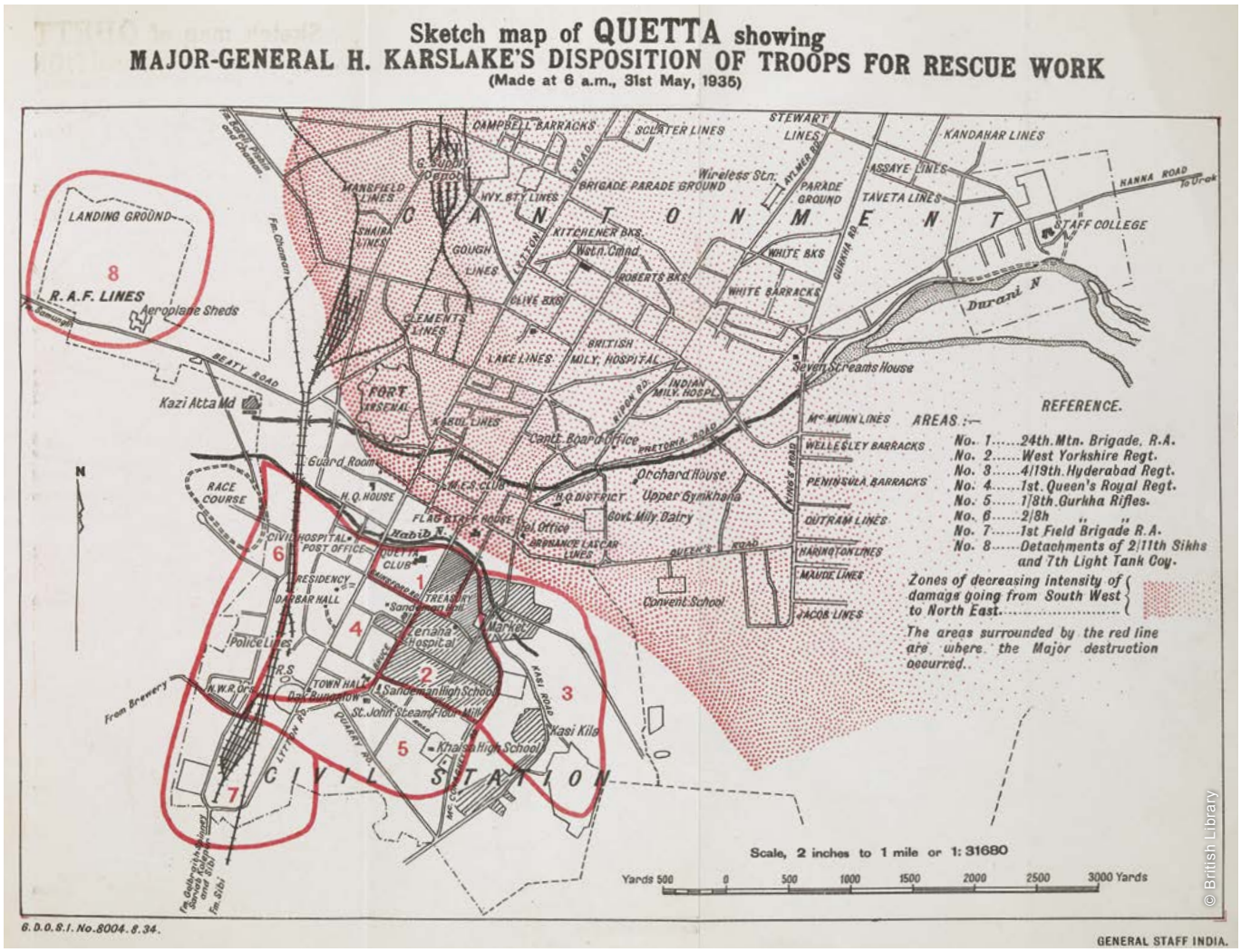
Smaller survivor populations lived elsewhere, including in a camp for 3,000 ethnic Hazaras in the Cantonment area, and an unknown number of civilians, presumably British, living in tents in the Civil Lines. To house the garrison, the army built more sophisticated and durable huts using double-fly tent roofing and mud brick walls, with salvaged doors and windows.[9]

The military's priority was to quickly evacuate the civilian population and the families of military men. The railway link between Quetta and the plains had remained intact, so by 14 June, 31,500 had been evacuated, including 17,000–20,000 injured.[10] Approximately 10,000 evacuees went to camps and hospitals in Punjab. Local authorities in the provinces were assisted by volunteer organisations, as well as numerous private individuals. All but 6,000 Indian civilians were evacuated from the Race Course camp and hospitals.

Between June and December 1935, the camps' populations were moved to new camps, while the old ones were first reduced or closed for sanitary reasons, to then grow again due to the influx of labour (mainly for clearance and salvage work). By the end of the year, over 7,000 people were again camped on or near the Race Course, more than 4,000 were in other camps, and 4,000 lived in temporary dwellings in the Civil Lines.

Jinnah road after the earthquake of May 1935. The rubble was completely removed in December 1936.

A First Aid unit at the railway station. The railway between Quetta and the plains remained intact, so in about two weeks, 31,000 were evacuated.



Sketch map of Quetta showing the disposition of troops for rescue work, done three hours after the earthquake. Decisions regarding immediate relief and longer-term policy were taken quickly and seen through consistently. Source: British Library Board (Asia, Pacific & Africa P/V 1752, Map facing p.26).

RELIEF FUND

Shortly after the earthquake, the Governor-General of India set up a Relief Fund to pay for continued support of survivors and partial compensation for lost property or businesses. The Fund took donations from private individuals, businesses and governments in India, Britain and worldwide. District officials executed distribution, while relief associations, including officials and non-officials, were organized to link the Fund to recipients. Other community organizations helped to bring cases to officials' attention.[11]

During June, the Fund provided clothes, medical supplies and small cash grants to survivors, all distributed at the discretion of local government officials. Subsequently, the Fund made cash and in-kind grants to people who had lost their employment and to business owners. The grants period was initially three months and later extended to six.

Roughly 26,000 people received help from the Relief Fund, amounting to Rs 1,050,206 (USD 7.1 million at 2018 prices).[12] Most of the money was spent in Punjab and Sindh provinces (81%), some in Britain (3%) and the rest in other parts of India. Applications had slowed to a trickle by the end of 1938.[13]

The government's control enabled it to prioritize particular groups. A specially-chartered ship took British families back to the UK, an expensive operation that privileged a small group of racially-defined beneficiaries. Low-paid government employees were also given preferential help, as were middle-class business owners.[14] On a more clearly humanitarian basis, widows, orphans and older people were given extra assistance.

RECONSTRUCTION – PLANNING PHASE

With most of the population evacuated or in camps, the authorities planned for reconstruction. Rubble removal was done both by government and, from March 1936, by private individuals (to whom the government paid up to 80% of the cost), and took two years to complete.

Governance of the reconstruction process rested with the central government's Quetta Reconstruction Committee, which included military and civil officials.

The actual planning work was complex and involved numerous official stakeholders. Local government officials in Baluchistan drew up the actual plans for the new city's layout, in consultation with the local military and health authorities, and then submitted these to the central government.[15] The plan included wider streets and improved water supply and sewage systems.[16] The new plan was designed to conform to contemporary ideas about good urban planning, as well as ensuring that the widened streets offered escape and access routes in the event of another earthquake.

TRANSITIONAL PHASE

Due to heavy frosts during the winter, reconstruction could not begin until spring 1936. To enable some degree of normal life to recommence, the municipal authorities constructed markets and shops on government-owned land. By 15 May 1936, eight wards were reopened for residential occupation, with sanitation, water supplies and street lighting. No permanent rebuilding was permitted yet, and transitional accommodation had to follow a temporary building code. On 25 May the large camp populations were ordered to move into the city.

The transitional dwellings were highly inflammable and residential property owners and speculators on private land charged tenants very high rents. To provide an alternative, the government constructed accommodation for 3,000 people on the outskirts of the Municipality, charging low rents. Known as Tin Town, the huts were prone to overheating and proved unpopular. They were later lined against heat and given small, walled courtyards which enabled female family members to use the outside space without exposing themselves to view.

PERMANENT RECONSTRUCTION

On 1 February 1937, the last wards of Quetta were reopened for occupation and a new permanent building code came into effect. The code was devised by a central technical committee of geologists and engineers. Official buildings were designed with brickwork set in cement and reinforced vertically by round steel rods and horizontally by steel flats, with reinforced concrete roofs. Military residential buildings were only one storey high; office buildings could include a second storey if there was direct access to external stairways to enable quick escape. The Geological Survey of India recommended that square-shaped buildings be preferred, because it found that rectangular buildings had collapsed sideways when the earthquake wave hit their long-sided walls at right angles.[17]

It was the first time that a compulsory building code was enforced in a Municipality. Property owners in Quetta protested against the building code's requirements, likely due to the high costs imposed. The local government insisted on following the code anyway.[18] It was able to do so relatively easily, because there was minimal engagement with Indian political representatives or community "spokespeople", in contrast with other areas of India.[19] The buildings constructed using the Quetta code performed well during a 1955 earthquake, with the main damage occurring to unreinforced walls of buildings and minarets of mosques.[20]

CONCLUSIONS

The military and civil authorities regarded their handling of rescue, relief and evacuation operations as exemplary. The methods they used were strongly authoritarian and carried out mainly by well-trained troops, who executed their orders effectively. By evicting the city's non-official inhabitants and forbidding permanent reconstruction until a building code was ready, the authorities ensured that Quetta was rebuilt to a safer standard.

However, the government's programme was far from user-centred. The discrepancy between the authorities' priorities and those of ordinary people became clear in disagreements over the new building code. In this case, the authorities refused to alter policy, while for the design of huts in the Tin Town, the government did respond to beneficiary concerns, but only reactively. Advance consultation with beneficiaries might have eliminated such problems.

The successes of this response were highly contingent on localized factors, namely the army's dominance and the lack of democratic structures. The contexts of and responses to subsequent humanitarian crises in India were very different.[21] While individuals involved in the Quetta response did write up lessons learned, there was no institutional mechanism in colonial India to translate such lessons into national policy.

As the market had been destroyed, the municipal authorities constructed markets and shops on government land before reconstruction began, to restore a degree of normality.

ENDNOTES

[1] Estimates from: Situation Reports for 3, 10 and 17 June 1935, in: Government of India, Bureau of Public Information (ed.), Quetta Earthquake, 1935: Collection of information made available to the press in the form of communiques, statements and reports regarding the situation and of the measures taken in connection with Relief, Supplies, Evacuation and Salvage (Simla: Government of India Press, 1935); L. A. G. Pinhey, Report on the Quetta earthquake of 31 May 1935 (Delhi: Government of India Press, 1938), p.1.

[2] British Library, London, India Office Records, IOR/L/MIL/7/19486: Report on Medical Transactions by the Medical Services following Quetta Earthquake, the 31st May 1935 (DHQ Press, Quetta).

[3] Extrapolated from Gul M. Khan, Census of India, 1931: Baluchistan, Parts I & II (Lahore: Civil and Military Gazette Press, 1934), p.27

[4] India, The Quetta earthquake, 1935, p.2.

[5] Quetta Earthquake & After: A Note prepared for members of the Assembly (Karachi: Quetta Central Relief Committee, 1935).

[6] National Archives of India, New Delhi, Home Department, Political Branch, 1935, Home_Political_NA_1935_NA_ F-88-7_35: Question of Prosecution of Dr Choth Ram and Babu Rajendra Prasad in respect of speeches in which they made various objectionable statements regarding the Quetta earthquake Relief Work (Dropped).

[7] Imperial War Museum Archive, London, Catalogue no. 898: Interview with Elizabeth Harrington, 18 March 1977, reel 4, https://bit.ly/2B7o3q8.

[8] L. A. G. Pinhey, Report on the Quetta earthquake of 31 May 1935 (Delhi: Government of India Press, 1938). Henry T. Holland, Frontier Doctor: An autobiography (London: Hodder & Stoughton, 1958).

[9] Centre of South Asian Studies Archive, University of Cambridge: Guyon Papers. J.M. Guyon, 'Recollections of the Raj' (unpublished, 1982), p.5.

[10] British Library, London, India Office Records, IOR/L/MIL/7/19486: Report on Medical Transactions by the Medical Services following Quetta Earthquake, the 31st May 1935 (DHQ Press, Quetta).

[11] Pinhey, Report on the Quetta earthquake, pp.47-8.

[12] Values were converted from Rs to USD at the 1935 exchange rate and converted to 2018 prices considering the inflation rate.

[13] British Library, India Office Records: L/F/7/919, Collection 109/7.

[14] Pinhey, Report on the Quetta earthquake, pp.48.

[15] Balochistan Archives, Quetta, File no C/7, 1936, Progs No.s XX Earthquake: Minutes of the third meeting of the Central Quetta Reconstruction Committee held on 30 May 1936.

[16] Balochistan Archives, Quetta, A.G.G/G 01282: Press communication on the reconstruction of Quetta.

[17] Balochistan Archives, Quetta: A.G.G/G 01294. G.D. West, Preliminary Geological Report on the Baluchistan Earth Quake of May 31st. 1935, p.13.

[18] Press communication on the reconstruction of Quetta.

[19] For example Bihar, where the provincial legislature debated reconstruction policy after a 1934 earthquake.

[20] Abdual Qadir Khan, "Earthquakes and aseismic design in Pakistan", in Proceedings of the 1st World Conference on Earthquake Engineering 19 (1956), 19, 23.1-23.9.

[21] Such as the Bengal famine of 1942-3, the Partition of India and Pakistan in 1947, and the 1950 earthquake on the north-eastern border with Tibet.

STRENGTHS, WEAKNESSES AND LESSONS LEARNED

Camps were established as a measure to house homeless survivors. The largest hosted around 10,000 people in basic tents, often built by the people themshelves. More durable tents were established to house the garrison.

STRENGTHS

+ Decisive leadership meant that decisions regarding immediate relief and longer-term policy were taken quickly and seen through consistently.

+ The army, as a disciplined body, was able to **organize quickly in order to reach survivors.**

+ The medical response was prioritized, with military and missionary doctors cooperating closely to reach the largest possible number of people.

+ The health authorities took proactive measures against major epidemic diseases, malaria and sand flies, while the sealing of the ruined town prevented contamination of the population by decomposing dead bodies.

+ The top-down nature of post-disaster governance enabled the authorities to **define and enforce a building code** for buildings that resisted future earthquake shocks.

WEAKNESSES

- The availability of shelter in the immediate aftermath of the earthquake was not enough for all, as it depended on the local military having a surplus of tents. **There was no pre-existing plan** for the provision of shelter.

- Design of temporary shelters, required **substantial modification to make them appropriate** to local climatic and cultural conditions.

- The number of survivors accommodated in the two main camps (13,000 total) was far lower than the number evacuated by train over the two weeks following the earthquake (31,500); **it is not clear how and where the remaining survivors found shelter before evacuation.**

- The Relief Fund was complex to administer, with local officials spending a full year assessing claims, due to slow communication between Quetta and elsewhere in India. Applicants were therefore left without support from the biggest provider for long periods.

- Differential relief was given on a racial basis, with disproportionate resources going to British survivors rather than Indians.

LESSONS LEARNED

- Shelter design must factor in **local climatic and cultural conditions** and the needs of users.
- **A large degree of political will is needed to enforce unpopular but effective measures,** such a restrictive new building code (or a public health cordon).
- **A decisive, authoritarian organization can quickly organize** shelter, food and evacuation for a large civilian population, despite not having any known plan for humanitarian crises.
- **The ethics of a response that overrides beneficiaries' concerns are problematic.** The colonial government's authoritarian policies were effective in the immediate term, but the benefits only lasted as long as the state retained high levels of authority and political power. The Quetta building code was not implemented elsewhere in India, suggesting a lack of buy-in from the local population. Given the typically long return period of major earthquakes, building practices must be sustained over many decades. A more inclusive approach might ensure that reconstruction continues to be appropriate to future hazard.