Ten Years Experience in Earthquake Reconstruction in the Republic of Yemen

An Evaluation of the Dhamar Earthquake Reconstruction Programme

by Ernst J.A. Lohman DHA-UNDRO

In close co-operation with the other members of the evaluation team, Mr. J.P. Buwalda, Netherlands, Mr. W. Dubach, Switzerland, Prof. Dr. M. Erdik, Turkey, and Dr. J. Studer, Switzerland.

A five-man mission to evaluate the Dhamar Earthquake Re-construction Project took place from 17-31 May 1992 in Dhamar, Republic of Yemen, in close co-operation with a team of Yemeni and international experts. The team included representatives from the Ministry of Foreign Affairs, the Ministry of Planning and Development and the Staff of the Executive Office for Reconstruction (EOREDA). The National Team was headed by the General Manager of EOREDA, Mr. Ahmed Obeid. The team is greatly appreciative of the good co-operation and frankness displayed throughout all stages of the mission.

It should be mentioned here that the reconstruction programme was the first one of its kind in Yemen; seen in this light, the results are remarkably positive. Some of the somewhat negative results have therefore *not* been deleted, but are seen as future tools for even better results in the Al Udein Reconstruction Programme, and other similar programmes.

Background to the Dhamar Earthquake Reconstruction Programme

The Programme was initiated following one of the worst disasters in recent times when, in December 1982, an earthquake, with a magnitude of 6.0 Mb on the Richter Scale, occured in Dhamar Province, in the centre of the Yemen. The earthquake caused major loss of life and property: 1,600 people were killed, thousands injured, and property loss was estimated at US $2 billion. Less than a month after the earthquake, the Government of Yemen established a Supreme Council for Reconstruction, with a mandate to prepare a general policy for reconstruction of the affected areas. At the same time, an Executive Office for Reconstruction of Earthquake Affected Areas (EOREDA) was created.

Background to the Evaluation Mission

Early in 1992 the Swiss Disaster Relief Unit (SDR) expressed its willingness to make a contribution to the victims of the Al Udein Earthquake, 140 km South of Dhamar, which occured on 28 November 1991. After discussions with DHA-UNDRO, the SDR agreed to focus on reconstruction efforts in Al Udein, instead of making a relief contribution; the SDR believed that a thorough review of the experiences in reconstruction in Dhamar would be one prerequisite for such a possible contribution The Government of Yemen agreed with the Swiss proposal and approved the formation of an international evaluation team, via UNDP Sana'a, to be headed by DHA-UNDRO, in close co-operation with a Yemeni counterpart team. In addition to the two experts provided by the Swiss Government, the Governments of the Netherlands and Turkey kindly agreed to provide experts for the evaluation team.

Objectives of the Evaluation Mission

The objectives of the evaluation mission were: to assess the relevance and effectiveness of the various results of the Dhamar Earthquake Reconstruction Programme; to advise the Government which policy decisions have proved to be successful or have not led to the expected results; and the steps which may be needed to improve these policies. The objective of the evaluation mission was based on a DHA-UNDRO proposal, approved by the Yemen Government.

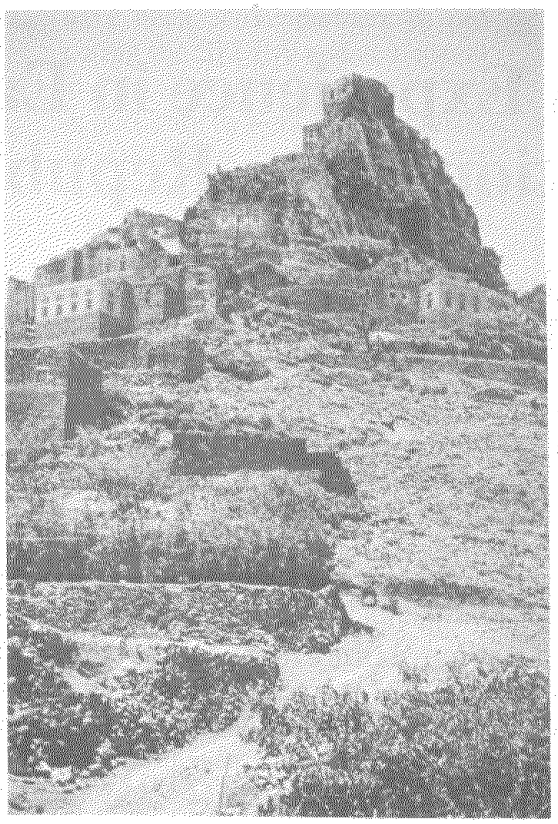
The conclusions of the evaluation mission are directly applicable to the

earthquake reconstruction programme of Al Udein, and an earthquake risk reduction/development programme for all earthquake-prone areas in the Ibb region, in the south of the country. Furthermore, a reconstruction programme is now required because of the urgent need to support the Yemen Government in overcoming the problems in the Al Udein District, caused by continuous earthquake swarms.

Main Observations and Conclusions

The reconstruction programme in Dhamar was relevant in the sense that it provided the victims with housing and access to the basic infrastructure. The effectiveness of the project, measured in terms of the initial objectives and available funding, has been adequate; but it could have been greater if the reconstruction plan had been placed in an overall context of development for the Dhamar region. However, this has more to do with an overall adjustment in government policy, as this objective was not included in EOREDA's original mandate in 1982.

Within the context of the policies and strategies adopted for reconstruction, and within the context of available human, material and financial resources, the Supreme Council for Reconstruction and its Executive Office have implemented the reconstruction programme efficiently.



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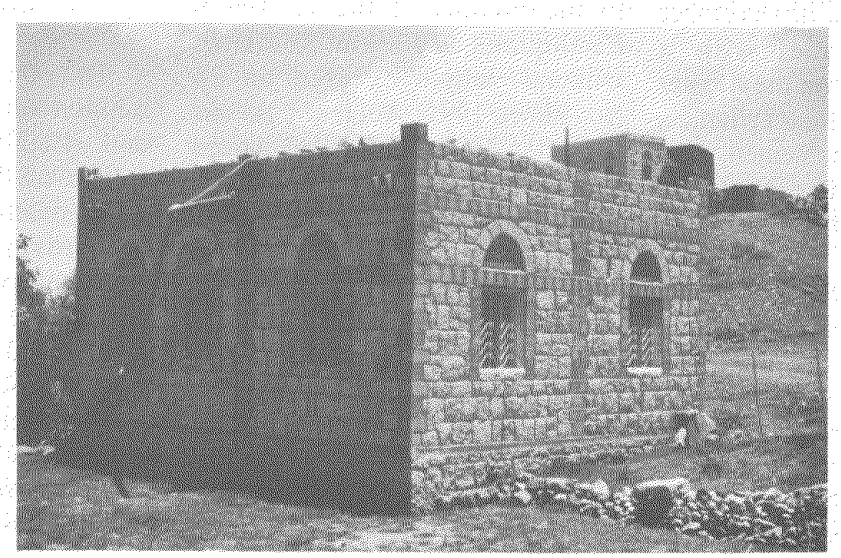
The old village of Hisan Ahmad Sa'id near Harf Ya'ar, 40 miles west of Dhamar

The longer-term impact and sustainability of its results will be further enhanced if those policies and strategies which have proved to be successful are placed in an overall context of government objectives to protect the development process against disasters, and are included in special government-approved building codes and land-use zonations for other earthquake-prone areas.

Community participation was lacking in several phases of the contractor-built reconstruction programme. The potential of community participation was clearly demonstrated in the Netherlands-funded self-help reconstruction programme.

After the 1982 earthquake in Dhamar city and villages, many new buildings were constructed. In general, buildings not constructed under the supervision of EOREDA engineers (such as those built by individuals without government support), are insufficiently earthquake resistant.

The old city of Dhamar still has some fine examples of traditional Yemeni architecture. Active steps have already been taken by EOREDA to reinforce these buildings, but an overall masterplan for the city of Dhamar, and a special plan to preserve these traditional buildings, in combination with earthquake risk reduction measures, is still required. Such measures were not a part of EOREDA's mandate.



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A house in Hisan Ahmad Sa'id built under the self-help reconstruction programme

The reconstruction programme for

Dhamar mainly focussed on the engineering aspects of reconstruction and the strengthening of buildings. The concept of land-use planning in the Dhamar region, as a prerequisite for regional development plans in an earthquake-prone region such as Dhamar, has not been used optimally. This concept was also not a part of EOREDA's original mandate

The involvement of the Red Crescent in the Dhamar reconstruction programme, although limited, was successful in several respects, especially in the training of the population. This involvement should be further strengthened and defined. Also Civil Defence activities in these fields should be more clearly defined and actively stimulated.

PRINCIPAL RECOMMENDATIONS

■ *Reconstruction aspects*

Building control should be used to ensure that all repaired and new houses in earthquake-prone areas have a minimum of strengthening measures against earthquakes.

Based on experiences from the Dhamar earthquake, building guidelines prepared by EOREDA for basic constructions in earthquake-affected areas, should be completed and regularized; these regulations should then be enforced.

On the basis of these building regulations, the development of a practical building code for Yemen traditional and low-cost housing should be encouraged. It is recommended to continue the training of skilled and unskilled labour in the field of earthquake-resistant building practice. The current EOREDA practice of issuing certificates for successful participation should be continued Furthermore, refresher training courses should be established. Measures should be taken to ensure that every affected settlement has an adequately trained labour force.

It is also recommended to establish information courses for decision-makers at the local level to help them understand local land-use plans, and the process of producing such plans as part of development.

■ *Community Participation*

The acceptance of the self-help housing project by the beneficiaries is very high. Therefore the evaluation team recommends the full involvement of future occupants (through training, incentives, land-allocation policies, etc) during each phase of planning, design and construction.

A pilot project should be set up showing model-houses of different design, layout and price. The houses would be based on a modular system for easy decision-making and calculation, without extra cost.

A minimal land-use plan needs to be developed and approved by the affected population; this plan should be updated regularly in keeping with the development of the region.

Reconstruction should be integrated into the social and economic development of the affected area.

■ *General Policies Emerging from the Reconstruction Programme*

Nation-wide earthquake hazard and risk assessments will gradually enable the Government to change from a post-disaster reconstruction policy to a systematic pre-disaster risk reduction programme.

A national programme for earthquake risk-reduction activities should be initiated on the basis of the accumulated experiences gained in the reconstruction programmes in Dhamar and Al Udein, and the proposed earthquake risk-reduction programme in the Ibb region.

When the 'model' for earthquake-risk-reduction programmes at the respective government levels has proved successful, similar systematic risk reduction programmes can be developed for other natural disasters such as: rock fall, landslides and floods.

Future earthquake reconstruction programmes should be placed in the overall context of development planning. Co-operation between the Ministry of Planning and Development and EOREDA should be strengthened.

A National Strategy for Environmental Protection is already in progress, with natural disasters included as a national problem field. There should be a practical link between environmental protection and pre-disaster management to avoid duplication and overlapping activities. A chapter describing this connection could be included in the national strategy for environmental protection. Special care should be also taken to include risk-reduction studies to preserve Yemen's rich cultural heritage.

The proposed Supreme Council for Disaster Management should make the necessary arrangements to

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BOOK REVIEWS

by the problem of how to best structure and present the considerable volume of inter-related material - and some problems of terminology. The chapters are designed to be self-contained, while cross-referencing relevant material to other chapters and annexes; in some instances, there is deliberate duplication. The arrangement works fairly well, but may not be easily handled by users who do not already have some familiarity with the topic, and with the structure and contents of the handbook as a whole. Indeed, the user will not find a "cook book" which offers simple "how-to-do-it" instructions. The author has deliberately, and correctly, chosen to put the complex issues before the user, to offer some guidelines based on experience, and to emphasize the need for approaches to be developed that are tailored to the particular needs of each national and local situation.

The user must also be able to understand, and not be unduly disturbed by, some of the problems inherent in the terminology of "disaster management." Carter has managed better than most writers to be consistent in his use of terms, and to point out some differences in usage by different experts that may confuse the uninitiated (including the usefulness or otherwise of distinguishing "prevention" from "mitigation"), without becoming enmeshed in lengthy semantic discussions. But minor problems remain.

Overall, the handbook will be a valuable resource for many planners and managers involved directly, or indirectly, in disaster-related matters. The ADB's sponsorship and publication of this handbook, which captures the experience of one of disaster management's most experienced practitioners, is commendable, and provides a solid basis for further refinement in the future. It is unfortunate that this edition has been published without an index, and I, for one, will look forward to a second edition, in the not too distant future, in which this omission is corrected.

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The publication can be obtained, free-of-charge, from:
Information Office,
Asian Development Bank,
P.O.Box 789,
1099 Manila,Philippines.

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carry out its task as a pre-, during-, and post-disaster management body, with its prime task being to shift the emphasis from post-disaster to a nation-wide pre-disaster risk reduction programme as part of the national development planning process.

The emphasis of the work of this Supreme Council, therefore, should not be on control, but on active stimulation of the total development process itself. The process should be properly planned on the basis of short (1 year), medium (3-5 years) and long-term (10 years) plans.

The focus of the role of NGOs, (e.g. the Red Crescent) in disaster management should change from post-disaster rescue, relief, rehabilitation and reconstruction, to pre-disaster awareness and preparedness training. For this purpose it is suggested that national risk maps be prepared, indicating highly-populated areas at risk from earthquakes, rockfalls, landslides and floods. The maps would guide the NGOs, and the Government, in the selection of priority areas.

The evaluation team strongly supports the Government's decision to keep EOREDA in its present function - especially at a moment when its skills are needed for the Reconstruction Programme of Al Udein, and an Earthquake Risk Reduction Programme in the other earthquake-prone regions in the Governerate of Ibb.

EOREDA should systematically register all data and information produced during the past 10 years, and evaluate their own individual tasks for possible improvements in the Al Udein Reconstruction Programme. This should be done in the form of a self-evaluation report by EOREDA, based on the findings and recommendations of the international evaluation team. ■