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REHABILITATION OF TYPHOON VICTIMS IN THE PHILIPPINES

DR. SATYENDRA P.GUPTA
Senior Research Scientist
Asian Disaster Preparedness Center
Asian Institute of Technology
G.P.O. Box 2754, Bangkok, Thailand

ABSTRACT

The Philippines suffer from the disastrous effects of typhoons every year. Experience has demonstrated that most losses are due to inadequate shelters. The Department of Social Welfare and Development, the welfare arm of the government, is responsible for emergency shelter assistance to the disaster victims especially those whose houses have been totally destroyed. The department has spearheaded a program designed to assist the rehabilitation of typhoon victims in selected pilot regions of the country through the construction of typhoon resistant core shelter units. The units are being built under self-help basis pooling labor resources of the beneficiaries and utilising indigenous materials under the supervision of trained foremen ensuring that standards are maintained. Modular design of the unit will facilitate its future upgrading and further extensions as the family's socio-economic conditions improve. Behavior of the units built since 1988 until so far in several typhoons has been very encouraging. This paper describes the above aspects.

INTRODUCTION

The Philippine Archipelago is one of the most disaster prone areas of the world. It has a distinct geography consisting of as many as 7107 islands of which 11 constitute 94 percent of the total land area. Not all the islands are inhabitated. It is a mountainous country and, except for urban areas, many towns and locations are accessible only via narrow dirt roads which can easily be rendered impassable by landslides or even washed away by flash floods. When this occurs communities may be isolated from the rest of the country for days.

The Philippines is subject to frequent disasters of many types. It is vulnerable in varying degrees to hazards like typhoons, floods, landslides, volcanic eruptions, earthquakes, tsunamis, seiche, storm surges and sea level changes. Typhoons regularly affect the country. The annual average number of tropical cyclones originating from or entering into the Philippine area of responsibility is 19-22 and 5 to 9 make landfall each year causing widespread damage. Flooding often results from heavy rainfall associated with tropical

cyclones. Storm surges created by tropical cyclones are another problem causing suffering to communities located in coastal areas.

The estimated worth of property and agricultural products lost and or damaged per typhoon ranges from 10 to 500 million pesos[1] . Damages due to flooding varies from 2 to 100 million pesos. An estimate of damage occurring due to typhoons between September 1970 and March 1982 indicated 3,867 lives lost, 6,206,000 people affected and property worth 681,819,000 U.S. dollar destroyed. Figure 1 shows the tracks of typhoons crossing Philippine landmass from 1955 to 1985 indicating that except for some parts of Southern Mindanao, the whole country is vulnerable.

TYPHOON SISANG

Typhoon Sisang hit the Philippine coastal province of Sorsogon in the Bicol region on November 25, 1987 with a windspeed of about 220 km per hour. It struck in the evening and battered the town of Sorsogon and other adjoining areas for 5-6 hours creating havoc. People were caught absolutely unprepared. They had underestimated the gravity of the oncoming disaster. When communications broke down and the power supply failed warnings could not be disseminated and the community paid the price. Sisang was the tenth typhoon to affect Philippines in the year 1987 and its passage lasted from 23-27 November. Tracks of several typhoons during 1987 in the Philippines are shown in Figure 2. Out of several crossing the Philippines landmass during the year Typhoon Sisang proved to be the most disastrous.

The worst effects of Typhoon Sisang were in Regions IV (Metro Manila) and V (Bicol) with more than 1200 people either dead, injured or missing. Many houses of Regions III (Central Luzon), IV, V, VI (Western Visayas) and NCR (National Capital Region) were either totally or partially destroyed.

HOUSING OVERVIEW

The Philippines is a developing country. Rapid family formation, increasing land and construction costs, financial inability of many families to own homes are factors in the growing scarcity of housing. The housing shortage is particularly acute in urban areas. Home construction is largely a private sector activity though the government is also increasingly involved in helping people. The vernacular housing or so called traditional housing which is most common in coastal and rural areas lacks basic typhoon resistant features. A typical nipa house in the coastal area of Sorsogon province is shown in Figure 3. Many families who are often the victims of typhoon disaster normally live in such houses.

[1]) 1.00 U.S. dollar = 22.2 Pesos (1987)

These traditional houses as now built are inherently weak and in any typhoon thousands of them are destroyed year after year. Efforts to rebuild the destroyed houses of disaster victims are mainly through self-help, supplemented by limited assistance from the Government and periodic aid from the private sector as well as from International and local non-governmental organisations. The Emergency Shelter Assistance, which is part of the Department of Social Welfare and Development's (DSWD) package of services for disaster victims provides financial grants, not to exceed peso 500, per family with either totally or partially damaged houses. It is evident that such support is rather symbolic and falls far short from reaching its objective and therefore alternative solutions had to be thought off.

DAMAGE ASSESSMENT

After the disastrous typhoon, the Asian Disaster Preparedness Center (ADPC) in cooperation with various government and non-government organisations in the Philippines arranged for its Senior Research Scientist to visit the affected areas. The objectives and principal tasks of this mission were to become familiar with the prevalent types of construction, to see the damaged and undamaged dwellings and other structures and to analyze the causes of weaknesses of these structures leading to their destruction. To render on the spot advice in the repairs, reconstruction works and further to make recommendations for short and long terms measures with an aim to improve the situation. Typical destruction of wooden houses along the coastline in the Sorsogon province is shown in Figure 4. Immediately after the disasters, typhoon victims started reconstruction of their dwellings utilizing salvaged material as shown in Figure 5. Full details of this mission report are contained in an ADPC publication entitled "Damage Survey Report on Typhoon Sisang in the Philippines, November 25, 1987".

One of the recommendations of the report was to have a program to identify and document the weaknesses in traditional housing in various typhoon prone areas of the country and further suggest ways of increasing resistance to typhoon damages. In the rehabilitation program emphasis must be given to the construction of typhoon resistant houses. The same message was repeated by the ADPC's Senior Research Scientist while delivering seminar at several universities in the Bicol region (typhoon devastated areas) as well as during a round table discussion held at Tagaytay in March 1988 Chaired by Secretary, DSWD and attended by government officials, NGOs and donor agencies.

DISASTER MANAGEMENT

The Department of Social Welfare and Development (DSWD) of Government of the Philippines is specifically tasked with the extension of emergency relief assistance and social services to victims of disasters to help them cope with the crisis, meet their immediate basic needs and eventually lead to their rehabilitation and a life of normalcy. During disasters the Secretary of DSWD directs the department's disaster emergency operations and

coordinates DSWD's operations with the National Disaster Coordinating Council (NDCC) and heads of other agencies and groups.

Typhoon Sisang in 1987, like the other disasters in the past, rendered thousands of families homeless. Reports indicated that of the 489,119 affected families 206,078 had their houses totally destroyed necessiating either major restoration or replacement. Additionally there were the partially damaged houses that needed repairs and upgrading before they could become fit to be reoccupied.

Long-standing experiences of DSWD in disaster relief operations show that the majority of the people are victimized by damage due to structurally inadequate shelters. Another reason is that these houses are usually located in high risk areas like the shoreline. The DSWD's existing Emergency Shelter Assistance (ESA) is not sufficient to meet the housing needs of disaster victims due to budgetary constraints. Consequently families even with ESA remain vulnerable and perennial target beneficiaries for housing assistance.

The responses generated by Typhoon Sisang brought donations that were allocated for shelter assistance. Its timing coincided with DSWD's interest in improving its shelter services and the department created an Emergency Shelter Committee. The Core Shelter Project is a result of the committee's efforts in improving the housing standards in the typhoon prone areas. It was to be implemented on a pilot basis in the areas hardest hit by Typhoon Sisang in Region IV, V and VIII. Now it has been extended to cover all regions of the country.

OBJECTIVES OF THE CORE SHELTER ASSISTANCE PROJECT

The immediate objective of this project is to provide assistance to the typhoon victims for the construction of typhoon-resistant shelter in Region IV-A (Southern Tagalog), V (Bicol) and VIII (Central Visayas), thus also enabling the DSWD to use cost effectively the external assistance received for the rehabilitation of Typhoon Sisang victims. The long-range goal is to upgrade the emergency shelter assistance of the DSWD. This will be accomplished with the community organization component by increasing participation of the victims and by drawing on their commitment to make their houses livable and maintain typhoon resistant standards.

DESIGN OF CORE SHELTER UNIT

The DSWD developed a core shelter unit for the typhoon victims with the help of a local engineer under the overall guidance of the Senior Research Scientist of ADPC. Before its finalisation a consultative meeting was arranged between officials of DSWD, the engineer and the Senior Research Scientist of Asian Disaster Preparedness Center at DSWD Office, Quezon City. The plan of the Core Shelter Unit originally developed by the

local engineer was thoroughly evaluated and several suggestions were made by ADPC's Senior Research Scientist for incorporating them into the drawings to make it typhoon resistant and structurally sound. The drawings and specifications were finalized through further informal consultations between DSWD and ADPC and implementation started during 1988. These units were designed to withstand a wind speed of 180 km per hour.

Construction of the Units:

The newly designed core shelter unit using locally available material for roofing and timber board siding is shown in Figure 6. Other unit using split bamboo siding is shown in Figures 7. Figure 8 shows the bare frame erection using timber. In this case the beneficiary chose to build cement hollow block (CHB) walls up to the sill of window. Figure 9 show a number of units under construction in Tagaytay area in Cavite province. Several houses have been constructed in a planned way for a community and salvaged G.I. sheets have been used for roofing shown in Figure 10.

Initially 450 units were constructed for the victims during 1988 on a trial basis and these units faced two typhoons in year 1988 with wind velocities reaching 160 and 175 km per hour. All shelters withstood the typhoon winds without any damage giving DSWD encouragement and confidence in performance of the shelters. It was decided to increase the number of units in this scheme so as to cover more beneficiaries and to seek UNDP technical assistance. Several agencies have now expressed interest in this project and are helping and contributing in different ways in a spirit of cooperation. The Philippine National Railway donated its land near the town of Bato in Camarines Sur Province for the construction and rehabilitation of victims. A row of core shelter units in a donated plot of land is shown in Figure 11.

UNDP TECHNICAL ASSISTANCE

The government of the Philippines attaches high priority to the Core Shelter Assistance project which is being pilot tested in the three regions most regularly struck by typhoons. The results of the pilot implementation will serve as a basis for upgrading of the existing emergency shelter assistance of the DSWD on a national scale. UNDP technical assistance was sought to facilitate the identification of the most suitable technology transfer process. Apart from various types of assistance sought under this project, DSWD specifically requested UNDP to provide an international consultant to advice on planning, refining and interpreting the physical design as well as transfer skills through training and demonstration to the DSWD personnel, foremen and beneficiaries. Under this pilot scheme 5,613 typhoon resistant core shelter units in the 15 provinces and 4 cities of the regions IV, V and VIII were planned to be constructed.

The DSWD also expressed a desire to UNDP to make use of the technical expertise of the Asian Disaster Preparedness Center in this work because of its past experience in the

development of the core shelter unit. UNDRO was requested to become a cooperating agency in the project. The ADPC is a collaborating center of UNDRO and thus with this fruitful cooperative agreement between the four (DSWD, UNDP, UNDRO and ADPC) the pilot project implementation started and several thousand units have been constructed.

PROJECT IMPLEMENTATION

It has been ensured that the minimum requirements for a typhoon resistant construction must be met. Cost effectiveness is achieved by providing for roofing, walling and flooring materials made of indigenous and cheap materials. To accommodate gradual subsequent shelter upgrading the design involves self contained modules as follows:

Module A: Provision of a core shelter unit consisting of foundation, wood post and framing, roof framing and trusses, gravel fill for toilet and flooring with indigenous local materials, roofing, sidings, door and windows.

Module B:- Upgrading and improvement through provision of Cement Hollow Block (CHB) walls and concrete slabs for mainfloor and toilet.

Module C: Upgrading through provision of door and window panels and interior finishing.

Module D: Upgrading through provisions of GI corrugated roofing sheets, gutters, down spouts, etc.

This modular design incorporates all features of modern house without imposing it on the beneficiary. There is minimum danger that the beneficiary perceives the unit to be too good for his needs persuading him to give it up, lease, or sell it in order to generate resources to meet other more important needs. On the other hand motivated by an improved perception of the importance of housing the beneficiary has the technology that will permit him to sequence the upgrading of the units. This feature enhances the cost effective delivery of shelter technology to low income groups. The direct beneficiary of the project have to meet the following requirements in order to qualify for a unit.

i) Their monthly income should be below the urban food threshold of Peso 1,441 for a family of six or the rural threshold of Peso 1,221.

ii) Their houses have to be either completely missing or destroyed and their limited resources have prevented them from reconstructing their damaged shelter.

iii) They should not be recipients of shelter assistance from any agency.

iv) They should have a guarantee of ownership or permanent or long term occupancy of the lot where the shelter will be built.

An issue that has been addressed in this project is beneficiary participation in needs assessment, in identification of existing resources and of capabilities. The social component can never be ignored in the provision of any assistance. Beneficiary participation ensures that the type of shelter provided is exactly what the beneficiaries wants and their needs are not exaggerated. It also guarantees the building up of human capabilities which if ignored will give rise to dependence. Deficiencies in beneficiary involvement in the project can also have adverse consequences on the long term ability of the beneficiaries to value and safeguard the houses given to them. Moreover provision of post-disaster shelter may be an opportunity to develop cooperative action and spirit.

A cadre of DSWD officials at the headquarters in Quezon City, Metro Manila and regional offices down to barangay (Village) level have been given specific responsibilities in the management of this project. These officials and social workers are assisted by technical personnel and foremen. Once beneficiaries have been identified for receiving assistance in the project, Community Association for Shelter Assistance (CASA) is organized, composing of five clients and their families. It is tasked with the mobilization of labor resources to service the construction needs of five shelter units. It is responsible for the safe storage of construction materials and monitoring their use in the project. Before actual construction of units, training sessions are organized at regional level. The first session is only for social workers to familiarize them with the project Philosophy and train them for the task to be performed by them in the "social preparation period" when they are mostly dealing with the beneficiaries. The second session deals with core shelter unit construction in which technical persons including foremen and social worker all participate. One such session shown in Figure 12 is in progress at Lucena City, Quezon province in which about 58 participants (foremen, engineers and social workers) were trained. During the second training session one unit of shelter is also built to teach the technique of its construction as shown in Figure 13 and to ensure familiarization with the unit. This unit also serves as a demonstration house for the whole region. A bare core unit as constructed by the foremen and beneficiary during training is shown in Figure 14. Immediately after the bare unit was completed the beneficiaries rushed to complete its roof covering Figure 15 using locally available material Nipa. Full advantage of locally available and salvaged materials have been taken to reduce the cost of each unit. A group of 5 beneficiaries first build one unit of shelter under the guidance and help of a trained foreman; then other units are repeated. One trained foreman is generally responsible for construction of 50 core shelter units in cooperation with beneficiaries and an area social worker. Emphasis is given to the beneficiaries to work under the supervision of foremen so as to learn the construction techniques and develop skill. One technical person is responsible for one region. Random checking of built units ensures quality control and one such tour is shown in Figure 16. With the encouraging results the Philippine Government extended this project into other regions of the country not covered under this pilot scheme

using its own resources and until now about 12000 units have been constructed and sanctions have been accorded for almost 14000 units. The project implementation is progressing satisfactorily.

The estimated construction cost of materials for the Core Shelter Unit is about Peso 4500 (US$ 1.00 = 22.2 Pesos). Cost of walling and roofing using indigenous material is assumed to be Peso 800. These prices are based on estimates of 1988. With the increase in cost of building materials year after year, the government is revising its contribution. At present a sum of Peso 6500 is being spent by the government on each unit when US$ 1.00 = Peso 28.20.

TRAINING

As a part of the pilot project the international consultant (ADPC) conducted a number of trainings in which DSWD Social Workers and other staff, supervisory technical staff such as regional and local engineers and foremen participated. The on site training generally involved three days of work. On the first day general briefing about the project used to be provided by DSWD officials from the central office followed by technical presentations on the Core Shelter Unit. Active participation of the foremen in the theoretical understanding of the shelter unit was ensured. The foremen were put to work in the construction of one sample unit in the next two days. Strict quality control was enforced and foremen were trained to proceed with the construction step by step following the drawing and specifications. Social workers who will be a part of project implementation watched the whole construction sequence and on completion of the unit, checked it. Once the construction of a unit was finished in the field, every one returned to the classroom for recapitulation, further question - answer session and clarifications before the closure of the training session. Now the social worker, foremen and technical supervisory staff are ready to go to their own region for project implementation. Similar trainings were conducted at various locations by central office project staff.

PERFORMANCE OF THE SHELTER UNITS SO FAR

As already pointed out that the construction of these shelter units started in 1988 on an experimental basis. With the success achieved and good performance shown by these units during the typhoons the project was expanded with UNDP assistance. There were some difficulties experienced in the actual construction of the units. The shelter has some unique features called typhoon resistant features and it was very difficult for the beneficiaries and also others associated in the project to appreciate it in the beginning as they had not seen these things before in the traditional construction in the Philippines. During construction there used to be several deviations from the originally prepared drawing and specifications. Sometimes structural members used to be omitted and invariably a few typhoon resistant features used to be discarded. Subsequently advise has been given to rectify these.

A structure has many redundancies and reserve strength when it comes to damages. The Core Shelter Units survived inspite of these mistakes. These mistakes were caused simply due to negligence and not enforcing strict quality control as professed during training programmes.

The international consultant while doing periodic inspection visits came very hard on these lapses and emphasized on the importance of proper construction. Strict adherence to drawing and specifications were suggested with improvements in on site supervision and construction quality control. Several check lists were prepared for use during and after construction. It is heartening to point out that situation has considerably improved and construction quality is improving. The deviations are becoming less and less.

These units have faced 3-4 typhoons in different areas in last four years and not a single unit has collapsed so far. The typhoon wind forces have reached up to 180 km per hour. A complaint sometimes made by beneficiaries, that the unit is small for a Filipino family of average six people. One must understand that if large sum of funds are available, there will be no difficulty in providing a bigger unit but with limited resources available it is extremely difficult to fulfill peoples aspiration. The technology of typhoon resistant construction is available and any size unit could be designed and built safely. People generally built extensions outside. The building of extension is the sole responsibility of the beneficiaries. The Core Unit is typhoon resistant and if extensions are also built sufficiently strong by the beneficiaries then during typhoons no problems are anticipated, otherwise if extensions get damaged or collapse, it may do damage to the core too. The basic aim of provision of Core Shelter Units is to safeguard the life of the people and their properties, which is fully met by these units at present.

The life of these core units will be enhanced if there is proper maintenance and upkeep. Maintenance is as crucial and important as the unit's actual construction. With heavy rains in the Philippines and termite attack materials such as wood will decay and hence proper upkeep is necessary for longer life of the units.

CONCLUSION

Experience with natural disasters has time and again proved that most lives are lost by destruction due to inadequate shelters. If the structures are built appropriately to withstand the forces created by a disaster the damages could be minimized. Disasters cannot be always prevented but their disastrous effects can certainly be mitigated.

The core shelter project in the Philippines is a simple example of cooperation between various agencies for mitigating the effects of typhoons. The poorest of the poor in the country are being benefitted by this project and it must be recognised that it is they who always suffer the most in disasters. The technology of typhoon resistant low cost construction is available and people can be helped.

Disaster-prone countries of all regions may learn from this Philippine experience.

ACKNOWLEDGEMENT

The Department of Social Welfare and Development, Government of the Philippines deserves all praise for visualizing and spearheading a down to earth program for the benefit of poor people. Dr. Mita Pardo de Tavera, Secretary DSWD, Government of the Philippines deserves special appreciation for initiating this programme. She along with her officers of DSWD have really given their heart to this project and are the guiding spirit; their dedication indeed deserves all praise. UNDP technical assistance and UNDRO cooperation for this worthwhile project will always be remembered. The Asian Disaster Preparedness Center, Asian Institute of Technology, Bangkok is pleased to be associated with the project and is happy to provide technical expertise.

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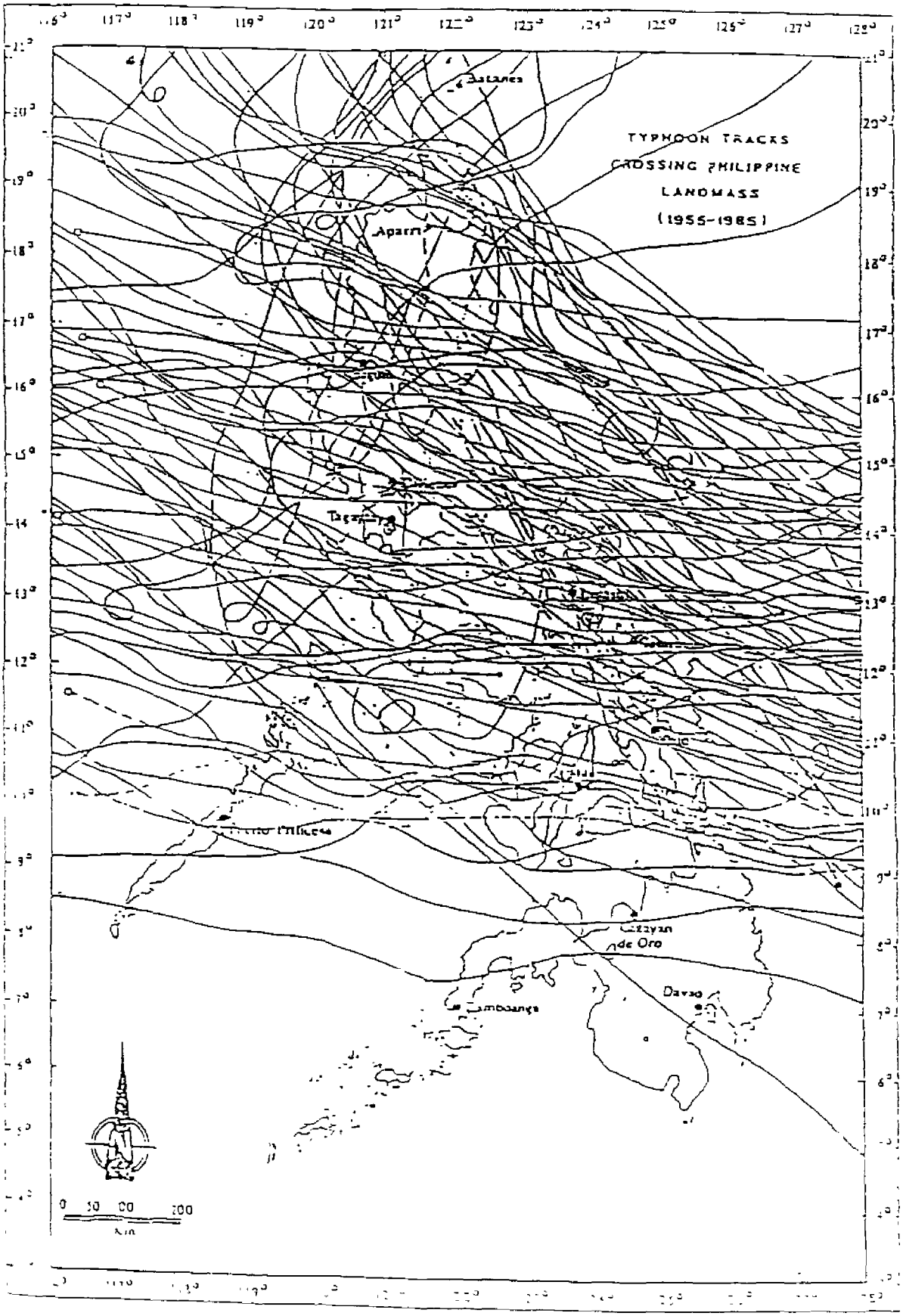
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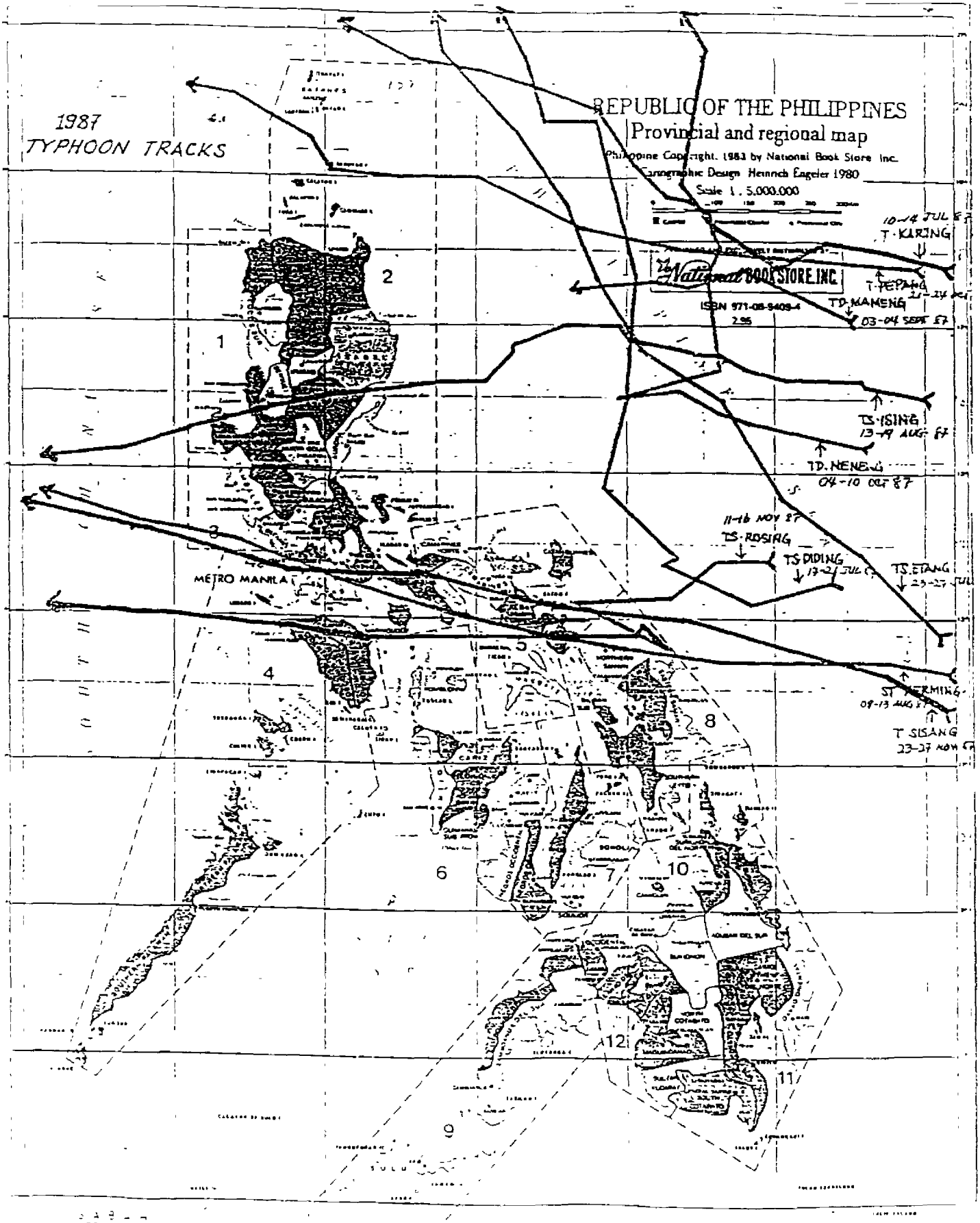
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