

*Scope of Work
for
The Study on Monitoring and Early Warning System for Landslides and Floods*

Agreed upon between

*Direction for Prevention and Attention of Emergency, Soacha Municipal Office
and
Japan International Cooperation Agency*

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I. INTRODUCTION

In response to the request of the Government of Colombia for the technical cooperation on the Study on Monitoring and Early Warning System for Landslides and Floods and Damage Rapid Assessment after a Seismic Event (hereinafter referred to as "the Study"), the Government of Japan decided to conduct the Study in accordance with relevant laws and regulations in force in Japan.

Accordingly, the Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of the technical cooperation programs of the Government of Japan, will undertake the Study in close cooperation with the authorities concerned of the Government of Colombia.

The present document sets forth the Scope of Work of the Study and will be valid after the approval by executive board of JICA Headquarters.

II. OBJECTIVES OF THE STUDY

The objectives of the Study are:

- (a) To prepare a Plan of monitoring and early warning system for the Study area in Tunjuelo middle River basin and the Soacha River basin, for landslides and floods.
- (b) To establish, operate and maintain monitoring and early warning systems for selected areas as the pilot projects with initiative of the community people as much as possible.
- (c) To transfer technologies and knowledge to Colombian personnel involved in the Study.

As the result of discussion, the Study does not include Damage Rapid Assessment after a Seismic Event as a component of the Study which was included in the original request.

III. STUDY AREA

The Study will cover the following areas as shown in Annex I:

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The study areas are the following six (6) rivers;

- (a) Chiguaza
- (b) Yomasa
- (c) Santa Librada
- (d) La Estrella-El Infierno
- (e) Tibanica
- (f) Soacha

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The study areas are the following two (2) areas;

- (a) Altos de La Estancia in Bogota
- (b) Altos de Cazuca and El Divino Nino in Soacha


IV. SCOPE OF THE STUDY

PHASE I: Basic Study

- 1) Data collection (meteorology, topography, geology, hydrology, social conditions)
- 2) Field reconnaissance
- 3) Review of existing plans/studies, organizations, legal systems and warning systems
- 4) Analysis of records of past disasters

PHASE II: Formulation of Plan

- 1) Analysis of data/information on:
 - (1) Meteorology
 - (2) Topography/geology
 - (3) Hydrology
 - (4) Landslides/slope failures
 - (5) Social structure
 - (6) Assessment of the missing data/information which are essential for the Study
- 2) Formulation of hazard maps for:
 - (1) Inundations
 - (2) Flash floods and debris flows
 - (3) Landslides and slope failures for the municipalities of Soacha
- 3) Recommendation on the following systems for:
 - (1) Monitoring systems for rainfall, river flow and land slide
 - (2) Early warning systems for landslide, slope failure, debris flow and flood
- 4) Preparation for the implementation of pilot projects
 - (1) Selection of the sites for pilot projects
 - (2) Detailed survey on land slide (boring, topographic survey, etc)
 - (3) Formulation of detailed hazard maps
 - (4) Design of monitoring systems
 - (5) Design of early warning systems
 - (6) Design of community plans
 - (7) Design of emergency countermeasure against landslides and slope failures
 - (8) Cost estimation
 - (9) Determination of warning and evacuation criteria with regard to rainfall intensity, movement of landslides etc.

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PHASE III: Implementation of Pilot Projects

- 1) Installation of monitoring equipment for rainfall, land slide movement, etc.
- 2) Installation of early warning equipment for communication etc.
- 3) Training on operation and maintenance of the equipment
- 4) Implementation of emergency countermeasure against landslides and slope failures
- 5) Execution of community emergency drills

V. SCHEDULE OF THE STUDY

The schedule of the Study is attached in ANNEX-2. The schedule is tentative and subject to modification if so agreed among concerned parties.

VI. REPORTS

JICA shall prepare and submit the following reports to the Government of Colombia.

1. Inception Report:

Forty (40) copies (10 in English, 30 in Spanish) at the commencement of the first (1st) phase. The report will contain the schedule and methodology of the Study as well as outline of the field survey.

2. Progress Report:

Twenty (20) copies (10 in English, 10 in Spanish) during the second (2nd) phase. The report will contain the interim progress of the study.

3. Interim Report :

Forty (40) copies (10 in English, 30 in Spanish) at the end of the second (2nd) phase. The report will include the master plan and selection of the pilot projects.

4. Draft Final Report:

Forty (40) copies (10 in English, 30 in Spanish) at the end of third (3rd) phase. The report will contain the outcome of the study including the result of the pilot projects. The Government of Colombia shall submit its comments within one (1) month after the receipt of the Draft Final Report.

5. Final Report:

Fifty (50) copies (20 in English, 30 in Spanish) within one (1) month after the receipt of the comments on the Draft Final Report.

VII. UNDERTAKINGS OF THE GOVERNMENT OF COLOMBIA

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1. To facilitate the smooth conduct of the Study, the Government of Colombia shall undertake:
 - (1) to permit the members of the Japanese study team (hereinafter referred to as "the Team") to enter, leave and sojourn in Colombia for the duration of their assignments therein and to exempt them from foreign registration requirements and consular fees;
 - (2) to exempt the members of the Team from taxes, duties, and any other charges on equipment, machinery and other materials brought into Colombia for the implementation of the Study;
 - (3) to exempt the members of the Team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Team for their services in connection with the implementation of the Study; and
 - (4) to provide necessary facilities to the Team for remittance as well as utilization of the funds introduced into Colombia from Japan in connection with the implementation of the Study.
2. The Government of Colombia shall bear claims, if any arises, against the members of the Team resulting from, occurring in the course of, or otherwise connected with, the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or willful misconduct on the part of the Team.
3. Direction for Prevention and Attention of Emergency (hereinafter referred to as "DPAE") and Soacha Municipal Office shall act as the counterparts to the Team, and provide the Team with the following at their own expense and in cooperation with other organizations concerned:
 - (1) security-related information on as well as measures to ensure the safety of the Team,
 - (2) information on as well as support in obtaining medical service,
 - (3) available data, information and studies related to the Study,
 - (4) counterpart personnel,
 - (5) suitable office space with necessary office equipment and furniture,
 - (6) credentials or identification cards, and
 - (7) appropriate numbers of vehicles with drivers.
4. DPAE shall act as the focal point representing the two counterparts in relation with JICA, Acción Social and other organizations concerned for the smooth implementation of the Study.

VIII. CONSULTATION

JICA, DPAE and Soacha Municipal Office shall consult with each other in respect of any matter that may arise from or in connection with the Study.

ANNEX I: MAP OF STUDY AREA
ANNEX II: TENTATIVE SCHEDULE OF THE STUDY

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