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Debris Flow Disaster Prevention and Response Operation Plan

Part I General Principles

The Council of Agriculture (hereinafter, the COA) is the central competent authority for debris flow disaster prevention and rescue operations under Article 3, Subparagraph 3 of the [Disaster Prevention and Response Act](#). The COA is responsible for directing, supervising, and coordinating with all levels of relevant administrative agencies and utility enterprises in implementing all kinds of tasks such as debris flow mitigation and preparedness before disaster, emergency response action during disaster, and recovery after disaster. The COA, having drafted the Debris Flow Disaster Prevention and Response Operation Plan (hereinafter, the Operation Plan) in accordance with Article 19, Paragraph 2 of the Disaster Prevention and Response Act, and relevant details of the Disaster Prevention and Response Basic Plan (hereinafter, the Basic Plan). The Operation Plan was approved on January 16, 2002 in the third meeting of the National Disaster Prevention and Response Council (NDPPC) and announced by the National Disasters Prevention and Protection Commission (NDPPC), the Executive Yuan, bearing reference number Tzai-Fang-Jian-Tzu No. 0919970038. The Council of Agriculture promulgated the Operation Plan on February 22, 2002, bearing reference number Nung-Lin-Tzu No. 0910030038.

The first amendment to the Operation Plan was approved by the National Disaster Prevention and Response Council on June 16, 2004; and announced by the National Disasters Prevention and Protection Commission, the Executive Yuan on July 8, 2004, bearing reference number Tzai-Fan-Guan-Tzu No. 0939970178; and promulgated for implementation by the Council of Agriculture on August 13, 2004, bearing reference number Nung-Shou-Suei-Bau-Tzu No. 0931842783.

Other relevant central or local authorities for debris flow disaster prevention and rescue efforts include the Ministry of the Interior (MOI), Ministry of Economic Affairs (MOEA), Ministry of Transportation and Communications (MOTC), Environmental Protection Administration (EPA), Department of Health (DOH), Ministry of National Defense (MOND), Ministry of Education (MOE), Ministry of Foreign Affairs (MOFA), Ministry of Justice (MOJ), Public Construction Commission (PCC), Government Information Office (GIO), Ministry of Finance (MOF), Directorate-General of Budget, Accounting and Statistics (DGBAS), Council of Indigenous Peoples (COIP), National Disasters Prevention and Protection Commission (NDPPC), National Science Council (NSC), and local governments (including governments of municipalities under the direct jurisdiction of the Executive Yuan, counties, cities, villages, and townships).

Disaster Prevention and Response Act

1. This Act was promulgated in accordance with the President's Decree dated July 19, 2000 and bearing reference number Hua-Tsung-(I)-Yi-Tzu No. 8900178710. The Act has been incorporated for the development and improvement of a disaster prevention and response system of functions to protect the safety of the people's life and properties and conservation of the homeland.
2. Addition of Article 39-1, published under Presidential Order Hua-Tsung-(I)-Yi-Tzu No.09100108310, May 29, 2002.

slopelands
Under Article 3, Paragraph 3 of the Soil and Water Conservation Act, slopeland refer to national forest area, forest land for experimentation, protection forest land and public and private land conforming to either of the following which the central or municipal competent authority identifies in accordance with the natural terrain, requirements of the administrative regions, and requirement for conservation and utilization, and which are approved and publicly announced by the Executive Yuan upon application of the central or municipal competent authority: (1) with an elevation of more than 100 m; (2) with an elevation less than 100 m, however, average gradient greater than 5% .

1. Operation Plan Descriptions

(1) Objectives

The objectives of the Operation Plan are to develop sound debris flow disaster prevention and response system, strengthen relevant debris flow disaster recovery and reconstruction, and implement debris flow disaster prevention education, training and publicity to enhance debris flow disaster prevention, preparedness, and mitigate disaster losses. In addition, the Operation Plan also serves as the basis for Regional Disaster Prevention and Response Plans.

(2) Constituents and contents

The Operation Plan consists of five parts, including General Principles, Disaster Prevention, Disaster Emergency Response, Post-disaster Recovery and Reconstruction, Operation Plan Implementation, Control and Evaluation., and Appendixes.

(3) Relationship with other plans

The Operation Plan is formulated based on the Basic Plan and will become effective after being approved by the NDPRC. The Operation Plan is by nature a subordinate plan of the Basic Plan and a complementary plan for all kinds of Disaster Prevention and Response Operation Plans formulated by the MOI, MOEA, MOTC, EPA, DOH, and Atomic Energy Council (AEC). The Operation Plan is a superior and guiding plan for Regional Disaster Prevention and Response Plans formulated by all levels of local governments. The matters set forth in the Operation Plan that required to be handled by relevant agencies should also be included in the debris flow section of regional disaster prevention and response plans prepared by local governments for implementation by corresponding agencies (units) to ensure a sound mechanism for overall debris flow disaster prevention and response.

2. Characteristics and recognition of debris flow disasters

(1) Natural conditions for formation of debris flow disasters

Located in the Pacific-Rim Seismic Zone, Taiwan has fragile geological characteristics with a large number of faults, steep [slopelands](#) and shallow soils. Geographically located in the path of rainy fronts and West Pacific typhoons, Taiwan is frequented by typhoons and storms, which bring abundant rainfall coupled with natural environmental factors such as earthquakes. All these are likely to cause debris flow potential areas.

A debris flow is a mixture of mud, sand, gravel, boulder and water that created by the action of gravity and carries the following characteristics:

- i. The unit weight of a debris flow in motion is between $1,400 \text{ kg/m}^3$ and $2,300 \text{ kg/m}^3$.
- ii. A gravel type of debris flow travels at a velocity of 3 to 10 m/sec and a mud type at 2 to 20 m/sec.
- iii. Debris flows take place mostly on 15° to 30° slopes and are deposited on 3° to 6° slopes.
- iv. Debris flows often form alluvial deposits on relatively flat areas at valley outlets.
- v. The front section of a moving debris flow is wave-shaped and often characterized by a high concentration of boulders.

Debris flows are natural phenomena with triggering conditions, including abundant deposits, sufficient water and steep slope. The development process of a debris flow consists of the source area (generation section), transportation section (flowing section) and deposition area (deposition section). The source area is often located on relatively steep areas upstream of valleys. Water flows sharply erode riverbed and side banks, causing [landslide](#) and accumulate a large amount of debris. When water flows mix with debris to a certain concentration typical debris flow, a certain flow velocity and riverbed washing energy will be created at appropriate grades. In addition, the sediments and woody debris travelling at the front end can also cause certain damage. A debris flow at this stage is known as a transportation section. When the debris flow reaches relatively wide or moderately inclined areas at downstream riverbeds, it slows down and becomes gradually dehydrated, with gradually deposition of sediment. Alluvial deposit is formed at the opening of a valley or river mouth and is known as the deposition area.

(2) Social conditions

In the past, although debris flows occurred, they were regarded as natural phenomena, since they mostly took place in sparsely populated areas. However, rapid economic development has caused a shift of population and industries towards mountainous areas. As a result, the threats posed by debris flows to mankind, settlements, farms, and public facilities are increasing, and debris flows regard as natural disasters have gradually emerged.

landslides

Under Article 160 of the Technical Regulations of Soil and Water Conservation, a landslide refers to the falling or sliding of rock and soil on slopes and consists primarily of falls, slumps and slides.

investigation and analyses of major historical debris flow disaster cases
See Appendix A

scenario simulation
Quantified simulations and loss assessments on potential debris flow disasters are conducted, including situation simulations and assessments on conditions such as potential casualties, damage to buildings and the environment and social and economic losses.

Concrete Execution Plans for Resolution of Debris Flow Disasters
It was decided during the 2768th Session of the Executive Yuan on January 9, 2002 that relevant authorities are required to prepare concrete plans for implementation in accordance with the Debris Flow Resolution Program.

Table on Relevant Responsibilities and Division of Work Items
See Appendix B

(3) Case studies and analyses

When a debris flow disaster occurs, all levels of governments should commit necessary manpower and resources collecting, investigating, analyzing, exploring, and compiling information about the status and causes of a disaster and submitting such information to the Soil and Water Conservation Bureau, COA for inclusion into the [investigation and analyses of major historical debris flow disaster cases](#) (Appendix A), which serve as future reference for the formulation of disaster prevention strategies.

(4) Recognition of debris flow disasters

A debris flow disaster is recognized on the basis of the above-mentioned characteristics and the Technical Regulations of Soil and Water Conservation. In case of any doubt, the recognition is made by the COA's Debris Flow Advisory Group.

3. [Scenario simulation](#) of disasters

All levels of governments should estimate each disaster potential area before formulating any policies. Such estimation should cover the following matters:

- (1) Scenario simulation of debris flow disasters, determination of the disaster area and estimation of disaster-incurred losses.
- (2) Prepared the hazard maps and data base of debris flow disasters to serve as disaster prevention information.

4. Division of work items and responsibilities

All agencies (units) and all levels of governments should in addition to handling the matters set forth in the Operation Plan, should plan comprehensively and execute for debris flow disaster prevention and rescue operations by following the division of work items and responsibilities for each unit as set forth in the [National Land Security Plan – Concrete Execution Plans for Resolution of Debris Flow Disasters](#) approved by the Executive Yuan. If necessary, the COA may coordinate with all units for review and revision (See Appendix B for the [Table on Relevant Responsibilities and Division of Work Items](#)).

5. The Operation Plan formulation procedure

The Operation Plan will be prepared and reviewed by the COA by considering comments and opinions from relevant agencies (units) solicited by the COA and will be subsequently submitted to the NDPRC for approval

prior to its implementation (the COA is authorized to approve amendments to the Operation Plan's Appendixes). All relevant agencies (units) are required to thoroughly follow the Operation Plan.

6. Schedule and timing for the Operation Plan amendment and review

Under Article 8 of the Enforcement Rules of the Disaster Prevention and Response Act, the COA should, based on the Basic Plan, review the Operation Plan and amend it in every two year period, if necessary, by conducting inspection and evaluation based on the outcome of relevant scientific research, circumstances of disasters and their coping strategies. If necessary, the COA may amend it from time to time.

7. Operating procedure for debris flow disaster prevention and rescue

The COA will prepare the [Operating Procedures Related to Debris Flow Disaster Prevention and Rescue](#) (Appendix C). All units may prepare relevant operating manuals on their own based on such operating procedures.

8. Index

To facilitate effective and quick search and review of all kinds of debris flow prevention and rescue information by relevant personnel, an index is compiled for the Operation Plan.

Operating Procedures Related to Debris Flow Disaster Prevention and Rescue
See Appendix C

Part II Disaster Prevention

Disaster prevention covers disaster prevention and rescue measures such as disaster mitigation in normal times and pre-disaster preparation with an aim to reduce natural disasters and man-made damage to national land and prepare disaster emergency plans beforehand to enhance the emergency response capability for coping with disasters.

Chapter 1 Disaster Mitigation in Normal Times

Section 1 Preparedness of Security Facilities for National Land

1. To strengthen slopeland conservation and management

- (1) Forestation should be enhanced in the upstream areas of [watersheds](#) (COA).
- (2) The conservation and management of [reservoir watersheds](#) should be strengthened to improve water quality and ensure sustainable utilization of soil and water resources (MOEA and COA).
- (3) Emergency soil and water maintenance and treatment at the sources of debris flows and landslides should be implemented to reduce source materials of debris flows, minimize landslides, and debris flow disasters (COA).
- (4) Programs related to mountain management and disaster prevention should be strengthened with each watershed as a basic treatment unit (COA).

2. To strengthen disaster prevention management on slopelands

- (1) The [overuse](#) of slopelands should be dealt with to reduce sediment related disasters caused by overuse (COA and local governments).
- (2) Programs for investigation, reporting and crackdown on over-development and construction on slopelands should be reinforced, and overuse investigation should be conducted (COA and local governments).
- (3) Review, supervision and management of slopeland development should be strengthened to reduce disasters caused by man-made development of slopelands (COA, MOI, and local governments).
- (4) Disaster prevention planning for rural village on slopelands should be enhanced, and soil and water conservation facilities for rural villages

[watershed](#)

Under Article 3, Paragraph 4 of the Soil and Water Conservation Act, area above a given point of stream or river where the natural drainage converges.

[reservoir watershed](#)

Under Article 3, Paragraph 6 of the Soil and Water Conservation Act, a “reservoir watershed” refers to the area within the whole basin of a watershed or dam (including the intake of an off-channel reservoir).

[overuse](#)

Pursuant to the interpretation set forth in Article 26 of the Enforcement Rules of the Soil and Water Conservation Act, the overuse of slopelands refers to agricultural, fishing and stock-breeding development, plantation, operation or use within areas designated as those suitable for forest land or lands requiring intensive treatment under the Statute for Slopeland Conservation and Use.

and settlements on slopelands should be improved (COA and local governments).

- (5) Workshops and seminars on laws, regulations, and techniques regarding slopeland management should be organized to cultivate slopeland management professionals and enhance the law enforcement capability of slopeland managing personnel (COA and MOJ).
- (6) To rapidly and effectively search and plan relevant disaster prevention measures, a [geographic information database](#) for slopelands and a search system should be set up, and the National Geographic Information Task Force under the Ministry of the Interior should integrate existing geographic information databases from various units (MOI, COA, and MOEA).
- (7) The authorities and responsibilities of various existing slopeland management agencies, as well as operations relating to conservation and mitigation work and investigation of illegal uses, should be integrated to thoroughly implement slopeland safety and maintenance projects (COA and MOI).
- (8) Continuous efforts should be made to study appropriate amendments to slopeland administration acts and regulations to cater social and environmental changes (COA).
- (9) Research projects related to debris flow disaster prevention should be carried out on a continuous basis to strengthen the research and applications of disaster prevention technologies and strategies, including the grasp of meteorological and geological information, slope safety and stability, debris flow triggering mechanisms and affected area of impact, exploration on engineering and nonengineering means to withstand, retain, train or evade debris flows and a focus on disaster prevention and rescue practices, to thoroughly fulfill disaster mitigation functions (COA, NSC, PCC, MOEA, MOI, and MOTC).

Section 2 Assurance of Disaster Prevention Construction and Facilities

1. Safety inspection and review

A database regarding the current status and safety inspection of [erosion and sediment control engineering](#) structures and soil and water conservation measures should be set up. The localities and the geological structure factors of damaged structures should be identified. In addition, statistics can be employed to analyze the primary triggers for the damage or destruction, and the functions and performance of existing disaster prevention construction and facilities can be reviewed to help strengthen existing disaster prevention projects and the planning and design of subsequent disaster prevention structures (COA and local governments).

[geographic information database](#)

An integrated geographic information database incorporating graphic, image and attribute data.

[erosion and sediment control engineering](#)

These refer to projects relating to sediment and flood control, collapse treatment and environmental conservation undertaken or subsidized by relevant authorities such as the Forestry Bureau and Soil and Water Conservation Bureau under the COA.

potential debris flow torrent

The potential debris flow torrent is the nature hazard estimation which exceed the resilient ability of protect objects within the affected areas.

Designated Soil and Water Conservation Area

Under Article 3, Paragraph 5 of the Soil and Water Conservation Act, such area refer to area designated by the central or municipal competent authority where the handling and maintenance of soil and water conservation must be strengthened., including the following items: (1) reservoir watersheds, (2) watersheds of major streams and rivers that are subject to special protection, (3) coasts, the riparian zones of lakes and reservoirs, or banks of waterways that are subject to special protection, (4) sand dunes, sand beaches etc. that are under serious wind erosion, (5) steep slopeland that is likely to jeopardize public safety, (6) other areas with a great impact on soil and water conservation.

treatment and maintenance of soil and water conservation

Under Article 3, Paragraph 1 of the Soil and Water Conservation Act, the application of engineering, agronomic or vegetative measures to protect soil and water resources, maintain natural ecology and landscape, and prevent soil erosion, collapse, landslide, debris-flow, and other disasters.

2. Assurance of construction quality

All emergency agencies of competent authority should enforce the supervision and inspection of the quality of engineering construction according to the Article 70 of the Government Procurement Act. All subordinate should be supervised to prescribe three-level engineering quality management and assure the construction disaster prevention in advance, according to the Quality Management Systems for Public Construction Projects. (COA, local governments, and PCC).

Section 3 Investigation and Mapping of Potential Torrents

1. Survey on potential debris flow torrents

Surveys on [potential debris flow torrent](#) should be continued and an inquiry system should be set up for disaster areas as determined by the scope of impact of past disaster event and by relevant surveys. The COA and local governments should follow the survey and assessment outcome to enhance the mapping of [Designated Soil and Water Conservation Areas](#), debris flow prevention, and sediment control works, or the posting of warning signs (COA and local governments).

2. Delimitation of Designated Soil and Water Conservation Areas

Pursuant to the Regulation of Delimitation and Abolishment of Designated Soil and Water Conservation Areas, active efforts should be made to partition soil and water conservation areas. Administrative authorities for designated soil and water conservation areas should enhance [treatment and maintenance of soil and water conservation](#) by stages and areas and exercise strict control over developments in restricted areas so as to conserve soil and water resources, mitigate natural disasters and maintain public safety on slopelands (COA, local governments, MOEA, and MOI).

3. Installation and maintenance of warning signs for potential debris flow torrent

Continuous efforts should be made to post and maintain warning signs for potential debris flow torrent (local governments and COA).

Section 4 Disaster Evacuation Planning

1. With regard to debris flow evacuation planning, local governments should plan debris flow evacuation routes and shelters in consideration of local characteristics. The COA will provide a demonstration plan to offer examples and standards (local governments and COA).

2. County (city), village (township and city) governments should formulate Debris Flow Disaster Prevention and Evacuation Program based on the outcome of debris flow evacuation planning (local governments and COA)
3. The COA should prescribe the [Operating Procedures for Debris Flow Disaster Evacuation](#) (Appendix C.1), which serves as the basis for debris flow evacuation drills by local governments (COA and local governments).

Operating
Procedures for
Debris Flow
Disaster
Evacuation

See Appendix C.1

Section 5 Disaster Prevention and Rescue Budget

All levels of governments should prepare a disaster prevention and rescue budget in accordance with Article 43 of the Disaster Prevention and Response Act. If such disaster prevention and rescue budget is insufficient, revenues of a given year may be allocated to meet emergency funding needs, depending on the needs (local governments, MOI, MOEA, MOTC, COA, COIP, and DGBAS).

Section 6 Preparedness of Meteorological Facilities

1. The Central Weather Bureau should monitor weather changes such as typhoons and rain storms at all times and provide meteorological data (MOTC).
2. Disaster prevention and rescue units of all levels of governments should regularly (March through April each year) and irregularly maintain and test all kinds of transmission, reporting, communications and warning equipment (local governments, MOI, MOEA, MOTC, COA, and COIP).

Chapter 2 Pre-disaster Preparedness

Section 1 Establishment of Emergency Response Mechanism

1. Local governments and relevant utility enterprises should formulate emergency mobilization plans to specify the emergency contact methods, assembly methods, gathering locations, mission assignment, operating procedures and matters to be noted for people responsible for disaster emergency response implementation and conduct regular drills by simulating all kinds of scenarios (local governments, MOI, MOEA, MOTC, and COA).
2. Each local government should formulate Debris Flow Disaster Prevention and Evacuation Program for potential debris flow torrent in advance. If necessary, the COA should provide active guidance and assistance to local governments in formulating relevant details (local governments and COA).

3. Each local government should set up a rescue organization to provide support for the rescue of human lives (local governments).
4. Each local government and the military should follow relevant requirements in executing a mutual support agreement which provides for the dispatch procedure and methods and windows of contact, and enhance mutual communications and conduct joint drills in regular times (local governments and MOND).
5. Local governments and relevant public utility enterprises should strengthen the facilities and equipment of disaster emergency response centers (action term) and debris flow disaster prevention and control measures. They should also consider allocation mechanisms in times of difficulties with the supply of food and drinking water and ensure that such mechanisms can operate normally upon power outage (local governments, MOI, MOEA, MOTC, and COA).
6. The MOTC should supervise the Civil Aeronautic Administration with respect to coordination with aviation operators and local governments to jointly maintain the safety of landing sites for rescue missions of helicopters to facilitate support operations (MOTC and local governments).
7. All levels of governments should maintain contact with the civil defense mobilization preparation system to handle the preparation for disaster rescue, responses and conscription of reservists (local governments and MOND).

Section 2 Collection, Reporting, Analysis and Application of Disaster Information

1. Establishment of a disaster information collection and reporting system

- (1) The [Operating Procedures for Collection and Reporting of Debris Flow Disaster Information](#) (Appendix C.2) should be formulated to establish an emergency reporting system for debris flow disasters (COA).
- (2) Establishment of communication list related to disaster rescue

Each local government is required to set up a communication list related to disaster rescue based on such information provided by the central competent authority or set up by such local government as the emergency contact persons, [protected objects](#), evacuation routes, emergency shelters, first-aid stations and disaster rescue resources for potential debris flow torrent. Such communication list should be verified on a regular basis (local governments, COA, MOI, and COIP).

Operating
Procedures for
Collection and
Reporting of
Debris Flow
Disaster
Information

See Appendix C.2

[protected objects](#)

These refer to
information about the
residents and public
facilities within debris
flow-affected areas

2. Assurance of communications facilities

- (1) All levels of governments and relevant public utility enterprises may plan alternative proposals for power outage or damage of communications systems to ensure communications availability in times of disasters, and the deployment of communications system structures should be diversified (local governments, MOI, MOEA, MOTC, COA, and COIP).
- (2) All levels of governments may regularly inspect or test communications facilities or conduct operating training for such facilities and simulate emergency scenarios involving communications breakdown or massive communications usage (local governments, MOI, MOEA, MOTC, COA, and COIP).
- (3) All levels of governments may establish a disaster rescue communications network to ensure that on-site disaster data can be transmitted to all levels of disaster emergency operation centers and relevant disaster prevention agencies (local governments, MOI, MOEA, MOTC, COA, and COIP).
- (4) All levels of governments may setup the operating modes of the citizens' mobile phones and radio systems in times of disasters (local governments, MOI, MOEA, MOTC, COA, and COIP).

3. Analysis and application of disaster data

All levels of governments should regularly information related to debris flow disaster prevention from time to time and provide such information for the review of the citizens via the Internet and all kinds of information delivery channels (local governments and COA).

Section 3 Preparedness for Rescue and Emergency Medical Care

1. All levels of governments should regularly prepare equipment, apparatuses, and resources required for debris flow disaster rescue and emergency medical care and enhance the training of rescue and emergency medical professionals. As for relevant equipment, including excavation machinery, rescue equipment, and life detection equipment should be prepared, in addition to common equipment and apparatuses for all kinds of disasters, and rescue dogs should be prepared and trained. Private sectors may be subsidized to facilitate such efforts (local governments, MOI, and COA).
2. All levels of governments should prepare an emergency medical care system for debris flow disasters, prescribe the reporting procedure between the medical care command and medical institutions and among

medical institutions, regulate the division of work items among medical staff in dealing with a large number of patients, and conduct regular exercises (local governments, DOH, and MOND).

Section 4 Preparedness for Emergency Transportation

1. To deal with emergency transportation as a emergency response measure to handle debris flow disasters, local governments should plan the transportation facilities (roads, airports, and landing sites for helicopters), transportation locations (stations, markets, school playground, etc.) and relevant alternative proposals. The safety of a transportation system with respect to disaster prevention should be considered, and repeated damage to the environment and resident by strong winds generated by helicopters should also be avoided. Relevant agencies should be consulted to establish an emergency transportation network, and relevant agencies should be notified (local governments, MOTC, MOI, and MOND).
2. Local governments should negotiate with relevant agencies to plan reserved sites for helicopters in advance to serve as part of the emergency transportation network and should announce such sites (local governments, MOTC, and MOI).
3. Traffic control agencies should plan traffic control measures for land transportation in times of disasters and ensure the safety of road facilities such as traffic signals and information bulletin boards during disasters (local governments, MOTC, and MOI).
4. All levels of governments and relevant public utility enterprises should prepare the manpower, tools and equipment required for the removal of road barriers and emergency repair in the wake of a disaster and enter into support agreements with construction and maintenance operators (local governments, MOTC and MOI).
5. All levels of governments and public utility enterprises should enter into agreements with transportation operators in advance to facilitate emergency transportation. (local governments, MOTC, and MOI).

Section 5 Preparedness of Evacuation Shelters

1. Local governments should plan the evacuation routes beforehand and select appropriate locations as the evacuation shelters for residents by considering the situation of disasters, population distribution and topographic conditions, communicate such information to the residents, and regularly mobilize the residents to participate in disaster prevention drills. Assistance should be provided to disadvantaged groups such as senior citizens, children and mentally and physically handicapped people (local governments, COA, and MOI).

2. Local governments should set up water storage tanks, temporary toilets and telecommunications facilities for delivery of information and for contact at evacuation shelters or in their vicinity and plan the preparation and storage of food, drinking water, medical supply, and cooking utensils (local governments).
3. Local governments should prescribe administrative rules for the use of shelters and communicate such rules to the citizens (local governments).
4. All levels of governments should identify the quantity of materials needed by temporary shelters and set up an allocation and supply system in advance (local governments and MOI).
5. All levels of governments should survey lands that may be used for temporary shelters in advance (local governments and MOI).

Section 6 Preparedness for Allocation and Provision of Food, Drinking Water and Necessities of Living

1. Local governments should estimate the kinds and quantity of food, drinking water and necessities of living in times of a large-scale debris flow disaster and set the allocation and provision plans, in which the appropriateness of storage locations, comprehensiveness of storage methods and safety of storage buildings should be considered (local governments).
2. All levels of governments should prepare for the storage and allocation of food, drinking water, medical supply, necessities of living and telecommunications facilities (local governments, MOI, COA, DOH, MOTC, and COIP).

Section 7 Preparedness for Emergency Recovery of Facilities and Equipment.

1. All levels of governments and relevant public utility enterprises should estimate potential disaster damage to the facilities, equipment and [lifelines](#) under their management, prepare for emergency recovery and provision measures beforehand, and execute support agreements with relevant operators (local governments, MOI, MOEA, and MOTC).
2. Local governments should regularly inspect various disaster prevention and debris flow control engineering within their jurisdictions and intensify such inspection during [flooding seasons](#). Any damage found during the inspection should be reported immediately for maintenance to ensure that disaster prevention functions of all projects can be carried out (local governments, MOI, MOEA, MOTC, and COA).

[lifelines](#)

Basic energy pipelines that support the lives of disaster-struck residents, including electricity, water, gas, etc.

[flooding season](#)

Under Article 18 of the River Management Regulation, flood defence season covers from May 1 to November 30.

Section 8 Preparedness of Disaster Information for Citizens

1. All levels of governments should provide comprehensive information regarding the process of disasters handling and deployment and enhancement of information delivery facilities to disaster-struck residents (local governments, MOI, MOEA, MOTC, COA, GIO, and COIP).
2. All levels of governments and relevant public utility enterprises should strengthen and maintain their information delivery system and communications facilities and equipment to speedily deliver relevant disaster information and provide living information to disaster-struck residents (local governments, MOI, MOEA, MOTC, COA, and COIP).
3. All levels of governments and public utility enterprises should plan disaster prevention consultation services in advance to cope with the citizens' needs (local governments, MOI, MOEA, MOTC, COA and COIP).

Section 9 Preparedness for Prevention of Repeated Disasters

1. The COA should prescribe the [Operating Procedures for Prevention of Repeated Debris Flow Disasters and for Recovery and Reconstruction](#) (Appendix C.5) (COA).
2. All levels of governments should enrich and maintain necessary equipment, facilities and disaster detection devices to prevent repeated debris flow disasters (local governments, MOI, MOEA, MOTC, and COA).

Section 10 Preparedness for Acceptance of International Support

1. The central government should prescribe relevant operating guidelines for accepting international support, survey international support organizations and catalog such organizations in advance.
2. The operating guidelines set forth in the preceding paragraph should be set by the MOI with the assistance of the COA and MOFA (MOI, MOFA, and COA).

Section 11 Drills and Training for Relevant Disaster Prevention and Rescue Agencies

1. Local governments should enhance debris flow disaster emergency treatment for villages and townships prone to potential debris flow torrent (local governments, COA and COIP).

2. All levels of governments should plan cross-county and city training of disaster emergency preparedness (local governments, MOI, MOEA, MOTC, COA, and COIP).
3. Local governments and public utility enterprises should keep close contact with the military, community disaster prevention and rescue organizations, private disaster prevention and rescue volunteering organizations and companies and conduct drills (local governments, MOI, MOEA, MOTC, and MOND).
4. When conducting [disaster prevention and response drills](#), all levels of governments and public utility enterprises should simulate all kinds of debris flow disaster scenarios to strengthen emergency response handling capability and coordination and communication mechanisms between various agencies. Evaluation should be conducted following such drills for reference of disaster prevention and rescue (local governments, MOI, MOEA, MOTC, and COA).

Section 12 Cataloging Facilities and Equipment

1. All levels of governments and relevant public utility enterprise should prepare all kinds of information (such as cadasters, buildings, rights relationship, facilities, objects buried underground, and real estate registration and maintenance and support systems for information such as surveying drawings and information drawings) in advance to smoothly perform recovery and reconstruction (local governments, MOI, MOEA, and MOTC).
2. Public facility management agencies should prepare relevant information in advance such as the construction drawings, bases and foundations of major facilities under management and make copies for separate storage to facilitate post disaster restoration (local governments, MOI, MOEA, and MOTC).

Chapter 3 Disaster Prevention Education, Training and Publicity for Citizens

Section 1 Promotion of Disaster Prevention Awareness

1. Debris flow disaster prevention education and publicity should be continued (local governments and COA).
2. The [Implementation Guidelines for Debris Flow Disaster Prevention Education and Publicity](#) (Appendix C.3) will be set to strengthen disaster prevention education and training, promote the disaster prevention awareness of all citizens, and impart all kinds of disaster prevention knowledge and self-help methods to the citizens so that the citizens will

disaster prevention and response drills

To simulate potential disasters, the following measures can be taken to enhance the contingency-copying capability and the preparedness of the citizens participating in the simulation and training: issuance of pre-disaster warnings, preventive measures, promotion of disaster prevention, organization of communication self-protection groups, establishment of a command center, announcement of evacuation route for residents, post-disaster reporting, and disaster rescues.

Implementation Guidelines for Debris Flow Disaster Prevention Education and publicity

See Appendix C.3

stay away from dangerous areas for their own safety (local governments, COA, MOI, and COIP).

Section 2 Dissemination of Disaster Prevention Knowledge

1. All levels of governments may conduct analysis and investigation regarding debris flow disaster potentials, degrees of danger and scenario simulation. Local governments should provide timely notice to the citizens to prepare emergency living supplies and carry-ons and disseminate disaster prevention knowledge regarding emergency response actions and evacuations that should be initiated in times of disasters (local governments, COA, MOI and COIP).
2. The MOE and local governments should promote education regarding the conservation of national land, soil and water conservation and prevention of debris flow disasters (MOE and local governments).

Section 3 Implementation of Disaster Prevention Training

1. All levels of governments and relevant public utility enterprises should conduct debris flow disaster prevention training through activities such as disaster prevention weeks (local governments, MOI, MOEA, MOTC, COA, and COIP).
2. Local governments may simulate scenarios of debris flow disasters and disaster response measures beforehand by regularly inviting personnel of relevant agencies, residents, organizations, and companies to jointly participate in training and exercises. For disadvantaged groups in times of disaster evacuation such as senior citizens, mentally and physically handicapped people, infants and young children and foreign nationals, special disaster prevention training should be planned and implemented (local governments).

Section 4 Promotion of Disaster Prevention for Companies

Companies located on slopelands should consider their social responsibilities by participating and facilitating debris flow disaster prevention drills in their areas (local governments, MOI, MOEA, and COA).

Chapter 4 Research on and Observations of Debris Flow Disaster Countermeasures

Section 1 Research on Debris Flow Disaster Countermeasures

1. The COA and NSC should promote the technology and research relating to debris flow disaster prevention and rescue from the perspective of

disaster prevention, and should cooperate with relevant research institutions in order to effectively apply research outcome (COA and NSC).

2. The COA and NSC should work with academic institutions and other professional organizations to promote relevant disaster prevention research (COA and NSC).

Section 2 Observations of Debris Flow Disasters

1. The MOTC should upgrade meteorological observation facilities to enhance the capability of typhoon path forecasting, heavy rainy storm monitoring and rainfall forecasting. The COA should upgrade relevant hydrological observation and transmission facilities to promote the capability of the debris flow warning system and various debris flow prevention and rescue facilities (MOTC and COA).
2. Setting debris flow observation station and collecting the hydrological and geographic information are necessary to serve as reference for establish [rainfall threshold value for debris flow warning](#) in the future (COA).
3. Local governments may set up debris flow monitoring or observation systems on their own, depending on their actual needs and incorporate such systems into local disaster prevention systems. The COA should provide consultation, if necessary (local governments and COA).

[rainfall threshold value for debris flow warning](#)

Local precipitation records and debris flow indicators will serve as the basis for reference, and precipitation and debris flow benchmarks will be established based on local geological environments and circumstances.

Section 3 Collection and Analysis of Debris Flow Disaster Cases

1. The COA and local governments should analyzes the causes of disasters and review current practices based on past cases of debris flow disasters and relevant information collected (COA and local governments).
2. The COA should broadly collect debris flow cases and measures, acts and regulations related to disaster prevention and rescue operation in other countries and conduct regular exchanges of experience or send officials overseas for training (COA).
3. The COA should regularly organize domestic and international practical workshops, academic conference and training on debris flow disaster prevention and rescue to improve Taiwan's capability in debris flow disaster prevention and rescue (COA).

**Debris Flow
disaster
forecasting and
warning**

When it is determined that a debris flow is likely in a debris flow prone area pursuant to the rainfall data released by the Central Weather Bureau and alert values for different alert areas, information should be provided to direct municipality and county (city), village (township, city, district) governments to issue warnings or take relevant coping measures.

**Operating
Procedures for
Forecasting and
Warning of Debris
Flow Disasters**

See Appendix C.4

Part III Disaster Emergency Response

Chapter 1 [Debris Flow Disaster Forecasting and Warning](#)

Section 1 Release of Disaster Alert Information

Under the [Operating Procedures for Forecasting and Warning of Debris Flow Disasters](#) (Appendix C.4), the Soil and Water Conservation Bureau of the COA is responsible for system establishment and professional assistance and, when determining the likelihood of any debris flow, should provide information to direct municipality, county (city) and township, city governments as soon as possible so that warnings can be issued or relevant measures taken (COA, local governments, and MOI).

Section 2 Evacuation Education for Citizens

Local governments should prescribe emergency contingency measures for debris flows and should enhance evacuation education in debris flow prone areas. The COA should make its best efforts to provide support to deal with disasters (local governments, COA, MOI, and COIP).

Chapter 2 Emergency Mobilization

Section 1 Emergency Response Organization

1. Establishment of disaster emergency operation organizations

- (1) At an occurrence of a debris flow disaster or in the event of any likelihood of such occurrence, all levels of governments should set up appropriate organizations to deal with such disasters in accordance with relevant requirements such as the Disaster Prevention and Response Act (local governments, COA, and MOI).
- (2) If a disaster is likely to occur, a local government should set up a disaster emergency operation center, and local disaster prevention and rescue units should mobilize disaster rescue manpower and equipment to stand by (local governments).

2. Cross-county and city support

If necessary, local governments may request support from neighboring local governments based on applicable mutual support agreements, depending on the scale of debris flow disasters (local governments).

Section 2 Dispatch of Technical Inspection Personnel to Disaster Areas

1. The COA should send professionals and specialists to disaster areas, depending on the scale of disasters or at the request of local governments, to identify the status of disasters in order to implement appropriate emergency response measures (COA).
2. The COA and its affiliated Soil and Water Conservation Bureau and the Forestry Bureau should handle relevant disaster inspections in accordance with the [Assistant Items and Procedures Requirements for COA's Support to Local Governments in Handling Debris Flow Disasters](#) (Appendix D.6) (COA).
3. When a disaster occurs, local disaster prevention and rescue units should mobilize disaster rescue manpower and equipment immediately to start rescue operations relating to debris flow disasters. The central competent authority or (county) city governments should provide necessary support and keep track of the status of emergent treatment (local governments, COA, MOI, and MOND).
4. The central competent authority or local governments should request military support, if necessary, in accordance with the order of CDEOC Commander or the [Measures to Application for Military Support in Handling Disasters](#) (Appendix D.14).

Section 3 Disaster Emergency Response Equipment, Machinery-Control and Conscripting

Local governments should maintain information about the current quantity of disaster emergency equipment as well as the status of machinery allocation and fully understand methods of conscripting (local governments, and MOI).

Section 4 Mobilization of Professionals and Specialists to Support Disaster Inspection and Rescue

1. The COA should set up the Debris Flow Advisory Group in accordance with the [Guidelines for Debris Flow Treatment Advisory Group under the COA](#) (Appendix D.8). Relevant professionals and specialists for the handling of debris flow disasters should provide disaster rescue consultation and recommendations to improve disaster rescue efficiency. If necessary, the Advisory Group may be requested to be present in relevant disaster emergency operation centers. Relevant compensation and remuneration should be paid based on the most preferential terms (COA and MOI).
2. The COA should establish a list of experts and scholars for debris flow disaster handling and rescue, and provide such list to all levels of

[Assistant Items and Procedures Requirements for COA's Support to Local Governments in Handling Debris Flow Disasters](#)
See Attachment 4-6

[Regulation to Application for Military Support in Handling Disasters](#)
See Attachment 4-14

[Guidelines for Debris Flow Treatment Advisory Group under the COA](#)

1. See Appendix D.8
2. The Guidelines were abolished on December 20, 2004 (reference number Nung-Shou-Suei-Bau-Tzu No. 0931843324), and the works were transferred to the Soil and Water Conservation Planning Special Group.

governments for reference. If necessary, such list may be published on the Internet. The PCC may provide assistance as the competent authority for kinds of professional engineers (COA and PCC).

3. If necessary, the support of disaster rescue equipment, tools, rescue manpower and rescue dogs may be requested from other countries (COA, MOFA, MOI, MOTC, GIO, and local governments).

Chapter 3 Collection, Reporting and Dissemination of Debris Flow Disaster Information

Section 1 Collection and Reporting of Debris Flow Disaster Information

1. When of a debris flow disaster occurs, local governments should report disaster and damage information to their superior governments according to reporting procedures (in accordance with the [Measures for Multiple Intelligence Setup for Disaster Investigation and Reporting](#) (Appendix D.13) and the [Operating Procedures for Collection and Reporting of Debris Flow Disaster Information](#) (Appendix C.2) so that the COA's Disaster Emergency Action Term or the [Central Disaster Emergency Operation Center](#) (CDEOC) can quickly assess, analyze and identify the scale and conditions of each disaster (local governments, MOI and COA).
2. Local governments should report the establishment and operating status of disaster emergency operation centers and their emergency response performance to relevant superior authorities (local governments).
3. After a disaster emergency operation mechanism is activated, communications should remain open. In the event of any damage to communications equipment, such equipment should be repaired as soon as possible to correctly deliver disaster information and to facilitate disaster command and dispatch operations (MOTC, MOI, COA, and local governments).

Section 2 Identification and Dissemination Information of Debris Flow Disaster

The citizens may be frightened during a disaster. The CDEOC (or the COA if the CDEOC is not set up) should clarify rumors and hearsays based on facts and scientific evidence and provide accurate information to the citizens (MOI, COA, and GIO).

Chapter 4 Evacuation and Sheltering

Section 1 Evacuation Persuasion or Instructions to Disaster-struck Residents

Measures for Multiple Intelligence Setup for Disaster Investigation and Reporting

Directive dated March 28, 2001 and bearing reference number (2001) Nei-Hsiao -Tzu No. 9086327. See Appendix D.13

Operating Procedures for Collection and Reporting of Debris Flow Disaster Information

See Appendix C.2

Central Disaster Emergency Operation Center

Article 13 of the Disaster Prevention and Response Act stipulates that the head of the central competent authority for disaster prevention and rescue shall report to the organizer of the National Disaster Prevention and Response Council if any major disaster has happened or is likely to happen. The organizer may set up a Central Disaster Emergency Operation Center based on the scale and nature of disasters and designate a commander

If a debris flow disaster occurs or is likely to occur, local governments should give priority to the consideration of human lives, implement persuaded or instructed evacuation of local residents based on the Debris Flow Disaster Prevention and Evacuation Program, which is formulated in advance, and provide information such as shelters, evacuation routes, dangerous zones, disaster status and other information needed for evacuation (local governments).

Section 2 Shelters

1. If a disaster occurs or likely to occur, local governments should set up shelters depending on actual needs and communicate such information to the residents. If necessary, additional shelters may be set up (local governments).
2. Local governments should manage shelters appropriately and plan the delivery of shelter information, supply and distribution of food and drinking water, and environmental cleanup, and should seek support from volunteers such as disaster-struck residents, local residents or community disaster prevention and rescue organizations. If necessary, the support of neighboring local governments may be requested (local governments).
3. Local governments should keep track of information relating to the mental and physical status of evacuees at shelters and maintain good living environments of shelters (local governments).

Section 3 Temporary Shelters

1. If local governments consider that it is necessary to set up temporary shelters, they should consult relevant government authorities immediately before such shelters are set up. When such shelters are set up, repeated disasters should be avoided, and assistance should be provided to help disaster-struck residents move into such shelters (local governments).
2. When equipment or tools needed by local governments in setting up temporary shelters are inadequate and allocations are thus required, authorities for equipment or tools needed by temporary shelters may be requested directly or through the CDEOC to allocate or provide such tools and equipment (local governments, MOI, MOEA, MOND, and MOE).
3. When receiving a request, the CDEOC should instruct relevant agencies to allocate equipment and tools. When receiving such an instruction, the relevant agencies should take appropriate measures or coordinate with relevant organizations or companies to supply the equipment and tools and report to local governments (local governments, MOI, MOND, and MOE).

Section 4 Cross-County and City Evacuation Shelters

1. If a local government determines that it is necessary to operate cross-county or city shelters outside of disaster areas based on the evacuation and sheltering conditions of disaster-struck residents, shelter-related authorities may be requested directly or via the CDEOC to provide support (local governments, MOI, MOND, and MOE).
2. When receiving a request, the CDEOC, shelter-related authorities and local governments of nondisaster areas should implement cross-county and city shelters from a humanitarian perspective (local governments and MOE).

Section 5 Protection and Care of Disadvantaged Group

1. Local governments should adequately care for the living environments and health conditions of senior and mentally and physically handicapped citizens and the socially disadvantaged such as young children and pregnant women, give priority to such people if they wish to move into temporary shelters, and set up temporary shelters for senior and mentally and physically handicapped citizens. Helpless senior citizens or young children should be placed in social welfare institutions such as asylums for senior citizens or young children (local governments and MOI).
2. Local governments should immediately arrange the students in disaster areas to neighboring schools, set up temporary classrooms or offer at-home tutoring and provide psychological counseling to calm the residents (local governments and MOE).
3. When preparing and implementing debris flow disaster prevention, rescue and evacuation programs and measures, all levels of governments should, to the greatest extent, use the mobility rate (mobilization capability) of socially disadvantaged groups as the basis for their fundamental planning (local governments, MOI, COA, and COIP).

Chapter 5 Emergency Transportation

Section 1 Guideline of Emergency Transportation

1. The targets of debris flow emergency transportation are primarily injured citizens in disaster areas, necessities of living for stranded citizens in disaster areas and emergency rescue and restoration manpower and equipment. Local governments should consider factors such as the scale, degree of emergency and importance of a disaster in implementing local or regional traffic control measures (local governments).
2. In times of debris flow disasters, local governments should consider

emergency transportation for matters related to emergency measures such as the rescue of people, medical treatment, sanitation and health care and environmental maintenance (local governments).

3. Determination of transportation objects

(1) Stage 1

- i. Manpower and materials required for the rescue and support of human lives during rescue and medical care.
- ii. Manpower and materials required for fire fighting and rescue operations to prevent the escalation of disasters.
- iii. Emergency response manpower required for various disaster prevention and rescue agencies, manpower required for maintaining telecommunications, electricity, gas and water facilities, and manpower and materials required for initial response measures.
- iv. Transportation of patients to safe areas.
- v. Facilities required for emergency transportation, emergency repair of transportation locations and manpower and materials required for traffic control.

(2) Stage 2

- i. Work set forth in Stage 1 should continue.
- ii. Life supporting materials such as food and drinking water.

(3) Stage 3

- i. Work set forth in Stage 2 should continue.
- ii. Manpower and materials required for post-disaster restoration.
- iii. Necessities of life.

Section 2 Execution of Emergency Transportation

1. Local governments should handle emergency transportation on their own and, if necessary, request the COA (or CDEOC) to coordinate with traffic and transportation agencies to facilitate emergency transportation (local governments, MOI, COA, and MOTC).

2. The COA (or CDEOC) may, at the request of local governments, integrate, command, coordinate and dispatch emergency transportation via land, maritime and air transportation facilities. If necessary, helicopters, vehicles and vessels may be conscripted to facilitate emergency transportation (local governments, MOI, COA, and MOTC).
3. The COA, MOTC, MOI, MOND, local governments or other relevant public and private agencies should supervise, coordinate and utilize existing aircraft, vehicles and vessels to implement emergency transportation pursuant to the CDEOC's instructions.
4. If necessary, the COA may request the MOTC (or the CDEOC will command) to coordinate with air, land and maritime transportation operators to facilitate emergency transportation (local governments, MOI, COA, and MOTC).

Section 3 Assurance of Smooth Traffic and Transportation

The assurance of smooth traffic and transportation is the key to the success of a disaster emergency measure. All levels of governments should integrate and coordinate the matters relating to smooth traffic and transportation.

1. Traffic control

To ensure the emergency transportation of injured citizens in disaster areas, necessities of living for stranded citizens in such areas, and manpower and machinery for emergency rescue and repair, the transportation and police offices of local governments may plan traffic control for transportation routes and communicate such measure to the citizens prior to its implementation.

(1) Control of road traffic

- i. The local police authorities should, in addition to collecting information such as traffic conditions and disasters at disaster areas, use all kinds of traffic monitor or video taping equipment to quickly identify the road or traffic conditions required for flood defense and emergency rescue (local governments).
- ii. To ensure emergency transportation, local police authorities may prohibit access of general vehicles and, with the assistance of police authorities or volunteering traffic police in neighboring areas outside of disaster areas, to implement comprehensive traffic control (local governments).
- iii. Local police authorities should notify the residents of traffic control being implemented (local governments).

- iv. To ensure emergency transportation, local police authorities may tow vehicles that obstruct the transportation or use police cars to lead the transportation (local governments).

(2) Air traffic control

The MOTC, MOND and relevant transportation units should give priority to the takeoff and landing of emergency aircraft, depending on the condition of a debris flow disaster (or the number of injured or stranded residents), or restrict the takeoff and landing of general aircraft (MOTC, MOI, and MOND).

2. Emergency repair of roads

- (1) All road authorities should identify road damages under their administration, remove road barriers and give priority to the emergency route repair for emergency transportation. When bridges required for emergency rescue and transportation are damaged, local governments and traffic authorities should set up makeshift bridges to enable emergency transportation access. In case of a lack of such capability, they may request or coordinate with the military to facilitate the construction of makeshift bridges (such as MGB bridges) to restore transportation (local governments, MOTC, and MOND).
- (2) Local governments, police authorities and the military may, depending on the conditions of disasters, take necessary measures to help remove road barriers (local governments, MOI, MOTC and MOND).
- (3) All levels of governments and relevant public utility enterprises should report road damages and status of their restoration to disaster emergency operation centers (local governments, MOTC, and MOI).

Chapter 6 Sanitation, Health Care and Disease Prevention

Section 1 Sanitation and Health Care

1. The Department of Health (DOH) should keep track of pharmaceutical and medical supply needs from time to time to ensure adequate supply (DOH).
2. To prevent the mental and physical health of disaster-struck residents from being affected by drastic changes in living condition, local governments should maintain a good healthy environment in a disaster area, keep track of the health status of the victims and consider the option of setting up medical relief stations (local governments).
3. Local governments should plan and allocate medical staffs of their

affiliated health organizations (offices) or hospitals responsible for first aid to provide itinerant health care services in disaster areas and to implement sanitation and health care operations in disaster areas (local governments).

4. To ensure the sanitation of living environments, local governments should set up mobile toilets, depending on actual needs, and take necessary measures to dispose of excrements, garbage and wastes in order to maintain the sanitation and tidiness of disaster areas (local governments).

Section 2 Disinfection and Disease Prevention

Local governments should take indoor and outdoor disinfection and disease prevention measures to prevent an outbreak of diseases. The DOH may be requested to provide assistance or to coordinate with other local governments or to request MOND for assistance with respect to the dispatch of disease prevention personnel or the provision of disease prevention pharmaceuticals (local governments, DOH, and MOND).

Chapter 7 Maintenance of Social Order

1. Local police authorities should take emergency response measures such as patrol in disaster areas and their neighboring areas, joint defense, vigilance and maintenance of social order (local governments and MOI).
2. Local governments should patrol and monitor disaster areas to ensure the normality and safety of the residents' lives and the supply of their necessities of life (local governments and MOI).

Chapter 8 Provision of Disaster Information to Disaster-struck Residents

Section 1 Delivery of Disaster Information to Disaster-struck Residents

All levels of governments should identify the needs of disaster-struck residents and, from time to time, deliver information such as meteorological conditions, water supply status, operating and management status of lifelines and public facilities and strategies adopted by relevant government agencies to disaster-struck residents through the assistance of mass media (local governments, MOTC, MOI, MOEA, COA, GIO, and COIP).

Section 2 Inquiries about Disaster Information

To provide disaster-related information for citizens, local governments may set up dedicated lines, single contact windows and information websites for

citizens' inquiries and for announcement of such information (local governments).

Chapter 9 Acceptance of Support and Assistance

Section 1 Establishment of Volunteering Assistance System

All levels of governments should keep track of community disaster prevention and rescue organizations, private disaster prevention and rescue volunteering organizations, reservist organizations and civil defense organizations at all times, set up communication channels, and establish a system for accepting volunteers' assistance (local governments, MOI, COA, MOND, and COIP).

Section 2 Materials Support from Citizens and Companies

With respect to materials support from citizens and companies, local governments should consider the types, quantity, designated delivery locations, and gathering locations of materials urgently needed by disaster-struck residents in all disaster areas and communicate such information to citizens through mass media (local governments).

Section 3 International Disaster Rescue Support

The central government should review matters related to acceptance of international disaster rescue support by considering the types, scale, estimated time of arrival and locations of such support (MOI and MOFA).

Section 4 Handling of Donations

When accepting monetary donations from local and foreign agencies, organizations, companies and individuals, all levels of governments should invite people who are generally perceived to be fair and wise by society to set up a relevant management committee to handle such matters (COA, local governments, MOI, and MOFA).

Chapter 10 Disaster Emergency Rescue, Risk Measures, Restoration and Repair

Section 1 Rescue

1. Community disaster prevention and rescue organizations and private disaster prevention and rescue volunteering organizations may assist relevant authorities in the rescue of disaster residents and emergency care.
2. The [National Rescue Command Center of the Executive Yuan](#), CDEOC or forward command posts should voluntarily or upon request engage in

National Rescue Command Center of the Executive Yuan

To establish a unified national disaster prevention and rescue structure and command system, the Executive Yuan set up the National Rescue Command Center by upgrading the Rescue Coordination Center for Armed Forces on July 24, 2001.

integrated coordination, depending on the scale of a disaster, to ensure effective implementation of rescue and emergency care (MOI).

3. The equipment and tools needed by all levels of governments for rescue operations should basically be prepared by the agencies in charge of such operations. Manpower and rescue equipment may be conscripted from the private sector, if necessary, to facilitate rescue operations (local governments and MOI).
4. The rescue of residents stranded in a debris flow disaster should be handled by local governments. In case of a lack of capability or of necessity, a support application may be filed with the National Rescue Command Center, and the Debris Flow Disaster Emergency Action Term of the Council of Agriculture should be reported (local governments, MOI, and COA).

Section 2 Emergency Risk Measures, Restoration, and Repair

Emergency risk measures, restoration and repair should be handled by local governments immediately as such circumstances arise, and priority will be given to the use of local disaster reserve funds. In case of severe damage caused by disasters and of any need for the COA's support, the [Assistance Items and Procedural Requirements for COA's Support to Local Governments in Handling Debris Flow Disasters](#) (Appendix D.6) may be followed (local governments and COA).

Section 3 Emergency Restoration of Facilities and Equipment

In times of debris flow disasters, local governments should immediately mobilize or send for professional technicians to conduct emergency inspection of disaster prevention facilities and equipment under management and take emergency response measures for lifelines, basic living facilities and public facilities and equipment to ensure the livelihood of citizens (local governments).

Chapter 11 Emergency Medical Care

Section 1 Emergency Medical Care of Local Governments

1. Local governments should activate emergency medical systems and notify medical institutions within their jurisdictions to get ready for accepting and treating patients.
2. Public medical institutions within disaster areas should conduct emergency repair of their buildings and medical equipment. If necessary, the assistance of relevant operators may be requested (local governments).

3. Disaster emergency operation centers in disaster areas may integrate and coordinate medical operations within disaster areas (local governments).

Section 2 Emergency Medical Care in Times of Inadequate Capability of Local Governments

1. The central competent authority for medical services, disaster prevention and rescue agencies and local governments outside disaster areas should accurately manage emergency medical care personnel being organized. If necessary, medical institutions may be asked to send emergency medical care personnel to provide assistance (DOH and local governments).
2. Local governments should integrate and coordinate emergency medical care personnel in disaster areas as supported by neighboring local governments (DOH and local governments).
3. If necessary, local governments may request medical institutions under local governments of nondisaster areas to facilitate the transportation and treatment of injured and sick patients (DOH and local governments).

Chapter 12 Treatment of Victims' Bodies

Local governments should promptly coordinate with local prosecutors' offices to inspect victims' bodies as soon as possible, handle the belongings of the deceased, allocate coffins, ensure the safe delivery of bodies and the maintenance of sanitation, and collect information relating to the burials and storage of the bodies to ensure proper handling of the bodies. If necessary, the assistance of neighboring local governments may be requested (local governments, MOJ, and MOI).

Part IV Post-disaster Recovery and Reconstruction

Chapter 1 Post-disaster Reconstruction Projects

Section 1 Inspection and Consolidation of Disaster Information

During the debris flow disaster restoration and reconstruction stage, the COA and other relevant central agencies and direct municipality, county (city) governments should pay continuous attention to the development and handling of disasters, inspect and assess damaged facilities and report all kinds of debris flow disaster statistics to the COA (local governments, COA, and MOI).

Section 2 Recovery and Reconstruction Projects

In the face of various facilities damaged by debris flow disasters, the COA and all relevant authorities in the central government, as well as direct municipality, county (city) governments, should promptly start emergency repair and recovery of transportation infrastructure and restoration of original facades by considering priorities assigned to disasters as established based on areas requiring emergent treatment, considerations to prevent disaster escalation, areas prone to repeated disasters and areas requiring medium and long-term planning and treatment. Safety, aesthetics and economics, as well as restoration of all kinds of ecosystems, should be considered in planning relevant treatment and reconstruction projects (local governments, COA, and MOI).

Section 3 Land Use in Disaster Areas

If landslides in a disaster area is escalating, or if the landslides in the disaster area is a natural evolution process, land use in such area should be restricted when post-disaster recovery and reconstruction are planned to prevent any recurrence of such disaster (local government, COA, and MOI).

Section 4 Cause Assessment of Disasters

After a disaster, scientific methods should be employed, or an assessment committee should be organized to assess the causes of such disaster. Human factors for such disaster should be forcibly eliminated prior to the commencement of post disaster recovery and reconstruction (local governments, COA, and MOI).

Chapter 2 Recovery and Reconstruction Funding

Section 1 Preparation of Budgets

Reconstruction after a disaster should be funded by the disaster prevention and rescue budgets prepared annually by all agencies, direct municipality and

county (city) governments and by adjustment of relevant annual budgets in accordance with Article 43 of the Disaster Prevention and Response Act and should not be subject to the limitations set forth in [Articles 62 and 63 of the Budget Act](#) (local governments, MOEA, MOTC, COA, and DGBAS).

Section 2 Subsidies

In the event of insufficient funding after a local government has taken measures mentioned in the preceding section, the [Operating Guidelines for Budget Review of Post Disaster Reconstruction Projects](#) (Appendix D.12) should be followed to obtain funding for the recovery and reconstruction of public facilities (local governments, MOI, MOEA, MOTC, COA, COIP, DGBAS, and PCC).

Chapter 3 Fundamental of Recovery and Reconstruction for Disaster Areas

Section 1 Formulation of Restoration and Reconstruction Plans

Local governments should conduct prompt review and aim at rapid restoration of original functions by considering local characteristics, status of damage in disaster areas, authorities and responsibilities of agencies having jurisdiction over relevant public facilities and visions of residents and, at the same time, formulate restoration and reconstruction plans focusing on mid-term and long-term reconstruction planning in cities and villages where debris flows can be avoided or circumvented (local governments).

Section 2 Implementation of Recovery and Reconstruction Plans

Local governments may plan the restoration and reconstruction of disaster areas by respecting the opinions of disaster-struck residents. The central government will support such effort (local governments, MOI, MOEA, MOTC, COA, and COIP).

Section 3 Fiscal and Financial Support

If substantial funding is required by the local government of a disaster area to execute disaster emergency preparedness measures for disasters and post disaster restoration and reconstruction, the central governments should negotiate with the local government for appropriate sharing of responsibility and render support through fiscal and financial measures (local governments, MOF, and DGBAS).

Section 4 Central Government Support

The central government may, at the request of a local government, send

Articles 62 of the Budget Act

Funding for various agencies, political matters, projects or operating items within the general budget may not be used interchangeably, provided that this restriction shall not apply to items collectively funded by the Executive Yuan and the first reserve fund.

Articles 63 of the Budget Act

If the funding for a particular item among items of various purposes within a project or operating item is deficient while the other items have funding surplus as a result of budget distribution by all agencies, the funding for other items shall be used pursuant to the requirements of the central budget authority, provided that such funding shall not be used as personnel expenditure.

Operating Guidelines for Budget Review of Post Disaster Reconstruction Projects

See Appendix D.12

relevant professional technicians, allocate equipment and tools and handle other matters to provide assistance (MOI, MOEA, MOTC, COA, EPA, DOH, MOND, COIP, and PCC).

Chapter 4 Emergency Restoration

Section 1 Rapid Repair of Damaged Facilities

All levels of governments should promptly repair damaged facilities by implementing allocation programs for materials, equipment and tools and support programs for professional technicians, which have been formulated beforehand (MOI, MOEA, MOTC, COA, EPA, DOH, MOND, COIP, PCC, and local governments).

Section 2 Simplifying Operating Procedures

To promptly repair lifelines and transportation facilities of vital importance to the residents' livelihood in disaster areas, all levels of governments should, to the greatest extent, simplify operating procedures and formalities relating to the repair (MOI, MOEA, MOTC, COA, COIP, PCC, and local governments).

Section 3 Principles of Emergency Restoration

All levels of governments should execute rapid repair of damaged facilities with the restoration of original functions as the basic consideration and implement renovative repair from the perspective of preventing further disasters (MOI, MOEA, MOTC, COA, and local governments).

Section 4 Cleaning in Disaster Areas

Local governments should establish methods for the disposal of wastes, garbage and debris by setting up temporary storage sites and final disposal sites for progressive collection, transportation and disposal to rapidly clean up disaster areas and avoid environmental pollution. In addition, other appropriate measures should be taken to maintain the health of the residents and operators (local governments, MOI, and EPA).

Chapter 5 Planning and Programming of Recovery and Reconstruction

Section 1 Development of System for Implementing Reconstruction Programs

Local governments should develop the system for implementing reconstruction programs. If necessary, the central government should also set up the system of a reconstruction organization to support local governments

(local governments and MOI).

Section 2 Reconstruction of Cities and Villages from Debris Flows Disasters

1. A local government engaging in reconstruction should aim at a safe and comfortable environment. The reconstruction strategies should be formulated to prevent debris flow disasters, strengthen the safety of buildings, roads, bridges and lifelines in potential disaster areas and plan open space and disaster prevention locations such as parks and lawns (local governments and MOI).
2. The span of a bridge which is reconstructed after being destroyed by a debris flow should be increased, and the number of piers should be reduced to the greatest extent possible. The amount of a debris flow should be included in hydraulic calculations (MOI, MOEA, MOTC, COA, COIP, and local governments).

Section 3 Consolidation of Reconstruction Directions

A local government engaging in reconstruction should negotiate and communicate with local residents to understand their expectation of the new township so as to consolidate reconstruction directions and form objectives and consensus. Proper participation of the residents should be considered so that they can understand reconstruction status such as the steps, stages, and progress of a reconstruction program (local governments).

Chapter 6 Support for Livelihood Reconstruction for Disaster-struck Residents

Section 1 Issuance of Disaster Damage Certificates

Local governments should, after a debris flow disaster, send professional technicians immediately to inspect and assess the status of the disaster and establish a system for issuing disaster damage certificates as soon as possible to issue such certificate to disaster victims. If there are no sufficient professional technicians, the assistance of relevant central government agencies may be requested, or coordination may be made for the assistance and support of relevant professional associations (local governments, MOI, COA, and PCC).

Section 2 Provision of Life Support Funds

All levels of governments should investigate and register the status of each resident in disaster areas and provide all kinds of necessary funds for the livelihood of disaster-struck residents such as disaster consolation money and living support allowances pursuant to relevant acts and regulations to help

**Regulations of Kind
and Standard for
Debris Flow
Disaster Relief**

Prescribed by the COA (reference number (2001) Nung-Lin-Tzu No. 900031094) on November 30, 2001 in accordance with Article 48 of the Disaster Prevention and Response Act, then revised by the COA (reference number Nung-Shou-Suei-Bau-Tzu No. 0941842046) on February 2, 2005. See Appendix D.7.

restore their livelihood. A disaster relief budget should be prepared, and disaster relief funds be distributed in accordance with the [Regulations of Kind and Standard for Debris Flow Disaster Relief](#) (Appendix D.7) (local governments).

Section 3 Tax Exemption, Reduction or Grace Periods

The NDPPC should consult relevant agencies after a disaster and prescribe tax exemption, reduction or tax grace periods for disasters pursuant to applicable laws (NDPPC, MOF, and local governments).

Section 4 Minimization of Burdens for Disaster-struck Residents

All levels of governments may, depending on the circumstances, coordinate with insurance companies to take measures such as postponing payment of premiums, preferential premiums and subsidies for medical and health care cost for disaster areas to reduce the burdens of disaster-struck residents. For working people in disaster areas, their employment may be maintained or job intermediary services may be provided (MOF, DOH, MOI, COA, and local governments).

Section 5 Low-interest Loans to Disaster-struck Residents

The NDPPC should coordinate with financial institutions for the provision of low-interest loans to residents in disaster areas (NDPPC and COA).

Section 6 Household Maintenance for Disaster Areas

Local governments should help disaster-struck residents maintain their household living during reconstruction periods by building temporary residential units or providing public housing units (local governments, MOI, and COIP).

Section 7 Fund-raising for Post Disaster Reconstruction

Local governments should raise funds by addressing prioritized areas in accordance with Article 43 of the Disaster Prevention and Response Act and its enforcement rules in order to effectively promote the integrated recovery and reconstruction of disaster areas (local governments).

Section 8 Publicity of Post Disaster Reconstruction Strategies

All levels of governments should disseminate relevant measures such as post disaster reconstruction strategies implemented in disaster areas to disaster-struck residents. If necessary, a general consultation window may be set up (local governments, MOI, MOEA, MOTC, COA, COIP, and GIO).

Part V Operation Plan Implementation, Control and Evaluation

1. Major Tasks of All Stages of Disaster Prevention and Rescue Operations

- (1) To effectively carry out disaster prevention and rescue efforts, all relevant authorities should designate personnel with exclusive responsibility for handling disaster prevention and rescue work and for the readiness of disaster prevention and rescue organizations.
- (2) All relevant authorities should set up standard operating procedures for disaster prevention and rescue missions and mechanisms such as the standardization of formats for disaster reports and enhance their coordination and communication with other agencies so that the following matters can be thoroughly implemented:
 - i. All relevant authorities should consider the work items that should be implemented for various stages such as disaster prevention, emergency response, and recovery and reconstruction for debris flow disasters as set forth in Appendix E and actively implement measures currently planned and those to be implemented in the future (within two years) based on their implementation schedules and the division of work items between and among the principal (supporting) agencies.
 - ii. To help local governments enhance their Regional Disaster Prevention and Response Plans, the relevant authorities under the Operation Plan should promote relevant research and studies, extensively collect disaster prevention and rescue information and actively provide information and guidance so as to facilitate the implementation of disaster prevention and response plans.

2. Control and Evaluation

- (1) All major tasks set forth in the Operation Plan should be actively and thoroughly carried out by all principal (supporting) agencies, which should also set their performance evaluation indicators for regular reviews.
- (2) Regarding the implementation status and achievement of each work item under the Operation Plan, focused items will be selected by the COA in conjunction with all relevant principal (supporting) agencies for annual review. The rest of the work items will be controlled and managed by all principal (supporting) agencies.
- (3) The performance of each agency in carrying out disaster prevention and rescue tasks will be included as major reference for evaluating the performance of such agency. The personnel-in-charge and their supervisors will be rewarded or penalized based on such performance.

3. Budgets

The budgets required for implementing tasks of the Operation Plan shall be provided by all relevant principal (supporting) agencies through preparation of relevant budgets.

Appendixes

- Appendix A Investigation and Analyses of Major Historical Debris Flow Disaster Cases
- Appendix B Table on Relevant Responsibilities and Authorities of All levels of Governments in Debris Flow Disaster Prevention and Response and the Table on Division of Work Items among Various Agencies with respect to the Debris Flow Disaster Mitigation Program approved by the Executive Yuan
- Appendix C Operating Procedures Related to Debris Flow Disaster Prevention and Rescue
 - C.1 Operating Procedures for Debris Flow Disaster Evacuation.
 - C.2 Operating Procedures for Collection and Reporting of Debris Flow Disaster Information
 - C.3 Implementation Guidelines for Debris Flow Disaster Prevention Education and Publicity
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- Appendix D Requirements Relating to Emergency Reporting, Response and Reconstruction for Disasters
 - D.1 Operating Rules for Disaster Emergency Reporting
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 - D.5 Kind, Details, Type, Method and Announcement Timing of Debris Flow Disaster Warning Signals
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 - D.8 Guidelines for Debris Flow Treatment Advisory Group under the COA
 - D.9 Operating Guidelines for Debris Flow Disaster Emergency Action Term, COA
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D.11	Operating Guidelines for Emergency Reporting Prescribed by Soil and Water Conservation Bureau, COA
D.12	Operating Guidelines for Budget Review of Post Disaster Reconstruction Projects
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