Status of Early Information System and Support of DWIDP to Community DRR

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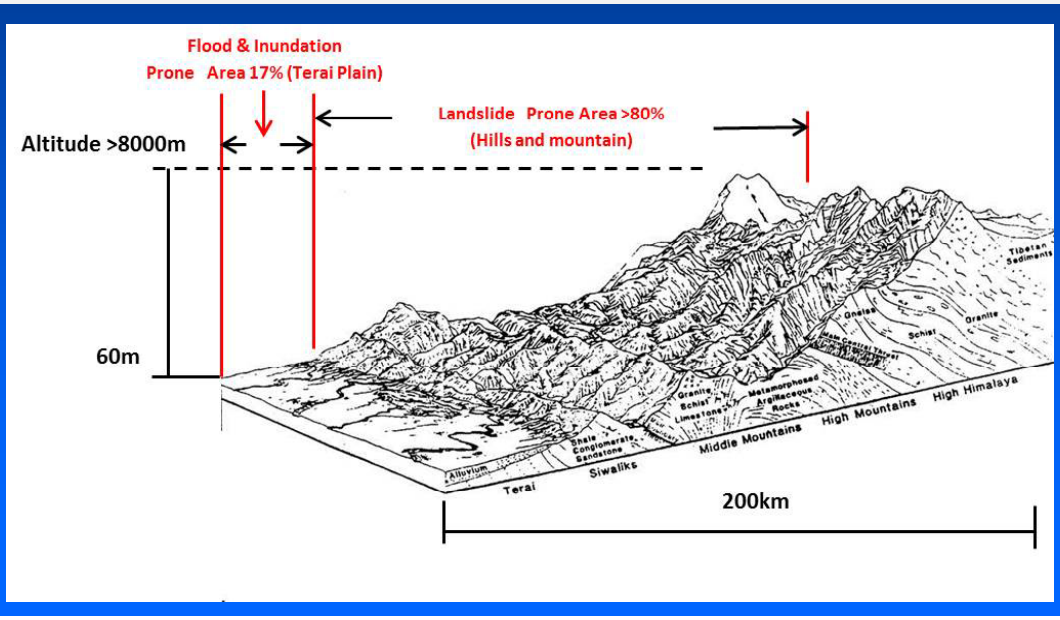
Country Background: NEPAL

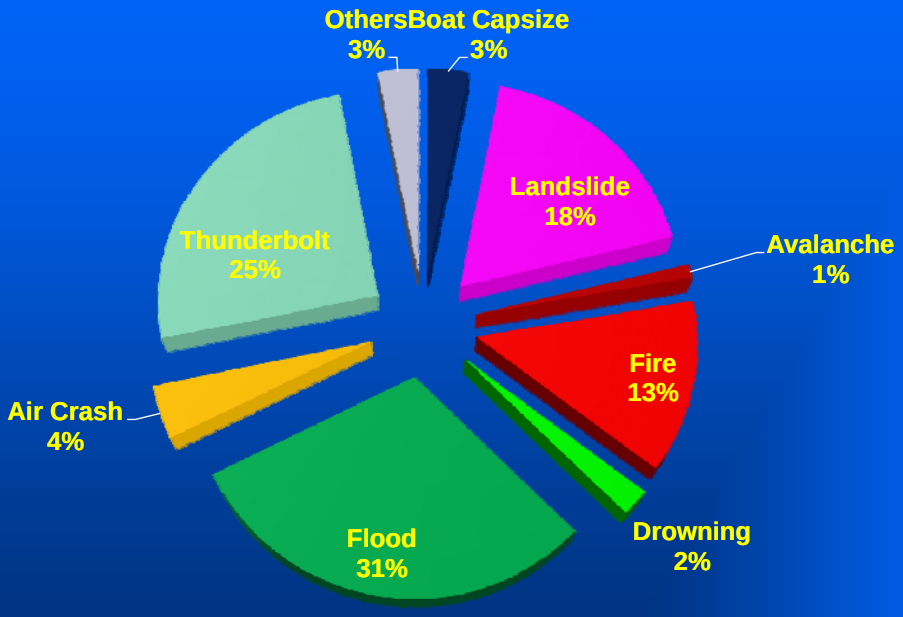
- Lat: 26°22' – 30°27' N
- Long: 80°04' – 88°12'E
- Total Area = 147,181 km2
- Total Population = 29.9 mill.
- Literacy = 60.3 % +

Area Coverage
- The Himalayas (4000 - 8848 m) = 15 %
- The Hills/Mountains (330- 4000 m) = 68 %
- The Terai Plain (60- 330 m) = 17 %



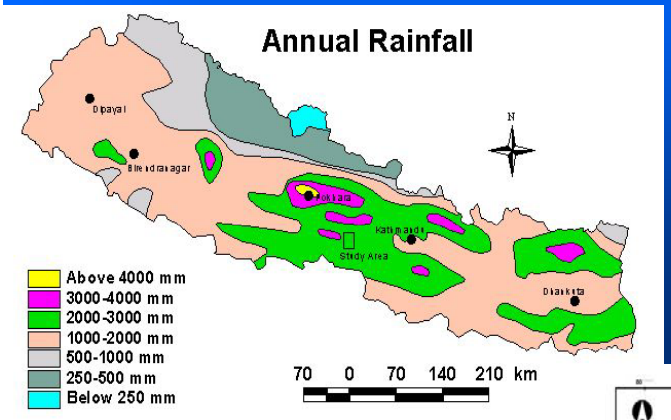
Loss of Human Lives from Disasters

2070 (2013/14) Total Death=436

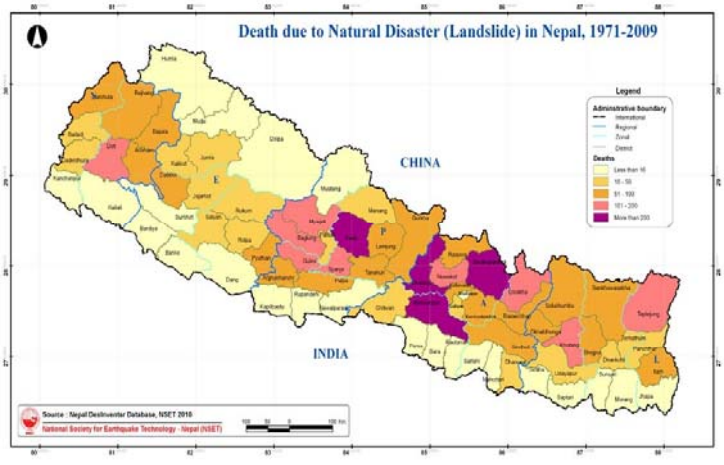


Others: ,Wind Storm, Rainfall, Epidemic, cold wave

Source: MoHA



The Water Induced Disasters are concentrated in Central part of the country.



The Causes of Water Induced Disasters in Nepal are

- High intensity of rainfall
- Young and Fragile geology and steep morphology
- Earth Quake
- Human Interference

Those disaster caused loss of lives and properties and environmental degradation each year.

Steps of Disaster Management

- Prevention of Disaster in Source Area
- Mitigation of Disasters in Middle and toe
- EWS to the community

The first two belongs to Structural Mitigation:
comparatively costly.

Next belongs to Non-structural Mitigation:
Which is one of the Effective and important technology

Training on EWS

- VCEW provided trainings about the installation and preparation of Simple EWS equipments (Flood and Landslide) to two Hydrologists of DWIDP

The EIS installed house

The EIS rain gauze installing

The EIS equipment installed

The EIS solar panel installed

The EIS battery installing

- **The EIS installed on roof terrace of the house of Mr Kedar Tamang. (consists of Solar panel, battery, warning system and rain gauze)**

Khadichaur Flood gauze Station

for Flood warning

Site selection for The EIS flood gauze installation

Site selection for The EIS flood gauze installation

- **The EIS installed at right bank of Sunkoshi River, below the bridge (Khadichaur-Jiri road). The equipments were installed in the house of Mr Padam/Bhim/Hira Tamang. (consists of Solar panel, battery, warning system and flood gauze)**

Future Plan of EWS Installation

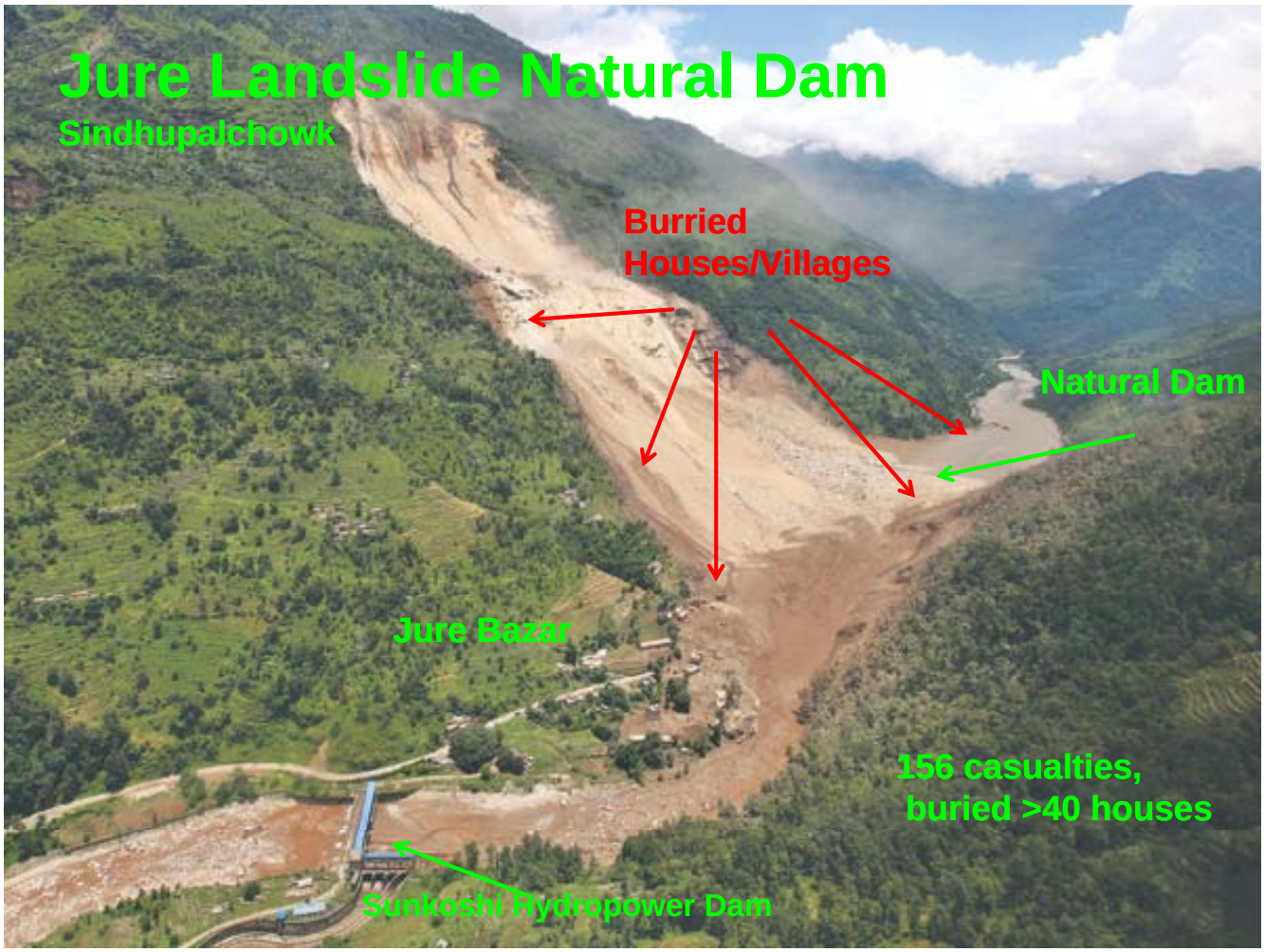
The Early Information System is one of the most effective non-structural public awareness phenomenon about the disaster. In this regard ,we feel a need of installation of EIS in many places of the country. Some of them are.

- **Kerunge Khola Landslide area, Nawalparasi district.**
- **Handewa Landslide area Taplejung district.**
- **Lyang Khola Landslide area, Araniko Highway 105+000, Sindhupalchowk district.**
- **Gyapche Landslide, Ramechhap district**
- **Darchula flood disaster**
- **Jure Landslide and Natural Dam, in Sunkoshi River, Sindhupalchowk district**
- **And so on**

Effects and Damages

Jure Landslide and Natural Dam in Sunkosi River, Sindhupalchowk District on August 2, 2014

(Arniko Highway)



Rainfall at Barahbise Station

Days	Rainfall (mm)	Days	Rainfall (mm)
July 17	30.2	29	12.0
18	40.2	**30**	**70.2**
19	17.2	**31**	**70.4**
20	62.3	Aug 1	12.4
21	10.3	**2**	**11.2**
22	14.1	3	25.4
23	7.3	4	21.8
24	12.0	5	0.0
25	25.0	6	30.2
26	10.6	7	26.8
27	31.4	8	40.4
28	0.4	9	21.2

Cause and immediate Impact of the Jure Landslide

Cause

- Old landslide, unstable mass
- Highly weathered phyllite, quarzite and schist
- Formation of tension cracks in the crown
- Stream water and canal water playing roll to increase pore water pressure of the landslide mass.
- Heavy rainfall triggered the Jure landslide

Damages and Impact by the Jure Landslide

Hydrological Status

Gauge Plate installed to monitor the lake water level.

Length of Lake: 3.1 KM
Maximum width: 390m
Average width: 195m
Water Surface Area: 4,52,500 m2
Maximum depth: 47 m
Average depth: 21 m
Discharge Inflow in average: 200 m3/s
River totally dammed for 11 hours and partially for more 1 hour
Approximate volume of water in the lake: 80, 00,000 m3
More water can be drained out: at least 50 m3/s (from 31m2)
Recommended cross-sectional area to be opened for outflow 30 m2/day


Widening and Deepening outlet by Blasting
Secondary outlet opening
Right bank
Leftt bank
flow
Course boulder
Decreasing grain size
Fine boulder with Silt and clay
Jure Landslide Natural Dam
Secondary outlet opening
Photo by: SC Amatya, DWIDP


Opening of Primary Channel

Efforts to open the Secondary Channel

(August 28, 2014, Nepal Samachar)

Status of Jure Landslide Area

Jure Landslide crown area

Vulnerable and Early Warning Area

100m periphery of Landslide and flood plane area

Proposed to Government of Nepal

Since more than 80% of the country covered by mountainous area which are prone to Landslide. More over the climate change scenario playing a great role to increase the landslide vulnerability. Landslide itself is not only disastrous but it threats to the people, infrastructures and agricultural lands of its surrounding environment and downstream areas through the rivers such as Landslide Dam Outburst Flood e.g. Jure Landslide Natural Dam in Sunkoshi, Sindhupalchowk. We do not have sufficient data about this type of disasters.

In this regard now onward the country have to think

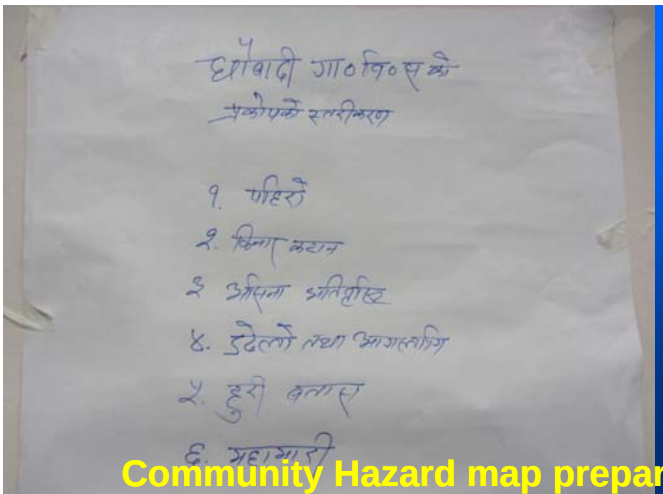
- To prepare inventory of Landslides through out the country.
- To prepare Landslide Hazard and vulnerability map (community level),
- To prepare master plan of selected vulnerable Landslide to reduce the disaster,
- To develop Early Warning Systems on those vulnerable Landslides.
- Create Coordination/communication friendly environment
- Establishment of Authentic institute (Detail study and management of pre-disaster, During Disaster and Post disaster of LS

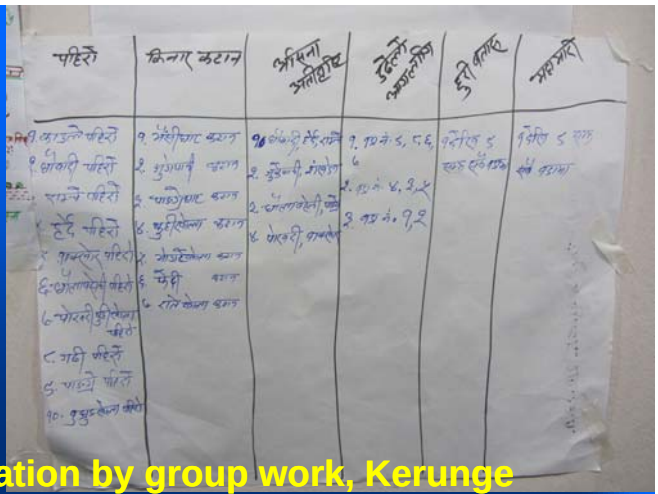
Support to Community DRR

- DWIDP is working with local users committee to support the community DRR in structural measures like, construction of sabo dam, hill side work, and bio-engineering and non-structural measures like community DRR workshop, roving seminar, documentary forecasting from NTV etc.
- DWIDP in collaboration with UNDP worked in a community based water Induced disaster management workshop in chitwan for Kerunge Khola Disaster area people. And a study on COMMUNITY BASED HAZARD, VULNERABILITY AND RISK ASSESSMENT IN THE KERUNGE WATERSHED AREA NAWALPARASI DISTRICT was done.
- DWIDP, Ministry of Irrigation recently developed a procedure guideline to work with local users committee for community DRR. The estimated construction works up to NRs. 6 million will done with local users committee and above NRs. 6million will be done through Tender procedure/contractor.

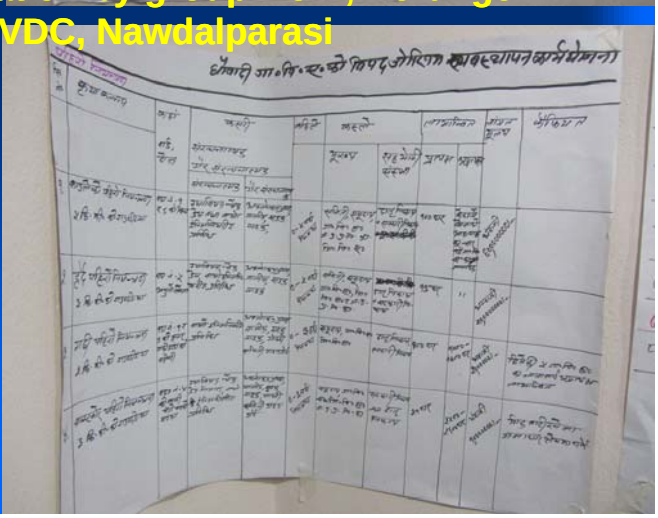
Awareness Training Roving Seminar

Community Based Water Induced Disaster Risk Management Workshop organized in collaboration with UNDP, Kerunge Khola Landslide area, Nawalparasi district





Community Hazard map preparation by group work, Kerunge Landslide, Dhaubadi VDC, Nawdalparasi



Emergency works

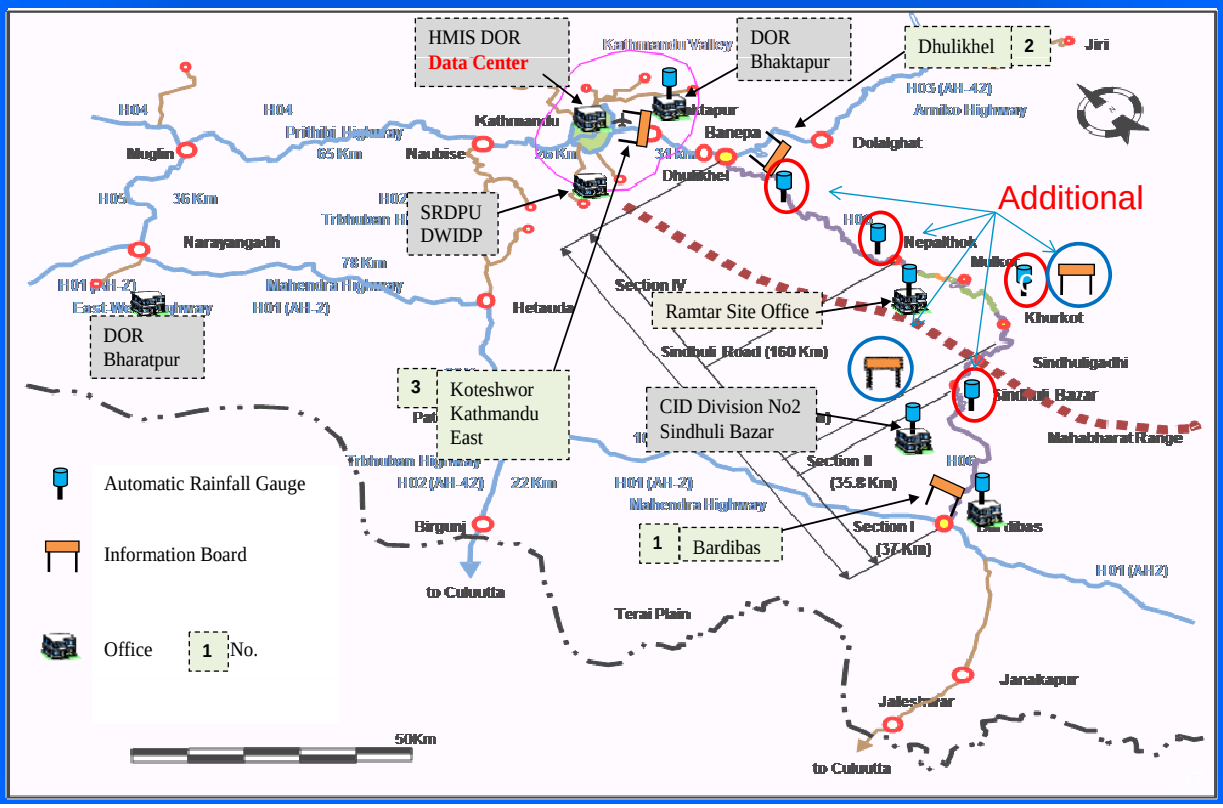
- DWIDP distributes Sand bags (will be filled by local people) for emergency flood control.

Early Information System

- Early Information system for landslide in Kabilas Village, Chitwan district and for Road disaster in Mugling-Narayanghat Highway was installed in 2008 with support of JICA
- EIS is installed in Sindhuli road (GoJ Grant project), DWIDP is as counterpart institute.
- Disaster due to rain in that road is going to be added (in exercise).

Provision of Additional EIS

- 4- Automatic rainfall gauges (Sindhuli Ghari, Khurkhot, Nepalthok,Dhulikhel)
- 2- Road information board (Sindhuli Bazar, Khurkhot)



EIS flow in Sindhuli Road

rain observation data flow (altogether automatic)

disaster or accident data flow

Case1 Heavy rain

Case2 Disaster or Accident

Mr. A: Road Administrator in charge of EIS in DOR Head Quartor

Rainfall gauges send rain observation data

Road Users

Telephone by voice

1)Police or Road Maintenance Office Of Shindhuli Road

2)Input the information using mobile phone and send it to the Data Center System

3)Send the SMS to Mr. A automatically

4)Confirm the Accuracy of information to DOR by telephone

5)After checking the accuracy of the message, Mr. A open the Web site to public and send the message to Road Information Boards

Internet (by Wireless Communication)

Data Center System Server

Internet

Mr. A

6)Message is displayed in the information boards and web sites to the public. Message is sent to the mobile phone of officials concerned, automatically.

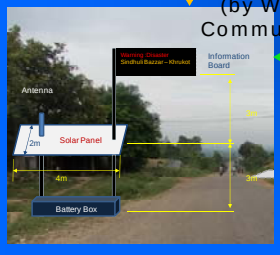
Internet (by Wireless Communication)

Internet

SMS

7)Asking the higher authority to decide to road closure or traffic regulation.

8)Instruction of traffic regulation or road closure if necessary



Road Information Boards

Web Site in Public

SMS to Officials concerned

CDO and Police

Tinthana Landslide
occurred on Sept 17 2012, 1AM
(Photo by SC Amatya on Sept. 22, 2012)

Thank you

for your attention