

2.2 Landslides and Flood on Railway and Road

In northern Vietnam, there are many faults that run from NNW (north-northwest) to SSW (south-southwest). The main big rivers (including Red River) here flow down to the Gulf of Bac Bo along these faults. On account of these faults, there are many big landslides in the northern mountainous areas during heavy rainfall as indicated in Figure 2.2.1. In central and southern Vietnam almost all the main rivers also flow down to the sea along faults, but the activities of faults are weak and the scale of landslides is small. In the mountainous areas in central Vietnam, however, the land has become unstable, a most conducive situation for landslide.

With these geological characteristics, transport accidents, especially landslides affecting railway and road, concentrically occur in northern Vietnam. Flashfloods and floods break out in the delta areas as Red River and Mekong River overflow. Detailed aspects on railway and road are as follows:

The national railway passes through three dangerous regions affected by flood and landslide brought by storms, typhoons and tropical heavy rain. These areas are:

- Vinh-Thu Loc (319-498 km): Flashflood and flood
- Haoson-Ca Pass area (1,220-1,269 km) in Khanh Hoa Province: Falling stones and landslides in rainy season
- Yen Bai-Lao Cai (155-293 km): 15 dangerous sites of flashfloods, floods and landslides in rainy season.

National roads have many sections where flashfloods, floods and landslides regularly occur due to storms, typhoons and tropical heavy rain. National roads in the northern and north central mountainous areas are regularly damaged by flashfloods and landslides (see Table 2.2.1). Route No.1 in coastal areas and river basins gets submerged in flood every year.

Table 2.2.1
 Number and Volume of Landslides in National Roads, 1997

NR No.	Number	Volume (m ³)	No	Number	Volume (m ³)
1A	3	4,358	32	8	13,560
2	4	11,000	34	13	23,576
4D	12	5,230	37	26	27,120
6	25	17,163	43	11	8,284
8	4	2,820	45	2	266
9	2	4,200	49	6	2,603
12	91	55,266	70	2	8,290
14	11	23,600	183	1	60
24	2	7,200	279	18	37,672

Figure 2.2.1 Flood- and Landslide-prone Areas in Vietnam

