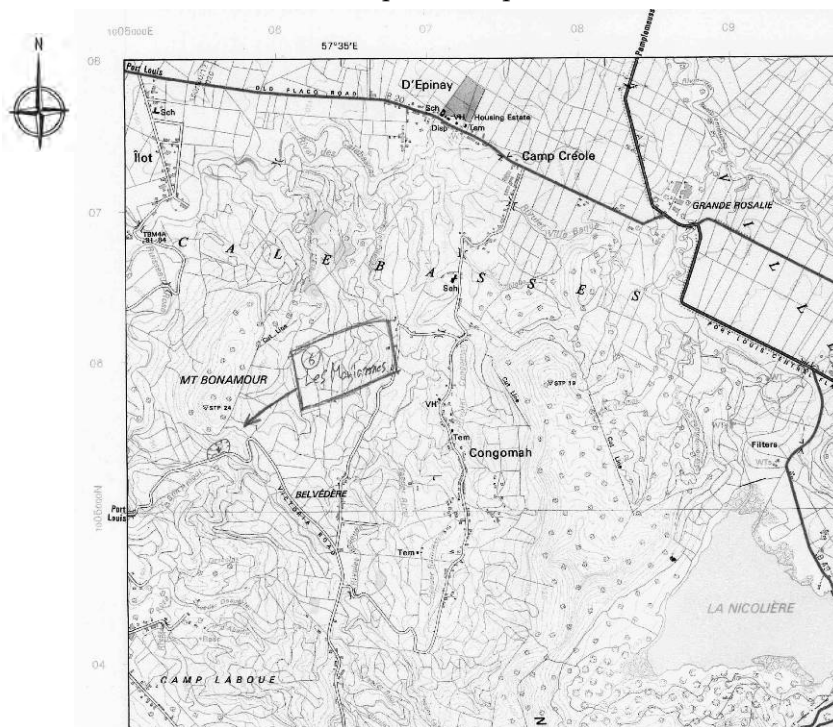


## 8. Result of Aerial Photograph Interpretation



photo map



Landslide distribution map

6. Les Mariannes Community Centre (Road area)





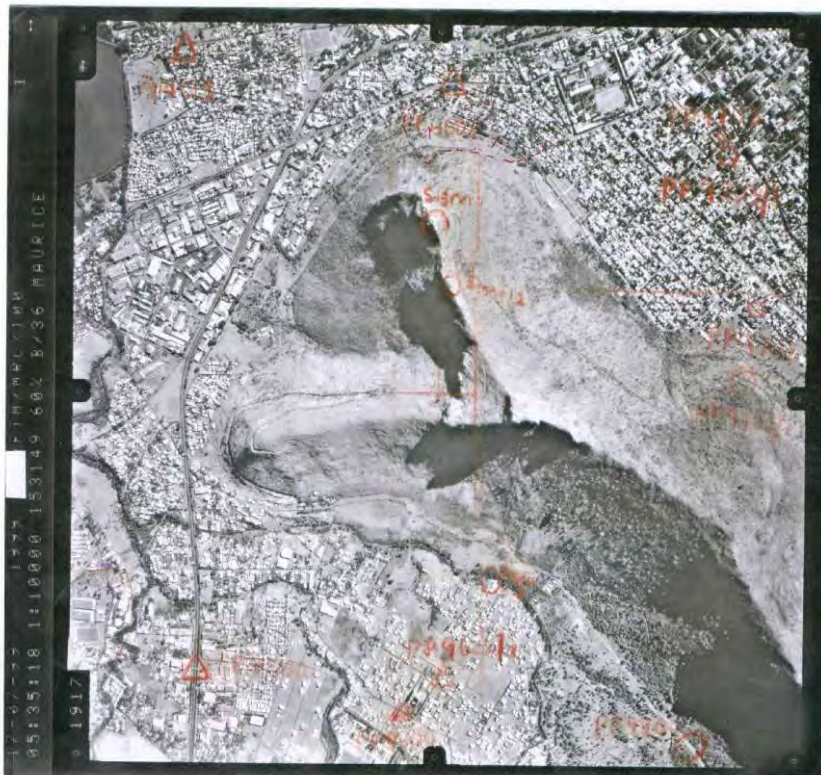
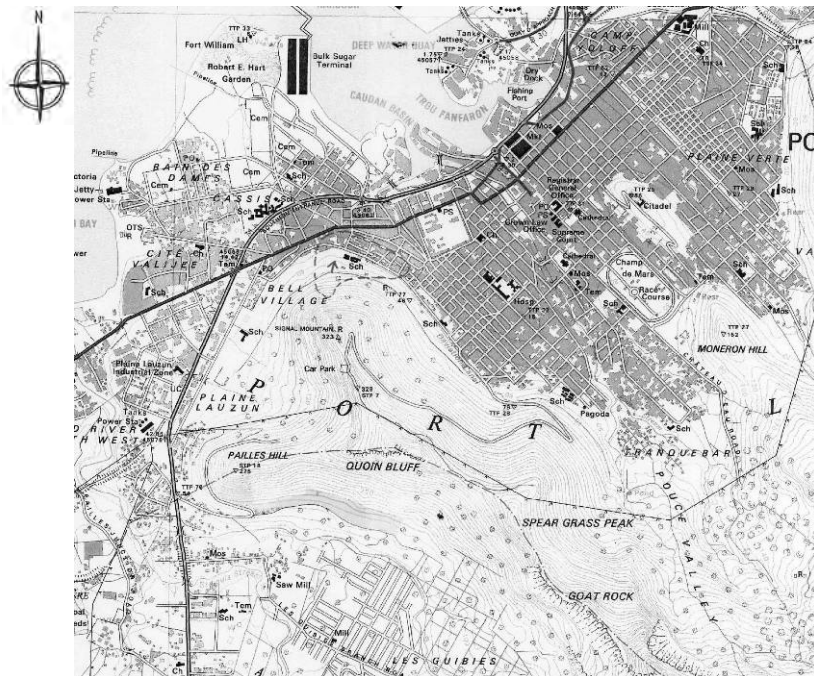


photo map



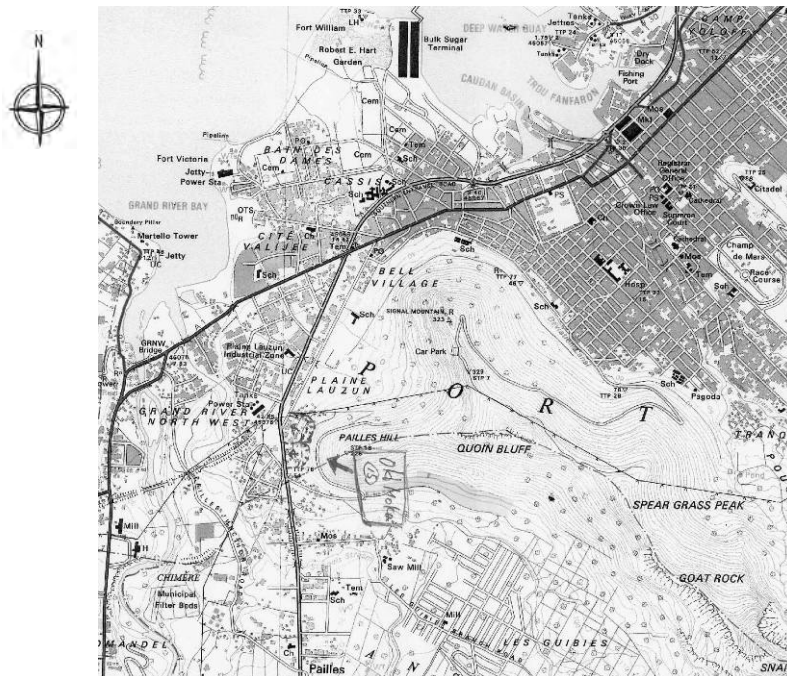
Landslide distribution map

13. Mgr. Leen Street and nearby vicinity, La Butte





photo map

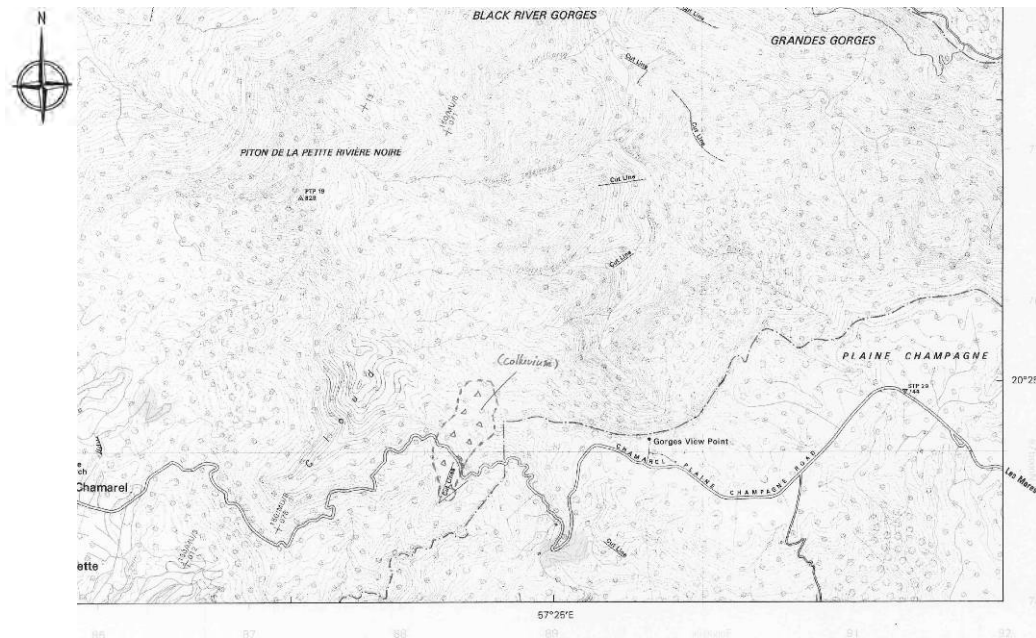


Landslide distribution map

15. Old Moka Road, Camp Chapelon



photo map



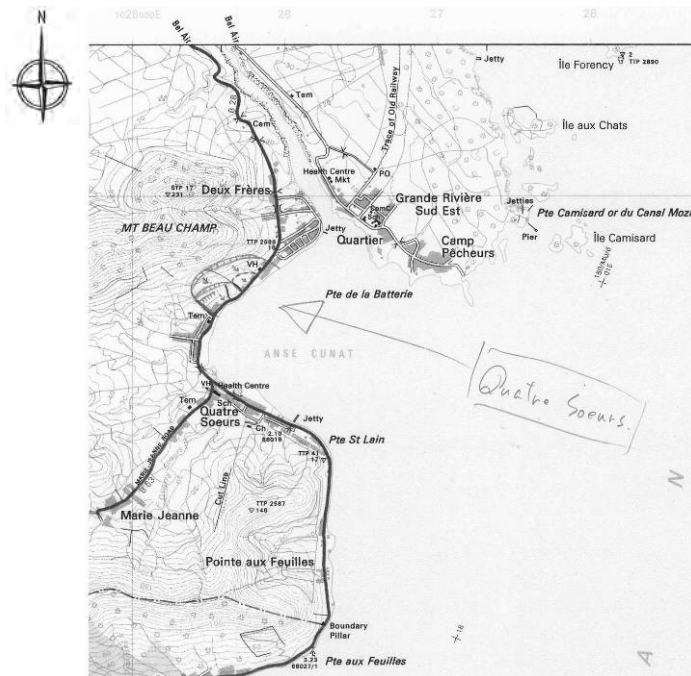
Landslide distribution map

20. Plaine Champagne Road, opposite "Musee Touche Dubois"





photo map



Landslide distribution map

27. Quatre Soeurs, Marie Jeanne, Jhummah Streert, Old Grand Port

## 9. The Survey Result of Landslide Awareness of Residents



## The survey result of landslide awareness of residents

The following simple tabulation results are reported in this progress report (count result until end of September 2012)

- ( 1 ) Summary of simple tabulation result of all respondent
- ( 2 ) Comparison of simple tabulation result of the three pilot sites (Awareness about landslide disaster, restriction in the Caution Zone)

### 1 Summary of simple tabulation result of all respondent

#### 1.1 District of residence

The following table shows the number of responses by each administrative area. The unbiased responses were obtained from each administrative area.

Administrative area	No. of responses
Port Louis	49
Pamplemousses	28
Riviere du Rempart	40
Flacq	30
Grand Port	44
Savanne	30
Plaines Wilhems	28
Moka	24
Bck River	31
-	1
Total	306

#### 1.2 Attribute of respondents

The following tables and figures show the tabulation result of age, sex, length of residence, land ownership of the residence and house ownership. The unbiased responses of age and sex were obtained. Regarding to the length of residence, about 30% respondents answered 11-30 or 31-50 year. And, Over 85% respondents have own land and own house.

<Age>

Option	No. of Response	Ratio of Response
1: 20-29	66	21%
2: 30-39	69	22%
3: 40-49	79	26%
4: 50-59	58	19%
5: over 60	32	11%
99: No response	2	1%

<Sex>

Option	No. of Response	Ratio of Response
1: Female	118	39%
2: Male	184	60%
99: No response	4	1%

< Length of residence (year)>

Option	No. of Response	Ratio of Response
1: 0-5	20	6%
2: 6-10	27	9%
3: 11-30	104	34%
4: 31-50	94	31%
5: over 51	41	13%
99: No response	10	3%

< Land ownership of the residence>

Option	No. of Response	Ratio of Response
1: Own land	265	86%
2: Leased land	28	9%
99: No response	8	3%
Other	5	2%

< House ownership>

Option	No. of Response	Ratio of Response
1: Own house	270	88%
2: Leased house	22	7%
99: No response	9	3%
Other	5	2%



### 1.3 Awareness about landslide disaster and experience

The following table and figure show the tabulation result of “[Q1] Did you know about the landslide disasters in Mauritius before this questionnaire?” The response of “Yes” is about 70%, “No” is about 30%. It is confirmed that the awareness of landslide in Mauritius is high.

Option	No. of Response	Ratio of Response
1: Yes	217	71%
2: No	84	27%
99: No response	0	0%

The following table and figure show the tabulation result of “(Q1a) If your answer to the question is “Yes”, how did you hear about the landslide disaster(s)? (Multiple answer)”. The respondents obtain the information from TV, radio, news paper, word of mouth.

Option	No. of Response	Ratio of Response
1: TV	136	65%
2: Radio	109	52%
3: Newspaper	51	24%
4: Internet	6	3%
5: Word of mouth	45	21%
6: Notice board	2	1%
7: Leaflet	0	0%
8: School lessons	5	2%
9: Public events/Campaign	2	1%
10: Community forum/meeting	2	1%
99: No response	16	8%
Other	10	5%

Respondents may select more than one checkbox, therefore percentages may add up to more than 100%.

The following table and figure show the tabulation result of “[Q2] Have you ever experienced landslide disaster damage in your current residence?”.

Option	No. of Response	Ratio of Response
1: Yes	37	12%
2: No	263	86%
99: No response	1	0%

The following table and figure show the tabulation result of “[Q3] Are you worried about landslide disasters around your current residence?”.

Option	No. of Response	Ratio of Response
1: Yes	167	54%
2: No	130	42%
99: No response	1	0%

**a. Recognition about the early warning system, development/building restrictions**

The following table and figure show the tabulation result of “[Q4] The government will inform the residents of affected areas of the need to evacuate and assistance available when there is a high risk of a landslide occurring. Did you know this landslide warning system existed?”. The response of “Yes” is about 37%, “No” is about 60%. It is confirmed that the recognition of the early warning system in Mauritius is low.

Option	No. of Response	Ratio of Response
1: Yes	113	37%
2: No	187	61%
99: No response	1	0%

The following table and figure show the tabulation result of “(Q4a) If your answer to the question is “Yes”, how did you hear about the landslide warning system? (Multiple answer)”.

Option	No. of Response	Ratio of Response
1: TV	70	53%
2: Radio	63	48%
3: Newspaper	30	22%
4: Internet	5	4%
5: Word of mouth	23	17%
6: Notice board	2	2%
7: Leaflet	1	0%
8: School lessons	1	1%
9: Public events/Campaign	1	1%
10: Community forum/meeting	2	2%
99: No response	28	21%
Other	2	1%

Respondents may select more than one checkbox, therefore percentages may add up to more than 100%

The following table and figure show the tabulation result of “[Q5] Do you think that the above warning system is necessary?”. It is confirmed that the needs of the early warning system in Mauritius is high.

Option	No. of Response	Ratio of Response
1: Strongly Agree	180	59%
2: Agree	116	38%
3: Disagree	4	1%
4: Strongly Disagree	0	0%
99: No response	1	0%

The following table and figure show the tabulation result of “[Q6] What kind of information do you feel is necessary to be prepared for a landslide disaster? (Multiple answer)”.

Option	No. of Response	Ratio of Response
1: Evacuation sites	211	71%
2: Hazardous spot around your residence	122	41%
3: Timing of evacuation	82	27%
4: Evacuation route	78	26%
99: No response	3	1%
Other	7	2%

Respondents may select more than one checkbox, therefore percentages may add up to more than 100%



The following table and figure show the tabulation result of “[Q7] No person shall start development actions (such as digging foundations, road construction etc.) without having obtained a permit to do so from the Authority. Did you know about this restriction before this questionnaire?”. About 86% respondents answer “Yes”, it is cleared that the development permission system is known widely in Mauritius.

Option	No. of Response	Ratio of Response
1: Yes	265	86%
2: No	33	11%
99: No response	1	0%

The following table and figure show the tabulation result of “(Q7a) If your answer to the question is “Yes”, how did you hear about it? (Multiple answer)”. The respondents obtain the information from word of mouth, TV, radio, news paper. The most common answer is “word of mouth”, it has different tendency with supporting question of Q1 and Q4.

Option	No. of Response	Ratio of Response
1: TV	107	44%
2: Radio	94	38%
3: Newspaper	44	18%
4: Internet	5	2%
5: Word of mouth	120	49%
6: Notice board	6	2%
7: Leaflet	1	1%
8: School lessons	4	1%
9: Public events/Campaign	6	3%
10: Community forum/meeting	7	3%
99: No response	12	5%
Other	12	5%

Respondents may select more than one checkbox, therefore percentages may add up to more than 100%

The following table and figure show the tabulation result of “[Q8] No person shall start a building construction, or extensive alterations, additions or repairs to an existing building without having obtained a permit to do so from the Authority. Did you know about this restriction before this questionnaire?”. The response of “Yes” is 84%, it is confirmed that the building permission system is known widely in Mauritius.

Option	No. of Response	Ratio of Response
1: Yes	257	84%
2: No	40	13%
99: No response	1	0%

The following table and figure show the tabulation result of “(Q8a) If your answer to the question is “Yes”, how did you hear about it? (Multiple answer)”.

Option	No. of Response	Ratio of Response
1: TV	111	45%
2: Radio	93	38%
3: Newspaper	45	18%
4: Internet	6	2%
5: Word of mouth	118	48%
6: Notice board	6	3%
7: Leaflet	2	1%
8: School lessons	4	2%
9: Public events/Campaign	7	3%
10: Community forum/meeting	7	3%
99: No response	14	6%
Other	8	3%

Respondents may select more than one checkbox, therefore percentages may add up to more than 100%

The following table and figure show the tabulation result of “[Q9] No person shall start development actions (such as digging foundations, road construction etc.) and the building construction in a hazard area that is too high above sea level or too steep a slope, as restricted by the government, with the aim of mitigating disasters. Did you know about these restrictions before this questionnaire?”. The response of “Yes” is 10% low compared with Q7 and Q8.

Option	No. of Response	Ratio of Response
1: Yes	229	75%
2: No	70	23%
99: No response	0	0%

The following table and figure show the tabulation result of “(Q9a) If your answer to the question is “Yes”, how did you hear about it? (Multiple answer)”.

Option	No. of Response	Ratio of Response
1: TV	112	48%
2: Radio	95	41%
3: Newspaper	47	21%
4: Internet	6	3%
5: Word of mouth	101	44%
6: Notice board	5	2%
7: Leaflet	2	1%
8: School lessons	4	2%
9: Public events/Campaign	6	2%
10: Community forum/meeting	6	3%
99: No response	16	7%
Other	5	2%

Respondents may select more than one checkbox, therefore percentages may add up to more than 100%

## 1.4 Landslide countermeasures and caution zone

The following table and figure show the tabulation result of “[Q10] Do you think that the designation of the Caution Zone by the government to mitigate the landslide disaster is it required?”. It is confirmed that about 97% respondents have a positive awareness about the designation of the Caution Zone.

Option	No. of Response	Ratio of Response
1: Strongly Agree	176	58%
2: Agree	119	39%
3: Disagree	3	1%
4: Strongly Disagree	0	0%
99: No response	1	0%

The following table and figure show the tabulation result of “[Q11] Do you think that the explanation by the Authorities before the designation of the Caution Zone is required?”.

Option	No. of Response	Ratio of Response
1: Strongly Agree	178	58%
2: Agree	116	38%
3: Disagree	2	1%
4: Strongly Disagree	1	0%
99: No response	2	1%

The following table and figure show the tabulation result of “[Q11a] If you answered “Strongly agree” ‘Agree” to the above question, This kind of methods will be suitable for you? (Multiple answer)”.

Option	No. of Response	Ratio of Response
1: TV	204	71%
2: Radio	182	64%
3: Newspaper	123	43%
4: Internet	22	8%
5: Notice board	48	17%
6: Leaflet	20	7%
7: House-to-house visit	60	21%
8: Public events/Campaign	27	10%
9: Community forum/meeting	20	7%
99: No response	5	2%
Other	4	1%

Respondents may select more than one checkbox, therefore percentages may add up to more than 100%

The following table and figure show the tabulation result of “[Q12] Do you think that the publicity of the Hazard Map is required?”. About 97% of respondents are positive for the publicity of the Hazard Map

Option	No. of Response	Ratio of Response
1: Strongly Agree	174	57%
2: Agree	122	40%
3: Disagree	4	1%
4: Strongly Disagree	1	0%
99: No response	1	0%



The following table and figure show the tabulation result of “(Q12a) If you answered “Strongly agree” ‘Agree “to the above question, what kind of method will be suitable for you? (Multiple answer)””.

Option	No. of Response	Ratio of Response
1: Internet	429	20%
2: Newspaper	1274	59%
3: Notice board	1350	63%
4: Leaflet	394	18%
99: No response	54	3%
Other	100	5%

Respondents may select more than one checkbox, therefore percentages may add up to more than 100%

The following table and figure show the tabulation result of “[Q13] If there is nobody in the hazard area, there will be no risk. Therefore, the restriction on development actions (such as digging foundations, road construction etc.) in the Caution Zone is considered as one of the countermeasures to reduce the risk of landslide damage. Do you think that the restriction on development actions in the Caution Zone is required?”. It is confirmed that about 96% of respondents are positive for the adoption of development restriction in the Caution Zone.

Option	No. of Response	Ratio of Response
1: Strongly Agree	151	49%
2: Agree	142	47%
3: Disagree	4	1%
4: Strongly Disagree	1	0%
99: No response	2	1%

The following table and figure show the tabulation result of “[Q 14] If there is nobody in the hazard area, there will be no risk. Therefore, the restriction on building construction in the Caution Zone is considered as one of the countermeasures to reduce the risk of landslide damage. Do you think that the restriction on building construction in the Caution Zone is required?”. It is confirmed that about 96% of respondents are positive for the adoption of building restriction in the Caution Zone.

Option	No. of Response	Ratio of Response
1: Strongly Agree	150	49%
2: Agree	145	47%
3: Disagree	3	1%
4: Strongly Disagree	0	0%
99: No response	2	1%

The following table and figure show the tabulation result of “[Q 15] Building standards/regulations to ensure structures can withstand the impact of landslides to protect the lives of residents is considered as one of the countermeasures to prevent damage. Do you think that building standards/regulations in the Caution Zone are required?”. It is confirmed that about 94% of respondents are positive for the adoption of building standards/regulations in the Caution Zone.

Option	No. of Response	Ratio of Response
1: Strongly Agree	143	47%
2: Agree	143	47%
3: Disagree	11	3%
4: Strongly Disagree	2	1%
99: No response	2	1%

The following table and figure show the tabulation result of “[Q 16] Relocation (moving/change of residence) from the Caution Zone to a safe area is considered as one of the countermeasures to prevent the landslide damage. Do you think that relocation from the Caution Zone to a safe area to avoid landslide damage is required?”. It is confirmed that about 94% of respondents need the relocation to safe area from the Caution Zone.

Option	No. of Response	Ratio of Response
1: Strongly Agree	148	48%
2: Agree	141	46%
3: Disagree	8	3%
4: Strongly Disagree	1	0%
99: No response	1	0%

The following table and figure show the tabulation result of “[Q 17] Do you think that the explanation about assistance for the relocation by the Authorities is required?”. It is confirmed that about 96% of respondents need the assistance for the relocation by the Authorities.

Option	No. of Response	Ratio of Response
1: Strongly Agree	162	53%
2: Agree	132	43%
3: Disagree	2	1%
4: Strongly Disagree	0	0%
99: No response	2	1%

The following table and figure show the tabulation result of “(Q17a) If you answered “Strongly agree” ‘Agree “to the above question, what kind of methods will be suitable for you? (Multiple answer)””.

Option	No. of Response	Ratio of Response
1: TV	186	68%
2: Radio	170	62%
3: Newspaper	114	42%
4: Internet	20	7%
5: Notice board	40	15%
6: Leaflet	18	7%
7: House-to-house visit	71	26%
8: Public events/Campaign	25	9%
9: Community forum/meeting	21	8%
99: No response	8	3%
Other	1	0%

Respondents may select more than one checkbox, therefore percentages may add up to more than 100%

The following table and figure show the tabulation result of “[Q 18] If your house is located in the Caution Zone, do you think that you would relocate from the Caution Zone to a safe area if recommended to by the Authority?”. It is confirmed that about 91% of respondents are positive for relocation.

Option	No. of Response	Ratio of Response
1: Strongly Agree	143	47%
2: Agree	134	44%
3: Disagree	19	6%
4: Strongly Disagree	2	1%
99: No response	2	1%

The following table and figure show the tabulation result of “[Q19] If your house is located in the Caution Zone, and if the government offers assistance for relocation, do you think that you will relocate from the Caution Zone to a safe area?”. The response of Q18 and Q19 was compared to confirm the difference awareness about assistance by government. The response of Q19’s “Strongly Agree” is increased about 6% than the response of Q18’s “Strongly Agree”.

Option	No. of Response	Ratio of Response
1: Strongly Agree	163	53%
2: Agree	122	40%
3: Disagree	8	3%
4: Strongly Disagree	1	0%
99: No response	3	1%

The following table and figure show the tabulation result of “(Q19b) What kind of assistance for the relocation by the government would you require? (Multiple answer)”. It is confirmed that the respondents need “Financial assistance”, “To secure alternative land” and “To secure alternative house” as the assistance for the relocation by the government

Option	No. of Response	Ratio of Response
1: Financial assistance	196	67%
2: To secure alternative land	174	59%
3: To secure alternative house	142	48%
4: Assistance about job placement	24	8%
5: Livelihood assistance	17	6%
6: General consultation	16	5%
99: No response	4	1%
Other	7	2%

Respondents may select more than one checkbox, therefore percentages may add up to more than 100%

The following table and figure show the tabulation result of “[Q20] What kind of things would motivate you to relocate to a more secure area?”.

Option	No. of Response	Ratio of Response
1: Availability of government assistance	166	57%
2: The timing is right for moving (personally)	35	12%
3: The timing is right for rebuilding your home (personally)	20	7%
4: You feel a greater sense of danger from landslides	121	41%
99: No response	4	1%
Other	4	1%

Respondents may select more than one checkbox, therefore percentages may add up to more than 100%

## 1.5 Evacuation exercise

The following table and figure show the tabulation result of “[Q21] When you will recognize signs of a landslide disaster, what kind of action will you take?”. About 1,500 respondents (about 60% of the total respondents) answer “I will report the situation to the Authority.” And, the awareness of the voluntary evacuation is also confirmed. It is assumed that there is possibility about the development of warning/evacuation/monitoring system with the local authority in the future.

Option	No. of Response	Ratio of Response
1: I will report the situation to the Authority.	195	66%
2: I will evacuate voluntarily.	72	24%
3: If my family recommend the evacuation, I will evacuate.	41	14%
4: If the neighbors recommend the evacuation, I will evacuate.	14	5%
5: If the Authority recommends the evacuation, I will evacuate.	30	10%
6: I will not do anything.	7	2%
99: No response	2	1%
Other	3	1%

Respondents may select more than one checkbox, therefore percentages may add up to more than 100%

The following table and figure show the tabulation result of “[Q22] Have you ever joined an evacuation exercise for the landslide disaster?”. It is confirmed that there are remarkably few respondents who have joined in the evacuation exercise.

Option	No. of Response	Ratio of Response
1: Yes	5	2%
2: No	290	95%
99: No response	1	0%

The following table and figure show the tabulation result of “(Q22a) If your answer to the question is “Yes”, could you give us details?”.

Option	No. of Response	Ratio of Response
1: 1 time	1	0%
2: 2 times	1	0%
3: 3 times	0	0%
4: over 4 times	0	0%
99: No response	29	10%

The following table and figure show the tabulation result of “[Q 23] If the Authority holds an evacuation exercise, do you think that you will join it?”. About 90% respondents have an awareness of participation to the evacuation exercise.

Option	No. of Response	Ratio of Response
1: Strongly Agree	145	47%
2: Agree	130	42%
3: Disagree	18	6%
4: Strongly Disagree	3	1%
99: No response	2	1%



The following table and figure show the tabulation result of “(Q23a) If you answered Reasons for “Disagree or Strongly Disagree” to the above question, could you tell us the reason? (Multiple answer)”.

Option	No. of Response	Ratio of Response
1: Because it is a hassle	8	11%
2: Because the landslide disaster will not affect me.	7	10%
3: Because I will be able to evacuate by myself without the exercise.	6	8%
4: Because I hesitate to join it alone (if someone I know is going, I will join)	4	5%
99: No response	52	68%
Other	3	4%

Respondents may select more than one checkbox, therefore percentages may add up to more than 100%

The following table and figure show the tabulation result of “[Q24] What kind of option will be suitable to involve the residents for the evacuation exercise?”.

Option	No. of Response	Ratio of Response
1: The Authority makes the evacuation exercise obligatory.	135	46%
2: The participants of the evacuation exercise will be given something	48	16%
3: There is an increased awareness of landslide disasters.	115	39%
4: Knowing others who are participating.	29	10%
99: No response.	4	1%
Other	6	2%

Respondents may select more than one checkbox, therefore percentages may add up to more than 100%

## 2 Comparison of simple tabulation result of the three pilot sites (Awareness about landslide disaster, restriction in the Caution Zone)

The following table and figure show the tabulation result of the awareness about landslide disaster (Q1) by each pilot site. About 100% respondents know the landslide in Chitrakoot and Quatre Soeurs.

	Chitrakoot		Quatre Soeurs		Vallée Pitot	
	No. of Response	Ratio of Response	No. of Response	Ratio of Response	No. of Response	Ratio of Response
1: Yes	10	100%	8	100%	11	73%
2: No	0	0%	0	0%	4	27%
99: No response	0	0%	0	0%	0	0%

The following table and figure show the tabulation result of the awareness about development restriction in the Caution Zone (Q13) by each pilot site. About 100% respondents of all pilot sites are positive for the development restriction in the Caution Zone. The respondents of Quatre Soeurs have the highest percentage of “Strongly Agree” in the three districts.

	Chitrakoot		Quatre Soeurs		Vallée Pitot	
	No. of Response	Ratio of Response	No. of Response	Ratio of Response	No. of Response	Ratio of Response
1: Strongly Agree	7	70%	7	100%	2	13%
2: Agree	3	30%	0	0%	13	87%
3: Disagree	0	0%	0	0%	0	0%
4: Strongly Disagree	0	0%	0	0%	0	0%
99: No response	0	0%	0	0%	0	0%

The following table and figure show the tabulation result of the awareness about the building construction restriction in the Caution Zone (Q14) by each pilot site. About 100% respondents of all pilot sites are positive for the development restriction in the Caution Zone. The respondents of Quatre Soeurs have the highest percentage of “Strongly Agree” in the three districts.

	Chitrakoot		Quatre Soeurs		Vallée Pitot	
	No. of Response	Ratio of Response	No. of Response	Ratio of Response	No. of Response	Ratio of Response
1: Strongly Agree	6	60%	7	88%	2	13%
2: Agree	4	40%	1	12%	13	87%
3: Disagree	0	0%	0	0%	0	0%
4: Strongly Disagree	0	0%	0	0%	0	0%
99: No response	0	0%	0	0%	0	0%

The following table and figure show the tabulation result of the awareness about the building standards/regulations in the Caution Zone (Q15) by each pilot site. About 100% respondents of all pilot sites are positive for the building standards/regulations in the Caution Zone. The respondents of Quatre Soeurs have the highest percentage of “Strongly Agree” in the three districts.

	Chitrakoot		Quatre Soeurs		Vallée Pitot	
	No. of Response	Ratio of Response	No. of Response	Ratio of Response	No. of Response	Ratio of Response
1: Strongly Agree	5	56%	7	100%	2	13%
2: Agree	4	44%	0	0%	13	87%
3: Disagree	0	0%	0	0%	0	0%
4: Strongly Disagree	0	0%	0	0%	0	0%
99: No response	0	0%	0	0%	0	0%

The following table and figure show the tabulation result of the awareness about the relocation in the Caution Zone (Q16) by each pilot site. About 95% respondents of all pilot sites are positive for the relocation in the Caution Zone. The respondents of Quatre Soeurs have the highest percentage of “Strongly Agree” in the three districts. On the other hand, about 7% respondents answer “Disagree” in Vallée Pitot.

	Chitrakoot		Quatre Soeurs		Vallée Pitot	
	No. of Response	Ratio of Response	No. of Response	Ratio of Response	No. of Response	Ratio of Response
1: Strongly Agree	5	56%	7	88%	1	7%
2: Agree	4	44%	1	12%	12	86%
3: Disagree	0	0%	0	0%	1	7%
4: Strongly Disagree	0	0%	0	0%	0	0%
99: No response	0	0%	0	0%	0	0%

The following table and figure show the tabulation result of the awareness about the relocation in the Caution Zone by recommendation of government (Q 18) by each pilot site. About 80-100% respondents of all pilot sites are positive for the relocation by recommendation of government. The respondents of Quatre Soeurs have the highest percentage of “Strongly Agree” in the three districts. On the other hand, about 20% respondents answer “Disagree” in Vallée Pitot.

	Chitrakoot		Quatre Soeurs		Vallée Pitot	
	No. of Response	Ratio of Response	No. of Response	Ratio of Response	No. of Response	Ratio of Response
1: Strongly Agree	5	50%	7	88%	1	7%
2: Agree	5	50%	1	13%	11	73%
3: Disagree	0	0%	0	0%	3	20%
4: Strongly Disagree	0	0%	0	0%	0	0%
99: No response	0	0%	0	0%	0	0%

The following table and figure show the tabulation result of the awareness about the relocation with government assistance in the Caution Zone (Q 19) by each pilot site. About 95% respondents of Chitrakoot and Quatre Soeurs are positive for the relocation with assistance. The response of Q18 and Q19 was compared to confirm the difference awareness about assistance by government. The response of Q19’s “Strongly Agree” is increased about 14 % than the response of Q18’s “Strongly Agree” in Vallée Pitot.

	Chitrakoot		Quatre Soeurs		Vallée Pitot	
	No. of Response	Ratio of Response	No. of Response	Ratio of Response	No. of Response	Ratio of Response
1: Strongly Agree	5	56%	7	88%	3	21%
2: Agree	4	44%	1	12%	10	72%
3: Disagree	0	0%	0	0%	1	7%
4: Strongly Disagree	0	0%	0	0%	0	0%
99: No response	0	0%	0	0%	0	0%

**Results of Questionnaire survey in the three Landslide-prone areas**

**1. Outline of the survey**

**Purposes:**

- To know how much inhabitants understand landslide issues
- To review the early warning and evacuation system the Project has proposed.
- To reflect necessary information to IEC materials.

**Targets:**

- All inhabitants who live in three landslide-prone areas (Chitrakoot, Vallee Pitot, Quatre Soeurs)
- No. of Households: Chitrakoot (21), Vallee Pitot (26), Quatre Soeurs (9)

**Survey methods:**

- Interview survey based on the designed questionnaire

**Implementation period :**

- Mon 21 July - Wed 31 July (9 days in total)

**2. Interviewees**

**Geder**

	Chitrakoot		Vallee Pitot						Quatre Soeurs	
			Total		IN of lanslide block		OUT of landslide block			
	Count	%	Count	%	Count	%	Count	%	Count	%
Male	9	42.9%	4	15.4%	1	10%	3	18.8%	6	66.7%
Female	12	57.1%	22	84.6%	9	90%	13	81.3%	3	33.3%
Total	21	100.0%	26	100.0%	10	100%	16	100.0%	9	100.0%

**Age**

	Chitrakoot		Vallee Pitot						Quatre Soeurs	
			Total		IN of lanslide block		OUT of landslide block			
	Count	%	Count	%	Count	%	Count	%	Count	%
yonger than 20	0	0.0%	2	7.7%	0	0.0%	2	12.5%	0	0.0%
20-29 years	3	14.3%	1	3.8%	0	0.0%	1	6.3%	0	0.0%
30-39 years	4	19.0%	5	19.2%	1	10.0%	4	25.0%	3	33.3%
40-49 years	4	19.0%	6	23.1%	3	30.0%	3	18.8%	3	33.3%
50-59 years	3	14.3%	10	38.5%	6	60.0%	4	25.0%	2	22.2%
more than 60	7	33.3%	2	7.7%	0	0.0%	2	12.5%	1	11.1%
Total	21	100.0%	26	100.0%	10	100.0%	16	100.0%	9	100.0%

**3. Questions**

**General knowledge on landslide**

Q1. Do you know what landslide is ?

	Chitrakoot		Vallee Pitot						Quatre Soeurs	
			Total		IN of lanslide block		OUT of landslide block			
	Count	%	Count	%	Count	%	Count	%	Count	%
Yes	21	100%	24	92.3%	10	100%	14	87.5%	9	100%
No	0	0%	2	7.7%	0	0%	2	12.5%	0	0%
Not sure	0	0%	0	0.0%	0	0%	0	0.0%	0	0%
Total	21	100%	26	100.0%	10	100%	16	100.0%	9	100%

Q2. Do you know the mechanism landslides occurs?

	Chitrakoot		Vallee Pitot						Quatre Soeurs	
			Total		IN of lanslide block		OUT of landslide block			
	Count	%	Count	%	Count	%	Count	%	Count	%
Yes	20	95.2%	22	84.6%	10	100%	12	75.0%	9	100%
No	1	4.8%	3	11.5%	0	0%	3	18.8%	0	0%
Not sure	0	0.0%	1	3.8%	0	0%	1	6.3%	0	0%
Total	21	100.0%	26	100.0%	10	100%	16	100.0%	9	100%

Q3. Which seasons landslide is likely to occur?

	Chitrakoot		Vallee Pitot						Quatre Soeurs	
			Total		IN of lanslide block		OUT of landslide block			
	Count	%	Count	%	Count	%	Count	%	Count	%
December - April	20	95.2%	25	96.2%	10	100%	15	93.8%	9	100%
May - November	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0%
Not sure	1	4.8%	1	3.8%	0	0%	1	6.3%	0	0%
Total	21	100.0%	26	100.0%	10	100%	16	100.0%	9	100%

Q4. Do you live in a landslide-prone zone?

	Chitrakoot		Vallee Pitot						Quatre Soeurs	
			Total		IN of lanslide block		OUT of landslide block			
	Count	%	Count	%	Count	%	Count	%	Count	%
Yes	20	95.2%	16	61.5%	7	70.0%	9	56.3%	9	100%
No	0	0.0%	10	38.5%	3	30.0%	7	43.8%	0	0%
Not sure	1	4.8%	0	0.0%	0	0.0%	0	0.0%	0	0%



Total	21	100.0%	26	100.0%	10	100.0%	16	100.0%	9	100%
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The majority of inhabitants living in three priority areas have a basic knowledge of landslide. However, almost half of inhabitants who live outside of landslide block in Vallee Pitot had some general knowledge of landslide, but did NOT know that they are living in a landslide-prone area.

Q5. Do you know NDRRMC?

	Chitrakoot		Vallee Pitot						Quatre Soeurs	
			Total		IN of lanslide block		OUT of landslide block			
	Count	%	Count	%	Count	%	Count	%	Count	%
Yes	7	33.3%	1	3.8%	0	0%	1	6.3%	0	0%
No	13	61.9%	23	88.5%	8	80%	15	93.8%	9	100%
Not sure	1	4.8%	2	7.7%	2	20%	0	0.0%	0	0%
Total	21	100.0%	26	100.0%	10	100%	16	100.0%	9	100%

Most of the inhabitants did NOT know about NDRRMC.

Q6. Which organization is conducting landslide monitoring works at your area?

	Chitrakoot		Vallee Pitot						Quatre Soeurs	
			Total		IN of lanslide block		OUT of landslide block			
	Count	%	Count	%	Count	%	Count	%	Count	%
MPI	15	71.4%	14	53.8%	6	60%	8	50%	9	100%
Local Authorities	2	9.5%	0	0.0%	0	0%	0	0%	0	0%
NDRRMC	0	0.0%	0	0.0%	0	0%	0	0%	0	0%
Don't know	4	19.0%	12	46.2%	4	40%	8	50%	0	0%
Others	1	4.8%	0	0.0%	0	0%	0	0%	0	0%

More than 1/3 of inhabitants in Chitrakoot and Vallee Pitot did NOT know MPI is conducting landslide monitoring while all inhabitants in Quatre Soeurs knew that.

Q7. (Chitrakoot only) Do you know MPI with the assistance of JICA will implement countermeasure works in your area from July 201

	Chitrakoot	
	Count	%
Yes	16	76.2%
No	3	14.3%
Not sure	2	9.5%
Total	21	100.0%

Q8. (Chitrakoot only) If yes to Q7, do you know the purpose of countermeasures?

	Chitrakoot	
	Count	%
Yes	14	87.5%
No	1	6.3%
Not sure	1	6.3%
Total	16	100.0%

### Early warning and evacuation system

Q9. Do you know early warning and evacuation system has been established in your area?

	Chitrakoot		Vallee Pitot						Quatre Soeurs	
			Total		IN of lanslide block		OUT of landslide block			
	Count	%	Count	%	Count	%	Count	%	Count	%
Yes	20	95.2%	16	61.5%	8	80%	8	50.0%	6	67%
No	1	4.8%	9	34.6%	2	20%	7	43.8%	1	11%
Not sure	0	0.0%	1	3.8%	0	0%	1	6.3%	2	22%
Total	21	100.0%	26	100.0%	10	100%	16	100.0%	9	100%

Q10. (Chitrakoot and Vallee Pitot only) Do you know that alert system has been installed in your area?

	Chitrakoot		Vallee Pitot					
			Total		IN of lanslide block		OUT of landslide block	
	Count	%	Count	%	Count	%	Count	%
Yes	20	95.2%	16	61.5%	8	80%	8	50%
No	1	4.8%	10	38.5%	2	20%	8	50%
Not sure	0	0.0%	0	0.0%	0	0%	0	0%
Total	21	100.0%	26	100.0%	10	100%	16	100%

Q11. (Chitrakoot and Vallee Pitot only) If yes to Q10, do you know where alert system has been installed in your area?

	Chitrakoot		Vallee Pitot					
			Total		IN of lanslide block		OUT of landslide block	
	Count	%	Count	%	Count	%	Count	%
Yes	20	100%	14	87.5%	8	100%	6	75%
No	0	0%	2	12.5%	0	0%	2	25%
Not sure	0	0%	0	0.0%	0	0%	0	0%
Total	20	100%	16	100.0%	8	100%	8	100%

Q12. (Chitrakoot and Vallee Pitot only) If yest to Q10, do you know the difference between yellow and red light signal?

	Chitrakoot		Vallee Pitot					
			Total		IN of lanslide block		OUT of landslide block	
	Count	%	Count	%	Count	%	Count	%
Yes	12	60%	5	31.3%	5	62.5%	0	0%
No	6	30%	9	56.3%	1	12.5%	8	100%
Not sure	2	10%	2	12.5%	2	25.0%	0	0%
Total	20	100%	16	100.0%	8	100.0%	8	100%

The alert system is well-known to inhabitants who live in both Chitrakoot and inside of landslide block in Vallee Pitot, however, the difference between yellow and red light signals were not clear for them. In Vallee Pitot, less than 50 % of inhabitants who live outside of landslide block did NOT know.

Q13. Do you know where simple rain gauge system has been installed in your area?

	Chitrakoot		Vallee Pitot						Quatre Soeurs	
			Total		IN of lanslide block		OUT of landslide block			
	Count	%	Count	%	Count	%	Count	%	Count	%
Yes	19	90.5%	6	23.1%	6	60%	0	0%	9	100%
No	2	9.5%	20	76.9%	4	40%	16	100%	0	0%
Not sure	0	0.0%	0	0.0%	0	0%	0	0%	0	0%
Total	21	100.0%	26	100.0%	10	100%	16	100%	9	100%

Most of inhabitants in Chitrakoot and Quatre Soeurs knew about simple rain gauge system. In Vallee Pitot, only 40% of inhabitants who live inside of landslide block knew the system while none of inhabitants who live outside of landslide block knew about it.

Q14. Who will contact Police at warning stage in your area?

	Chitrakoot		Vallee Pitot						Quatre Soeurs	
			Total		IN of lanslide block		OUT of landslide block			
	Count	%	Count	%	Count	%	Count	%	Count	%
yourself	12	57.1%	24	92.3%	9	90%	15	93.8%	9	100%
sombody	11	52.4%	2	7.7%	2	20%	0	0.0%	0	0%
government	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0%
others	1	4.8%	0	0.0%	0	0%	1	6.3%	0	0%
don't know	0	0.0%	1	3.8%	0	0%	0	0.0%	0	0%

The Project has assigned some people who will contact Police at warning stage. However, most of inhabitants in Vallee Pitot and Quatre Soeurs have believed that they should call Police by themselves. Approx. 60 % of inhabitants in Chitrakoot knew that the delegated person should contact Police as their representatives.

Q15. Do you know the contact number of the persons who will contact Police at warning stage in your area?

	Chitrakoot		Vallee Pitot						Quatre Soeurs	
			Total		IN of lanslide block		OUT of landslide block			
	Count	%	Count	%	Count	%	Count	%	Count	%
Yes	3	14.3%	2	7.7%	2	20%	0	0.0%	4	44.4%
No	18	85.7%	22	84.6%	8	80%	14	87.5%	5	55.6%
Not sure	0	0.0%	2	7.7%	0	0%	2	12.5%	0	0.0%
Total	21	100.0%	26	100.0%	10	100%	16	100.0%	9	100.0%

Most of people in three areas did NOT know the contact number of the delegated persons who will contact Police at warning stage.

Q16. Do you know WHO will inform you when it reaches to the warning stage?

	Chitrakoot		Vallee Pitot						Quatre Soeurs	
			Total		IN of lanslide block		OUT of landslide block			
	Count	%	Count	%	Count	%	Count	%	Count	%
Local Police	19	90.5%	26	100%	10	100%	16	100%	9	100%
Local Authorities	0	0.0%	0	0%	0	0%	0	0%	0	0%
MPI	0	0.0%	0	0%	0	0%	0	0%	0	0%
NDRRMC	0	0.0%	0	0%	0	0%	0	0%	0	0%
Others	1	4.8%	0	0%	0	0%	0	0%	0	0%
don't know	1	4.8%	0	0%	0	0%	0	0%	0	0%
Total	21	100.0%	26	100%	10	100%	16	100%	9	100%

Q17. Do you know WHO will inform you when it reaches to the evacuation stage?

	Chitrakoot		Vallee Pitot						Quatre Soeurs	
			Total		IN of lanslide block		OUT of landslide block			
	Count	%	Count	%	Count	%	Count	%	Count	%
Local Police	19	90.5%	26	100%	10	100%	16	100%	9	100%
Local Authorities	0	0.0%	0	0%	0	0%	0	0%	0	0%
MPI	0	0.0%	0	0%	0	0%	0	0%	0	0%
NDRRMC	0	0.0%	0	0%	0	0%	0	0%	0	0%
Others	1	4.8%	0	0%	0	0%	0	0%	0	0%
don't know	1	4.8%	0	0%	0	0%	0	0%	0	0%
Total	21	100.0%	26	100%	10	100%	16	100%	9	100%

People have believed that Local Police would inform them of the timing of the warning and evacuation stages.

Q18. (Chitrakoot only) In end March 2014, evacuation order was issued in your area following torrential rainfall. Did you evacuate from your res

	Chitrakoot	
	Count	%
Yes	0	0.0%
No	16	76.2%
Not sure	0	0.0%
Nobody at home	5	23.8%
Total	21	100.0%

Q19. (Chitrakoot only) If yes to Q18, where did you evacuate to?

	Chitrakoot	
	Count	%
Evacuatio center (desined p	0	0%
Neighbour's house	0	0%
Family/relative's house	0	0%
Others	0	0%
Total	0	0%

Q20. If no to Q18, why you did not evacuate?

	Chitrakoot	
	Count	%
I did not take it serious (I thought no need to evacuate)	8	50.0%
I did not know where to evacuate	4	25.0%
I thought that there was no proper arrangement/set up at the evacuation centre	2	12.5%
I didn't want to leave my house	2	12.5%
I did not know evacuation order was issued	1	6.3%
I did not have any transport to the evacuation centre	1	6.3%
The evacuation center was too far from my house	0	0.0%
I thought that my stay at evacuation centre might be too	0	0.0%

25 % of inhabitants were not at home at that time while no one evacuated even though the evacuation order was issued. The major cause of this was that inhabitants did not take it seriously. Also, some of them were also not aware where to evacuate.

Q21. If evacuation order is issued in future, will you evacuate from your residence ?

	Chitrakoot		Vallee Pitot				Quatre Soeurs			
	Total	%	IN of lanslide block	OUT of landslide block	Total	%				
Yes	13	61.9%	18	69.2%	8	80%	10	62.5%	9	100%
No	4	19.0%	1	3.8%	0	0%	1	6.3%	0	0%
Not sure	4	19.0%	7	26.9%	2	20%	5	31.3%	0	0%
Total	21	100.0%	26	100.0%	10	100%	16	100.0%	9	100%

Q22. If YES to Q21, where will you evacuate to ?

	Chitrakoot		Vallee Pitot				Quatre Soeurs			
	Total	%	IN of lanslide block	OUT of landslide block	Total	%				
Evacuation center (designed place by governmen/police)	9	69.2%	13	72.2%	7	87.5%	6	60%	9	100%
Family/relative's house	4	30.8%	5	27.8%	1	12.5%	4	40%	2	22.2%
Neighbours house	0	0.0%	0	0.0%	0	0.0%	0	0%	0	0%
Others (	0	0.0%	0	0.0%	0	0.0%	0	0%	0	0%

The evacuation center is expected to be the place where inhabitants will evacuate to.

Q23. If NO to Q21, why will you NOT evacuate?

	Chitrakoot		Vallee Pitot				Quatre Soeurs			
	Total	%	IN of lanslide block	OUT of landslide block	Total	%				
I don't have a safe/secured place to go / I don't know where to	3	75%	1	100%	0	0%	1	100%	0	0%
I do not have any transport to the Evacuation center	1	25%	0	0%	0	0%	0	0%	0	0%
I can't leave my house	1	25%	0	0%	0	0%	0	0%	0	0%
I do not mind whether landslide occurs	0	0%	0	0%	0	0%	0	0%	0	0%
The Evacuation center is too far from my house	0	0%	0	0%	0	0%	0	0%	0	0%
Others	0	0%	0	0%	0	0%	0	0%	0	0%

Approx. 40 % of inhabitants in Chitrakoot and Vallee Pito were “No” or “Not sure” if they would evacuate or not when the evacuation order is issued in future. The main cause of this was that inhabitants did NOT know which place is good to evacuate. All of inhabitants in Quatre Soeurs are sure to evacuate.

Q24. Something caused by landslide disaster happened to you and/or your family while you didn't evacuate, who should be blamed for it?

	Chitrakoot		Vallee Pitot				Quatre Soeurs			
			Total		IN of landslide block	OUT of landslide block				
Yourself	11	52.4%	15	57.7%	8	80%	7	43.8%	7	77.8%
Government	3	14.3%	6	23.1%	3	30%	3	18.8%	3	33.3%
Nobody	7	33.3%	5	19.2%	0	0	5	31.3%	0	0.0%
Police	0	0.0%	0	0.0%	0	0	0	0.0%	0	0.0%
don't know	0	0.0%	1	3.8%	0	0	1	6.3%	0	0.0%

Over 50% of inhabitants have felt that they are the ones to blame if something happened while they didn't evacuate. Some of them

Q25. If you found troubles (crack, subsidence etc) caused by continuous heavy rains, which organization you will inform?

	Chitrakoot		Vallee Pitot				Quatre Soeurs			
			Total		IN of landslide block	OUT of landslide block				
Police	20	95.2%	23	88.5%	9	90%	14	87.5%	9	100%
Local Authorities	0	0.0%	1	3.8%	0	0%	1	6.3%	0	0
NDRRMC	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0
Nobody	0	0.0%	1	3.8%	0	0%	1	6.3%	0	0
N/A	1	4.8%	1	3.8%	1	10%	0	0.0%	0	0
Total	21	100.0%	26	100.0%	10	100%	16	100.0%	9	100%

Q26. What will you do if you notice cracks / subsidence caused by heavy rainfall in your building/house?

	Chitrakoot		Vallee Pitot				Quatre Soeurs			
			Total		IN of landslide block	OUT of landslide block				
Inform authority	10	47.6%	15	57.7%	6	60%	9	56.3%	9	100%
Seek assistance from Police/ authorities for	8	38.1%	13	50.0%	6	60%	7	43.8%	3	33%
Do nothing	2	9.5%	0	0.0%	0	0%	0	0.0%	0	0%
Self Evacuation	1	4.8%	0	0.0%	0	0%	0	0.0%	0	0%
don't know	0	0.0%	1	3.8%	0	0%	1	6.3%	0	0%

“Police” is the first contact organization for inhabitants if they have noticed cracks/subsidence in their buildings.

Q27. Do you know where Evacuation center is at your area?

	Chitrakoot		Vallee Pitot				Quatre Soeurs			
			Total		IN of landslide block	OUT of landslide block				
Yes	12	57.1%	11	42.3%	5	50%	6	37.5%	9	100%
No	9	42.9%	15	57.7%	5	50%	10	62.5%	0	0%
Not sure	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0%
Total	21	100.0%	26	100.0%	10	100%	16	100.0%	9	100%

Q28. Do you know appropriate evacuation route from your house to the Evacuation center?

	Chitrakoot		Vallee Pitot				Quatre Soeurs			
			Total		IN of landslide block	OUT of landslide block				
Yes	12	57.1%	11	42.3%	5	50%	6	37.5%	9	100%
No	7	33.3%	3	11.5%	1	10%	2	12.5%	0	0%
Not sure	2	9.5%	12	46.2%	4	40%	8	50.0%	0	0%
Total	21	100.0%	26	100.0%	10	100%	16	100.0%	9	100%

100 % of inhabitants in Quatre Soeurs knew about the location of evacuation center and appropriate route while less than 60 % of inhabitants in Chitrakoot and Vallee Pitot knew that.

Q29. How will you evacuate?

	Chitrakoot		Vallee Pitot				Quatre Soeurs			
			Total		IN of landslide block	OUT of landslide block				
need assistance from authority	15	71.4%	19	73.1%	10	100%	9	56.3%	8	89%
by own car	2	9.5%	7	26.9%	1	10%	6	37.5%	1	11%
on foot	2	9.5%	3	11.5%	0	0%	3	18.8%	0	0%
Not sure, all depends on the situation	2	9.5%	2	7.7%	0	0%	2	12.5%	0	0%
by public transportation (bus, etc)	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0%

Over 70 % of inhabitants in three areas have felt the need of assistance from relevant assistance for evacuation.

Q30. Do you think the current early warning and evacuation system is working well?

	Chitrakoot		Vallee Pitot					Quatre Soeurs		
			Total		IN of lanslide block		OUT of landslide block			
Yes	5	23.8%	6	23.1%	6	60%	0	0%	3	33.3%
No	3	14.3%	0	0.0%	0	0%	0	0%	1	11.1%
Not sure	13	61.9%	20	76.9%	4	40%	16	100%	5	55.6%
Total	21	100%	26	100%	10	100%	16	100%	9	100%

Q31. If NO to Q30, how should the system be improved?

	Chitrakoot		Vallee Pitot					Quatre Soeurs		
			Total		IN of lanslide block		OUT of landslide block			
Not sure	3	33.3%	0	0%	0	0.0%	0	0%	0	0%
The system should be well-explained to all the residents	2	22.2%	1	50%	0	0.0%	1	50%	0	0%
The role and responsibility of each organization and inhabitants should be clearly defined	2	22.2%	1	50%	0	0.0%	1	50%	0	0%
I don't know if it's reliable or not	2	22.2%	0	0%	0	0.0%	0	0%	0	0%
The system seems complicated - should be simplified	0	0.0%	0	0%	0	0.0%	0	0%	0	0%
Total	9	100.0%	2	100%	0	0.0%	0	100%	0	0%

Most of inhabitants were uncertain if the current system is functioning well or not as they never observed that the alert system were in operation.

### IEC and Others

Q32. Have you/your family members attended any stakeholder meetings which were organized by MPI and JICA ?

	Chitrakoot		Vallee Pitot					Quatre Soeurs		
			Total		IN of lanslide block		OUT of landslide block			
Yes	21	100%	12	46.2%	10	100%	2	12.5%	8	89%
No	0	0%	14	53.8%	0	0%	14	87.5%	0	0%
Not sure	0	0%	0	0.0%	0	0%	0	0.0%	1	11%
Total	21	100%	26	100.0%	10	100%	16	100.0%	9	100%

Almost all of households have experiences to attend the stakeholder meetings which were organized by MPI and JICA.

Q33. Which organization should be responsible for landslide monitoring and countermeasures ?

	Chitrakoot		Vallee Pitot					Quatre Soeurs		
			Total		IN of lanslide block		OUT of landslide block			
MPI	18	85.7%	20	76.9%	10	100%	10	62.5%	9	100%
Local Authorities	1	4.8%	3	11.5%	0	0%	3	18.8%	0	0%
NDRRMC	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0%
don't know	1	4.8%	4	15.4%	0	0%	4	25.0%	0	0%
Others	1	4.8%	0	0.0%	0	0%	0	0.0%	0	0%

(JICA)

Most of inhabitants in three areas believed that MPI should be responsible for landslide monitoring and countermeasures, following by Local Authorities.

Q34. How did you get the information related to landslide?

	Chitrakoot		Vallee Pitot					Quatre Soeurs		
			Total		IN of lanslide block		OUT of landslide block			
From neighbours	7	33.3%	9	34.6%	0	0%	9	56.3%	0	0.0%
TV	8	38.1%	7	26.9%	1	10%	6	37.5%	6	66.7%
Stakeholder meeting at site	6	28.6%	4	15.4%	3	30%	1	6.3%	8	88.9%
Radio	7	33.3%	3	11.5%	1	10%	2	12.5%	5	55.6%
Newsletter distributed by pro	5	23.8%	1	3.8%	1	10%	0	0.0%	1	11.1%
Internet / Website	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%
SMS	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%
Others	2	9.5%	2	7.7%	0	0%	3	18.8%	0	0.0%

(From family, visit Police) (Learned at school (La butte), Heard at the first time by the survey)

The three main sources of information related to landslide is; TV, Stakeholder meeting on site and Radio. Some people also get information by words of mouth such as neighbors.

Q35. Do you know JICA landslide management Project ?

	Chitrakoot		Vallee Pitot					Quatre Soeurs		
			Total		IN of lanslide block		OUT of landslide block			
Yes	20	95.2%	12	46.2%	10	100%	2	12.5%	9	100%
No	1	4.8%	14	53.8%	0	0%	14	87.5%	0	0%
Not sure	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0%
Total	21	100.0%	26	100.0%	10	100%	16	100.0%	9	100%

Inhabitants in three areas knew about JICA Project but most of them who live outside of landslide block in Vallee Pitot did NOT know

Q36. Comments and Suggestions

<Chitrakoot>

- There was no rainfall, the alert system gave false alert. There was some workers located near the alert system

- The work should be started as soon as possible. The inhabitants are relying a lot on the work to be completed.
- The work should be done as soon as possible.
- Won't leave her house alone, if children will go, she will go along. JICA is doing a good job. She will be very happy if the work is successful
- She wants the work being done more urgently. It must be needed as serious.
- They know the procedure of evacuation, but what will happen after all, about their house, personal belongings, etc.
- What will happen after evacuation and end of warning. Are old people aware of what to do as during the day every person are at work.
- They did some expenses for house cracks. They want the work to get done.
- don't have a secure accommodation in future
- no permit for development
- need to verify the proper functioning of the alert system. The landslide problem will not be resolved by the construction of that drain.
- Check the top of the mountain as the river at the bottom there is no water and avoid water to stay in canal.
- JICA and MPI are doing well their work. Now they need to wait for work being done so their security

#### <Vallee Pitot>

- Need to undertake countermeasures (roads, drains)
- Evacuation center is too far. It's better to make inhabitants assembly at park then later shift them to evacuation center
- Government must take some decision more rapidly and take it as urgent.
- Stop construction because we don't know
- Government need to take their responsibility

#### <Quatre Souers>

- They want to build their house as per their choice. So they want government to give them money.
- can't see any development. They are waiting for a ?? They will take action, which make them anxious. The work should be done asap.
- They have requested the government to give them money for house construction as per their choice



## 4. Findings

### (1) Awareness level of landslide

- The majority of inhabitants living in three priority areas have a basic knowledge of landslide. However, almost half of inhabitants who live outside of landslide block in Vallee Pitot had some general knowledge of landslide, but did NOT know that they are living in a landslide-prone area.
- More than 1/3 of inhabitants in Chitrakoot and Vallee Pitot did NOT know MPI is conducting landslide monitoring while all inhabitants in Quatre Soeurs knew that.
- In Chitrakoot, 25 % of inhabitants still did NOT know that MPI/JICA is now implementing countermeasures on site.

### (2) NDRRMC

- Most of the inhabitants did NOT know about NDRRMC.

### (3) Early warning and evacuation system

#### <Alert system in Chitrakoot and Vallee Pitot>

- The alert system is well-known to inhabitants who live in both Chitrakoot and inside of landslide block in Vallee Pitot. However, in Vallee Pitot, less than 50 % of inhabitants who live outside of landslide block did NOT know.

#### <Simple rain gauge system in three priority areas>

- Most of inhabitants in Chitrakoot and Quatre Soeurs knew about simple rain gauge system. In Vallee Pitot, only 40% of inhabitants who live inside of landslide block knew the system while none of inhabitants who live outside of landslide block knew about it.

#### <Communication at each stage>

- "Police" is the first contact organization for inhabitants if they have noticed cracks/subsidence in their buildings. For evacuation, more than 30 % of inhabitants have requested assistance from relevant authority.
- The Project has assigned some people who will contact Police at warning stage. However, most of inhabitants in Vallee Pitot and Quatre Soeurs have believed that they should call Police by themselves. Approx. 60 % of inhabitants in Chitrakoot knew that the delegated person should contact Police as their representatives.
- Most of people in three areas did NOT know the contact number of the delegated persons who will contact Police at warning stage.
- People have believed that Local Police would inform them of the timing of the warning and evacuation stages.

<Evacuation order issued in Chitrakoot in March 2014>

- 25 % of inhabitants were not at home at that time while no one evacuated even though the evacuation order was issued. The major cause of this was that inhabitants did not take it seriously. Also, some of them were also not aware where to evacuate.

<Future plan of evacuation>

- Approx. 40 % of inhabitants in Chitrakoot and Vallee Pito were “No” or “Not sure” if they would evacuate or not when the evacuation order is issued in future. The main cause of this was that inhabitants did NOT know which place is good to evacuate. All of inhabitants in Quatre Soeurs are sure to evacuate.

<Responsibility of landslide and its disasters>

- Over half of inhabitants have felt that they are the ones to blame if something happened while they didn't evacuate. Some of them insisted that the government should take more responsibility on this.
- Most of inhabitants in three areas believed that MPI should be responsible for landslide monitoring and countermeasures, following by Local Authorities.

<Necessary information and arrangement for evacuation>

- The evacuation center is expected to be the place where inhabitants will evacuate to.
- 100 % of inhabitants in Quatre Soeurs knew about the location of evacuation center and appropriate route while less than 60 % of inhabitants in Chitrakoot and Vallee Pitot knew that.
- Over 70 % of inhabitants in three areas have felt the need of assistance from relevant assistance for evacuation.

<Review of current system>

- Most of inhabitants were uncertain if the current system is functioning well or not as they never observed that the alert system were in operation.

(4) IEC and others

- Almost all of households have experiences to attend the stakeholder meetings which were organized by MPI and JICA.
- The three main sources of information related to landslide is; TV, Stakeholder meeting on site and Radio. Some people also get information by words of mouth such as neighbors.
- Inhabitants in three areas knew about JICA Project but most of them who live outside of landslide block in Vallee Pitot did NOT know about it.

#### 4. Conclusions

- ✧ Awareness activities such as stakeholder meeting, should be conducted not only for inhabitants who live inside of the landslide block but also for the ones who live outside of the landslide block as they will be affected by landslide disaster as well. These people should be included in the evacuee list.
- ✧ NDRRMC should make more efforts to make it better known (by mass media, etc)
- ✧ At this stage, we can't conclude that the current early warning and evacuation system is working or not as not much experience in operation has been accumulated. The survey provided some matters to be considered as follows;
  - The alert system allows inhabitants easily and visually recognition as it has been located outside. However, the difference between yellow and red lights should be reminded to inhabitants.
  - It might be difficult for inhabitants to identify which households own it unless they did obtain information in the stakeholder meeting.
  - Contact point should be one for any landslide inquiries including during warning and evacuation stages. "Police" will be the best organization for this.
  - The presence of contact person will be useful for the government such as MPI to obtain information of actual site condition, but for inhabitants, it would be better to let anyone contact Police, otherwise the number of contact person should be well informed.
  - "Self-evacuation" should be promoted but assistance for evacuation by relevant authority is still required for some people, especially for elderly. It is important for the government to identify the persons who need assistance in advance.
  - The government should not hesitate to issue warning and evacuation orders when it reaches the alert level. The location of evacuation center and appropriate route should be well informed in advance. And, transport for people who need assistance should be arranged at evacuation stage. Inhabitants will not have a right to blame the government if government played their roles even something happened to them by not following instructions.
- ✧ "Stakeholder meeting on site" is an effective tool to disseminate information, especially specific information to the site, such as location and route of evacuation center. TV and radio are also informative but will be effective to disseminate landslide information in general.

10. Regular Check Sheets and Photo Sheets

## Regular Check Sheet

Management number	01010101010101	Disaster	Damage of wall	Area name	Temple Road, Creve Coeur	
Date	April 22, 2013					
Reporter's name	Takeshi KUWANO					
Landslide /Slope failure	New failure					
	Swell slope					
	New/enlarged step/cliff					
	New/enlarged crack on slope					
Rockfall	New rockfall					
	Enlarged crack on rock slope					
	Erosion of unstable rock					
Debris flow	Filling up of debris sediment					
	Overflow of debris on road					
	Clogged culvert					
	New failure on river slope					
Spring water	Depleted/decreased spring water					
	Increased spring water					
	New spring water					
	Turbid spring water					
House/road	New/enlarged step/settlement					
	New/enlarged crack					
Counter-measure	Damage/deformation					
	Clogged drainage					
	Overflowed drainage					
Other problem						
Condition	No significant progress.					
Proposed action						
Purpose of action						





Full view of concrete block wall



The damage of the concrete block wall



Valley side of the road



The course that the surface water flows through



Damage of the drainage of the roadside

## Regular Check Sheet

Management number	0101010101012	Disaster	Stream erosion	Area name	Congomah Village Council (Ramlakhan)		
Date	April 22, 2013						
Reporter's name	Takeshi KUWANO						
Landslide /Slope failure	New failure						
	Swell slope						
	New/enlarged step/cliff						
	New/enlarged crack on slope						
Rockfall	New rockfall						
	Enlarged crack on rock slope						
	Erosion of unstable rock						
Debris flow	Filling up of debris sediment						
	Overflow of debris on road						
	Clogged culvert						
	New failure on river slope						
Spring water	Depleted/decreased spring water						
	Increased spring water						
	New spring water						
	Turbid spring water						
House/road	New/enlarged step/settlement						
	New/enlarged crack						
Counter-measure	Damage/deformation						
	Clogged drainage						
	Overflowed drainage						
Other problem							
Condition	No significant progress.						
Proposed action							
Purpose of action							





Full view



Full view of upper stream



Inlet of upperstream



Full view of down stream



Outlet of downstream

## Regular Check Sheet

Management number	0101010101013	Disaster	Damage of wall	Area name	Congomah Village Council (Leekraj)	
Date	April 22, 2013					
Reporter's name	Takeshi KUWANO					
Landslide /Slope failure	New failure					
	Swell slope					
	New/enlarged step/cliff					
	New/enlarged crack on slope					
Rockfall	New rockfall					
	Enlarged crack on rock slope					
	Erosion of unstable rock					
Debris flow	Filling up of debris sediment					
	Overflow of debris on road					
	Clogged culvert					
	New failure on river slope					
Spring water	Depleted/decreased spring water					
	Increased spring water					
	New spring water					
	Turbid spring water					
House/road	New/enlarged step/settlement					
	New/enlarged crack					
Counter-measure	Damage/deformation					
	Clogged drainage					
	Overflowed drainage					
Other problem						
Condition	No significant progress.					
Proposed action						
Purpose of action						





Full view of the retaining wall



Retaining wall



Cross section of retaining wall



## Regular Check Sheet

Management number	010101010101014	Disaster	Damage of wall	Area name	Congomah Village Council (Frederick)		
Date	April 22, 2013						
Reporter's name	Takeshi KUWANO						
Landslide /Slope failure	New failure						
	Swell slope						
	New/enlarged step/cliff						
	New/enlarged crack on slope						
Rockfall	New rockfall						
	Enlarged crack on rock slope						
	Erosion of unstable rock						
Debris flow	Filling up of debris sediment						
	Overflow of debris on road						
	Clogged culvert						
	New failure on river slope						
Spring water	Depleted/decreased spring water						
	Increased spring water						
	New spring water						
	Turbid spring water						
House/road	New/enlarged step/settlement						
	New/enlarged crack						
Counter-measure	Damage/deformation						
	Clogged drainage						
	Overflowed drainage						
Other problem							
Condition	No significant progress.						
Proposed action							
Purpose of action							



Full view of damage of retaining wall



Damage in retaining wall by erosion



Damage in retaining wall by erosion



Retaining wall that comes off

## Regular Check Sheet

Management number	0101010101015	Disaster	Damage of Embankment	Area name	Congomah Village Council (Blackburn Lanes)		
Date	April 22, 2013						
Reporter's name	Takeshi KUWANO						
Landslide /Slope failure	New failure						
	Swell slope						
	New/enlarged step/cliff						
	New/enlarged crack on slope						
Rockfall	New rockfall						
	Enlarged crack on rock slope						
	Erosion of unstable rock						
Debris flow	Filling up of debris sediment						
	Overflow of debris on road						
	Clogged culvert						
	New failure on river slope						
Spring water	Depleted/decreased spring water						
	Increased spring water						
	New spring water						
	Turbid spring water						
House/road	New/enlarged step/settlement						
	New/enlarged crack						
Counter-measure	Damage/deformation						
	Clogged drainage						
	Overflowed drainage						
Other problem							
Condition	No significant progress.						
Proposed action							
Purpose of action							





Full view of the road



Slope failure



Transverse cracks



Repaired road of another site



Cross section of the slope failure

## Regular Check Sheet

Management number	0101010101016	Disaster	Slope failure	Area name	Les Mariannes Community Centre (Road area)		
Date	April 22, 2013						
Reporter's name	Takeshi KUWANO						
Landslide /Slope failure	New failure						
	Swell slope						
	New/enlarged step/cliff						
	New/enlarged crack on slope						
Rockfall	New rockfall						
	Enlarged crack on rock slope						
	Erosion of unstable rock						
Debris flow	Filling up of debris sediment						
	Overflow of debris on road						
	Clogged culvert						
	New failure on river slope						
Spring water	Depleted/decreased spring water						
	Increased spring water						
	New spring water						
	Turbid spring water						
House/road	New/enlarged step/settlement						
	New/enlarged crack						
Counter-measure	Damage/deformation						
	Clogged drainage						
	Overflowed drainage						
Other problem							
Condition	No significant progress.						
Proposed action							
Purpose of action							





Full view of the slope



Trace of main scarp



Trace of slope failure



Bottom of the slope



Bottom of the slope



Rocks and gravel by slope failure



## Regular Check Sheet

Management number	0101010101017	Disaster	Stream erosion	Area name	Les Mariannes Community Centre (Resident area)		
Date	April 22, 2013						
Reporter's name	Takeshi KUWANO						
Landslide /Slope failure	New failure						
	Swell slope						
	New/enlarged step/cliff						
	New/enlarged crack on slope						
Rockfall	New rockfall						
	Enlarged crack on rock slope						
	Erosion of unstable rock						
Debris flow	Filling up of debris sediment						
	Overflow of debris on road						
	Clogged culvert						
	New failure on river slope						
Spring water	Depleted/decreased spring water						
	Increased spring water						
	New spring water						
	Turbid spring water						
House/road	New/enlarged step/settlement						
	New/enlarged crack						
Counter-measure	Damage/deformation						
	Clogged drainage						
	Overflowed drainage						
Other problem							
Condition	No significant progress.						
Proposed action							
Purpose of action							



Full view of the river



Eroded area at the upper side



Inlet of box culvert



Outlet of box culvert



Outlet of box culvert

## Regular Check Sheet

Management number	010101010101018	Disaster	Damage of Embankment	Area name	L'Eau Bouillie	
Date	April 22, 2013					
Reporter's name	Takeshi KUWANO					
Landslide /Slope failure	New failure					
	Swell slope					
	New/enlarged step/cliff					
	New/enlarged crack on slope					
Rockfall	New rockfall					
	Enlarged crack on rock slope					
	Erosion of unstable rock					
Debris flow	Filling up of debris sediment					
	Overflow of debris on road					
	Clogged culvert					
	New failure on river slope					
Spring water	Depleted/decreased spring water					
	Increased spring water					
	New spring water					
	Turbid spring water					
House/road	New/enlarged step/settlement					
	New/enlarged crack					
Counter-measure	Damage/deformation					
	Clogged drainage					
	Overflowed drainage					
Other problem						
Condition	The road was paved and repaired. There are no ditches in the area. But new cracks and deformation happened by erosion of the roadside because of the heavy rainfall in the middle February and the end of March.					
Proposed action	Concrete ditched should be constructed along the road					
Purpose of action	to prevent further erosion of the road foundation.					





Full view of the damaged road



Deformation by erosion of foundation



Erosion of foundation



Natural ditch



Paved road



Paved road

## Regular Check Sheet

Management number	010101010101019	Disaster	Landslide	Area name	Chitrakoot, Vallee des Pretres		
Date	May 6, 2013						
Reporter's name	Yoji KASAHARA						
Landslide /Slope failure	New failure						
	Swell slope						
	New/enlarged step/cliff						
	New/enlarged crack on slope						
Rockfall	New rockfall						
	Enlarged crack on rock slope						
	Erosion of unstable rock						
Debris flow	Filling up of debris sediment						
	Overflow of debris on road						
	Clogged culvert						
	New failure on river slope						
Spring water	Depleted/decreased spring water						
	Increased spring water						
	New spring water						
	Turbid spring water						
House/road	New/enlarged step/settlement						
	New/enlarged crack						
Counter-measure	Damage/deformation						
	Clogged drainage						
	Overflowed drainage						
Other problem							
Condition	As a pilot project site, monitoring is being conducted						
Proposed action	Until the completion of countermeasures, monitoring and early warning system should be continuously implemented.						
Purpose of action							





Main scarp



Incline of the telephone pole



New crack along the road



Heavy damage at school



Heavy damage at houses



Heavy damage at houses

## Regular Check Sheet

Management number	01010101010101010	Disaster	Landslide	Area name	Vallee Pitot (near Eidgah)		
Date	May 6, 2013						
Reporter's name	Yoji KASAHARA						
Landslide /Slope failure	New failure						
	Swell slope						
	New/enlarged step/cliff						
	New/enlarged crack on slope	New cracks behind the house					
Rockfall	New rockfall						
	Enlarged crack on rock slope						
	Erosion of unstable rock						
Debris flow	Filling up of debris sediment						
	Overflow of debris on road						
	Clogged culvert						
	New failure on river slope						
Spring water	Depleted/decreased spring water						
	Increased spring water						
	New spring water						
	Turbid spring water						
House/road	New/enlarged step/settlement	The house has collapsed.					
	New/enlarged crack						
Counter-measure	Damage/deformation						
	Clogged drainage						
	Overflowed drainage						
Other problem							
Condition	As a pilot project site, monitoring is being conducted						
Proposed action	Until the completion of countermeasures, monitoring and early warning system should be continuously implemented.						
Purpose of action							





Extensometer set up next to house



The broken house



The broken house



New cracks observed behind the house



Toe of the landslide



Cracks at bank protection

## Regular Check Sheet

Management number	010101010111	Disaster	Stream erosion	Area name	LePouce Street		
Date	April 30, 2013						
Reporter's name	Yoji KASAHARA						
Landslide /Slope failure	New failure						
	Swell slope						
	New/enlarged step/cliff						
	New/enlarged crack on slope						
Rockfall	New rockfall						
	Enlarged crack on rock slope						
	Erosion of unstable rock						
Debris flow	Filling up of debris sediment						
	Overflow of debris on road						
	Clogged culvert						
	New failure on river slope						
Spring water	Depleted/decreased spring water						
	Increased spring water						
	New spring water						
	Turbid spring water						
House/road	New/enlarged step/settlement						
	New/enlarged crack						
Counter-measure	Damage/deformation						
	Clogged drainage						
	Overflowed drainage						
Other problem							
Condition	No significant progress.						
Proposed action	It is necessary to construct the ditch of an appropriate scale.						
Purpose of action	To prevent the clog of ditches and overflow						





House around the depressions



House around the depressions



Ditch of the depressions (upstream)



Ditch of the depressions (downstream)

## Regular Check Sheet

Management number	010101010112	Disaster	Damage of wall	Area name	Justice Street (near Kalimata Mandir)	
Date	April 30, 2013					
Reporter's name	Yoji KASAHARA					
Landslide /Slope failure	New failure					
	Swell slope					
	New/enlarged step/cliff					
	New/enlarged crack on slope					
Rockfall	New rockfall					
	Enlarged crack on rock slope					
	Erosion of unstable rock					
Debris flow	Filling up of debris sediment					
	Overflow of debris on road					
	Clogged culvert					
	New failure on river slope					
Spring water	Depleted/decreased spring water					
	Increased spring water					
	New spring water					
	Turbid spring water					
House/road	New/enlarged step/settlement					
	New/enlarged crack					
Counter-measure	Damage/deformation					
	Clogged drainage					
	Overflowed drainage					
Other problem						
Condition	No significant progress. However, the mud flow is generated after the heavy rain, and the drain system is not enough.					
Proposed action	Artificial structures (drainage, culvert, etc.) should be constructed in the future. The fill removal in the back of the ditch is also effective. It is preferable to construct the					
Purpose of action	To prevent overflow To reduce the earth load of the retaining wall					





Slope in the retaining wall upper part



The gully by flow of surface water



Inclined the retaining wall



Inclined the retaining wall



Inclined the retaining wall



Inclined the retaining wall

## Regular Check Sheet

Management number	0101010101013	Disaster	Landslide	Area name	Mgr. Leen Street and nearby vicinity, La Butte		
Date	April 8, 2013						
Reporter's name	Takeshi KUWANO						
Landslide /Slope failure	New failure						
	Swell slope						
	New/enlarged step/cliff						
	New/enlarged crack on slope						
Rockfall	New rockfall						
	Enlarged crack on rock slope						
	Erosion of unstable rock						
Debris flow	Filling up of debris sediment						
	Overflow of debris on road						
	Clogged culvert						
	New failure on river slope						
Spring water	Depleted/decreased spring water						
	Increased spring water						
	New spring water						
	Turbid spring water						
House/road	New/enlarged step/settlement						
	New/enlarged crack						
Counter-measure	Damage/deformation						
	Clogged drainage						
	Overflowed drainage						
Other problem							
Condition	No significant progress						
Proposed action							
Purpose of action							





Upper slope of the landslide area.  
No notable cracks and displacement



Middle slope of the landslide area. □  
No notable cracks and displacement



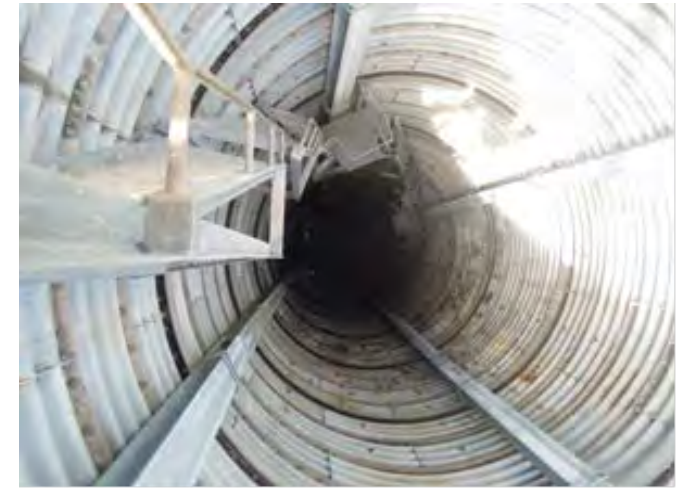
Middle slope of the landslide area.  
The slope is straight (along red line). No swelling and bending on the slope.



Horizontal drilling.  
The brown trace of water-flow was identified (red arrow)



Drainage well.



Inside of drainage well.  
No deformation, bending and tilting.



## Regular Check Sheet

Management number	0101010101014	Disaster	Stream erosion	Area name	Pouce Stream	
Date	April 30, 2013					
Reporter's name	Yoji KASAHARA					
Landslide /Slope failure	New failure					
	Swell slope					
	New/enlarged step/cliff					
	New/enlarged crack on slope					
Rockfall	New rockfall					
	Enlarged crack on rock slope					
	Erosion of unstable rock					
Debris flow	Filling up of debris sediment					
	Overflow of debris on road					
	Clogged culvert					
	New failure on river slope					
Spring water	Depleted/decreased spring water					
	Increased spring water					
	New spring water					
	Turbid spring water					
House/road	New/enlarged step/settlement					
	New/enlarged crack					
Counter-measure	Damage/deformation					
	Clogged drainage					
	Overflowed drainage					
Other problem						
Condition	Damage is confirmed to the gabion. However, the function of the erosion prevention is secured.					
Proposed action						
Purpose of action						



Full view of the channel (Downstream)



Full view of the channel (Upstream)



Some gabions have been damaged a little.



Some gabions have been damaged a little.



Debris flow occurred after the heavy rain.



Deposited sand by debris flow

## Regular Check Sheet

Management number	01010101010115	Disaster	Landslide	Area name	Old Moka Road, Camp Chapelon		
Date	April 29, 2013						
Reporter's name	Yoji KASAHARA						
Landslide /Slope failure	New failure						
	Swell slope						
	New/enlarged step/cliff						
	New/enlarged crack on slope						
Rockfall	New rockfall						
	Enlarged crack on rock slope						
	Erosion of unstable rock						
Debris flow	Filling up of debris sediment						
	Overflow of debris on road						
	Clogged culvert						
	New failure on river slope						
Spring water	Depleted/decreased spring water	decreased of spring water					
	Increased spring water						
	New spring water						
	Turbid spring water						
House/road	New/enlarged step/settlement						
	New/enlarged crack						
Counter-measure	Damage/deformation						
	Clogged drainage						
	Overflowed drainage						
Other problem							
Condition	No significant progress. However, the groundwater level is high in this area. Pushing the ditch out and cracks of house are confirmed.						
Proposed action	Artificial structures (drainage, horizontal drainage, etc.) should be constructed on the house						
Purpose of action	To decrease the water level and prevent the deformation						





Full view of the slope from road



Incline of a telephone pole



Retaining wall incline (Pushing of back out)



Marsh in front of house of tiptoe of the slope



Spring water in corner of basement



Open cracks of veranda

## Regular Check Sheet

Management number	010101010116	Disaster	Damage of wall	Area name	Boulevard Victria, Montague Coupe	
Date	April 30, 2013					
Reporter's name	Yoji KASAHARA					
Landslide /Slope failure	New failure					
	Swell slope					
	New/enlarged step/cliff					
	New/enlarged crack on slope					
Rockfall	New rockfall					
	Enlarged crack on rock slope					
	Erosion of unstable rock					
Debris flow	Filling up of debris sediment					
	Overflow of debris on road					
	Clogged culvert					
	New failure on river slope					
Spring water	Depleted/decreased spring water					
	Increased spring water					
	New spring water					
	Turbid spring water					
House/road	New/enlarged step/settlement					
	New/enlarged crack					
Counter-measure	Damage/deformation					
	Clogged drainage					
	Overflowed drainage					
Other problem						
Condition	No significant progress. However, the gabion has become unstable recently.					
Proposed action	It will be necessary to reinforce the gabion in the future. The fill removal in the back of the gabion is also effective.					
Purpose of action						





Full view of Gabion wall (East side)



Full view of Gabion wall (West side)



The upper part and the rear of the Gabion wall (East side)



Pushing out is confirmed a little.



Gabion reinforced with rust prevention wire net



## Regular Check Sheet

Management number	0101010101017	Disaster	Slope failure	Area name	Pailles : (i) access road to Les Guibies and along motorway, near flyover bridge		
Date	April 29, 2013						
Reporter's name	Yoji KASAHARA						
Landslide /Slope failure	New failure	New failure after heavy rain					
	Swell slope						
	New/enlarged step/cliff						
	New/enlarged crack on slope						
Rockfall	New rockfall	New rockfall after heavy rain					
	Enlarged crack on rock slope						
	Erosion of unstable rock						
Debris flow	Filling up of debris sediment						
	Overflow of debris on road						
	Clogged culvert						
	New failure on river slope						
Spring water	Depleted/decreased spring water						
	Increased spring water						
	New spring water						
	Turbid spring water						
House/road	New/enlarged step/settlement						
	New/enlarged crack						
Counter-measure	Damage/deformation						
	Clogged drainage						
	Overflowed drainage						
Other problem							
Condition	The slope around the bridge has small collapsed and sediment discharge was confirmed in the ditch.						
Proposed action	Artificial structures (drainage, ditch, etc.) should be constructed on the slope. It is necessary to green the slope .						
Purpose of action	To prevent further erosion of the slope.						



Full view of the slope failure



Greened cut slope (No significant progress)



Crack of concrete



Full view of the slope failure( New failure)



Falling rocks from the slope



Top of trace of erosion

## Regular Check Sheet

Management number	010101010118	Disaster	Stream erosion	Area name	Pailles : (ii) access road Morcellement des Aloes from Avenue M.Leal (on hillside)		
Date	April 29, 2013						
Reporter's name	Yoji KASAHARA						
Landslide /Slope failure	New failure						
	Swell slope						
	New/enlarged step/cliff						
	New/enlarged crack on slope						
Rockfall	New rockfall						
	Enlarged crack on rock slope						
	Erosion of unstable rock						
Debris flow	Filling up of debris sediment						
	Overflow of debris on road						
	Clogged culvert						
	New failure on river slope						
Spring water	Depleted/decreased spring water						
	Increased spring water						
	New spring water						
	Turbid spring water						
House/road	New/enlarged step/settlement						
	New/enlarged crack						
Counter-measure	Damage/deformation						
	Clogged drainage						
	Overflowed drainage						
Other problem							
Condition	No significant progress.						
Proposed action							
Purpose of action							





Full view of the slope from road



Erosion of the tank foundation



Situation of outlet



Situation of outlet



Outcrop of tank foundation



Falling rocks from the outcrop

## Regular Check Sheet

Management number	010101010119	Disaster	Slope failure	Area name	Pailles : (iii) soreze regin		
Date	April 29, 2013						
Reporter's name	Yoji KASAHARA						
Landslide /Slope failure	New failure	New failure after heavy rain					
	Swell slope						
	New/enlarged step/cliff						
	New/enlarged crack on slope						
Rockfall	New rockfall	New rockfall after heavy rain					
	Enlarged crack on rock slope						
	Erosion of unstable rock						
Debris flow	Filling up of debris sediment						
	Overflow of debris on road						
	Clogged culvert						
	New failure on river slope						
Spring water	Depleted/decreased spring water						
	Increased spring water						
	New spring water						
	Turbid spring water						
House/road	New/enlarged step/settlement						
	New/enlarged crack						
Counter-measure	Damage/deformation						
	Clogged drainage						
	Overflowed drainage						
Other problem	The damage of the ditch stands out.						
Condition	A lot of damages of the ditch are confirmed. The rockfall and the small collapse are confirmed.						
Proposed action	It is necessary to repair the ditch. In the future rockfall countermeasures should be constructed along the road.						
Purpose of action	To prevent rockfall and slope failure.						





Cracks on the road



Cracks on the road



Slope failure along the road



Rockfall from the mountain



Rockfall from the mountain



Damage on house

## Regular Check Sheet

Management number	0101010101020	Disaster	Slope failure	Area name	Plaine Champagne Road, opposite "Musee Touche Dubois"		
Date	April 10, 2013						
Reporter's name	Takeshi KUWANO						
Landslide /Slope failure	New failure						
	Swell slope						
	New/enlarged step/cliff						
	New/enlarged crack on slope						
Rockfall	New rockfall						
	Enlarged crack on rock slope						
	Erosion of unstable rock						
Debris flow	Filling up of debris sediment						
	Overflow of debris on road						
	Clogged culvert						
	New failure on river slope						
Spring water	Depleted/decreased spring water						
	Increased spring water						
	New spring water						
	Turbid spring water						
House/road	New/enlarged step/settlement						
	New/enlarged crack						
Counter-measure	Damage/deformation						
	Clogged drainage						
	Overflowed drainage						
Other problem							
Condition	No significant progress.						
Proposed action							
Purpose of action							





Full view (retaining wall)



Trace of past slope failure



Trace of past slope failure



Cracks on retaining wall



Cracks on retaining wall



Outlet of surface water on the slope

## Regular Check Sheet

Management number	0101010101021	Disaster	Damage of Embankment	Area name	Chamarel : (i) near Reataurant Le Chamarel		
Date	April 10, 2013						
Reporter's name	Takeshi KUWANO						
Landslide /Slope failure	New failure						
	Swell slope						
	New/enlarged step/cliff						
	New/enlarged crack on slope						
Rockfall	New rockfall						
	Enlarged crack on rock slope						
	Erosion of unstable rock						
Debris flow	Filling up of debris sediment						
	Overflow of debris on road						
	Clogged culvert						
	New failure on river slope						
Spring water	Depleted/decreased spring water						
	Increased spring water						
	New spring water						
	Turbid spring water						
House/road	New/enlarged step/settlement						
	New/enlarged crack						
Counter-measure	Damage/deformation						
	Clogged drainage						
	Overflowed drainage						
Other problem							
Condition	No significant progress.						
Proposed action							
Purpose of action							





Crack on the road side



Crack on the road side



The crack occurred in the road shoulder (by damage of differential settlement)



Slope under the shoulder



Water way under the slope



Road construction with fill

## Regular Check Sheet

Management number	010101010101212	Disaster	Damage of Embankment	Area name	Chamarel : (ii) Roadside		
Date	April 10, 2013						
Reporter's name	Takeshi KUWANO						
Landslide /Slope failure	New failure						
	Swell slope						
	New/enlarged step/cliff						
	New/enlarged crack on slope						
Rockfall	New rockfall						
	Enlarged crack on rock slope						
	Erosion of unstable rock						
Debris flow	Filling up of debris sediment						
	Overflow of debris on road						
	Clogged culvert						
	New failure on river slope						
Spring water	Depleted/decreased spring water						
	Increased spring water						
	New spring water						
	Turbid spring water						
House/road	New/enlarged step/settlement						
	New/enlarged crack						
Counter-measure	Damage/deformation						
	Clogged drainage						
	Overflowed drainage						
Other problem							
Condition	No significant progress.						
Proposed action							
Purpose of action							





Cracks and subsidence along A-A' line



Cracks and subsidence on upper part



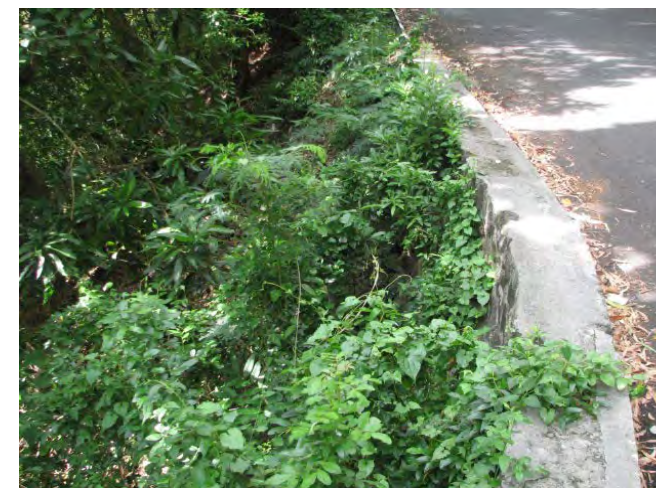
Retaining wall of the road along A-A' line



Cracks and subsidence on lower part



Cracks and subsidence along B-B' line



Stone masonry wall of the road along B-B' line



## Regular Check Sheet

Management number	01010101010123	Disaster	Damage of house	Area name	Gremde Riviere Noire Village Hall		
Date	April 10, 2013						
Reporter's name	Takeshi KUWANO						
Landslide /Slope failure	New failure						
	Swell slope						
	New/enlarged step/cliff						
	New/enlarged crack on slope						
Rockfall	New rockfall						
	Enlarged crack on rock slope						
	Erosion of unstable rock						
Debris flow	Filling up of debris sediment						
	Overflow of debris on road						
	Clogged culvert						
	New failure on river slope						
Spring water	Depleted/decreased spring water						
	Increased spring water						
	New spring water						
	Turbid spring water						
House/road	New/enlarged step/settlement						
	New/enlarged crack						
Counter-measure	Damage/deformation						
	Clogged drainage						
	Overflowed drainage						
Other problem							
Condition	No significant progress. The cracks are caused by not landslide but lack of bearing capacity of the ground.						
Proposed action	This area can be removed from the inspection sites after the discussion by related organization.						
Purpose of action							



Full view of the school



Cracks on wall



Horizontal cracks of the concrete step



Full view on sea side

## Regular Check Sheet

Management number	01010101010124	Disaster	Debris flow	Area name	Baie du Cap : (i) Near St Francois d'Assise Church		
Date	April 18, 2013						
Reporter's name	Takeshi KUWANO						
Landslide /Slope failure	New failure						
	Swell slope						
	New/enlarged step/cliff						
	New/enlarged crack on slope						
Rockfall	New rockfall						
	Enlarged crack on rock slope						
	Erosion of unstable rock						
Debris flow	Filling up of debris sediment	Small debris and garbage					
	Overflow of debris on road						
	Clogged culvert	Small debris and garbage					
	New failure on river slope						
Spring water	Depleted/decreased spring water						
	Increased spring water						
	New spring water						
	Turbid spring water						
House/road	New/enlarged step/settlement						
	New/enlarged crack						
Counter-measure	Damage/deformation						
	Clogged drainage						
	Overflowed drainage						
Other problem							
Condition	No significant progress. Small debris and garbage are stacked at the inlet of culvert.						
Proposed action	Regular maintenance (excavation of debris and garbage) should be conducted after rainy						
Purpose of action	To prevent the clog of culvert and overflow.						





Full view of the channel work



Upper part in the channel



Inlet of the box culvert  
Small debris and garbage are stacked



Discharged sediment at the mouth of stream



Outlet of the box culvert



Full view of a house next the stream

## Regular Check Sheet

Management number	0101010101025	Disaster	Rock fall	Area name	Baie du Cap :(ii) Maconde Region		
Date	April 18, 2013						
Reporter's name	Takeshi KUWANO						
Landslide /Slope failure	New failure						
	Swell slope						
	New/enlarged step/cliff						
	New/enlarged crack on slope						
Rockfall	New rockfall						
	Enlarged crack on rock slope						
	Erosion of unstable rock						
Debris flow	Filling up of debris sediment						
	Overflow of debris on road						
	Clogged culvert						
	New failure on river slope						
Spring water	Depleted/decreased spring water						
	Increased spring water						
	New spring water						
	Turbid spring water						
House/road	New/enlarged step/settlement						
	New/enlarged crack						
Counter-measure	Damage/deformation						
	Clogged drainage						
	Overflowed drainage						
Other problem							
Condition	No significant progress.						
Proposed action							
Purpose of action							





Full view of the slope 1



Clearance of the slope 1



Clearance of the slope 1



Full view of the slope 2



Clearance of the slope 2



Clearance of the slope 2



## Regular Check Sheet

Management number	010101010101216	Disaster	Stream erosion	Area name	<i>Riviere des Anguilles, near the bridge</i>		
Date	April 12, 2013						
Reporter's name	Takeshi KUWANO						
Landslide /Slope failure	New failure						
	Swell slope						
	New/enlarged step/cliff						
	New/enlarged crack on slope						
Rockfall	New rockfall						
	Enlarged crack on rock slope						
	Erosion of unstable rock						
Debris flow	Filling up of debris sediment						
	Overflow of debris on road						
	Clogged culvert						
	New failure on river slope						
Spring water	Depleted/decreased spring water						
	Increased spring water						
	New spring water						
	Turbid spring water						
House/road	New/enlarged step/settlement						
	New/enlarged crack						
Counter-measure	Damage/deformation						
	Clogged drainage						
	Overflowed drainage						
Other problem							
Condition	Over the past several years, the erosion is slightly progressing so that the edge of the cliff has been approaching the houses.						
Proposed action	Artificial structures (gabion, concrete walls etc.) should be constructed on the house side along the river						
Purpose of action	To prevent further erosion of the cliff.						



Full view of the slope from opposite side



Close view of a house above the cliff



Close view of the erosion at the bottom



The house above the cliff



The backside of the house



The backside of the house

## Regular Check Sheet

Management number	010101010101217	Disaster	Landslide	Area name	Quatre Soeurs, Marie Jeanne, Jhummah Streert, Old Grand Port		
Date	April 12, 2013						
Reporter's name	Takeshi KUWANO						
Landslide /Slope failure	New failure						
	Swell slope						
	New/enlarged step/cliff						
	New/enlarged crack on slope						
Rockfall	New rockfall						
	Enlarged crack on rock slope						
	Erosion of unstable rock						
Debris flow	Filling up of debris sediment						
	Overflow of debris on road						
	Clogged culvert						
	New failure on river slope						
Spring water	Depleted/decreased spring water						
	Increased spring water						
	New spring water						
	Turbid spring water						
House/ road	New/enlarged step/settlement						
	New/enlarged crack						
Counter- measure	Damage/deformation						
	Clogged drainage						
	Overflowed drainage						
Other problem							
Condition	As a pilot project site, monitoring is being conducted						
Proposed action	Until the completion of countermeasures, monitoring and early warning system should be continuously implemented.						
Purpose of action							





Upperpart of the landslide



Heavy damages at houses



Head cracks of the lower landslide



Heavy damages at houses



Deformed road side at the bottom of the lower landslide



Heavy damages at houses

## Regular Check Sheet

Management number	010101010101218	Disaster	Slope failure	Area name	Bambous Virieux, Rajiv Gandhi Street (near Bhavauy House), Impasse Bholoa		
Date	April 12, 2013						
Reporter's name	Takeshi KUWANO						
Landslide /Slope failure	New failure						
	Swell slope						
	New/enlarged step/cliff						
	New/enlarged crack on slope						
Rockfall	New rockfall						
	Enlarged crack on rock slope						
	Erosion of unstable rock						
Debris flow	Filling up of debris sediment						
	Overflow of debris on road						
	Clogged culvert						
	New failure on river slope						
Spring water	Depleted/decreased spring water						
	Increased spring water						
	New spring water						
	Turbid spring water						
House/road	New/enlarged step/settlement						
	New/enlarged crack						
Counter-measure	Damage/deformation						
	Clogged drainage						
	Overflowed drainage						
Other problem							
Condition	No significant progress.						
Proposed action							
Purpose of action							





Full view of the slope and house



Retaining wall and house



Retaining wall and house



Retaining wall and house



Retaining wall and house



Small collapse next to the house



## Regular Check Sheet

Management number	010101010101219	Disaster	Cavern	Area name	Cave in at Union Park, Rose Belle		
Date	April 12, 2013						
Reporter's name	Takeshi KUWANO						
Landslide /Slope failure	New failure						
	Swell slope						
	New/enlarged step/cliff						
	New/enlarged crack on slope						
Rockfall	New rockfall						
	Enlarged crack on rock slope						
	Erosion of unstable rock						
Debris flow	Filling up of debris sediment						
	Overflow of debris on road						
	Clogged culvert						
	New failure on river slope						
Spring water	Depleted/decreased spring water						
	Increased spring water						
	New spring water						
	Turbid spring water						
House/road	New/enlarged step/settlement						
	New/enlarged crack						
Counter-measure	Damage/deformation						
	Clogged drainage						
	Overflowed drainage						
Other problem							
Condition	No significant progress. The cave was already filled. There are no movement or erosion.						
Proposed action	This area can be removed from the inspection sites after the discussion by related organization.						
Purpose of action							

Management Number 0 0 0 0 0 0 0 0 2 9

# Photo sheet

Date April 12, 2013



The house which had a cave



Full view of the cave  
It was already filled



Close view of the cave  
It was already filled



Back side of the cave area

## Regular Check Sheet

Management number	01010101010130	Disaster	Slope failure	Area name	Trou-AUX-Cerfs	
Date	April 10, 2013					
Reporter's name	Takeshi KUWANO					
Landslide /Slope failure	New failure					
	Swell slope					
	New/enlarged step/cliff					
	New/enlarged crack on slope					
Rockfall	New rockfall					
	Enlarged crack on rock slope					
	Erosion of unstable rock					
Debris flow	Filling up of debris sediment					
	Overflow of debris on road					
	Clogged culvert					
	New failure on river slope					
Spring water	Depleted/decreased spring water					
	Increased spring water					
	New spring water					
	Turbid spring water					
House/road	New/enlarged step/settlement					
	New/enlarged crack					
Counter-measure	Damage/deformation					
	Clogged drainage					
	Overflowed drainage					
Other problem						
Condition	Vegetation is getting recovery. No significant progress.					
Proposed action						
Purpose of action						





Full view of the slope failure



Full view of the slope failure  
Vegetation is getting recovery



The fence in the back of the slope failure  
It is damaged by the slope failure



The back of the slope failure



The back of the slope failure



The top of the slope failure

## Regular Check Sheet

Management number	01010101010131	Disaster	Stream erosion	Area name	River Bank at Cite L'Oiseau		
Date	April 10, 2013						
Reporter's name	Takeshi KUWANO						
Landslide /Slope failure	New failure						
	Swell slope						
	New/enlarged step/cliff						
	New/enlarged crack on slope						
Rockfall	New rockfall						
	Enlarged crack on rock slope						
	Erosion of unstable rock						
Debris flow	Filling up of debris sediment						
	Overflow of debris on road						
	Clogged culvert						
	New failure on river slope						
Spring water	Depleted/decreased spring water						
	Increased spring water						
	New spring water						
	Turbid spring water						
House/road	New/enlarged step/settlement						
	New/enlarged crack						
Counter-measure	Damage/deformation						
	Clogged drainage						
	Overflowed drainage						
Other problem							
Condition	No significant progress.						
Proposed action							
Purpose of action							





Full view of the river



Full view from the upper side of the river



High water overflow at the bottom of the building



Full view of the right bank



Erosion at the bottom of the building



## Regular Check Sheet

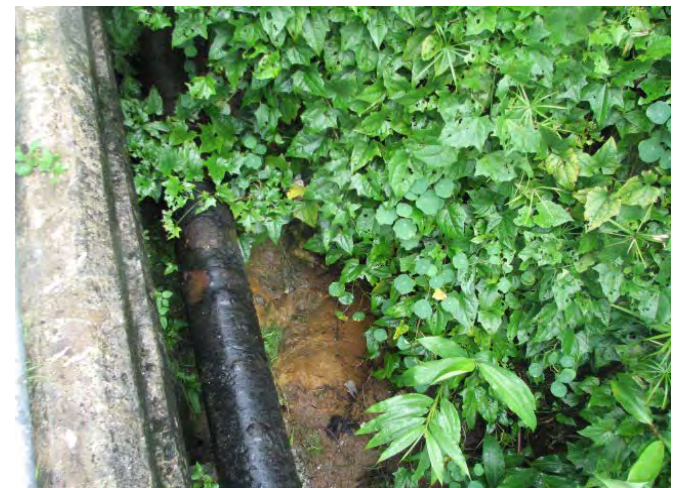
Management number	01010101010132	Disaster	Stream erosion	Area name	Louis de Rochecouste (Riviere Seche)	
Date	April 10, 2013					
Reporter's name	Takeshi KUWANO					
Landslide /Slope failure	New failure					
	Swell slope					
	New/enlarged step/cliff					
	New/enlarged crack on slope					
Rockfall	New rockfall					
	Enlarged crack on rock slope					
	Erosion of unstable rock					
Debris flow	Filling up of debris sediment					
	Overflow of debris on road					
	Clogged culvert					
	New failure on river slope					
Spring water	Depleted/decreased spring water					
	Increased spring water					
	New spring water					
	Turbid spring water					
House/road	New/enlarged step/settlement					
	New/enlarged crack					
Counter-measure	Damage/deformation					
	Clogged drainage					
	Overflowed drainage					
Other problem						
Condition	No significant progress					
Proposed action						
Purpose of action						



Full view of the river



Eroded area



Close veiw of the eroded area



Eroded area  
the eroded depth is 50cm



The inclined concrete block wall

## Regular Check Sheet

Management number	01010101010133	Disaster	Stream erosion	Area name	Piper Morcellement Piat		
Date	April 10, 2013						
Reporter's name	Takeshi KUWANO						
Landslide /Slope failure	New failure	Erosion by river					
	Swell slope						
	New/enlarged step/cliff						
	New/enlarged crack on slope						
Rockfall	New rockfall						
	Enlarged crack on rock slope						
	Erosion of unstable rock						
Debris flow	Filling up of debris sediment						
	Overflow of debris on road						
	Clogged culvert						
	New failure on river slope						
Spring water	Depleted/decreased spring water						
	Increased spring water						
	New spring water						
	Turbid spring water						
House/road	New/enlarged step/settlement						
	New/enlarged crack						
Counter-measure	Damage/deformation	Collapse					
	Clogged drainage						
	Overflowed drainage						
Other problem							
Condition	Stone masonry wall was collapsed due to the heavy rain in Middle February. The collapse cause further erosion on house side.						
Proposed action	The retaining wall should be repaired.						
Purpose of action	To avoid further collapse on house side.						





Full view of the river



Close view of river bank of the house side



A road to the house  
much water flow away on the road.



Broken wall on house side



Close view of broken wall



Close view of collapsed rocks

## Regular Check Sheet

Management number	01010101010134	Disaster	Landslide	Area name	Candos Hill at LalBahadoor Shastri and Mahatma Gandhi Avenues		
Date	April 17, 2013						
Reporter's name	Takeshi KUWANO						
Landslide /Slope failure	New failure						
	Swell slope						
	New/enlarged step/cliff						
	New/enlarged crack on slope						
Rockfall	New rockfall						
	Enlarged crack on rock slope						
	Erosion of unstable rock						
Debris flow	Filling up of debris sediment						
	Overflow of debris on road						
	Clogged culvert						
	New failure on river slope						
Spring water	Depleted/decreased spring water						
	Increased spring water						
	New spring water						
	Turbid spring water						
House/road	New/enlarged step/settlement						
	New/enlarged crack						
Counter-measure	Damage/deformation						
	Clogged drainage						
	Overflowed drainage						
Other problem							
Condition	No significant progress.						
Proposed action							
Purpose of action							





Full view of the collapse slope



Crack of concrete wall



Falling rocks



Crack of retaining wall



Spring water point (no water at the inspection)



## Regular Check Sheet

Management number	010101010101315	Disaster	Cavern	Area name	Cavernous Area at Mgr Leen Avenue and Bassin		
Date	April 17, 2013						
Reporter's name	Takeshi KUWANO						
Landslide /Slope failure	New failure						
	Swell slope						
	New/enlarged step/cliff						
	New/enlarged crack on slope						
Rockfall	New rockfall						
	Enlarged crack on rock slope						
	Erosion of unstable rock						
Debris flow	Filling up of debris sediment						
	Overflow of debris on road						
	Clogged culvert						
	New failure on river slope						
Spring water	Depleted/decreased spring water						
	Increased spring water						
	New spring water						
	Turbid spring water						
House/road	New/enlarged step/settlement						
	New/enlarged crack						
Counter-measure	Damage/deformation						
	Clogged drainage						
	Overflowed drainage						
Other problem							
Condition	No significant progress. The cave was already filled. There are no movement or erosion.						
Proposed action	This area can be removed from the inspection sites after the discussion by related organization.						
Purpose of action							

Management Number 0 0 0 0 0 0 0 0 3 5

# Photo sheet

Date April 17, 2013



Full view



Full view



Filled cave

## Regular Check Sheet

Management number	01010101010136	Disaster	Slope failure	Area name	Morcellement Hermitage, Coromandel	
Date	April 17, 2013					
Reporter's name	Takeshi KUWANO					
Landslide /Slope failure	New failure					
	Swell slope					
	New/enlarged step/cliff					
	New/enlarged crack on slope					
Rockfall	New rockfall					
	Enlarged crack on rock slope					
	Erosion of unstable rock					
Debris flow	Filling up of debris sediment					
	Overflow of debris on road					
	Clogged culvert					
	New failure on river slope					
Spring water	Depleted/decreased spring water					
	Increased spring water					
	New spring water					
	Turbid spring water					
House/road	New/enlarged step/settlement					
	New/enlarged crack					
Counter-measure	Damage/deformation					
	Clogged drainage					
	Overflowed drainage					
Other problem						
Condition	No significant progress.					
Proposed action						
Purpose of action						





Full view (retaining wall)



Cracks on stone block



Cracks on stone wall



Full view (upper end of retaining wall)



Damege on house



Cracks around the house

## Regular Check Sheet

Management number	010101010137	Disaster	Stream erosion	Area name	Montee S, GRNW	
Date	April 30, 2013					
Reporter's name	Yoji KASAHARA					
Landslide /Slope failure	New failure					
	Swell slope					
	New/enlarged step/cliff					
	New/enlarged crack on slope					
Rockfall	New rockfall					
	Enlarged crack on rock slope					
	Erosion of unstable rock					
Debris flow	Filling up of debris sediment					
	Overflow of debris on road					
	Clogged culvert					
	New failure on river slope					
Spring water	Depleted/decreased spring water					
	Increased spring water					
	New spring water					
	Turbid spring water					
House/road	New/enlarged step/settlement					
	New/enlarged crack					
Counter-measure	Damage/deformation					
	Clogged drainage					
	Overflowed drainage					
Other problem						
Condition	No significant progress.					
Proposed action						
Purpose of action						





Full view of the bridge



Bank erosion around bridge abutment



Bank erosion around bridge abutment



Erosion around structure



Grinding hole for drain.